Barry Cohen
PFMC
06/19/2019 03:12 PM PDT

RE: Comments on Non-Agenda Items

Greeting:
History of IFQ program.

How the Gov. controls it with specie caps, yearly catch limits and observers.

Fishermen's Choices:

1. Catch quota whenever you want to:
2. Gear switching
3. Quota ownership: Sell or Lease

Is a self managed program.

Points:

1. Contrary to what you've heard, myself and many other Trawlers believe there really is no big problem with gear switching and we want to maintain our original agreement with the council. If you buy into what you have heard, from a few, than you make more work for yourselves and new Regulations for the Trawlers.

In our opinion, that's a Lose-Lose proposition

Look at what we're doing already. Wasting lots of time and money trying to solve someone else's problems!!! The Industry can and should work out our own problems. So we have no complaint to bring to the Council!!!

This is what we heard are the "Problems"

A. Problem: Pot fishermen are raising the cost of quota. Here's the reality.

i. Trawlers get more return per pound than Pot fisherman.

ii. Outbid the Pot fishermen. (With your buyers Help)

B. Problem: Some Processors can't get enough bottom fish. Here's the **Best Solution.**

I. The Processors can help their fishermen buy more Blackcod Quota. "Kick in" some money to help their boats get more Quota.

ii. If the processors help their trawlers buy more Quota, than for sure they can outbid the Pot Fishermen. (Don't go complaining to the Council. That will just mean more regulations. I thought we agreed to "Self Manage" our own fishery!!!)

iii. In fact, I believe it's some Processors that are pushing this "Big Problem" idea. These Processors just want the Council to put "unnecessary" regulations on the fishermen so they don't have to solve their own company problems. If so, when I was a Processor and needed more fish I'd pay more for the fish or help the fishermen in other ways. I never complained to the Council to solve **my own company problems. I just solved the problems myself.** That's called, "Self Management"!!!

History of the "36" Line:

1994 "36" Line established for Survey concerns.
2002 extended surveys to total coast. No more need for 36 Line.
What Biological or Scientific needs does the "36" Line fulfill today? None!!!

Problems caused now by "36" Line:

1.. Deprives Northern Trawlers of needed blackcod quota

2. Tries to act as a legal boundary between Blackcod and Southern Blackcod. However, Blackcod are migratory and swim both ways across the "36" Line in spite of the "Rules". So, it really only, in a negative way, affects the Trawlers. Plus, regulations cost money.

3. Picks Winners and Losers. Southern Blackcod cheaper, so leasing Southern fishermen can sell it cheaper.

4. Causes 1,500,000 pounds of unused, but needed Blackcod.

5. Allows for some Fishermen to get two (not one) "Caps" of Blackcod, especially if they are close to the "36" Line.

6. Trying to make a specie as if it's different from the same specie.

7. Causes Processors to get less necessary fish.

8. Causes Workers to have less or no work.

9. Causes fish dependent on shore facilities to make less sales; such as fuel facilities, marine stores, etc.

10. Causes a drop in tourism.

11. Causes the coastal communities to have less, much needed, revenue.

12. A healthy Trawl Fishery is the "Backbone" of most processors and coastal communities.

What benefit does the "36" Line do for the Trawlers?

1. None
2. None

and

3. None

I believe it is an obligation of the Council to do what's best for the Trawlers and that's to help them, "Where Possible", to maximize their ability to catch their full quota. The Council should, "Where Possible" remove all restrictions preventing the trawlers from maximizing their legal catch; as the Council "Expects the Trawlers" to do **Their Best** to minimize "Waste and Discards".

Barry Cohen

05/23/2019 02:20 PM PDT

RE: Comments on Non-Agenda Items

Re: Trawl IQ Program and Blackcod

From Barry Cohen

From: fishmancohen <fishmancohen@aol.com>
To: FishmanCohen <FishmanCohen@aol.com>
Subject: Table Of Contents
Date: Mon, May 6, 2019 2:15 pm

11/16/18

Trawl IQ Program & "Trawl Blackcod" 36 Line

Table of Contents:

Page:

From: fishmancohen <fishmancohen@aol.com>
To: FishmanCohen <FishmanCohen@aol.com>
Subject: Letter to the Council
Date: Mon, May 6, 2019 1:30 pm

Trawl IQ Program & Southern Blackcod

To: PFMC Council Members,

My name is Barry Cohen.

This is a little history of and my thoughts, concerning the "southern" blackcod:

1. First of all some background about myself: In 1965 I started my fishing career in Avila Beach, Ca., trolling for salmon. After the salmon season, I bought a small 38 foot trawler, the "Bluejay". It was a shallow water trawler and I fished mostly for halibut, sandsole, and starry flounder. At that time there was not a three mile requirement from shore. After a few years of fishing the Bluejay, I moved up to a larger boat. I bought the Sharon Craig, a 65 foot trawler from Morro Bay. It was a great sea boat and allowed me to make trips from Avila Beach to Santa Barbara and out to 300 fathoms. I fished the Sharon Craig quite a few years and then sold it. I bought the Point Loma, a 78 foot trawler. I had that boat about 20 years. I had the Point Loma during the qualifying years for the Trawl "IQ" Program. Which takes me to the IQ discussion:

2. I was on the "Council's GAP for over 15 years. I was on the Gap when the discussions took place with the council for a "Trawl I Q program". These are the points that I believe were agreed upon between the Trawlers, the Gap, and the Council to initiate the "Trawl IQ Program". This was a **"Trawler/Council managment program" to self manage our fishery with a minimal amount of discards and waste.**

A. This would benefit the trawlers by allowing them to catch their quota **whenever** they wanted.

B. This would benefit the trawlers by allowing them to catch their quota **especially blackcod with whatever gear they chose so long as it was legal. (Pot caught Blackcod brought more money).**

C. This would benefit the trawlers by allowing them to **trade or sell their quota** so long as the trade or sale was legal.

D. For these benefits the fishermen agreed to allow the council to **track the fishermen's daily take of fish to insure no unreported waste or illegal activities.** (Observers, at sea and unloading). This would provide for a "cleaner" fishery; much less discards and fish waste.

3. Now for the Southern Blackcod: Here is a bit of Blackcod History. Why is there such a thing as "Southern Blackcod"? It was only a temporary name given to the blackcod population below the 36 line because the scientists had not yet surveyed the blackcod population below the 36 line and they did not want their survey results misconstrued by some to think it had included the blackcod population below the 36 line. The establishment of the "Blackcod 36 Line was in 1994.

Later, in 2002, the surveys were extended and included the "southern blackcod". The scientists found that the "Southern Blackcod" were genetically the same as the Blackcod above and so the two Blackcods were the same specie. So, really the name need not be used any longer. It's the same specie and it's not over fished. Another bit of "Blackcod information" is that the Blackcod is a migratory specie. In one instance a "tagged" blackcod was captured 1500 miles from where it was tagged. So as the law reads: the 36 line is used to separate the Southern from the Northern Blackcod and different rules apply. It's ironic that that is still the case, since we know that the fish themselves are the same specie and that the fish migrate across the line, at will, for hundreds of miles in any direction. So after learning those facts, we should have faced the reality that the 36 line is now a meaningless burden on the fishermen. **There is no Biological or Scientific reason NOT to eliminate the Blackcod 36 line.**

After the surveys and analysis, the actual name, Blackcod should have been restored and the pseudo-name, "Southern Blackcod" should have been eliminated. That would have saved a lot of problems for the fishermen. So, now there is no reason that it can not be included in the coastwide term "Blackcod". There are **"Blackcod" from Alaska to Mexico.** NOT **Blackcod in Alaska, Blackcod in Canada, Blackcod in Washington, Blackcod in Oregon, Blackcod in California down to the 36 line, Southern Blackcod from the 36 line to the Mexican border, and Blackcod in Mexico.** I think you can agree how silly that is. Especially since there is no longer any reason for it!!!

I guess the question is: "What purpose does the 36 Line now serve?" None? Today it is only a deterrent depriving the trawlers access to much needed blackcod that is readily available, but not legally accessible!!!**

****Today there are tons and tons of dormant blackcod quota south of the 36 Line because there are not enough fishermen that are able to fish the quota.**

4. As I said before in 2. D. This would benefit the trawlers by allowing them to trade **or sell their quota** so long as the trade or sale was legal.

Calling Blackcod Southern Blackcod and treating it as if it's a different specie (when it's not) sure puts a "ka bosh" on that benefit. Also, when the initial allocation was first made, all trawlers received some **Southern Trawl Blackcod.** For those trawlers that live and fish in the North and have not traded that quota, it's worthless to them. **And that's really silly because it's the exact same specie that they are already fishing!!!**

Here we are, some trawlers are restricted from catching their full quota because they don't have enough trawl blackcod to allow them to continue fishing. Yet we

have surplus trawl blackcod not being made available only because of a "temporary" adjective (southern) added to their name until a survey (which was made years ago) was made. Please, Council, fix that long overdue correction.

There is dormant southern trawl blackcod around that could be put to good use and help trawlers that need it to finish their quota.

That's what this program was all about; *"Trawlers, you help the Council by reducing discards and waste and we'll help you."..... "Ok Council we're reducing discards and putting up with observers, how about helping us with some more trawl blackcod that's readily available, but simply not accessible."* It's only in the Council's hands to fix this problem and make it right by the trawlers. It's really hard to be trawling on the North side of the 36 line and become short of trawl blackcod and not able to finish a trip when we see the boats to the South of us have a surplus of trawl blackcod and don't even have the boats to catch them. Something is really wrong with this picture!!!

5. This was and is a Trawl IQ Program between the Council and the Trawlers: This is the Council and Trawler's agreement and they are the only parties that gain and lose directly. The trawlers gave up things and the Council gave up things. I like a lot of the pot fishermen. In fact I'm friends with a lot of fishermen period. I was a fisherman and/or fish buyer for more than 52 years and made a lot of friends. However, in this case the pot fishermen and other non trawl fishermen are not party to this agreement. In my opinion this whole discussion should only be between the trawlers and the Council. The trawlers did not have direct input or involvement in the " Blackcod Pot Program", the Crab Pot Fishery, Salmon Fishing, etc.,etc.!!!! **So, why are so many getting involved in the Council/Trawler IQ Program?** The Pot fishermen or any fishermen have every right to buy/lease/fish, etc. trawl blackcod, but they are second party only. They have nothing to say about how this is managed. **It is still an IQ Program between the Council and the Trawlers. I believe the Council has an obligation to do what's best for the trawlers and that's to help them, where possible, to maximize their ability to catch their full quota. The Council should, where possible, remove all restrictions preventing the trawlers from maximizing their legal catch. As they "Expect the Trawlers" to do their best to minimize "Waste and Discards". Considering the agreement made, it would not be in good faith to deny the needed trawl blackcod for the trawlers when the Council requires the Trawlers to live up to their part of the agreement and reduce or eliminate discards.**

Another factor the Council must consider is what and who depends upon the good health and survival of the Trawlers: The processors, the fuel facilities, the tourism, in fact the health of the coastal communities as a whole have a stake in the health and survival of the Trawlers. The Trawlers are the "backbone" of a healthy fishing community along our coast.

In Conclusion:

I believe: i. The 36 line should be removed for "southern" blackcod..

ii. Southern Blackcod should just be blackcod and available to be traded coastwide.

iii. If a trawler wants to use any legal method to catch his quota he should be free to do so (as was initially agreed).

iv. If a trawler wants to sell or lease his quota or any part of his quota to any other legal gear type fisherman, he should be free to do so.

v. This should always remain a Trawl IQ Program as it was meant to be.

When we see an efficient and healthy trawl fishing industry that has close to zero waste, is well managed, and the fishermen make a fair profit; then the Council has done its job well with the Trawlers, the pot fishermen, the Processors, the other shore side facilities, and the communities.

Thank you for your time and consideration,

Barry A. Cohen

From: fishmancohen <fishmancohen@aol.com>
To: FishmanCohen <FishmanCohen@aol.com>
Subject: Think About This
Date: Mon, May 6, 2019 2:21 pm

11/23/18

2. Think About This.....

Trawlers:

1. Freedoms/Options we gained from the Trawl IQ program
   a. To catch our quota when ***we*** want to go fishing.
   b. To be able to catch our quota by means ***other than trawling***, so long as the other methods are legal methods.
   c. To be permitted to sell or lease our quota or any part of our quota to any legal party ***that we desire*** so long as the lease and/ or sale is also legal.

2. What we "agreed to" and "gave up" for those Freedoms/Options:
   a. Agreed to a new fishing strategy to reduce or eliminate waste and discards.
   b. Agreed to take and pay for observers.
   c. Agreed to deliver to "Licensed" processors only.

It's very hard to get any additional freedoms these days, especially in the fishing industry. So I would ***hang on tight*** to the ones we now have that are listed above under #1. We already paid for them under #2. If we give one away, the odds are that we'll never get it back. Then we're also taking a chance that they'll put their sights on the next one, and on and on until, who knows where it will stop. All gone??? That's not far fetched. It's part of our history. Ask me.

So which one do you want to "give up first? **1.C.?**

Right now some people think we shouldn't be able to sell or lease our quota to whoever we want to sell or lease it to.

That 's not what I want. I don't want someone else telling me who I have to sell or lease to. That means the value of my quota will go down. The Council said that we would own

our quota and that we could sell or lease it as we saw fit; so long as it was legal. If I can't sell it to who I want to then I guess it wasn't really mine to start with. Also, maybe I could have sold it for $5.00, but the Government says you have to sell it to Company X. They will pay you $2.00. So I say, "No thank you. I'd rather run my own business". This is only one example. We can't imagine what will come up. But we should keep our cards so we can still be in the game.

You never can tell what the future will bring. It may be soon that you will be very happy that you helped save
this freedom/option for you and the other trawlers Remember, our history says, "once gone, never returned"

So, at this time, I'm not willing to give up any of my negotiated freedom/options.

Well, how about it. Want to give up 1.B.?

So do we want to give away our opportunity to "gear switch"? If so, you can be sure we made such a "big stink" about it, that if we allow this to be taken from us we will "never, ever, never," see it again. Anyhow, As I have learned over the years is that if you have any fishing options / freedoms hang on to them. ***you will need them sometime*** "Down the road".

This is such a great option: It gives us a lot of flexibility. Just think about all the possibilities this brings to the table. If you need or want, you can have some other fisherman help you get some of your quota even though he is not a trawler. If you get sick or hurt that could be a big blessing! Options are Good!!! More unnecessary Regulations are not good and they hurt us!!!

Remember, you control your quota. If you don't want pot boats to own any of your blackcod, don't sell it to them. But you can lease it to them for a year for extra money. Or lease it to other trawlers. Maybe even your market will want to lease some for a year. Either way you don't have to sell it. You control it. Also, if the Council removes the 36 line and you have some of that "Southern Blackcod", you could just add that to you blackcod "POT". Yes, pun intended!!!
Hook & Line Rockcod, Pot Blackcod. All lease able if you want to, or have to make extra money . It's like paid insurance policies. You wouldn't give those away..... Same thing!!! Don't give it away.

You never can tell what the future will bring. It may be soon that you will be very happy that you helped save

this freedom/option for you and the other trawlers Remember, our history says, "once gone, never returned"

So, at this time, I'm not willing to give up any of my negotiated freedom/options.

We haven't been asked to catch our quota on a time line. YET!!! 1.A.
However, we just got out of that fiasco. Monthly or bi-montly limits!!! Oh my g_d, we don't want to go back to that again.

You never can tell what the future will bring. It may be soon that you will be very happy that you helped save
this freedom/option for you and the other trawlers Remember, our history says, "once gone, never returned"

So, at this time, I'm not willing to give up any of my negotiated freedom/options.

And that "pesty" 36 line: Where if you catch blackcod below the 36 line then you have to unload below the 36 line (that is if you have the "Southern" Blackcod quota). And the same in reverse if you catch blackcod above the 36 line. Unload above the 36 line. *Funny thing is that it's the same blackcod.* Initially it was only given the Southern name, South of the 36 line, to separate it from the Northern Blackcod, North of the 36 line, for a survey purpose. Now it's an absolutely unnecessary regulation!!! We have enough regulations. we don't need unnecessary regulations. Also, this Regulation is restricting our access to much needed blackcod that would really help most of us get more of our quota. There is no scientific or management necessity for this regulation. "Southern Blackcod" came from the blackcod survey before they surveyed below the 36 line. This "Trawl Blackcod 36 line" should have been removed after the science committee finished it's survey work below the 36 line. Since that time the 36 line has caused much needed blackcod to become unavailable to the Northern Trawlers. It has caused unnecessary and burdensome regulations, unloading inconveniences, and formed a divided fishery that unintentionally gave a competitive edge to some fishermen over other fishermen for the same specie of fish, also caused all the Northern Trawlers that were in the IQ Trawl program to receive a worthless fish, to them, in their quota mix. It was called the "Southern Blackcod", actually *it is the same specie* as the much sought after "Blackcod", but can only be caught below the 36 line. Frustrating and silly. It caused

less catch for the large majority of fishermen, less fish for almost all the processors, less work for their employees, hurt the coastal communities, etc.

I don't think these negative results were wanted or expected to happen, by anyone.

But, These Were The Unforeseen And Unintended Consequences Of Maintaining The "Trawl Blackcod" 36 Line.

I hope everyone can agree we need to fix this ridiculous, unnecessary, and harmful restriction.

We need to keep what we got: And get rid of the "Trawl Blackcod" 36 line

All of us as fishermen need to get together and work this out between us. If we stick together we can come out with the best possible results. All of you know this saying, but fishermen have a problem living it. So we usually wind up shooting ourselves in the foot. We are all Fishermen First; Gear Differences Later. We have enough enemies without fighting each other.

Remember, **"United we stand, Divided we fall"**. I just think it would be the wrong move to give up anything we fought so hard to get. **If we did give up anything, what would we get in return?**

If anyone wants to talk with me about any of this my phone # is (831) 760 - 2126

From: fishmancohen <fishmancohen@aol.com>
To: FishmanCohen <FishmanCohen@aol.com>
Date: Tue, May 7, 2019 2:17 pm

3. Gear Switching
11/23/18

TRAWL IQ PROGRAM GEAR SWITCHING OPTION

A. Benefits:

1. A Trawler can decide to use other types of "legal" gear to catch some of their quota; such as blackcod with pots.

a. Pot Blackcod warrants more money.

b. The Trawler could do selective fishing with little, if any, by-catch. Hook & Line, Pots, etc.

2. A. Trawler can decide to lease some of their quota to non-trawlers that can legally fish trawl fish. This can help prevent leaving fish "on the table" at the end of the year, catch some of the quota if the Trawler is unable to fish, etc.

3. These options 1. and 2. listed above, with the option that the Quota Owner has the right to sell or trade their quota (so long as the sale is legal), makes the quota more valuable.

B. Negatives: I can't think of any valid negatives as of now.

Now some of the Trawlers will argue that the pot fishermen will buy all or most of all the blackcod that comes up for sale or lease (Southern Blackcod for one). They say the pot fishermen get more money for their fish so they can afford to pay more to get it. Well. If

you really think that through, the trawlers get much more return on their dollar of purchased blackcod than the pot fishermen. The pot fishermen gets more money per pound, however, they can only catch the number (1 for 1) of pounds that they bought. On the other hand, the Trawler gets to catch the equal number of pounds of blackcod that he bought (like the pot fishermen) plus the Trawler can catch all the other associated quota species that were dependent upon the additional blackcod pounds.

Example: So, If I was trawling today and needed 500 pounds of blackcod to catch my full quota, I would not complain about the "pot fishermen offering more" for the blackcod.
I'd have the pot fishermen complaining about the "trawlers offering more". And I'd have my needed 500 pounds..... If you get my "drift"!!! It's called "Competition". It's the American Way.

Remember, The Pot fishermen are getting "Trawl Blackcod" only from Trawlers. The Trawlers should want the value of the blackcod to remain good or even get better. It's a good thing that pot fishermen "want" to buy or lease "trawl" blackcod. It helps to keep the value up. So, if any trawlers need blackcod, they should lease it or buy it (before letting the pot fishermen lease or buy it). The Trawlers that want to maintain control of their blackcod always have the option to only lease their quota on a yearly basis.

All Blackcod fishermen, (Trawlers, Pot, and Hook & Line) should support eliminating the 36 Line which will help all Blackcod Fishermen, Processors, and Communities from the 36 Line North without taking away from anyone below the 36 Line. (Especially now. There are tons and tons of dorment Southern Trawl Blackcod. There are very few Trawlers left in the South and the cost of required Observers has proven too expensive for the smaller pot boats.)

In conclusion: The Gear Switching Option is a good thing. Don't be afraid of it. Use it to your benefit.

From: fishmancohen <fishmancohen@aol.com>
To: FishmanCohen <FishmanCohen@aol.com>
Subject: Questions To Ask About The 36 Line
Date: Wed, May 15, 2019 1:25 pm

4. Questions to ask about The 36 Line

5/15/19

Questions To Ask About The 36 Line

A. Leave Status Quo - 36 Line Stays:

1. Who benefits:

a. The Pot fishermen below the 36 line? **The very few that are still fishing. There are now tons and tons of dormant "Trawl" Blackcod. After inquiring about the reason, I was told that the smaller fishing boats that fished the "trawl" blackcod with pots found that they could not make a profit.**

HOW?

i. The very few larger pot boats that are still fishing "trawl" blackcod can continue to buy or lease "trawl" blackcod at a discounted rate. This keeps their operation costs much lower than the similar fishermen above the 36 line.

ii. This lower cost allows for these "trawl" blackcod pot fishermen to have an unfair competitive edge over the other "trawl" blackcod pot fishermen fishing above the 36 line.

iii. This also causes unfair competition concerning sales prices for both pot caught and trawl caught blackcod north of the 36 line.

b. The Trawl fishermen below the 36 line? The answer is NO!!!

Who are they? Where are they? I will venture a guess there are only a hand full or so of Trawlers left below the 36 line. And they are probably mainly shallow water Trawlers.

And if there are any, that do fish for blackcod, then they most likely already have their own quota and don't have to lease it. They can just continue fishing, except now they have to dodge pot buoys.

2. Who loses:

a. The Trawl fleet above the 36 line that need more trawl blackcod to access their full quota.

b. The processors that need to keep their plants operating and more trawl caught blackcod means more bottomfish.

c. The shore side facilities such as fuel, ice, and marine stores, etc.

d. The coastal communities that supply the workers, attract the tourists, schools, support facilities, the Seafood eating public, etc.

c. Any trawlers in the south will not have the same value for their "trawl" blackcod that the rest of the trawlers on the whole coast have for theirs.

So, Status Quo: (36 Line stays) Southern pot fishermen leasing "trawl" blackcod get a big benefit.

Southern Trawlers get no benefit only negative consequences.

The Northern Trawlers get no benefits only less Blackcod which relates to less quota.

In some cases the Northern Trawlers are restricted from obtaining their full quota only because some of the blackcod (called "Southern Blackcod") are unavailable to them. Initially, "Southern Blackcod" was given that name simply to separate it at the 36 line from the Blackcod North of the 36 line for survey purposes. At that time the Surveys stopped at the 36 line. Later the surveys were extended to the South, coast wide past the 36 line. When the surveys were completed the "Trawl Blackcod" 36 Line should have been removed!!! Its purpose was served.

The Processors, coastal communities, the Seafood eating public, etc. are also losers because of the 36 line.

see above; 2. b, c, & d.

As you can see, not removing the "Trawl Blackcod" 36 line, after the needed surveys, was a big mistake. Continuing the "Trawl Blackcod" 36 line is even a bigger mistake, especially now that we see all the people that are getting unnecessarily hurt by it.

B. Remove the 36 line.

1. Who benefits:

a. The trawlers above the 36 line? Yes

HOW?

i. They can lease or purchase additional "trawl" blackcod to facilitate accessing more of their quota.

ii. It will allow for trawling both below, above, and across the 36 line without restriction.

iii. It will make trawling for "trawl" blackcod *FAIR and Equal* for all trawlers wherever they catch the blackcod. ie. If a Trawler is north of the 36 Line (or any new Line) he would have equal access to "trawl" blackcod the same as the other Trawl Vessel he sees trawling South of him below the 36 Line.

iv. It will allow the Trawler to unload at the harbor of his choice (not where the blackcod was caught - North or South of the 36 line).

b. The trawlers below the 36 line? Yes

HOW?

It will make their "trawl" blackcod quota more valuable.

c. The Processors, shore side facilities, coastal communities, and the general Seafood eating public, etc.

2. Who loses:

Maybe the pot fishermen only below the 36 line who lease or buy "trawl" blackcod.

Why? Because the "trawl" blackcod quota will be more valuable to the owner. But, also, maybe not. Maybe The Nature Conservancy will hold the prices down for the "Southern Trawl Blackcod" pot fishermen that they created. I think it's common knowledge that the Nature Conservancy does not want Trawlers on the ocean. That's why they created such a mess of the Central Coast of California by buying out all the trawlers they could find. The last I heard from a reliable source is that they bought thirteen trawlers, permits, and their quotas. Basically, that was

the end of a viable trawl industry on the Central Coast. So now the Trawl Fleet was converted to a Pot Fleet using Southern Trawl Blackcod. Since then, the Nature Conservancy dispersed all or most of the permits and quota to various ports alomg the Central and Southern coast of California. The Ports may have a few options. One, if the prices go up, they can "up" their prices. Second, they can just "subsidize" their pot fleet.???? We'll just see what happens.

Either way, they can still fish all they want. They may just have to be more in line with the rest of the coast as far as he cost of buying or leasing "trawl" blackcod quota. Which will just make things more fair.

So, remove the 36 Line:

a. The Trawlers get a big benefit by having additional access to more blackcod.

b. The Processors get more bottom fish.

c. The Coastal Communities have more income from the fisheries and tourism.

d. The "Southern" Trawlers now have the same value for their blackcod quota as the rest of the coast.

The "Southern "trawl" blackcod pot fishermen *may* have to pay more to buy or lease the "trawl" blackcod quota.

*** Note:** I hear some people have a fear that there will be a big shift of the "trawl" blackcod from below the 36 line to the **NORTH** if the 36 line is removed. So my questions and comments are:

1. Where will all this "trawl" blackcod come from:

a. My understanding is that the Nature Conservancy bought 13 trawlers, their permits and quota. Also, they dispersed much of it to different Ports in the South. I doubt that's leaving to go North. Other than that I'm not sure where all this "trawl" blackcod (that we're worried about) is coming from.

b. We should find out.

2. Say all the "trawl" blackcod that is there now, stays there. Where are the "trawlers" that are going to catch it? I know from my experience of 52+ years of buying trawl fish in Avila Beach, they won"t be coming from the North!!! Or is the "trawl" blackcod going to be the ***southern "trawl" blackcod pot fishery?***

3. What good will it do the trawlers to have all this "trawl" blackcod unavailable to trawlers?

4. Let's say for example that a lot more "trawl" blackcod effort does get shifted to the North:

a. It means that the southern area will be like a big MPA (that's what it is already) for blackcod. That should make some people very happy, like the environmentalists.

b. It may mean that the Council would have to adjust the yearly catch limit for blackcod. (Since they already do that, it's nothing new).

c. I doubt if that will drive boats to the South because there are still a lot more fish in the North. And there are no longer any fish plants in the South; filleters are rare, etc. So even if you catch the fish, (dover, english, rex, etc.) who is going to buy it?

d. So, all in all, I'd say there will probably be some effort shift to the North, but there are a lot of miles between Monterey, Ca. and Seattle, Wa. and most all the trawlers would love to have

more blackcod. I think some "southern" blackcod will get spread out along the coast, but not enough to cause an insurmountable problem.

Remember, The fish don't move, only the accounting of the fish. So a little here, a little there, and before you know it from Monterey to Seattle we've "doled out" a lot of "Southern Blackcod".

The reality of it is that the temporary name "Southern Blackcod" has already served its purpose. It is no longer relevant. It is genetically the same as the blackcod of the North. There is no biological reason to keep it separate.

Now it only serves as an impediment to the Trawlers ability to catch their full quota.

Please remove the 36 Line so we can have a more successful, reasonable, fair and equal fishery again.

Thank You for your consideration,

Barry A. Cohen

Christopher Lish

05/28/2019 11:51 AM PDT

RE: Comments on Non-Agenda Items

Dear Members of the Pacific Fishery Management Council, I'm writing to ask that at the June Council meeting, you initiate changes to the federal plan for managing northern anchovy and other important West Coast forage fish species. These changes should allow catch limits for all these species to be updated annually based on the best available science, while removing the unnecessary distinction between the plan's active and monitored management categories. "Our duty to the whole, including to the unborn generations, bids us to restrain an unprincipled present-day minority from wasting the heritage of these unborn generations. The movement for the conservation of wildlife and the larger movement for the conservation of all our natural resources are essentially democratic in spirit, purpose and method." -- Theodore Roosevelt Anchovy populations are known to rise and fall sharply over short periods of time, yet they are managed using fixed catch limits that can remain the same for years, potentially harming dependent predators and running a risk of overfishing when populations are low. Forage fish like anchovy are simply too important to be managed this way. By amending the fishery management plan (FMP) for anchovy and other coastal pelagic species, the Council can begin to actively manage this crucial forage fish by using readily available, up-to-date estimates of anchovy numbers and setting catch limits accordingly. These limits should be reviewed annually and updated as needed in response to significant population changes. "Every man who appreciates the majesty and beauty of the wilderness and of wild life, should strike hands with the farsighted men who wish to preserve our material resources, in the effort to keep our forests and our game beasts, game-birds, and game-fish--indeed, all the living creatures of prairie and woodland and seashore--from wanton destruction. Above all, we should realize that the effort toward this end is essentially a democratic movement." -- Theodore Roosevelt Please eliminate the distinction between the active and monitored stock categories in the FMP and shift anchovy to annual management so that catch limits are updated regularly using the best available science. By ensuring that management of this essential forage fish is active, science-based, and considers the broader marine ecosystem, the Council can help maintain both a healthy Pacific Ocean and productive, sustainable fisheries. "A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise." -- Aldo Leopold Thank you for your consideration of my comments. Please do NOT add my name to your mailing list. I will learn about future developments on this issue from other sources. Sincerely, Christopher Lish San Rafael, CA

Corbin Hanson

06/10/2019 03:01 PM PDT

RE: Comments on Non-Agenda Items

Chair Anderson and Council members, Please consider this appeal for help to resolve the critical problem outlined in my letter. Thank you. Corbin Hanson

Agenda Item B.1.b
Public Comment
June 2019

CORBIN HANSON
1440 N. Harding Street
Orange CA ,92867

Mr. Phil Anderson, Chair
And Members of the Pacific Fishery Management Council
7700 NE Ambassador Place #200
Portland OR 97220-1384

RE: Agenda Item B.1 ~ Request for relief

Dear Mr. Anderson and Council Members,

My name is Corbin Hanson and I am a commercial fisherman struggling to survive and make a living fishing in southern California's waters. I have been fishing in California for nearly 20 years. During that time, I have seen fish stocks rise and fall due to ocean cycles, and I have experienced booms and busts within California's fisheries. I would like to make a very clear statement. The sardine stock in southern California is rebounded and plentiful. I understand that the current stock assessment does not support the statement. However, this is absolutely true and I know this because I operate in these waters for a living and see it with my own eyes first hand!

We, as commercial fisherman in Southern California, rely on targeting multiple species of fish to sustain our existence. Sardines are a huge component of our income that we are no longer allowed to benefit from. I would like to deconstruct the overwhelming list of the discrepancies with the science/methodology that dictates the sardine stock assessment. However, I understand that cannot be changed at this time, and I only hope this message resonates loudly in the broader conversation of sardine management. Sardine fishing is closed and has been closed for four years now. It has affected myself and my colleagues with overwhelming stress. I have seen friends sell their boats and get out of the business. I have seen markets close their doors and cease from doing business. The socio-economic impact of the sardine closure is overwhelming, and frankly, crippling this industry!

We are all struggling to survive and I don't know how long we can sustain without access to this resource! That is not the end of our problems. Let me try to explain.

If there are no sardines in the water then we can conduct all of our other fisheries without concern of by-catch. On the contrary, if there is an abundance of sardines in our waters, you will see substantial by-catch in all of our fisheries, and this gives us grave concern. A reduction of the by-catch rate from 40% to 20% will effectively close down mackerel fishing to us!!!! **Almost half of the mackerel landed has high numbers of sardines mixed in because they swim and school together. Sardines also mix with anchovy and squid**. This is not a theory, it is a fact. A reduction of the allowable sardine by-catch from 40% to 20% will effectively be the proverbial "nail in the coffin" for those of us trying to hang on and survive in this historic California wetfish industry. Please allow me to present a pragmatic path of common sense to resolve this problem.

There is a large volume of sardines in our water, and we will certainly catch them while conducting our other fisheries. If we can leave the by-catch rate at 40% for the first 1,000 mt, this allows us mobility in our other fisheries and is still within the 4,000 mt Annual Catch Target approved by the Council in April. This is still a responsible management approach and does not change the amount of sardine allowed for harvest.

The Department of Fish and Wildlife submitted an analysis of sardine caught with other fisheries for the Council's April meeting. It showed that the incidental catch of sardines in other CPS fisheries was relatively low (well below 1,000 tons), but the sardine bycatch was above the 20 percent rate in close to

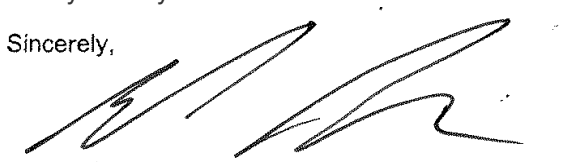
half of the landings of other CPS. That means nearly 50% of our other CPS landings that contain sardine will be eliminated if the bycatch rate is cut to 20%. In reality, this reduction will mean that fishermen will need to avoid targeting any CPS schools if they are mixed with sardines to avoid being in violation. Right now, when I try to go fishing for pure schools of mackerel, the only schools I see are full of sardines. If we catch sardines at a rate of 40% instead of 20%, what is the difference to anyone but us? There is still oversight with precautionary measures written in to refrain from overachieving the TAC.

Please provide relief from the restrictive 20% until the full stock assessment scheduled for 2020 can resolve discrepancies with the science/methodology that dictates the sardine stock assessment.

We are the only players that are affected by this reduction, and that burden is just unnecessary. Please, I implore anyone, to stop the madness and misrepresentation of our sardine abundance and look at this issue from our, "The Fisherman's," perspective. We can achieve the same goal without saddling the burden of a poorly assessed stock to our backs.

Thank you for your attention.

Sincerely,



Corbin Hanson

Diane Pleschner-Steele
California Wetfish Producers Association
06/08/2019 12:13 PM PDT

RE: Comments on Non-Agenda Items

Dear Chairman Anderson and Council members, I am submitting this letter on behalf of CWPA and California's wetfish industry, asking for your help. Thank you for your consideration. Diane Pleschner-Steele, Executive Director

CALIFORNIA WETFISH PRODUCERS ASSOCIATION
PO Box 1951 • Buellton, CA 93427 • Office: (805) 693-5430 • Mobile: (805) 350-3231 • Fax: (805) 686-9312 • www.californiawetfish.org

June 6, 2019

Mr. Phil Anderson, Chair
And Members of the Pacific Fishery Management Council
7700 NE Ambassador Place #200
Portland OR 97220-1384

RE: Agenda Item B.1 ~ Socio-Economic Point of Concern for the sardine fishery

Dear Mr. Anderson and Council members,

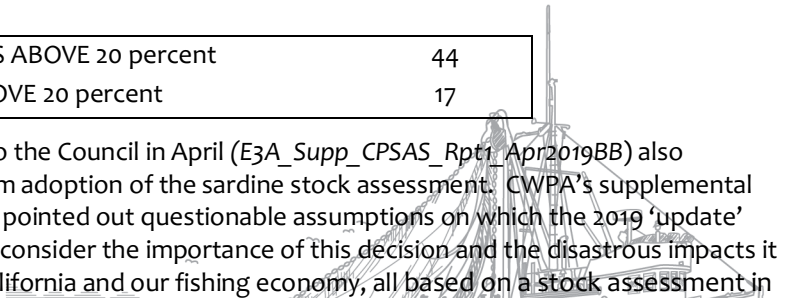
On behalf of California's historic sardine industry, I'm writing to appeal to the Council and National Marine Fisheries Service (NMFS) for relief on a **Socio-Economic Point of Concern**, after receiving dozens more reports recently of the sheer abundance of sardines in California waters, extending from San Diego as far as Monterey and beyond. This evidence sharply contradicts the 2019 sardine stock assessment, projected to be only 27,547 mt in U.S. waters from Canada to Mexico, in July, 2019. This estimate drops the sardine biomass below the 50,000 mt MSST "overfished" level, which will automatically cut incidental catch rates from 40 to 20 percent by weight in all other CPS fisheries, according to the prescriptive framework embedded in the CPS Fishery Management Plan.

While the directed sardine fishery remains closed, California's wetfish industry has been hanging on by focusing on other CPS, virtually all of which school with sardine. Therefore, the incidental take rate of sardine in these fisheries is critically important. The reduction to 20 percent by weight, coupled with report after report of sardines schooling with anchovy, mackerel, even squid, at rates far above 20 percent, has prompted this letter, appealing to you for help to avoid a social and economic disaster in California.

Submitted for the April Council meeting, an analysis by the California Department of Fish and Wildlife reported: "*On average, **138 landings per year containing incidental sardine have been made from the 2015-2016 to 2018-2019 fishing seasons (Table 1). These supported landings on average of more than 2,300 mt of target species with an ex-vessel value of more than $1.75 million** (Table 1).*" (*https://www.pcouncil.org/wp-content/uploads/2019/04/E3a_Supp_CDFW_Rpt2_APR2019BB.pdf*). Table 2 of that report displayed the relative percentage of incidental sardine caught in various CPS fisheries. Based on that report, in at least 40 percent of CPS fisheries containing sardine, the incidental rate exceeded 20 percent. The major impacts were to anchovy and Pacific mackerel fisheries, but even market squid was implicated. In aggregate, for the years 2015-2019, following closure of the sardine fishery, **61 landings of CPS and squid (44 percent) would be in violation under the new 20 percent incidental catch requirement:** *(see full table on page 2)*

TOTAL OTHER CPS LANDINGS ABOVE 20 percent	44
TOTAL SQUID LANDINGS ABOVE 20 percent	17

The CPS Advisory Subpanel supplemental statement to the Council in April (*E3A_Supp_CPSAS_Rpt1_Apr2019BB*) also highlighted severe socio-economic impacts arising from adoption of the sardine stock assessment. CWPA's supplemental letter (*E.3.b, Supplemental Public Comment, April 2019*) pointed out questionable assumptions on which the 2019 'update' stock assessment was based and asked the Council to consider the importance of this decision and the disastrous impacts it would likely precipitate, particularly on the State of California and our fishing economy, all based on a stock assessment in



which assumptions – such as the subtraction of 33,000 mt of sardine that the Acoustic Trawl survey estimated in Southern California on the premise that those sardines were from the 'southern' stock – could not be challenged because this is an 'update' year, although including that biomass would have increased the sardine population estimate above the trigger 50,000 mt MSST 'overfished' level.

TARGET SPECIES & PROPORTION OF INCIDENTAL SARDINE	NUMBER OF LANDINGS & PROPORTION OF INCIDENTAL SARDINE 2015 – 2019
Anchovy	
0-10%	15
11-20%	5
21-30%	19
31-40%	14
P. Mackerel	
0-10%	27
11-20%	15
21-30%	9
31-40%	2
Mkt Squid	
0-10%	263
11-20%	26
21-30%	14
31-40%	3
TOTAL OTHER CPS LANDINGS ABOVE 20%	44
TOTAL SQUID LANDINGS ABOVE 20%	17
Adapted from Table 2 – E3a_Supp_CDFW_Rpt2_Apr 2019	

The Council's adoption of the sardine stock assessment now precipitates a declaration of 'overfished,' according to policy, although one Council member acknowledged that fishing had nothing to do with this sorry situation.
Nevertheless, the prescriptive policies embedded in the CPS FMP for rebuilding 'overfished' stocks are likely to precipitate a socio-economic crisis in California's wetfish industry, which will impact our fishing economy and the State of California.

According to the CPS FMP Point-of-Concern (POC) Framework, Section 2.1.2, Point-of-concern criteria are intended to assist the Council in determining when a focused review on a particular species is warranted and may require implementation of specific management measures. **This framework provides the Council authority to act based solely on a point-of-concern**. A point of concern may occur if:

- *An error in data or a stock assessment is detected that significantly changes estimates of impacts due to current management.*
- *Control rule (harvest policy) parameters or approaches require modification*

The POC framework also provides a socio-economic framework. Section 2.1.3 states:

- ***Non-biological issues may arise which require the Council to recommend management actions to address certain social or economic conditions in the fishery or to achieve FMP objectives.***
- ***Actions that are permitted under this framework include all categories of actions authorized under the point-of-concern framework with the addition of direct resource allocation and access-limitation measures***

Among FMP objectives are:

- *Promote **efficiency and profitability in the fishery, including stability of catch***
- *Achieve OY*
- ***Accommodate existing fishery segments***

- *Acquire biological information and develop long-term research program*

The CWPA supplemental letter referenced above highlighted harsh socio-economic impacts that are likely to befall this Industry following implementation of a strict 20 percent by weight incidental catch rate of sardine in other CPS fisheries.

Please consider:

- The Department's data were compiled after the sardine fishery was closed, with the incidental rate at 40 percent. The analysis did not (could not) include the many times fishermen bypassed or released mixed fish schools of anchovy or mackerel because the rate of sardine in the school was greater than 40 percent.
- At a 20 percent incidental rate, fishermen will need to be ultra-careful if fishing on mixed fish schools. It takes extra time to test the contents of a set before bringing it aboard to ensure the load is below 20 percent sardine. **Many fishermen have declared that they will need to forego fishing on any CPS finfish school that contains sardine to avoid a violation**.
- The squid fishery also will suffer a potential impact because in recent years processors have accepted squid with a higher percentage of sardine because sorting gave processing crews some work to do, and because squid abundance has been low.
- Therefore, the Department analysis is a **bare minimum estimate of the loss of fishing opportunity, the loss of catch and revenue, and ultimately the loss of processing jobs, even precipitating bankruptcies**, which will impact not only our wetfish industry but also the State of California.

We ask the Council and CPS Management team to recognize that a serious point of concern exists that could result in the loss of livelihood for a significant number of CPS fishermen and processors, and a further downsizing of existing companies, if vessels cannot find pure schools of other CPS to harvest and squid abundance remains low.
Based on reports coming in now, sardines are everywhere, and mixed school concentrations often exceed the 20 percent rate that will become effective on July 1.

Once boats are tied to the dock, processors' doors closed and markets lost –– if no fishing industry exists because of severe and unwarranted cuts in an already ultra-precautionary fishery harvest policy –– then the Council has not taken into account the socio-economic needs of fishing communities, a principal tenet of the Magnuson Act.

Reviewing federal law, the Magnuson-Stevens Fishery Conservation and Management Act ("MSA") includes provisions that necessitate consideration of economic impacts to fishing communities and other socio-economic factors. One of the express purposes of the MSA is stated in **16 USC §1801(b)(4):** "to establish Regional Fishery Management Councils to exercise sound judgment in the stewardship of fishery resources through the preparation, monitoring, and revision of such plans under circumstances (A) which will enable the States, the fishing industry, consumer and environmental organizations, and other interested persons to participate in, and advise on, the establishment and administration of such plans, and (B) which **take into account the social and economic needs of the States.**"

We have previously testified to likely impacts in California's other CPS fisheries. This is equally applicable to potential CPS fisheries that occur off Oregon and/or Washington. If these fisheries are negatively impacted by adherence to a draconian incidental catch restriction required as part of a rebuilding plan, notwithstanding the de facto rebuilding plan already embedded in the sardine harvest control rule, thanks to the CUTOFF of directed fishing below 150,000 mt, California will suffer direct economic harm, and that harm could encompass all three States.

This economic harm will become a social issue if operations that harvest CPS for the benefit of the nation, are bankrupted. As commercial fishing space in Port and Harbors is limited, there is a very real fear that infrastructure supporting CPS operations will be replaced (worst case) or will fall into disrepair.

CWPA's supplemental letter in April provided information on the importance of CPS to numerous harbor communities; the volume crossing the dock is critically important to maintain harbor infrastructure and dockside employment**.**

National Standard 8, codified at **16 USC 1851(a)(8)**, requires that "conservation and management measures **shall**, consistent with the conservation requirements of this chapter (including the prevention of overfishing and rebuilding of overfished stocks), **take into account the importance of fishery resources to fishing communities** by utilizing economic and social data that meet the requirements of paragraph (2), in order to (A) **provide for the sustained participation of such communities**, and (B) to the extent practicable, **minimize adverse economic impacts on such communities**."

It is beyond dispute that CPS stocks are important to our fishing communities. **Our members are very concerned about not being able to continue viable businesses, absent relief from the FMP's prescriptive 20 percent incidental catch restriction.**

California's sardine industry now finds itself in a critical Catch-22 predicament, cut by both sides of a sharp sword: Recent year AT surveys have begun in the Pacific Northwest and moved south to California. In two recent years, due to timing constraints, the surveys omitted S.CA. entirely. In 2017 and 2018, the AT survey missed tens of thousands of tons of sardine observed in central California nearshore waters, and by the time the survey reached S.CA. and did estimate the 33,000 mt of sardines noted above, the stock assessment scientists assumed those sardines were not 'northern' stock and subtracted those fish from the stock assessment.

On the flip side of the sword, because of questionable assumptions and the inability to address them promptly due to rigid policies, fishermen will suffer even further cuts by the requirement to forego fishing on mixed-stock schools for fear of exceeding the prescribed 20 percent incidental catch rate. But the truth is: sardines are everywhere in our historic fishing grounds (which are well inside current AT survey boundaries), and in many cases sardines are schooling at higher than a 20 percent rate, according to recent reports.

Please understand that short- and long-term consequences to fishing communities are intrinsically linked. Without short-term viability, there will be no long term. Fishermen and markets alike cannot survive if boats are forced to tie up for weeks or months at a time, leaving processors with no fish to process. Some fishermen are already talking about releasing their crews to find other work, and markets have already downsized their processing crews substantially.

Based on the above and as per the CPS FMP, we ask for your understanding and help. We're asking the Council to:

(1) Identify that a point-of concern exists;

(2) Task the CPSMT with evaluating *"current data to determine if a resource conservation or ecological issue exists"* and report back in September. In effect, we are asking the CPS management team to determine that restoring the incidental rate to 40 percent up to 1,000 mt, vs. strict adherence to the 20 percent incidental catch allowance will not cause a resource conservation or ecological concern. But restricting the CPS purse seine fishery to a 20 percent incidental catch rate of sardine will seriously threatening the continued viability of California's wetfish industry, precipitating harm on fishermen, processors, dependent fishing communities and by extension, the State of California. **This restriction contravenes both the objectives of the CPS FMP and the national standards of the Magnuson Act.**

According to CDFW Report 2, the volume of incidental sardine landed in the purse seine fishery since the sardine fishery closure in 2015 has been relatively small, thus restoring the incidental catch rate to 40 percent will have negligible impact.

INCIDENTAL SARDINE LANDINGS

IN CPS FISHERIES SINCE 2015 FISHERY CLOSURE

	YEAR	MT
	20115-16	164
	2016-17	514
	2017-18	275
	2018-19*	389
Prelim.	*WFSH201904	

Adapted from Table 3–E3a_Supp_CDFW_Rpt2_Apr 2019

Following the provisions of the Point of Concern framework, we're also asking the Council to conclude that management action is necessary to address this social and economic issue.

Specifically, we ask the Council to address this Point of Concern during Future Agenda Planning at the June meeting, and support putting it on the September agenda, and further, direct the CPS management team to conduct an analysis of the biological and socio-economic impacts of restoring the incidental catch rate to 40 percent for presentation at the September meeting, where during that agenda item, the Council could take final action to address the Point of Concern.

We note that restoring the incidental catch rate to 40 percent, up to a limit of 1,000 mt, would fit under the ACT the Council approved for the 2019-20 fishing season. This action will help ensure the ability of our CPS fishermen, processors, and dependent fishing communities to continue their businesses. We also hope the 2020 sardine STAR panel review will be able to resolve the disconnect between the latest sardine stock assessment and the reality on the fishing grounds, particularly in California.

The future of our fisheries, the wetfish industry and California's fishing economy are at stake, based on actions of this Council and the National Marine Fisheries Service. On behalf of California's wetfish industry, we are asking for your help.

Thank you very much for your consideration.

Best regards,

Diane Pleschner-Steele
Executive Director

Appendix 1: Extracts from the CPS FMP on the Point of Concern Framework

APPENDIX 1: EXTRACTS FROM THE CPS FMP ON THE POINT OF CONCERN FRAMEWORK

https://www.pcouncil.org/wp-content/uploads/2018/05/CPS_FMP_as_Amended_thru_A16.pdf

1.6 Goals and Objectives

Goals and objectives for the CPS FMP (not listed in order of priority):

- **Promote efficiency and profitability in the fishery, including stability of catch**.
- **Achieve OY.**
- Encourage cooperative international and interstate management of CPS.
- **Accommodate existing fishery segments.**
- Avoid discard.
- Provide adequate forage for dependent species.
- Prevent overfishing.
- **Acquire biological information and develop long-term research program.**
- Foster effective monitoring and enforcement.
- Use resources spent on management of CPS efficiently.
- Minimize gear conflicts.

Page. 15 https://www.pcouncil.org/wp-content/uploads/2018/05/CPS_FMP_as_Amended_thru_A16.pdf

Page 16 – 17 https://www.pcouncil.org/wp-content/uploads/2018/05/CPS_FMP_as_Amended_thru_A16.pdf

2.1.2 Point-of-Concern Framework

The point-of-concern process is the Council's primary tool (along with setting HGs, ACLs, ACTs, or harvest quotas) for exercising resource stewardship responsibilities. The process is intended to foster continuous and vigilant review of Pacific Coast CPS stocks and fisheries. The process is also to prevent overfishing or any other resource damages. The CPSMT will monitor the fishery throughout the year, and account for any new information on status of each species or species group to determine if a resource conservation or ecological issue exists. Point-of-concern criteria are intended to assist the Council in determining when a focused review on a particular species is warranted and may require implementation of specific management measures. **This framework provides the Council authority to act based solely on a point-of-concern. Thus, the Council may act quickly and directly to address resource conservation or ecological issues.** In conducting this review, the CPSMT will utilize the most current catch, effort, abundance and other relevant data from the fishery.

In the course of the continuing review, a "point-of-concern" occurs when one or more of the following is found or expected:

1. Catch is projected to exceed the current HGs, ACLs, ACTs, or the harvest quota.
2. Any adverse or significant change in the biological characteristics of a species (age composition, size composition, age at maturity, or recruitment) is discovered.
3. An overfishing condition appears to be imminent or likely within two years.
4. Any adverse or significant change in ecological factors such as the availability of CPS forage for dependent species or in the status of a dependent species is discovered.
5. Developments in a foreign fishery occur that affect the likelihood of overfishing of CPS.
6. **An error in data or a stock assessment is detected that significantly changes estimates of impacts due to current management.**
7. **Control rule (harvest policy) parameters or approaches require modification.**

8. Projected catches for a Monitored species are expected to exceed the ABC or the ACL using either a species-specific control rule or the default control rule. This could require moving a Monitored species to the Actively managed classification.

Once a point-of-concern is identified, the CPSMT will evaluate current data to determine if a resource conservation or ecological issue exists and will provide its findings in writing at the next scheduled Council meeting. If the CPSMT determines a resource conservation or ecological issue exists, it will provide its recommendation, rationale, and analysis for appropriate management measures that will address the issue.

Direct allocation of a resource between different segments of a fishery is, in most cases, not the appropriate response to a resource conservation or ecological issue. Council recommendations to directly allocate the resource will be developed according to criteria and processes in the socioeconomic framework described in Section 2.1.3 and Section 2.1.4.

After receiving the CPSMT report, the Council will take public testimony and, if appropriate, recommend management measures to the NMFS Regional Administrator accompanied by supporting rationale and analysis of impacts. The Council analysis will include a description of (1) resource conservation or ecological issues consistent with FMP objectives; (2) likely impacts on other management measures and other fisheries; (3) socioeconomic impacts; and (4) costs and benefits to commercial and recreational segments of the CPS fishery. The recommendation will explain the urgency in implementation of the measure(s), if any.

The NMFS Regional Administrator will review the Council's recommendation and supporting information and will follow appropriate implementation processes described in this FMP, following public notice and comment. If the Council contemplates frequent adjustments to the recommended measures, it may classify them as "routine" through the appropriate process described in Section 2.1.1.

If the NMFS Regional Administrator does not concur with the Council's recommendation, he/she will notify the Council in writing of the reasons for rejection. Nothing prevents the Secretary from exercising authority to take emergency action under Section 305 (c) and (d) of the MSA. Nothing precludes or limits Council access to the point-of-concern framework.

2.1.3 The Socioeconomic Framework

Non-biological issues may arise which require the Council to recommend management actions to address certain social or economic conditions in the fishery or to achieve FMP objectives. Resource allocation, **fishing seasons, or landing limits** based on market quality and timing, safety measures, and prevention of gear conflicts are examples of possible management issues with a social or economic basis. **Actions that are permitted under this framework include all categories of actions authorized under the point-of-concern framework with the addition of direct resource allocation and access-limitation measures.**

If the Council concludes that management action is necessary to address a social or economic issue, it will prepare a report containing the rationale supporting its conclusion. The report will include proposed management measures, a description of viable alternatives, and analyses addressing (1) achievement of FMP goals and objectives, (2) likely impacts on other fisheries and other management measures, (3) sociobiological impacts, (4) socioeconomic impacts, and (5) costs and benefits to the CPS fishery.

The Council, following review of the report, supporting data, public comment and other relevant information, may recommend management measures to the NMFS Regional Administrator accompanied by relevant background data, information, and public comment. The recommendation will explain the urgency in implementation of the measure, if any.

The NMFS Regional Administrator will review the Council's recommendation, supporting rationale, public comments and other relevant information and, if it is approved, will undertake the appropriate method of implementation. Rejection of the recommendation will be explained in writing.

Procedures specified in this FMP do not affect authority of the Secretary to take emergency regulatory action under Section 305(c) or (d) of the MSA.

If conditions warrant, the Council may designate a management measure developed and recommended to address social and economic issues as a routine management measure, provided that the criteria and procedures in Section 2.1.1 are followed.

2.1.1

2.1.1 Routine Management Measures

Routine management measures are those the Council determines likely to be adjusted annually or more frequently. Measures are classified as routine by the Council through either full or abbreviated rulemaking process. **In order for a measure to be classified as routine, the Council will determine that the measure addresses an issue at hand and may, in the near future, require further adjustment to achieve its purpose.**

Once a management measure has been classified as routine through the abbreviated or full rulemaking procedures, it may be modified thereafter through the single meeting notice procedure if (1) modification is proposed for the same purpose as the original measure; and (2) impacts of the modification are within the scope of the impacts analyzed when the measure was originally classified as routine. Analysis need not be repeated when the measure is subsequently modified if the Council determines impacts do not differ substantially from original analysis. The Council may change a routine classification for an action without following any pre-specified procedure.

Any measure designated as routine for one specific species, species group, or gear type may not be treated as routine for a different species, species group, or gear type without first having been classified as routine through the rulemaking process.

To facilitate this process, the CPSMT will make recommendations to the Council and agencies regarding assessment or management needs.

The following measures are classified as routine measures at the outset of this FMP:

1. Reallocation of surplus incidental HG to the directed fishery (all species and fishery segments).
2. **In-season changes in the incidental catch allowance.**
3. Specification of annual HGs, ACLs, ACTs, or quotas.

Agenda Item B.1.b
Supplemental Open Public Comments
June 2019

6/06/19

Mr. Phil Anderson
Chairman, Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 101
Portland, Oregon 97220-1384

Mr. Chairman,

After hearing recently that Pacific Ocean perch stock off Washington and Oregon had been rebuilt to levels that prevailed before the 1966-1968 "mining" of the stock by Soviet and Japanese fleets, I was prompted to review the 2017 stock assessment document.

Despite the high quality of the analysis, I was shocked at how sensitive the results were to the recruitment "steepness" (h), and natural mortality (M) parameters used (Figures 83 and 85). Part of the problem here is that the NWFSC shelf/slope survey index shows no significant trend from 2003-2016 (Figure 40). The "base model" conclusion that the stock has been rebuilt to 1962 levels isn't very well supported by survey data. It seems highly unlikely that the surveys would fail to reflect the 63% increase (2003-2016) in biomass estimated from the base model (Table 26) if such an increase actually occurred.

It is difficult to reject an alternative conclusion that the stock has yet rebuilt to the management target level of 40% unexploited spawning biomass (Figure 33). A precautionary approach would have been to carry out a survey similar to the 1979 and 1985 Pacific Ocean perch (POP) surveys, then update the stock assessment rather than acting on the results from the 2017 assessment. The "POP" surveys employed a different statistical design than the multispecies NWFSC shelf-slope surveys, a high-opening trawl with ground gear capable of operating on rougher bottom, and yielded higher precision as a result (Table 6).

Instead, the Council chose to take the "base model" results from the 2017 assessment at face value, and to "fish down" the stock until it reached the MSY level (40% of unexploited biomass). The harvest guideline was set at 4,318 mt, while the estimated MSY is only 1,825 mt.

This is a highly aggressive approach, since setting the harvest guideline at 1,825 mt would also serve to reduce the biomass to the MSY level—it would just take longer. Little would be lost with this more cautious approach, since natural mortality is extremely low, and sustainable yields very close to MSY can be achieved when the stock is at 50% (or even 60%) of unexploited biomass (Figure g).

Since the 2017 assessment has been taken at face value, the Council is implicitly accepting that the multispecies survey is hyperstable with respect to stock abundance. As such, the Council has undertaken an overfishing experiment without a reliable means of measuring the results

When the Council initiated the Pacific Ocean perch rebuilding plan in 1981, industry questioned the reliability of the 1977 survey and asked that the stock be re-surveyed. The 1979 POP survey was undertaken in response. The resulting survey (Wilkins and Golden, 1983 , N. American Journ. Fish. Mgt.) showed only a 1,400 mt difference between the biomass estimates for the 1977 Triennial and 1979 POP surveys, with greater precision in 1979. It seems only reasonable that a similar survey be carried out now.

Sincerely,

Donald R. Gunderson

Emeritus Professor, University of Washington

Cc Dr. John Field, Chairman Scientific and Statistical Committee

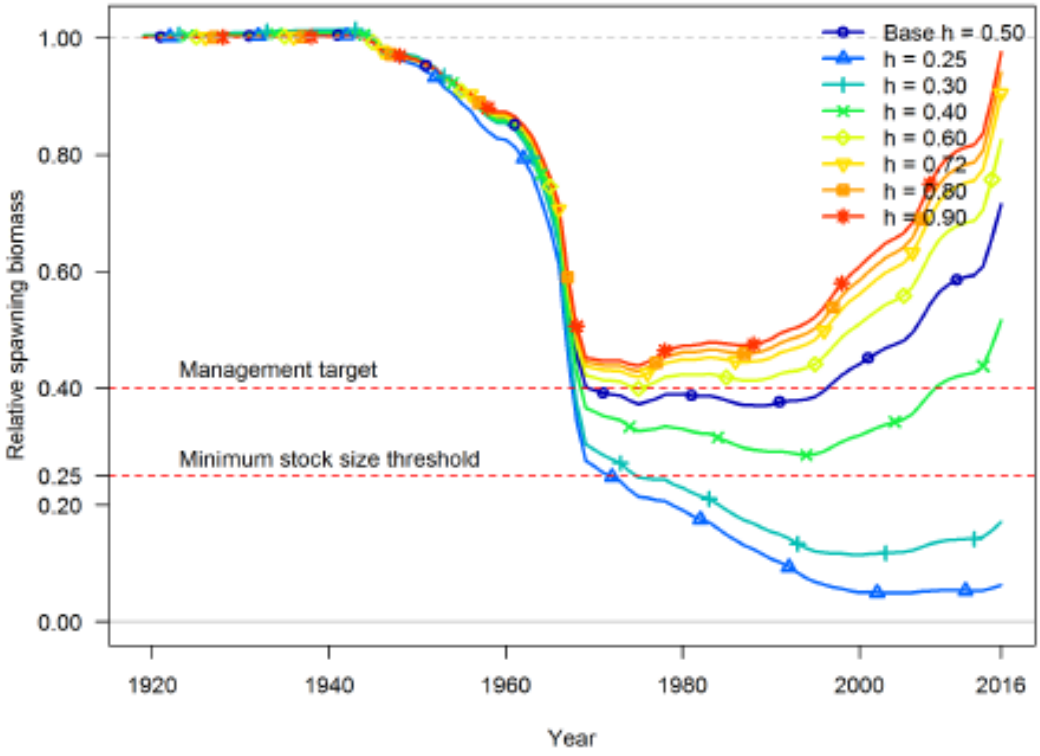


Figure 83: Trajectories of relative spawning output (depletion) across values of steepness.

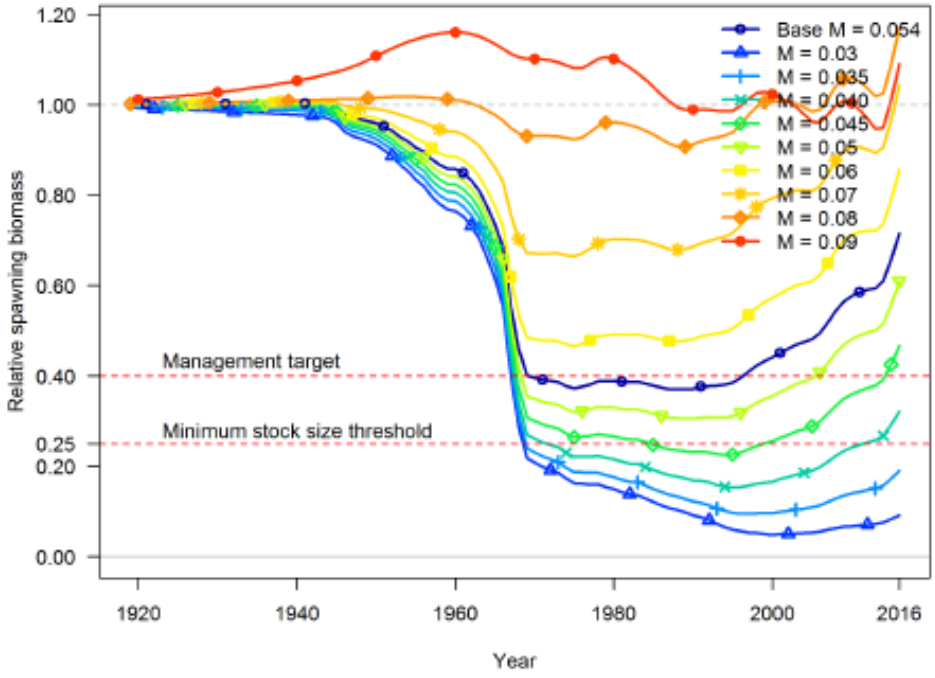


Figure 85: Trajectories of relative spawning output (depletion) across values of natural mortality.

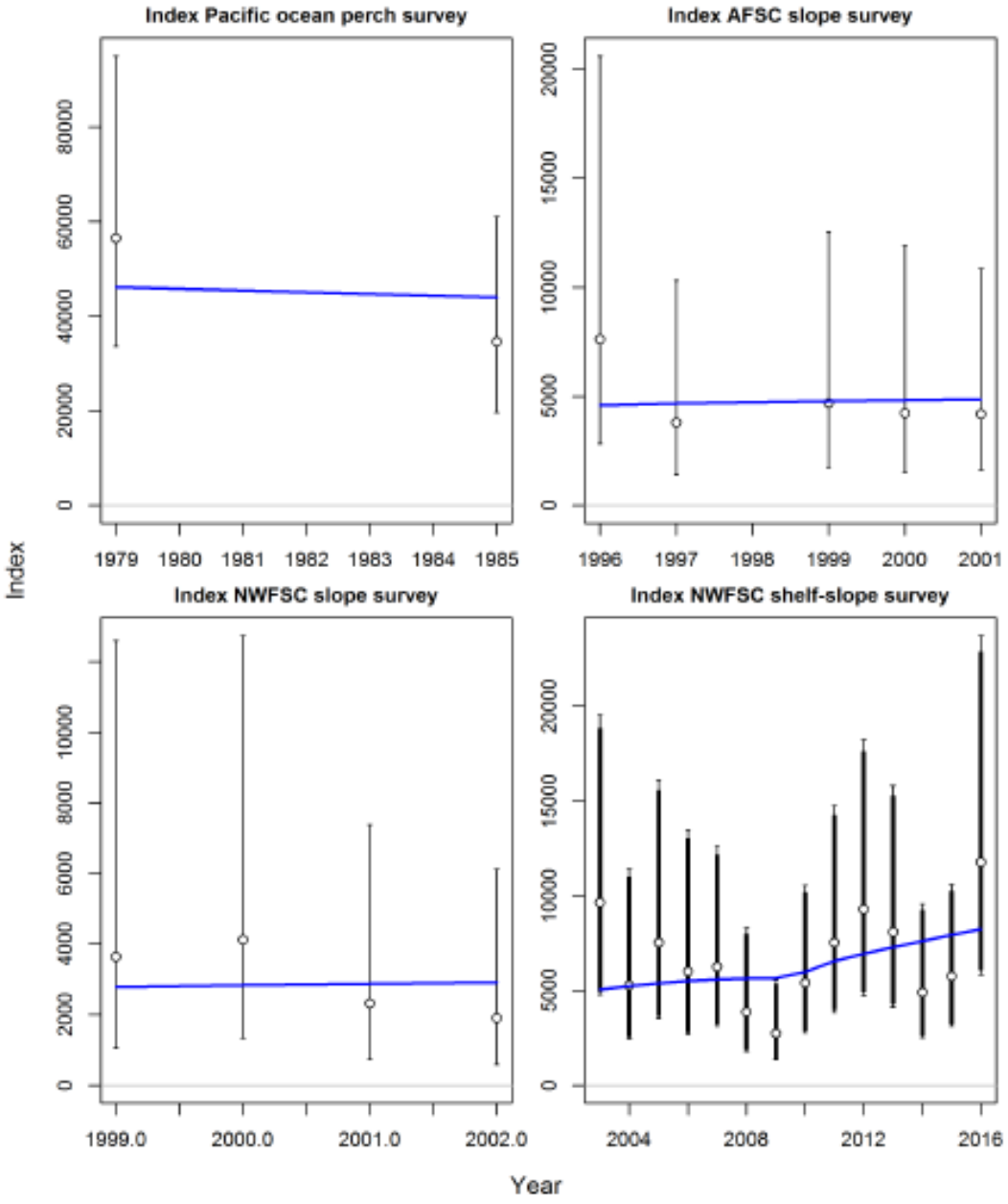


Figure 40: Estimated fits to the survey indices for Pacific ocean perch.

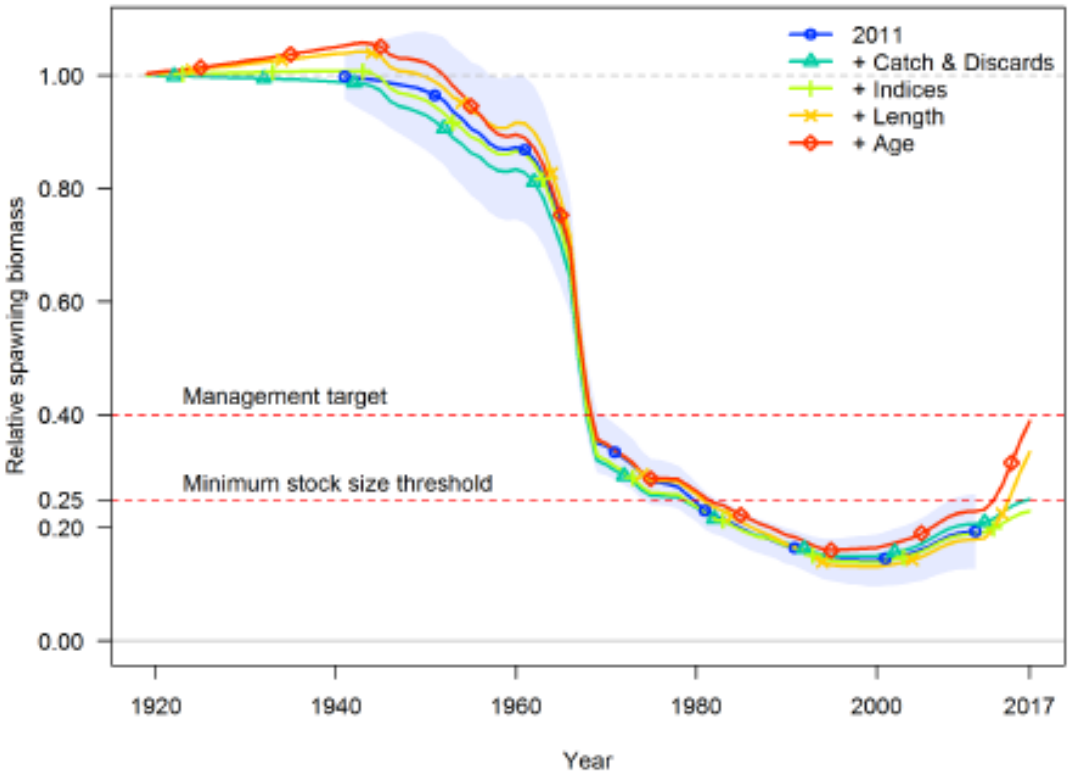


Figure 33: Estimated of relative spawning output when each of the data sets used in the current assessment was added to the 2011 model without updating model assumptions. Each data source was included in an additive fashion where the final model "+ Age" is the 2011 model with all data sources updated.

Table 26: Time-series of population estimates from the base model.

Year	Total biomass (mt)	Spawning output (million eggs)	Summary biomass 3+	Relative biomass	Age-0 recruits	Estimated total catch (mt)	1-SPR	Exploit. rate
1989	60,922	2,550	60,411	0.37	16,275	1478	0.415	0.024
1990	61,254	2,561	60,568	0.37	15,636	1127	0.345	0.019
1991	62,209	2,592	61,241	0.38	6,924	1483	0.41	0.024
1992	63,156	2,604	62,343	0.38	4,464	1571	0.425	0.025
1993	64,118	2,608	63,732	0.38	4,778	1417	0.395	0.022
1994	65,023	2,621	64,732	0.38	9,705	1180	0.345	0.018
1995	65,959	2,656	65,585	0.39	9,946	956	0.29	0.015
1996	66,969	2,725	66,381	0.40	5,164	883	0.265	0.013
1997	67,979	2,819	67,446	0.41	4,736	718	0.22	0.011
1998	68,964	2,913	68,656	0.42	3,507	725	0.22	0.011
1999	69,666	2,982	69,351	0.43	21,662	563	0.175	0.008
2000	70,446	3,037	69,912	0.44	32,360	161	0.05	0.002
2001	71,921	3,107	70,473	0.45	9,819	297	0.09	0.004
2002	74,097	3,171	72,483	0.46	5,377	179	0.055	0.002
2003	76,945	3,230	76,420	0.47	2,676	158	0.05	0.002
2004	79,589	3,274	79,292	0.47	6,757	149	0.045	0.002
2005	81,950	3,318	81,728	0.48	3,265	78	0.025	0.001
2006	83,973	3,412	83,613	0.49	3,592	86	0.025	0.001
2007	85,564	3,571	85,358	0.52	3,462	159	0.045	0.002
2008	86,802	3,745	86,308	0.54	116,128	135	0.035	0.002
2009	88,561	3,885	86,803	0.56	4,731	194	0.05	0.002
2010	92,115	3,976	86,769	0.58	7,499	183	0.045	0.002
2011	98,527	4,032	98,173	0.58	15,198	62	0.015	0.001
2012	104,262	4,067	103,709	0.59	2,101	60	0.015	0.001
2013	110,043	4,091	109,254	0.59	29,027	58	0.015	0.001
2014	115,579	4,197	115,075	0.61	4,630	56	0.015	0
2015	120,592	4,516	119,187	0.65	10,661	61	0.015	0.001
2016	125,377	4,931	124,995	0.72	11,016	68	0.015	0.001
2017	129,191	5,280	128,529	0.77	11,253	-	-	-

Table 6: Summary of the design-based estimates of fishery-independent biomass/abundance time-series.

	POP		AFSC Slope		NWFSC Slope		NWFSC Shelf-Slope	
Year	Obs	SE	Obs	SE	Obs	SE	Obs	SE
1979	34135	0.25	-	-	-	-	-	-
1985	16675	0.18	-	-	-	-	-	-
1996	-	-	6472	0.29	-	-	-	-
1997	-	-	2965	0.43	-	-	-	-
1999	-	-	19063	0.48	6472	0.45	-	-
2000	-	-	4438	0.50	2965	0.48	-	-
2001	-	-	14570	0.69	19063	0.40	-	-
2002	-	-	-	-	4438	0.45	-	-
2003	-	-	-	-	-	-	21055	0.36
2004	-	-	-	-	-	-	4623	0.55
2005	-	-	-	-	-	-	9674	0.60
2006	-	-	-	-	-	-	9609	0.53
2007	-	-	-	-	-	-	3769	0.57
2008	-	-	-	-	-	-	5723	0.59
2009	-	-	-	-	-	-	14790	0.78
2010	-	-	-	-	-	-	11133	0.47
2011	-	-	-	-	-	-	6186	0.46
2012	-	-	-	-	-	-	10208	0.46
2013	-	-	-	-	-	-	14306	0.58
2014	-	-	-	-	-	-	4040	0.29
2015	-	-	-	-	-	-	9766	0.56
2016	-	-	-	-	-	-	19859	0.52

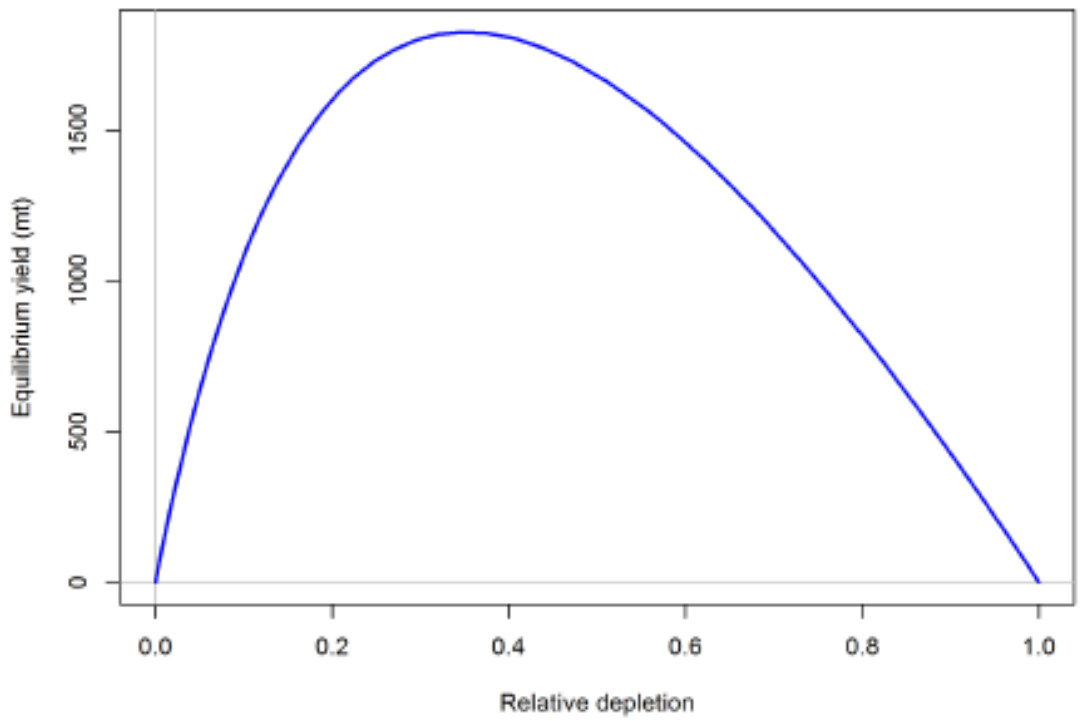


Figure g: Equilibrium yield curve for the base case model. Values are based on the 2016 fishery selectivity and with steepness fixed at 0.50.

Geoff Shester
Oceana
06/19/2019 04:52 PM PDT

RE: Comments on Non-Agenda Items

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June 19, 2019

Mr. Phil Anderson, Chair
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 101
Portland, OR 97220-1384

Re: Agenda Item B.1, Open Public Comment and Agenda Item F.1, CPS NMFS Report

Dear Chair Anderson and members of the Council:

We write to inform the Pacific Fishery Management Council (Council) that the collapsed status of the Pacific sardine population and recently published science indicate a point of concern for the stock based on conservation and ecological issues; and we also clarify when a point of concern is appropriate. We request that the Council direct the Coastal Pelagic Species Management Team (CPSMT) to evaluate current data and assess what management measures are appropriate to address the points of concern identified in this letter, including a reduction in the 2019-2020 overfishing limit (OFL), allowable biological catch (ABC), and annual catch limit (ACL). We oppose consideration of a Coastal Pelagic Species Fishery Management Plan (CPS FMP) amendment or emergency action to increase the incidental catch allowance for an overfished stock.

The point of concern framework is intended to address resource conservation or ecological issues

The point of concern process is "the Councils' primary tool . . . for exercising resource stewardship responsibilities" under the CPS FMP.[1] "The process is also to prevent overfishing or any other resource damages."[2] The point of concern framework allows the Council to change management measures based solely on the point of concern to "quickly and directly" address a conservation or ecological concern.[3] The FMP lists the specific circumstances under which a point of concern occurs including:

- Any adverse or significant change in the biological characteristics of a species (age composition, size composition, age at maturity, or recruitment) is discovered.
- An overfishing condition appears to be imminent or likely within two years.
- Developments in a foreign fishery occur that affect the likelihood of overfishing of CPS.
- Control rule (harvest policy) parameters or approaches require modification.[4]

[1] PFMC CPS FMP (February 2018) §2.1.2 *Point of Concern Framework*, at 16.
[2] *Id*.
[3] *Id*.
[4] *Id*.

The point of concern framework is separate and distinct from the socioeconomic framework under the FMP and is not intended to be used for social or economic reasons.[5] The point of concern framework authorizes management measures that help meet the objectives of the FMP based solely on the point of concern within the existing requirements of the FMP. While the socioeconomic framework allows for changes in management measures based on social and economic reasons, it does not authorize overriding existing FMP provisions.

The point of concern and the socioeconomic framework cannot be used to change FMP requirements

Neither the point of concern framework nor the socioeconomic framework allow the FMP to be changed. Any changes to FMP provision require an FMP amendment including any change to the incidental catch rate specified when a stock is overfished. An FMP amendment is at least a two-meeting process and requires full notice and comment published in the Federal Register.

Given that Pacific sardine are collapsed, and the population is below the minimum stock size threshold (MSST), now is the time for increased conservation and management to promote rebuilding, not rolling back safeguards designed to minimize take of an overfished species. We strongly oppose an emergency rulemaking or an FMP amendment that would allow for a higher incidental catch allowance when a stock is overfished. Such a change was previously requested and rejected during the Amendment 17 live bait process, it goes against the Coastal Pelagic Species Advisory Subpanel (CPSAS) recommendations from April 2019, and it would allow fishermen to target mixed stocks resulting in higher catches of sardine than would be seen under the 20% incidental catch rate.

The 20% incidental catch limit for overfished stocks is a feature of the FMP that minimizes mortality when stocks are overfished. Such incidental catch limits serve to reduce catch below ACLs and are implicit rebuilding provisions for overfished stocks in the FMP. As we have witnessed, the 40% incidental catch limit has kept US landings well below ACLs since the fishery has been closed. A 20% incidental catch limit further protects against take of an overfished species, which is the intent of the FMP. Based on most recent biomass estimates, we strongly oppose any effort to remove further safeguards, including the 20% incidental catch limit, in order to prevent overfishing and rebuild overfished stocks.

For the above reasons, we oppose the Council or NMFS taking emergency action to increase incidental catch limits. Furthermore, the need to increase landings on an overfished stock due to economic concerns does not meet the legal criteria or intent of the emergency provisions of the Magnuson-Stevens Fishery Conservation and Management Act.

Finally, NMFS is now over two months late in meeting its legal obligation to declare Pacific sardines overfished based on the approved 2019 stock assessment indicating the stock is well below the MSST. Before taking any other action, NMFS must immediately declare Pacific sardines

[5] *Id*. at 14.

overfished and request that the Council immediately develop measures to end overfishing and rebuild the stock.[6]

Resource conservation and ecological issues exist that warrant a point of concern for Pacific sardine

The status of Pacific sardine and recent science identify a point of concern under several of the conditions outlined in the FMP.

First, recently published science identified a significant change in the recruitment. A 2019 paper, *Re-evaluation of the environmental dependence of Pacific sardine Recruitment*, discovered that CalCOFI temperature is no longer a predictor of sardine recruitment, which was the basis for the 2019-2020 temperature-based Emsy of 26%.[7]
Second, an overfishing condition appears to be occurring. Coastwide landings exceeded MSY in 2017 and 2018 according to the 2019 assessment and the stock is currently below MSST.[8]

Third, increasing foreign fishing affects the likelihood of overfishing sardine. Mexican catch levels have significantly increased in the last two years, and have resulted in coastwide harvest rates exceeding MSY according to the 2019 stock assessment.[9]

Finally, the control rule parameters require modification. The CalCOFI temperature must be removed because it is no longer a valid predictor of sardine recruitment and it is not best available science.[10] The 87 percent distribution parameter was found to be out of date, not reflective of best available science, and must be corrected.[11] In addition, the current harvest policy was developed assuming a *single* undifferentiated sardine stock off the US West Coast. The new stock differentiation in assessments since 2016 reflects a new understanding of this stock (a southern subpopulation and northern subpopulation), meaning current management harvest parameters must be revisited and recalculated based on the differentiated stocks.[12]

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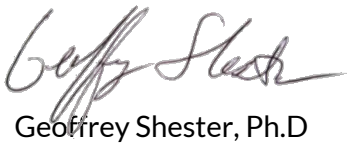
[6] 16 U.S.C. §§1854(e)(2).
[7] Zwolinski & Demer 2019. Re-evaluation of the environmental dependence of Pacific sardine recruitment
[8] Hill et al. 2019. Assessment of the Pacific sardine resource in 2019 for U.S. management in 2019-2020. NMFS Southwest Fisheries Science Center.
[9] *Id.*
[10] Zwolinski & Demer 2019. Re-evaluation of the environmental dependence of Pacific sardine Recruitment. Fisheries Research 216 (2019) 120–125
[11] Demer & Zwolinski 2017. "A Method to Consistently Approach the Target Total Fishing Fraction of Pacific Sardine and Other Internationally Exploited Fish Stocks". North American Journal of Fisheries Management 37:284–293.
[12] *Id.*

Conclusion

Given a point of concern has been identified based on ecological and conservation concerns contemplated under the CPS FMP, we request the Council direct the CPSMT to evaluate current data and recommend management measures to address the concerns. Any efforts to remove existing safeguards for overfished CPS stocks in the CPS FMP via emergency action or an FMP amendment are unwarranted based on the MSA's requirement to prevent overfishing and rebuild overfished stocks.

Sincerely,



Geoffrey Shester, Ph.D
California Campaign Director
Senior Scientist

Ben Enticknap
Pacific Campaign Manager
Senior Scientist

Attachment: Zwolinski and Demer. 2019. Re-evaluation of the environmental dependence of Pacific Sardine Recruitment. Fisheries Research *216 (2019) 120–125.*

Fisheries Research 216 (2019) 120–125

Contents lists available at ScienceDirect

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Technical note

Re-evaluation of the environmental dependence of Pacific sardine recruitment

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ABSTRACT

The environment influences the recruitment of small pelagic fishes, so environmental indices are used to match fishing mortalities to the stocks' productivities. For example, the exploitation fraction for the northern stock of Pacific sardine in the Northeastern Pacific is a function of sea-surface temperature (SST). The functional relationship changes, however, because our perception of the environmental effects on sardine recruitment is based on assessment models that are periodically updated with new input data and assumptions. In this paper, we use data from recent stock assessments to re-examine previously identified correlations of sardine recruitment success (the logarithmic ratio of recruitment and spawning stock biomass) with indices of SST off Southern California and the Pacific Decadal Oscillation (PDO). We show that the earlier correlation with SST is likely invalid, and the persistent correlation with the PDO is weaker. Because many environmental stock-recruitment relationships fail upon re-examination, environmental proxies for fish productivity might not always prescribe the correct amount of fishing mortality and should be avoided. Alternatively, for species assessed periodically, dynamic fishing mortalities could be based on measurements of recent stock productivity inferred directly from surveys, or from the results of analytical assessments based on those observations.

1. Introduction

Forage fishes (e.g. sardine, anchovy and mackerels) in eastern boundary upwelling ecosystems experience large swings in abundance, often affecting upper trophic levels and fishing industries (Alheit and Bakun, 2010; Schwartzlose et al., 1999). Many of these species alternate between regimes of high productivity that allow for large exploitations, and regimes of low productivity in which virtually no fishery is sustainable (Jacobson and MacCall, 1995). Exploitation strategies that ignore fluctuations in stocks' productivities can be slow to reduce fishing pressure during periods of deficient production, which can amplify the environmental effects and result in more frequent, more severe, and longer stock collapses (Essington et al., 2015). Conversely, exploitation strategies that match removals to the natural cycles of productivity may result in larger average catches, higher profits, and lower risk of stock collapses (King et al., 2015). However, successful application of dynamic fishing rules relies on early detection of changes in stock productivity. Because such changes are difficult to identify in stocks with moderate to high exploitation (Essington et al., 2015), environmental proxies for productivity are used in some management schemes to implement productivity-based harvest control rules (HCRs). One of the first such rules has been applied to the northern stock of Pacific sardine (*Sardinops sagax*) in the Northeast Pacific (PFMC, 1998).

During at least the last 100 years, the sardine biomass co-varied with basin-scale environmental conditions (Alheit and Bakun, 2010; MacCall, 1996; Zwolinski and Demer, 2012). More specifically, Jacobson and MacCall (1995) concluded that sardine surplus production varies with ocean temperature, and a HCR was adopted to modulate fishing pressure as a function of SST measured at the pier of the Scripps Institution of Oceanography (SIO) in La Jolla, California (PFMC, 1998). Fifteen years later, a re-analysis by McClatchie et al. (2010) indicated that there was no longer a correlation between SST_{SIO} and sardine recruitment, so the environment-informed HCR was eliminated (Hill et al., 2011). Three years later, the Pacific Fisheries Management Council (PFMC, 2014) adopted another environment-informed HCR, based on a correlation that Lindegren and Checkley (2013) found between sardine recruitment success and a SST index (SST_{annual}) measured off Southern California during California Cooperative Oceanic Fisheries Investigations (CalCOFI). They analyzed the sardine spawning stock biomass (B_{SS}) and recruitment (R) output from the 2010 sardine assessment (Hill et al., 2010), which we also found to co-vary significantly with a Pacific Decadal Oscillation (PDO) based index

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Table 1
Time-series of B_{SS} and Recruitment from Hill et al. (2016) and Hill et al. (2017). CalCOFI *SST* was obtained from Hill et al. (2017) and the monthly PDO values (Mantua et al., 1997) were obtained here http://research.jisao.washington.edu/pdo/PDO.latest.txt and arranged as per Zwolinski and Demer (2014). Details for the sources of data used to create the original indices can be found in the respective references.

			Model 2016		Model 2017	
Year	SST_{annual} (°C)	$PDO_{combined}$ (°C)	B_{SS} (*10^5 t)	Recruitment (1000s)	B_{SS} (*10^5 t)	Recruitment (1000s)
1994	16.4762	2.79	3.89395	6,352,900		
1995	15.9241	0.614	5.3345	2,122,680		
1996	16.3252	2.268	6.3004	3,402,270		
1997	16.695	2.056	6.30932	10,871,200		
1998	16.7719	3.208	5.96042	7,671,780		
1999	15.2843	−1.168	6.81023	1,270,570		
2000	15.7907	−1.438	7.66577	1,395,120		
2001	15.5535	−1.354	6.81193	2,901,170		
2002	14.9414	−1.466	5.34937	360,040		
2003	16.0328	1.202	3.95682	14,281,900		
2004	15.8849	1.18	2.80332	6,909,280		
2005	15.4585	1.61	4.06208	11,917,900	3.24261	25,300,000
2006	15.9157	0.524	5.83424	3,658,480	10.7	7,800,000
2007	15.1543	0.064	7.57295	5,718,360	12.2	6,940,000
2008	15.2724	−1.41	7.63427	1,956,750	10.4	3,440,000
2009	15.3583	−2.596	6.99527	5,563,750	7.76752	6,670,000
2010	15.552	0.122	5.8647	1,559,350	5.4047	7,630,000
2011	15.5618	−1.848	5.07364	2,27,700	3.9939	601,265
2012	15.2939	−2.478	4.15388	68,950	3.36083	140,769
2013	14.9097	−2.012	2.49089	104,030	2.01812	185,878
2014	14.1932	0.2	1.31188	382,260	1.04351	971,184
2015	17.4765	2.556			0.60262	663,664

(Zwolinski and Demer, 2014). We cautioned however, that the environmental recruitment models in both Lindegren and Checkley (2013) and Zwolinski and Demer (2014) could be affected by erroneous estimates of the spawning B_{SS} and R. This is because the 2010 assessment model for the northern stock also included fishery data (fishing mortality and demographics) from a separate southern stock (Demer and Zwolinski, 2014; Félix-Uraga et al., 2004), sometimes referred to as the central stock.

Here, we re-examine the relationships in Zwolinski and Demer (2014) between assessment-modeled sardine recruitment and both SST_{annual} and $PDO_{combined}$, using B_{SS} and R pairs from the 2016 and 2017 assessments formulations for the northern stock that exclude data from the central stock (Hill et al., 2016, 2017). Although this analysis is specific to the northern stock of sardine in the Northeast Pacific, we discuss how the implications are generically relevant for the science and management of small pelagic fishes.

2. Methods

Since 2007, statistical catch-at-age assessment models of the northern stock of Pacific sardine have been fit with Stock Synthesis (*SS*; Methot, 2010) using a variety of fisheries independent and dependent data (Hill et al., 2017). Until 2013, these assessments included landings data collected from Ensenada, Mexico, to the northern end of Vancouver Island, Canada, potentially from both the northern and central stocks (Demer and Zwolinski, 2014; Félix-Uraga et al., 2005; Hill et al., 2014). Since 2014, however, the assessments for the northern stock have excluded data from the central stock based on their association with an indicative range of satellite-sensed SST (Hill et al., 2014). This new modeling approach invalidated the results of earlier models in describing the dynamics of the northern stock.

Currently, the two valid model configurations for the northern stock are from 2014 (Hill et al., 2014) – this model was updated in 2016 and spans from 1994 through 2014 (Hill et al., 2016) –, and 2017, spanning from 2005 through 2017 (Hill et al., 2017). For the overlapping years, the two models share the same catch and composition data. Salient differences between these models are summarized below, and additional details can be found in Hill et al. (2017) and references therein.

The 2016 model is length-based, it uses a time-invariant growth model, and is fit with fisheries-independent estimates of total egg production (TEP) or spawning stock biomass (B_{SS}) derived from egg surveys (Lo et al., 2009), and biomass estimates for one year and older sardine (age 1+) from acoustic-trawl method (ATM) surveys (Zwolinski et al., 2014). The natural mortality coefficient of the population was set to 0.4, and the catchability coefficients for the egg-based indices were estimated, whereas the catchability coefficient for the ATM biomass indices (spring and summer) were fixed at 1 (Hill et al., 2016). The 2017 model is age-based, it uses an empirical length-at-age model, and includes fisheries-independent data only from the ATM surveys (Zwolinski et al., 2014). The natural mortality coefficient was set to 0.6 (Zwolinski and Demer, 2013) and the catchability coefficient was estimated within the model as 1.1 (Hill et al., 2017).

Because these models are semi-independent characterizations of the northern subpopulation of Pacific sardine, we posit that significant environmental influences on recruitment success should be evident in either realization. If the environmental dependence is only evident in one of the most recent stock assessments, it indicates that it might be a statistical artifact of a particular model run, or if it is indeed real, it means that at least one of the assessment models is not capturing the real dynamics of the stock. To elucidate the environmental dependence of northern stock sardine recruitment (R), we fit the B_{SS} -R data pairs from the 2016 and 2017 assessments within a single environmentally-dependent stock-recruitment model. The statistical dependence of the information from the two assessments in the overlapping years, i.e., from 2005 through 2014, is considered explicitly by fitting a mixed version of the linearized Ricker model with the following structure:

$$E(\log(R/B_{SS})) = \beta_0 + \beta_1 \times B_{SS} + \beta_2 \times I_{2017} + \beta_3 \times environment + \gamma_{year} + \varepsilon \quad (1)$$

$$\gamma_{year} \sim N(0, \sigma^2_{year}); \ \varepsilon \sim N(0, \ \sigma^2),$$

where β_0, β_1, β_2, and β_3 are estimated coefficients; R is expressed as abundance of age-0 fish in July; B_{SS} is the spawning stock biomass estimated in January of the same year; I_{2017} equals 0 or 1 for data from the 2016 or 2017 models, respectively; *environment* is an environmental index, here either SST_{annual} or $PDO_{combined}$ because they provided by far

the best results in Zwolinski and Demer (2014) – see Table 1 for the data and their sources; γ_{year} is a vector of annual random effects; and ε is a vector of random errors with constant variance. The mixed version of a static (or conventional) Ricker model, i.e., a model without environmental influence, is similar to that of Eq. (1) without the $\beta_3 \times environment$ term. We used the Ricker model because it can fit a range of stock-recruitment relationships, e.g., linear, asymptotic, and compensation. The models were fit using the *lme* function from the *nlme* package for R (R Core Team, 2016).

To overcome the uncertainty in parameter inference that is inherent to mixed models with small sample sizes (Gurka, 2006), and to minimize the possibility of finding a spurious model (Brooks and Deroba, 2015), we test the quality of competing models using a semi-parametric approach based on the models' out-of-sample prediction errors. The out-of-sample or "leave one out cross-validation" error is the deviation between an observed value and its predicted counterpart when the observation is not used to fit the model. This approach evaluates the models on their predictive ability rather than on the assymptotic significance of their parameters. To compare the various models, we calculate the mean-square prediction error (MSPE), which is the arithmetic mean of the squared out-of-sample errors. Among competing models, the model with smallest MSPE is the best predictive model. Additionally, we compute the pseudo out-of-sample r^2 (pseudo-r^2) as the square of the Pearson correlation coefficient between the predicted and observed values of $\log(R/B_{SS})$, and we test the independence of the residuals by plotting their auto-correlation. Finally, we test for significant reductions in the variance of the out-of-sample errors of pairs of competing models using a variance ratio F test (Selvin, 2005). In combination with graphic diagnostics (McCullagh and Nelder, 1989), we use the MSPE and the variance test to select the best performing model.

3. Results

The Static Ricker model, i.e., a Ricker recruitment model without environmental predictors, has little to no explanatory power (Fig. 1; Table 2) and therefore performs about the same as the arithmetic average of recruitment success (not shown). The model with SST_{annual} as the environmental predictor in Eq. (1) has a lower MSPE than the Static Ricker (Fig. 1; Table 2), but the out-of-sample error variance is not significantly smaller than that of the Static Ricker. The Pearson correlations between SST_{annual} and $\log(R/B_{SS})$ for the 2016 and 2017 data sets are 0.53 ($p = 0.01$) and 0.20 ($p = 0.56$), respectively. The model with $PDO_{combined}$ as the environmental predictor in Eq. (1) has the smallest MSPE, the out-of-sample error variance is significantly smaller than that of the Static Ricker (Table 2; Fig. 1), and the pairs of observed and predicted values are closest to the 1:1 line (Fig. 1). The correlations between $PDO_{combined}$ and $\log(R/B_{SS})$ for the 2016 and 2017 data sets are 0.75 ($p << 0.01$) and 0.73 ($p = 0.01$), respectively. These results indicate that sardine recruitment success, as estimated by the 2016 and 2017 northern stock-differentiated assessments, is not significantly informed by SST_{annual}, but is significantly informed by $PDO_{combined}$. The pseudo-r^2 for the model using using SST_{annual} is 0.10. In contrast, pseudo-r^2 for the model using $PDO_{combined}$ is 0.44, which indicates that about half of the variance of the data is explained by the model (Fig. 2). These results are confirmed when using only the 2016 assessment model results within a non-mixed linearized Ricker model (Fig. S1). The 2017 B_{SS}-R time series is probably too short to provide sensible results on its own. For completeness, the model diagnostics provided here in $\log(R/B_{SS})$, are presented in $\log(R)$ in Fig. S2.

4. Discussion

The variability in recruitment of forage species depends on a series of events that begins before the spawning season. For capital breeders like sardine, the feeding season prior to spawning controls energy storage and seemingly the start and duration of spawning (Ganias et al., 2007). This determines the conditions in which the eggs and larvae are reared, and modulates recruitment through processes that include, amongst others, advection (Parada et al., 2008), turbulence (Lasker, 1981), appropriate food supply (Lasker, 1978), and predation (Bjornstad et al., 1999). The complex interactions of these factors are insufficiently understood, at least partly because data are unavailable on critical temporal and spatial scales. Therefore, stock assessment

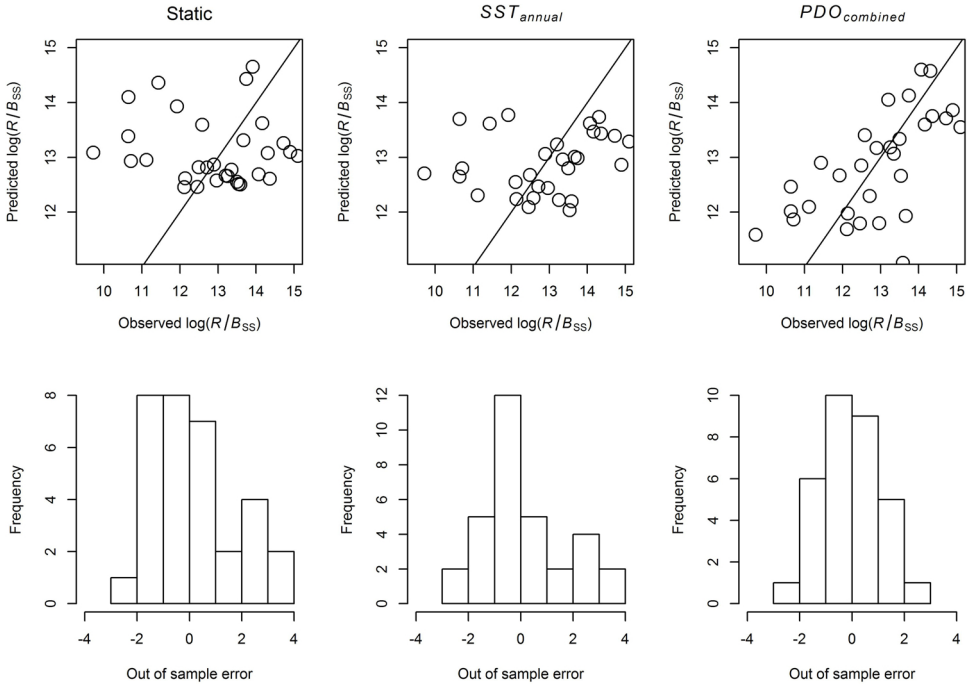

Fig. 1. Diagnostics for the three linearized Ricker mixed-models tested including observed $\log(R/SSB)$ versus out-of-sample predicted $\log(R/SSB)$ (top row), and histograms of out-of-sample errors (bottom row).

Table 2
Coefficients of the fixed component of the linearized Ricker mixed-models estimated using all observations (a full model summary is available in Table S2). Mean squared prediction error refers to the out-of-sample errors. The variance test was calculated against the out-of-sample error variance of the the static Ricker model. Pseudo-r^2 was calculated using all observations.

Ricker Model	Coefficients β_0, β_1, β_2, β_3	Mean squared prediction error	Variance test	Pseudo-r^2
Static	13.855; −0.184; 0.841, NA	2.45	NA	0.00
SST_{annual}	0.0216; −0.176; 0.833; 0.878	2.21	F = 1.10, p = 0.40	0.10
$PDO_{combined}$	13.500; −0.126; 0.781; 0.548	1.24	F = 1.97, p = 0.03	0.44

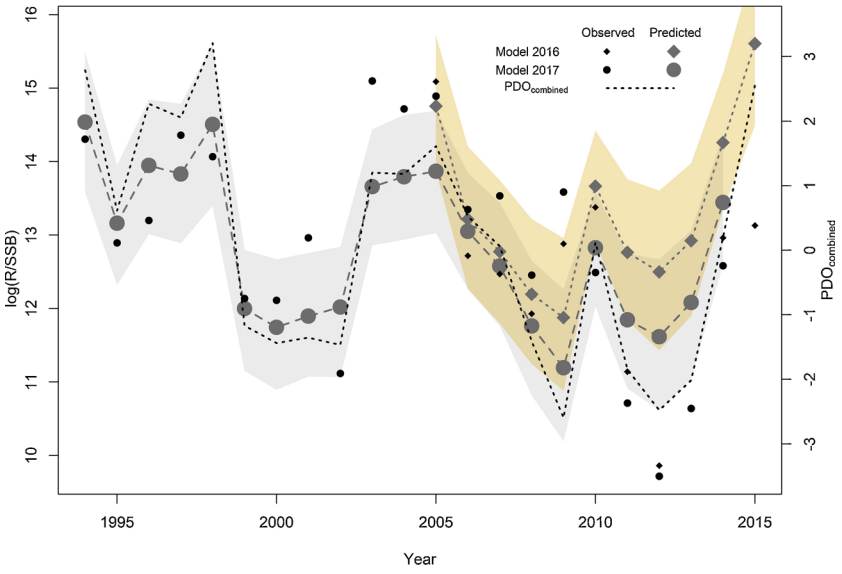

Fig. 2. Time series of recruitment success (small black dots) overlaid on $PDO_{combined}$ Ricker model predictions (gray lines and large gray dots). The gray and yellow bands represent, respectively, approximate 95% confidence intervals of the expected reproductive success for the 2016 (dashed) and 2017 models (dotted). (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

models and management strategy evaluations use statistical low-complexity stock-recruitment relationships (Munch et al., 2005). Although simpler, these models ignore the mechanistic complexity of the recruitment process and therefore exhibit large variances (Szuwalski et al., 2015). The inclusion of appropriate environmental variables (Subbey et al., 2014), has been shown to reduce the unexplained variability of stock-recruitment models (Myers, 1998). The covariates are proxies for the combination of processes involved in recruitment (Zwolinski and Demer, 2014), and enable models with good hindcasting properties (Myers, 1998). However, the majority of environmental-recruitment models fail upon re-analysis with new data (Myers, 1998). Case in point, (McClatchie et al., 2010) used data from the 2010 stock assessment (Hill et al., 2010) to re-analyze the model proposed by Jacobson and MacCall (1995) and concluded that sardine recruitment does not vary significantly with SST_{SIO}. Jacobson and McClatchie (2013), however, acknowledged "statistical short-comings" in the analysis by McClatchie et al. (2010) and concluded that SST_{SIO} may still predict sardine recruitment. Lindegren and Checkley (2013) restricted their analysis to data from 1983 to 2010 and found that sardine recruitment did vary significantly with SST_{annual}. Jacobson and McClatchie (2013) endorsed the use of SST_{annual} because, in part, SST_{annual} is derived from SST data collected in the sardine spawning area. However, using data from the latest, stock-differentiated assessments, we show that sardine recruitment does not vary significantly with SST_{annual}.

We offer two related explanations for the spurious relationship between sardine recruitment success and SST_{annual}. First, SST_{annual} does not represent the average SST within the recent spawning area because the range of SST associated to the northern stock (Demer and Zwolinski, 2014) has shifted north in recent years (Fig. 3). Second, as the northern stock shifted north, the landings data from Ensenada, Mexico, and San Pedro, California, included fewer sardine from the northern stock and more from the central stock that is associated to a higher range of SST (Demer and Zwolinski, 2014; Félix-Uraga et al., 2004). Consequently, the 2010 sardine assessment, as well as all assessments prior to separation of the stocks, may have confounded immigration with local production as suggested by Jacobson and MacCall (1995). This potential error is mitigated in the 2016 and 2017 assessments by excluding data from landings that occurred outside the SST range associated to the northern stock (Demer and Zwolinski, 2014).

Although the 2016 and 2017 assessments exclude data from the central stock, which in theory would result in a better model for the northern stock, the recruitment model presented here has a lower pseudo-r^2 than that derived from the 2010 assessment (Zwolinski and Demer, 2014). This counter-intuitive result coincides with progressively weaker stock-recruitment relationships observed in assessment models after 2010. For example, in the 2014 and 2015 model runs (Hill et al., 2014, 2015; respectively), there was virtually no evidence that R depended on B_{SS} within the observed ranges of B_{SS}. Despite this trend, it is notable that sardine recruitment success modeled by two substantially different assessment formulations, i.e., 2016 and 2017, continues to vary significantly with $PDO_{combined}$. We theorize that $PDO_{combined}$ may be a more robust indicator of sardine recruitment than SST_{SIO} and SST_{annual} because it was constructed considering the feeding and spawning timings of the of the northern stock of Pacific sardine (Zwolinski and Demer, 2014), and the PDO has been shown to correlate with multiple atmospheric, oceanographic, and biological time-series representative of large areas of the Northeast Pacific (Beamish, 1993; Clark et al., 1999; Hare and Mantua, 2000).

Although the significant correlation between $PDO_{combined}$ and sardine recruitment does not reveal a causal mechanism, it does add to the list of statistical relationships found between the PDO and other fish

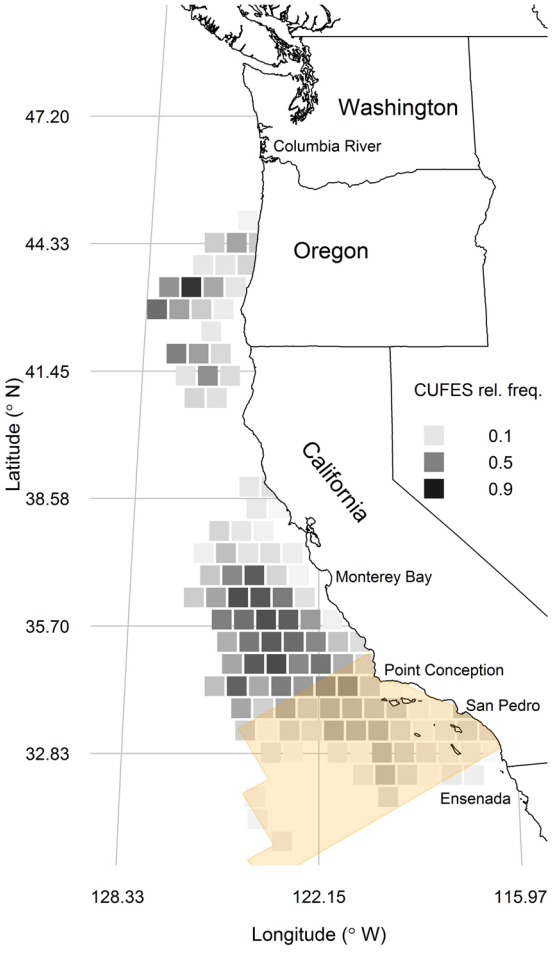

Fig. 3. Relative frequency of occurrence of continuous underway fish egg samples (CUFES) with at least one sardine egg during spring surveys from 2010 to the present.[1] The shaded region corresponds to the CalCOFI survey area within which SST_{annual} is derived.

stocks in the California Current Ecosystem (Beamish, 1993; Clark et al., 1999). Nonetheless, this correlation between recruitment and the environmental indices may also eventually fail. In addition, although the stock productivity may vary significantly with a particular environmental index, the unexplained annual variability could be sufficiently large to prevent an accurate prediction of the real productivity. With a marginally significant correlation, the environmental recruitment model can over- or underestimate recruitment success for short periods of time (e.g., 2003–2005 and 2011–2013 in Fig. 2), and inaccurately predict surpluses or deficits. Therefore, for stocks that are surveyed and assessed annually, the measured productivity, averaged over the species reproductive longevity, could be used to modulate the fishing fraction instead of an environmental proxy. This approach would allow the exploitation rate to match the stock productivity, irrespective of our understanding of the current environment.

On the other hand, even a marginally statistically significant environment-dependent recruitment model may be useful. For example, if required by the HCR, it could be used to predict recruitment in the management year and forecast the stock biomass into the following year more precisely than a model without environmental influence. Finally, the model could still be of use to simulate recruitment within a management strategy evaluation, to estimate optimal fishing mortalities and biological reference points.

[1] Data available here: http://coastwatch.pfeg.noaa.gov/erddap/tabledap/erdCalCOFIcufes.html.

Acknowledgements

The authors greatly appreciate the comments from Nate Mantua, Kevin Hill, Sam McClatchie, Steve Teo, Gerard DiNardo and from two anonymous reviewers.

Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:https://doi.org/10.1016/j.fishres.2019.03.022.

References

Alheit, J., Bakun, A., 2010. Population synchronies within and between ocean basins: apparent teleconnections and implications as to physical-biological linkage mechanisms. J. Mar. Syst. 79, 267–285.
Beamish, R.J., 1993. Climate and exceptional fish production off the west-coast of North-America. Can. J. Fish. Aquat. Sci. 50, 2270–2291.
Bjornstad, O.N., Fromentin, J.M., Stenseth, N.C., Gjosaeter, J., 1999. Cycles and trends in cod populations. Proc. Natl. Acad. Sci. U. S. A. 96, 5066–5071.
Brooks, E.N., Deroba, J.J., 2015. When "data" are not data: the pitfalls of post hoc analyses that use stock assessment model output. Can. J. Fish. Aquat. Sci. 72, 634–641.
Clark, W.G., Hare, S.R., Parma, A.M., Sullivan, P.J., Trumble, R.J., 1999. Decadal changes in growth and recruitment of Pacific halibut (Hippoglossus stenolepis). Can. J. Fish. Aquat. Sci. 56, 242–252.
Demer, D.A., Zwolinski, J.P., 2014. Corroboration and refinement of a method for differentiating landings from two stocks of Pacific sardine (Sardinops sagax) in the California current. ICES J. Mar. Sci. 71, 328–335.
Essington, T.E., Moriarty, P.E., Froehlich, H.E., Hodgson, E.E., Koehn, L.E., Oken, K.L., Siple, M.C., Stawitz, C.C., 2015. Fishing amplifies forage fish population collapses. Proc. Natl. Acad. Sci. U. S. A. 112, 6648–6652.
Félix-Uraga, R., Gómez-Muñoz, V.M., Quiñónez-Velázquez, C., García-Franco, W., 2004. On the existence of Pacific sardine groups off the west coast of Baja California and Southern California. Cal. Coop. Ocean. Fish. 45, 146–151.
Félix-Uraga, R., Gómez-Muñoz, V.M., Quiñónez-Velázquez, C., Melo-Barrera, F.N., Hill, K.T., García-Franco, W., 2005. Pacific sardine (Sardinops sagax) stock discrimination off the west coast of Baja California and southern California using otolith morphometry. Cal. Coop. Ocean. Fish. 46, 113–121.
Ganias, K., Somarakis, S., Koutsikopoulos, C., Machias, A., 2007. Factors affecting the spawning period of sardine in two highly oligotrophic seas. Mar. Biol. 151, 1559–1569.
Gurka, M.J., 2006. Selecting the best linear mixed model under REML. Am. Stat. 60, 19–26.
Hare, S., Mantua, N., 2000. On the assessment and identification of recent North Pacific climate regime shifts. Prog. Oceanogr. 47, 103–145.
Hill, K.T., Lo, N.C.H., Macewicz, B.J., Crone, P.R., Felix-Uraga, R., 2010. Assessment of the Pacific Sardine Resource in 2010 for U.S. Management in 2011. NOAA Technical Memorandum NMFS-SWFSC-469. U.S. Department of Commerce 137pp.
Hill, K., Crone, P.R., Lo, N.C.H., Macewicz, B.J., Dorval, E., McDaniel, J.D., Gu, Y., 2011. Assessment of the Pacific Sardine Resource in 2011 for U.S. Management in 2012. NOAA Technical Memorandum NMFS-SWFSC-487. U.S. Department of Commerce.
Hill, K., Crone, P.R., Demer, D., Zwolinski, J.P., Dorval, E., Macewicz, B.J., 2014. Assessment of the Pacific Sardine Resource in 2014 for U.S.A. Management in 2014–15. April 2014 Briefing Book Agenda Item H.1.b. Pacific Fishery Management Council, Portland, Oregon 182 p.
Hill, K.T., Crone, P.R., Dorval, E., Macewicz, B.J., 2015. Assessment of the Pacific Sardine Resource in 2015 for U.S.A. Management in 2015–16.
Hill, K., Crone, P., Dorval, E., Macewicz, B.J., 2016. Assessment of the Pacific Sardine Resource in 2016 for U.S.A. Management in 2016–17. US Department of Commerce. NOAA Technical Memorandum NMFS-SWFSC-562 184 p.
Hill, K., Crone, P., Zwolinski, J.P., 2017. Assessment of the Pacific Sardine Resource in 2017 for U.S. Management in 2017–18. US Department of Commerce. NOAA Technical Memorandum NMFS-SWFSC-576.
Jacobson, L.D., MacCall, A.D., 1995. Stock recruitment models for pacific sardine (*Sardinops-Sagax*) can. J. Fish. Aquat. Sci. 52, 2062.
Jacobson, L.D., McClatchie, S., 2013. Comment on temperature-dependent stock-recruit modeling for Pacific sardine (Sardinops sagax) in Jacobson and MacCall (1995), McClatchie et al. (2010), and Lindegren and Checkley (2013). Can J Fish Aquat Sci. 70, 1566–1569.
King, J.R., McFarlane, J.R., Punt, A.E., 2015. Shifts in fisheries management: adapting to regime shifts. Philos. Trans. R. Soc. B 370.
Lasker, R., 1978. The relation between oceanographic conditions and larval anchovy food in the California current: identification of factors contributing to recruitment failure. Rapports et Proces-Verbauz des Reunions Conseil International pour l'Explorations de la Mer. 173, 212–230.
Lasker, R., 1981. The role of a stable ocean in larval fish survival and subsequent recruitment. In: Lasker, R. (Ed.), Marine Fish Larvae: Morphology, Ecology and Relation to Fisheries. Washington Sea Grant, Seattle.
Lindegren, M., Checkley, D.M., 2013. Temperature dependence of Pacific sardine (*Sardinops sagax*) recruitment in the California current Ecosystem revisited and revised. Can. J. Fish. Aquat. Sci. 70, 245–252.
Lo, N.C.H., Macewicz, B.J., Griffith, D.A., 2009. Spawning Biomass of Pacific Sardine

(*Sardinops sagax*) of U.S. in 2009. NOAA Technical Memorandum NMFS-SWFSC-449 31pp.
MacCall, A.D., 1996. Patterns of low-frequency variability in fish populations of the California current. Cal. Coop. Ocean. Fish. 37, 100–110.
Mantua, N., Hare, S.R., Zhang, Y., Wallace, J.M., Francis, R.C., 1997. A Pacific decadal climate oscillation with impacts on salmon production. Bull. Am. Meteorol. Soc. 78, 1069–1079.
McClatchie, S., Goericke, R., Auad, G., Hill, K., 2010. Re-assessment of the stock-recruit and temperature-recruit relationships for Pacific sardine (*Sardinops sagax*). Can. J. Fish. Aquat. Sci. 67, 1782–1790.
McCullagh, P., Nelder, J.A., 1989. Generalized Linear Models. Chapman & Hall, London.
Methot, R.D., 2010. In: Fisheries, N. (Ed.), User Manual for Stock Synthesis Model. Version 3.10, Seattle.
Munch, S.B., Kottas, A., Mangel, M., 2005. Bayesian nonparametric analysis of stock-recruitment relationships. Can. J. Fish. Aquat. Sci. 62, 1808–1821.
Myers, R.A., 1998. When do environment-recruitment correlations work? Rev. Fish Biol. Fish. 8, 285–305.
Parada, C., Mullon, C., Roy, C., Freon, P., Hutchings, L., van der Lingen, C.D., 2008. Does vertical migratory behaviour retain fish larvae onshore in upwelling ecosystems? A modelling study of anchovy in the southern Benguela. Afr. J. Mar. Sci. 30, 437–452.
PFMC, 1998. Amendment 8 (to the Northern Anchovy Fishery Management Plan) Incorporating a Name Change to: the Coastal Pelagic Species Fishery Management Plan. Management Council, Portland, OR.
PFMC, 2014. Coastal Pelagic Species Management Team Report on Sardine Harvest Parameters Changes. Agenda Item I.1.C CPSMT Report March 2014.
R Core Team, 2016. R: A Language and Environment for Statistical Computing. URL. R Foundation for Statistical Computing, Vienna, Austria. https://www.R-project.org/.
Schwartzlose, R.A., Alheit, J., Bakun, A., Baumgartner, T.R., Cloete, R., Crawford, R.J.M., Fletcher, W.J., Green-Ruiz, Y., Hagen, E., Kawasaki, T., Lluch-Belda, D., Lluch-Cota, S.E., MacCall, A.D., Matsuura, Y., Nevarez-Martinez, M.O., Parrish, R.H., Roy, C., Serra, R., Shust, K.V., Ward, M.N., Zuzunaga, J.Z., 1999. Worldwide large-scale fluctuations of sardine and anchovy populations. S. Afr. J. Marine Sci. 21, 289–347.
Selvin, S., 2005. *F* Distributions. Encyclopedia of Biostatistics, vol. 2. John Wiley & Sons, Chichester, pp. 1469–1472.
Subbey, S., Devine, J.A., Schaarschmidt, U., Nash, R.D.M., 2014. Modelling and forecasting stock-recruitment: current and future perspectives. ICES J. Mar. Sci. 71, 2307–2322.
Szuwalski, C.S., Vert-Pre, K.A., Punt, A.E., Branch, T.A., Hilborn, R., 2015. Examining common assumptions about recruitment: a meta-analysis of recruitment dynamics for worldwide marine fisheries. Fish Fish. 16, 633–648.
Zwolinski, J.P., Demer, D.A., 2012. A cold oceanographic regime with high exploitation rates in the Northeast Pacific forecasts a collapse of the sardine stock. Proc. Natl. Acad. Sci. U. S. A. 109, 4175–4180.
Zwolinski, J.P., Demer, D.A., 2013. Measurements of natural mortality for Pacific sardine (Sardinops sagax). ICES J. Mar. Sci. 70, 1408–1415.
Zwolinski, J.P., Demer, D.A., 2014. Environmental and parental control of Pacific sardine (*Sardinops sagax*) recruitment. ICES J. Mar. Sci. 71, 2198–2207.
Zwolinski, J.P., Demer, D.A., Cutter Jr., G.R., Stierhoff, K., Macewicz, B.J., 2014. Building on fisheries acoustics for marine ecosystem surveys. Oceanography 27, 68–79.

Geoff Shester
Oceana
06/10/2019 09:19 AM PDT

RE: Comments on Non-Agenda Items

Attached, please find our previous comments to the Council in opposition to a West Coast permitted pelagic longline fishery inside or outside the exclusive economic zone (EEZ). We continue to oppose consideration of this action and request the Council remove scoping of a pelagic longline fishery outside the EEZ from the year at a glance.

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February 8, 2018

Mr. Phil Anderson, Chair
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Mr. Barry Thom, Regional Administrator
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Agenda Item B.1: Open Public Comment, Bycatch in Pelagic Longline Swordfish Fisheries

Dear Chair Anderson, Mr. Thom, and members of the Council:

Thank you for the opportunity to provide open public comment on bycatch in pelagic longline swordfish fisheries and its relevance to management of U.S. West Coast highly migratory species (HMS). Oceana analyzed ten years of bycatch data from the Hawaii-based shallow-set longline fishery. The results show an average discard rate nearing 50%; a highly irresponsible level of bycatch which should preclude this gear type from being considered for any HMS fisheries off the U.S. West Coast.

The California Current Ecosystem is globally important for its unique oceanographic conditions supporting a diverse array of wildlife, including sea turtles, sea lions, whales, dolphins, seabirds, and commercially and recreationally important fish species. New pelagic longline swordfish fisheries inside or outside the West Coast exclusive economic zone (EEZ) would dramatically increase bycatch of protected marine life, sharks and other fish species. Oceana opposes efforts to schedule scoping for an HMS fishery management plan (FMP) amendment that would authorize a pelagic shallow-set longline swordfish fishery off the U.S. West Coast, outside the EEZ, and we oppose proposals to 'test' pelagic longlines inside the West Coast EEZ.

Over the past several years there have been efforts to introduce a pelagic shallow-set longline fishery to the U.S. West Coast. In 2015, the Pacific Fishery Management Council approved an exempted fishing permit that would allow the use of shallow-set longlines inside the U.S. West Coast EEZ and the Council has continued to entertain a future agenda item to begin scoping for an HMS FMP amendment to authorize a West Coast-

based high seas shallow-set longline swordfish fishery, an item which was brought forward in 2009 and failed.

The California-based drift gillnet swordfish fishery has historically had, and currently has a significant bycatch issue. Adding another unselective gear to the West Coast swordfish fishery would only complicate and delay progress toward significantly reducing bycatch in this fishery. Instead, the Council should continue to focus on the development and authorization of deep-set buoy gear, as a responsible, low impact fishing gear for targeting swordfish off the U.S. West Coast.

In 1989, with the enactment of Section 9028 of the Fish and Game Code, the California Legislature prohibited pelagic longline fishing in the EEZ off the California coast by banning the use of hook and line fishing gear longer than 900 feet.[1] A prohibition on pelagic longline gear is also specified in the Council's HMS FMP, and when faced with the opportunity to authorize a high seas shallow-set pelagic longline fishery in 2009, the Council selected the "no-action" alternative due to bycatch concerns.[2]

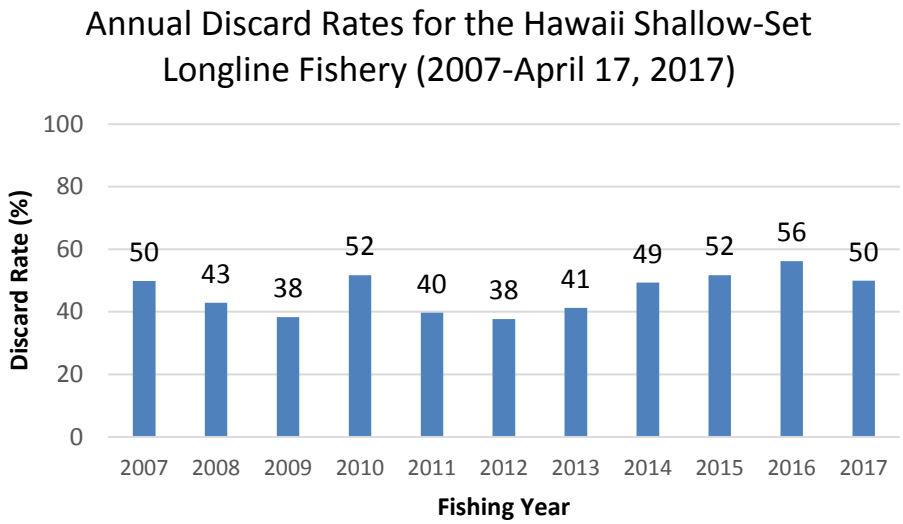

Figure 1. Annual discard rates (by number of animals) in the HI SSLL fishery, 2007-April 17, 2017

In response to a Freedom of Information Act request, Oceana recently received and analyzed observer data for the Hawaii-based shallow-set longline (SSLL) fishery.[3] Our analysis of NMFS observer data (the fishery has 100% observer coverage) shows that while bycatch in this fishery has improved since 2000, when mitigation measures such as circle hooks instead of J hooks were enforced, this fishery remains highly unselective (Figure 1).

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[1] Cal. Fish & Game Code § 9028
[2] Decisions of the 198th Session of the Pacific Fishery Management Council, at 1, http://www.pcouncil.org/wp-content/uploads/0409decisions.pdf
[3] NMFS (2017). FOIA observer data on the Hawaii shallow-set longline fishery.

The average discard rate (by number of animals) for the Hawaii SSLL fishery from 2007-April 17, 2017 is 46% (206,987 animals discarded).

Consistent with the Magnuson-Stevens Fishery Conservation and Management Act definition of bycatch[4], discards in Figure 1 are defined as animals caught but not kept. They are instead released and listed in the observer data as either Alive, Injured, Dead, or Unknown. The percentage of discards that have been released injured or dead in the same timeframe is 31.4%.

According to observer data, protected species including migratory sea birds, sea turtles, and marine mammals, are likely to perish or be injured when caught on pelagic longlines. Over 750 seabirds, 60 dolphins, and 190 sea turtles were incidentally caught by this fishery from January 2007 to April 2017 (Figure 2). Sharks and rays and non-target finfish were the most frequent bycatch in the fishery with 131,270 and 74,677 discards, respectively, between 2007 and April 17, 2017.

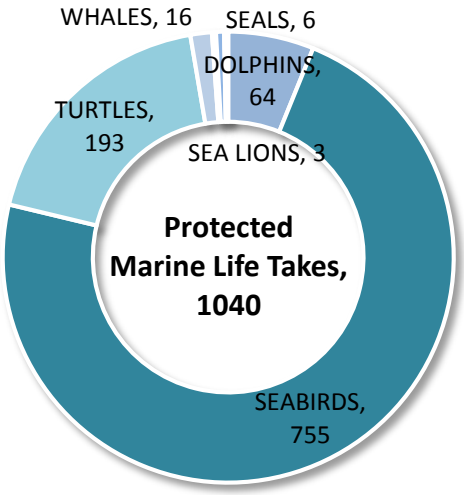

Figure 2. Observed Protected Marine Life Takes in the HI SSLL Fishery, 2007-April 17, 2017

Although interactions between the HI SSLL fishery and protected sea turtle species have decreased with gear and bait modifications implemented in 2000, it is important to look at this decrease in the broader context. For example, the Western Pacific population of Pacific leatherback sea turtles is estimated to have decreased within the same timeframe.[5] Given the lack of recovery of sea turtles, the risk posed to their populations by **any** interaction with a fishery off our coast remains high.

[4] 16 U.S.C. 1802 §(3)(2)
[5] Tapilatu et al. 2013. Long-term decline of the western Pacific leatherback, *Dermochelys coriacea:* a globally important sea turtle population. Ecosphere 4(2):1-15.

Since 2007, the HI SSLL fishery has caught and discarded at least 88 different non-target species, including six species of Endangered Species Act (ESA) listed mammals and turtles (see appended table). The Hawaii pelagic longline fisheries are known to take high numbers of false killer whales, and in January 2010, a false killer whale Take Reduction Team was formed to reduce mortality and serious injury of this species as required under the Marine Mammal Protection Act. In general, bycatch of marine mammals and other species would be expected to be even higher inside the U.S. West Coast EEZ than in the areas observed in the HI SSLL fishery, due to the higher densities of these animals in the California Current Ecosystem.[6, 7]

Additionally, we remind the Council of the NMFS tests to target swordfish using deep-set pelagic longline gear off central and southern California conducted in 2011-2013. During those experimental gear trials, only eight swordfish were caught and 76% of all fish caught with these deep-set longlines were non-marketable species.[8]

Due to the high bycatch rates and interactions with protected species that are associated with pelagic longlines, we strongly oppose an HMS FMP amendment authorizing the use of pelagic longline gear off the U.S. West Coast as well as exempted fishing permits. We urge the Council to remove this item from the year-at-a-glance agenda and we urge NMFS to deny the proposed pelagic longline EFP.

Sincerely,

Erin Kincaid
Marine Scientist

Ben Enticknap
Pacific Campaign Mgr. and Sr. Scientist

Attached: Oceana 2018. Collateral Capture: Bycatch in the Hawaii Shallow-Set Longline Fishery

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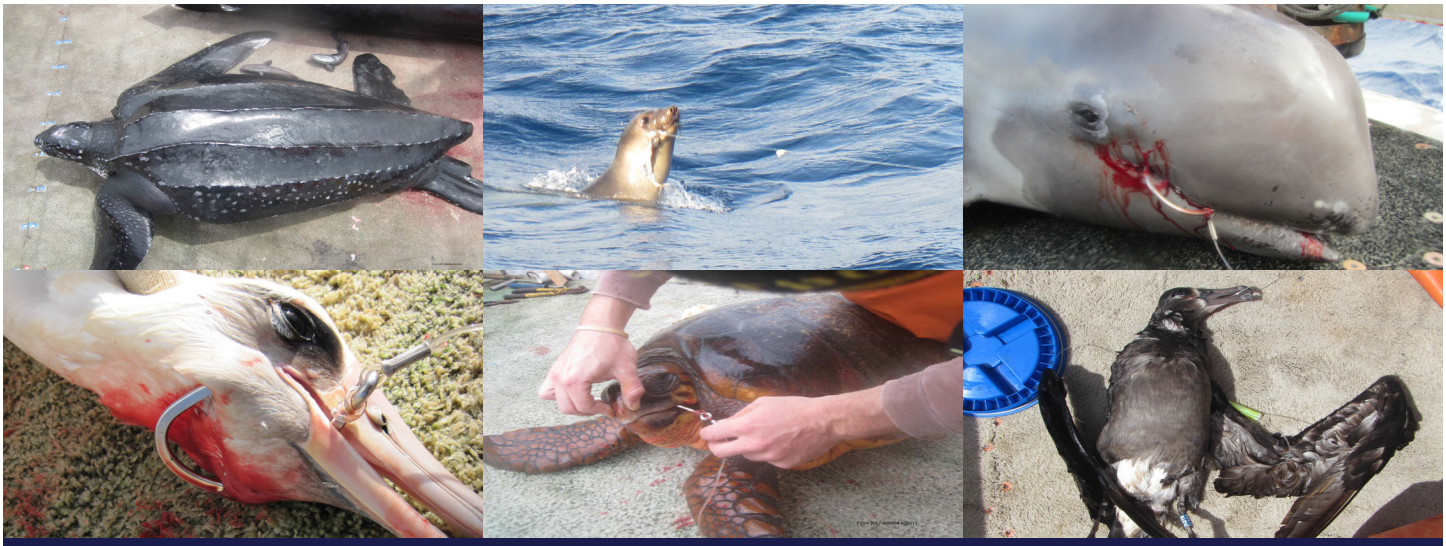
[6] Becker, E., K. Forney, P. Fiedler, J. Barlow, S. Chivers, C. Edwards, A. Moore, J. Redfern. 2016. Moving towards dynamic ocean management: How well do modeled ocean products predict species distributions? Remote Sensing 8,149.
[7] Forney, K., E. Becker, D. Foley, J. Barlow, E. Olson. 2015. Habitat-based models of cetacean density and distribution in the Central North Pacific. Endang Species Res 27:1-20.
[8] NMFS SWFSC Report. March 2014. Available: http://www.pcouncil.org/wp-content/uploads/K5b_NMFS_SWFSC_ALTERNATIVE_GEAR_MAR2014BB.pdf

Appendix

List of all species or categories caught in the Hawaii Shallow-Set Longline fishery from 2007-April 2017. Species listed as endangered or threatened under the ESA are indicated (*).

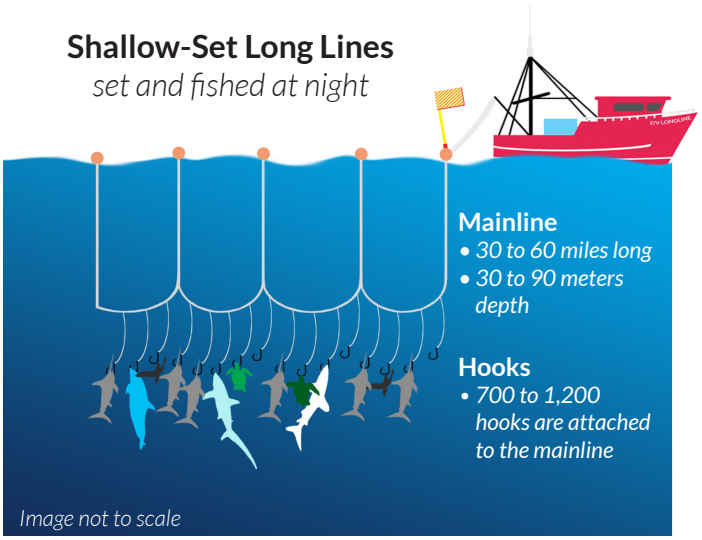
Catch Species (common name)		
Albacore Tuna	Longfin Escolar	Silky Shark
Beaked Whale, Ginkgo-toothed	Longfin Mako Shark	Skipjack Tuna
Bigeye Thresher Shark	Longnose Lancetfish	Slender Mola
Bigeye Tuna	Louver	Smooth Hammerhead Shark
Bignose Shark	Lustrous Pomfret	Snake Mackerel
Black Gemfish	Manta/Mobula	Striped Dolphin
Black Marlin	Mesoplodont Beaked Whale	Striped Marlin
Black-footed Albatross	Mobula (Devil Ray)	Swordfish
Blainville's Beaked Whale	Mobula Manta	Tapertail Ribbonfish
Blue Marlin	Northern Elephant Seal	Tiger Shark
Blue Shark	Oceanic White-Tip Shark*	Unid. Hammerhead Shark
Bluefin Tuna	Oilfish	Unid. Mako Shark
Bottlenose Dolphin	Olive Ridley Turtle	Unid. Snake Mackerel
Cigarfish	Opah	Unid. Thresher Shark
Common Mola	Other Identified Bird	Unidentified Beaked Whale
Common Thresher Shark	Other Identified Bony Fish	Unidentified Billfish
Cookie Cutter Shark	Other Identified Shark	Unidentified Bony Fish
Crestfish	Pelagic Puffer	Unidentified Common Dolphin
Crocodile Shark	Pelagic Stingray	Unidentified Dolphin
Dagger Pomfret	Pelagic Thresher Shark	Unidentified Dolphin or Whale
Deepwater Dogfishes	Pomfret, Brama spp.	Unidentified Gull
Dogfish, Velvet	Pompano Dolphinfish	Unidentified Hardshell Turtle
Dolphinfish	Rainbow Runner	Unidentified Kogia Whale
Escolar	Remora/Suckerfish	Unidentified Pinniped
False Killer Whale	Risso's Dolphin	Unidentified Pomfret
Fanfish	Roudi's Escolar	Unidentified Ray
Fin Whale*	Rough Pomfret	Unidentified Sea Lion
Flying Fish	Rough-Toothed Dolphin	Unidentified Shark
Galapagos Shark	Sailfish	Unidentified Shearwater
Giant Manta Ray	Salmon Shark	Unidentified Snake Mackerel
Gray Reef Shark	Sandbar Shark	Unidentified Tuna
Great Barracuda	Scalloped Hammerhead Shark	Unidentified Whale
Green/Black Turtle*	Scalloped Ribbonfish	Unspecified Kahala (Amberjack)
Guadalupe Fur Seal*	Sharptail Mola	Wahoo
Hammerjaw	Short-beaked Common Dolphin	White Shark
Humpback Whale*	Shortbill Spearfish	Yellowfin Tuna
Laysan Albatross	Shortfin Mako Shark	Yellowtail
Leatherback Turtle*	Shortnose Lancetfish	
Loggerhead Turtle*	Sickle Pomfret	



Collateral Capture
Bycatch in the Hawaii Shallow-Set Longline Fishery

The Hawaii Shallow-Set Longline (HI SSLL) fishery uses pelagic (midwater) gear to target swordfish. Unfortunately, of all the animals ensnared by these suspended, baited hooks, nearly half are injured, dying, or dead non-target species and are consequently tossed overboard.

Shallow-set longline gear consists of a continuous mainline supported by floats that typically stretches 30 to 60 miles in length. Anywhere from 700 to 1,200 hooks are attached. The lines are set at dusk between 30 and 90 meters depth and left to soak until dawn.



As the lines are pulled out of the water they reveal a multitude of other animals carelessly captured including seabirds, sea turtles, dolphins, and many non-target fish. This gear also entraps and harms marine mammals including humpback whales, bottlenose dolphins, short-finned pilot whales, false killer whales, and Risso's dolphins. Because of these documented entanglements, the HI SSLL fishery is classified as a Category II fishery under the Marine Mammal Protection Act – a federal designation given to fisheries that are known to cause incidental death or serious injury to marine mammals.

The Hawaii Shallow-Set Longline fishery entangled many threatened and endangered species from 2007 to 2017. These include Pacific leatherbacks, Pacific loggerheads, and green sea turtles, humpback and fin whales, Guadalupe fur seals, and oceanic whitetip sharks. A scientific study estimates that even one Pacific leatherback mortality from waters off the U.S. West Coast over the course of five years is sufficient to hinder recovery of this critically endangered animal.[1] Putting further pressure on these endangered species by introducing pelagic longlines off the U.S. West Coast would be reckless.

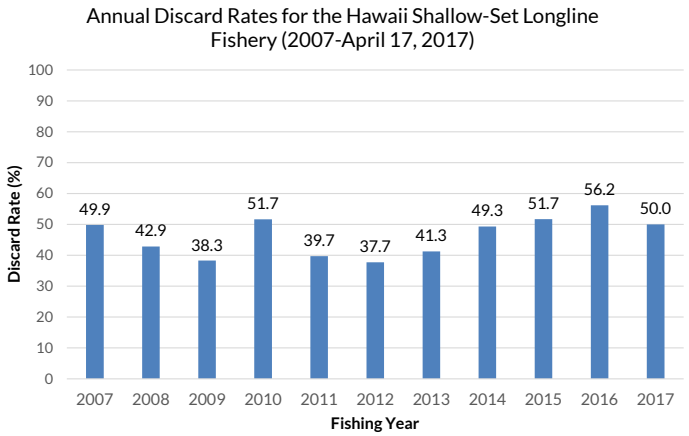
Cover Photo: Documented bycatch ensnared by shallow-set longlines off Hawaii includes leatherback sea turtles, northern elephant seals, Risso's dolphins, Laysan albatrosses, loggerhead sea turtles, and black-footed albatrosses.

February 2018

OCEANA Protecting the World's Oceans

From 2007 through April 17, 2017:

- 206,987 animals were discarded
- 46% of the total catch was discarded
- 64,926 of the discarded animals were released dead or injured, resulting in a death/injury rate of discards of 31.4%
- Over 750 seabirds, 60 dolphins, and 190 sea turtles were caught by this fishery
- 131,270 sharks and rays were discarded
- In 2015, a humpback whale and a fin whale were entangled in this gear and consequently injured



A discard refers to any animal caught that is not kept. This includes animals released alive, dead, or injured. Discard rates (percentage of the total number of animals caught that are thrown overboard) are determined using data provided by fishery observers.[2] The HI SSLL fishery has 100% observer coverage. Data from all sets in the fishery for 2007 through April 17, 2017 were used to determine discard rates.

Keep Shallow-Set Longlines Off the U.S. West Coast

In 1989, longlines were prohibited off the state of California and the Pacific Fishery Management Council (Council) included this prohibition in the West Coast Highly Migratory Species Fishery Management Plan. The Council in 2009 voted to not authorize a West Coast-based pelagic shallow-set longline fishery on the high seas due to significant bycatch concerns.

The drift gillnet swordfish fishery also has very high bycatch, jettisoning approximately 61 percent of everything it catches, on average. Adding another dirty gear to a fishery with disturbingly high discard rates will only complicate and delay progress toward reducing bycatch in the West Coast swordfish fishery. Selective, alternative gear, such as deep-set buoy gear, must be promoted and utilized to build a responsible and sustainable swordfish fishery off the U.S. West Coast.

[1]K.A. Curtis, J. Moore, and S. Benson. 2015. Estimating Limit Reference Points for Western Pacific Leatherback Turtles (Dermochelys coriacea) in the U.S. West Coast EEZ. PLoS One DOI:10.1371/journal.pone.0136452

[2]NMFS. 2017. Hawaii shallow-set longline observer data. Freedom of Information Act release.

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October 23, 2018

Mr. Phil Anderson, Chair
Pacific Fishery Management Council
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Portland, OR 97220

Mr. Barry Thom, Regional Administrator
NOAA Fisheries West Coast Region (NMFS)
7600 Sand Point Way NE, Bldg. 1
Seattle, WA 98115

Agenda Item B.1: Open Public Comment, Bycatch in Pelagic Longline Fisheries

Dear Chair Anderson, Mr. Thom, and Council Members,

Thank you for the opportunity to provide open public comment on bycatch in pelagic longline fisheries and its relevance to management of U.S. West Coast highly migratory species (HMS) fisheries. The California Current Large Marine Ecosystem is globally important for its diverse array of ocean wildlife, as a migration route, nursery area, and foraging destination for hundreds of highly migratory species traveling thousands of miles across the Pacific Ocean. Recognizing the risks pelagic longlines pose, this gear is prohibited inside the U.S. West Coast Exclusive Economic Zone (EEZ) and vessels managed under the HMS Fishery Management Plan are prohibited from using shallow-set longline gear on the High Seas of the North Pacific Ocean.[1]

Oceana strongly opposes efforts to introduce pelagic longlines off the U.S. West Coast, inside and outside the EEZ. We request that scoping for a high-seas pelagic longline fishery be removed from future agenda planning. The gear is an unselective fishing method with a wide suite of severe bycatch concerns.

Oceana analyzed ten years of bycatch data for the Hawaii shallow-set and deep-set longline fisheries, and found that both have high average discard rates (in terms of number of animals caught) with 46% for the shallow-set longline fishery and 48% for the deep-set longline fishery.[2] Importantly, bycatch concerns associated with this gear may be even more grave if it were deployed inside the California Current Ecosystem due to the high densities of animals

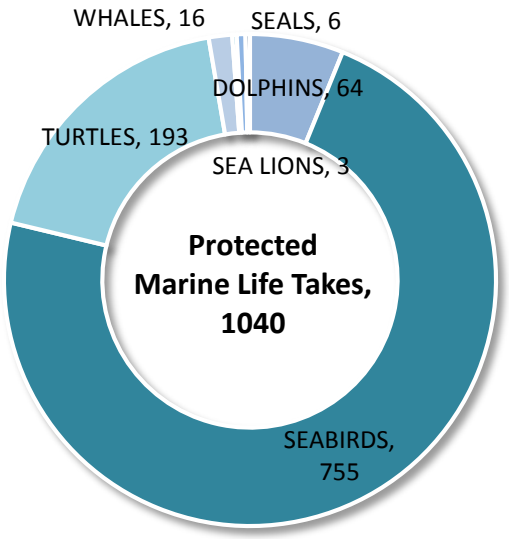
[1] 50 C.F.R. § 660.712(2). 69 Fed. Reg. 11540 (March 11, 2004); 50 C.F.R. § 223.206(d)(9). And, PFMC (2018). Highly Migratory Species Fishery Management Plan, at 51. Available: https://www.pcouncil.org/wp-content/uploads/2018/04/HMS_FMP_thru_A5_Apr18.pdf
[2] NMFS. 2017. Hawaii shallow-set longline observer data. Freedom of Information Act release. NMFS. 2017. Hawaii deep-set longline observer data. Freedom of Information Act release.

found in this part of the ocean .[3, 4] Under both California state and federal fisheries laws, fishery managers have an ongoing responsibility to minimize and avoid bycatch.[5,6] The introduction of this gear type would be lethal to a variety of marine life, irresponsible, and fully inconsistent with this responsibility.

The Hawaii shallow-set longline fishery has a high discard rate (46%) and captures and kills endangered and protected species.

The Hawaii-based shallow-set longline (HI SSLL) fleet is required to use circle hooks and mackerel-type bait, which have been effective at reducing sea turtle interactions. However, this fishery remains problematic; since reopening in 2004, the fishery has been forced to close twice due to interactions with endangered loggerhead and leatherback sea turtles and was shut down as recently as May of 2018 following settlement of a 2012 lawsuit challenging NMFS action to increase sea turtle bycatch caps.

Figure 1. Protected Marine Life Takes in the HI SSLL Fishery, 2007-April 17, 2017



From 2007 to 2017, the fleet caught 755 seabirds, 92 marine mammals, and 193 sea turtles (Figure 1).[7] From 2007 to 2017, on board observers noted that 46 percent of the animals

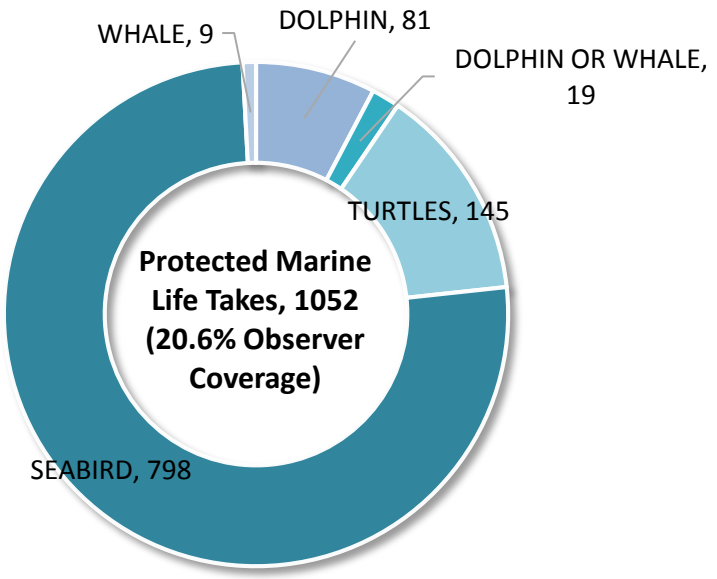
[3] Becker, E., K. Forney, P. Fiedler, J. Barlow, S. Chivers, C. Edwards, A. Moore, J. Redfern. 2016. Moving towards dynamic ocean management: How well do modeled ocean products predict species distributions? Remote Sensing 8,149.
[4] Forney, K., E. Becker, D. Foley, J. Barlow, E. Olson. 2015. Habitat-based models of cetacean density and distribution in the Central North Pacific. Endang Species Res 27:1-20.
[5] Magnuson Stevens Fishery Conservation and Management Act, 16 U.S.C. § 1853(a)(11).
[6] CA Fish & Game Code 7085(c)(1&2).
[7] NOAA. 2014. Pacific Islands Regional Office Observer Program. Hawaii Longline Shallow-set Quarterly and Annual Status Reports. http://www.fpir.noaa.gov/OBS/obs_hi_ll_ds_rprts.html

caught by this fishery were discarded, often dead or dying (31 percent of discards).[8] According to observer data, protected species including migratory sea birds, sea turtles, and marine mammals are likely to perish or be injured when caught on pelagic longlines.

The Hawaii deep-set longline fishery has a high discard rate (48%) and captures and kills large amounts of sharks and protected species.

The Hawaii-based deep-set longline (HI DSLL) fishery, the only NMFS Category I commercial fishery in the Pacific Ocean due to the frequent death and injury to marine mammals,[9] primarily targets tunas and requires a take reduction team to manage issues with false killer whale interactions and discards. Unlike the HI SSLL fishery, the deep-set longline fishery has limited observer coverage, with an average of 20.6 percent of sets being observed.

Figure 2. Observed Protected Marine Life Takes in the HI DSLL Fishery, 2007-April 17, 2017



From 2007 to 2017, 798 seabirds, 109 marine mammals, and 145 sea turtles were observed caught in the HI DSLL fishery (Figure 2).[10] From 2007 to 2017, 48 percent of the animals caught by this fishery were discarded, often dead or dying (62 percent of discards).[11] Studies of

[8] NMFS. 2017. Hawaii Shallow-set Longline Data (2007-2017). Unpublished data.
[9] The fishery is listed as a Category I due to the high incidence of serious injury or mortality for the following species: Bottlenose dolphin, HI; Pelagic False killer whale, HI; Pelagic1 False killer whale, NWHI; Humpback whale. Central North Pacific; Kogia spp. (Pygmy or dwarf sperm whale), HI; Pygmy killer whale, HI; Risso's dolphin, HI; Rough-toothed dolphin, HI; Short-finned pilot whale, HI; Sperm whale, HI; Striped dolphin, HI. National Marine Fisheries Service, Proposed List of Fisheries 2019, at 31.
[10] NMFS. 2017. Hawaii deep-set longline observer data. Freedom of Information Act release.
[11] *Id.*

bycatch in the HI DSLL fishery have found that the bycatch of lancetfish has now surpassed the target species, bigeye tuna, as the species with the highest annual catch rate and the authors suggest this fishery may be altering the trophic structure of the North Pacific ecosystem.[12]

NMFS ceased deep-set pelagic longline trials off California after the gear proved ineffective for targeting swordfish. These trials caught over 40 blue sharks for every swordfish and had an overall discard rate of 76%.[13]

Introducing pelagic longlines off the U.S. West Coast would exacerbate bycatch issues in HMS fisheries and we strongly oppose efforts to do so.

Since 2007, Hawaii-based pelagic longline fisheries have caught and discarded at least 99 different non-target species, including nine species of threatened or endangered marine mammals, sea turtles and one shark (see appended tables). Introducing any additional SSLL fishing effort on the high seas of the North Pacific or introducing this gear inside the U.S. EEZ will only exacerbate impacts on endangered species and increase the bycatch of a diverse array of sharks and other fishes. Any new pelagic longline fisheries would likely cause the injury and death of a significant number of endangered Pacific leatherback sea turtles, endangered loggerhead sea turtles, short-tail albatross, sperm whales, humpback whales and other protected marine life. This would be wholly inconsistent with NMFS's paramount duty to conserve threatened and endangered species as well as protected marine mammals and seabirds. It is inconsistent with sound management of fisheries resources.

Pacific leatherback sea turtle interactions are a particular risk as the population has declined by more than 80 percent since the 1980s.[14] Long-term data on Indonesian nesting beaches and California waters have shown annual declines by 5.9% and 3.7% respectively over the last two decades.[15] A recent population analysis established a reference point of no more than one Pacific Leatherback sea turtle could be killed over a six year period in the US West Coast EEZ to prevent delay in recovery.[16] This critically endangered population is a NOAA Species in the Spotlight that simply cannot sustain any additional mortality on the U.S. West Coast.

In 2009 the Council rejected a proposal to authorize a West Coast-based shallow set longline fishery on the High Seas. Since then the reasons for rejecting this fishery have only magnified.

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[12] Polovina JJ, Woodworth-Jefcoats PA (2013) Fishery-Induced Changes in the Subtropical Pacific Pelagic Ecosystem Size Structure: Observations and Theory. PLoS ONE 8(4): e62341. https://doi.org/10.1371/journal.pone.0062341

[13] NMFS, *Deep-Set Longline Study*, Agenda Item K.5.b. Supplemental SWFSC PowerPoint 1, March 2014, http://www.pcouncil.org/wp-content/uploads/K5b_SUP_SWFSC_PPT1_MAR2014BB.pdf.

[14] Tapilatu, R. F., P. H. Dutton, M. Tiwari, T. Wibbels, H. V. Ferdinandus, W. G. Iwanggin, and B. H. Nugroho. 2013. Long-term decline of the western Pacific leatherback, Dermochelys coriacea, a globally important sea turtle population. Ecosphere 4(2):Article 25. 15 pages.

[15] Benson, S.R., K.A. Forney, E.L. LaCasella, J.T. Harvey, J.V. Carretta. 2018. A LONG-TERM DECLINE IN THE ABUNDANCE OF LEATHERBACK TURTLES, *DERMOCHELYS CORIACEA*, AT A FORAGING GROUND OFF CALIFORNIA, USA. 38th Annual Symposium on Sea Turtle Biology and Conservation Presentation Abstracts.

[16] K.A. Curtis, J. Moore, and S. Benson (2015 Estimating Limit Reference Points for Western Pacific Leatherback Turtles (*Dermochelys coriacea*) in the U.S. West Coast EEZ. PLoS One DOI:10.1371/journal.pone.0136452

What is more, it is simply a waste of valuable time and resources to further pursue an ill-founded idea, particularly when there are other avenues to promoting sustainable swordfish fishing that have broad stakeholder support, namely the authorization of deep-set buoy gear to target swordfish off the U.S. West Coast.

We have heard fairness concerns that Hawaiian-permitted vessels can land pelagic longline caught swordfish in California, but California permitted vessels cannot. We propose the Council write a letter to NMFS and the Western Pacific Fishery Management Council and request management action to prevent Hawaiian permitted vessels from landing swordfish in US West Coast ports. Such a proposal could include moving the eastern boundary of allowable Hawaiian pelagic longlines westward. Rather than investing further management resources on expanded pelagic longline fishing, we urge the Pacific Fishery Management Council to focus efforts instead on reducing bycatch in the U.S. West Coast swordfish fishery by authorizing and promoting deep-set buoy gear and phasing out drift gillnets. Thank you for the opportunity to provide comments on this important issue.

Sincerely,

Geoffrey Shester, Ph.D.
California Campaign Director
and Senior Scientist

Erin Kincaid
Marine Scientist

Appendices

A. List of all 114 species or species categories caught in the Hawaii Shallow-Set Longline fishery from 2007-April 2017. Species listed as endangered or threatened under the Endangered Species Act are indicated (*).

Catch Species (common name)		
Albacore Tuna	Loggerhead Turtle*	Sickle Pomfret
Beaked Whale, Ginkgo-toothed	Longfin Escolar	Silky Shark
Bigeye Thresher Shark	Longfin Mako Shark	Skipjack Tuna
Bigeye Tuna	Longnose Lancetfish	Slender Mola
Bignose Shark	Louver	Smooth Hammerhead Shark
Black Gemfish	Lustrous Pomfret	Snake Mackerel
Black Marlin	Manta/Mobula	Striped Dolphin
Black-footed Albatross	Mesoplodont Beaked Whale	Striped Marlin
Blainville's Beaked Whale	Mobula (Devil Ray)	Swordfish
Blue Marlin	Northern Elephant Seal	Tapertail Ribbonfish
Blue Shark	Oceanic White-Tip Shark*	Tiger Shark
Bluefin Tuna	Oilfish	Unid. Hammerhead Shark
Bottlenose Dolphin	Olive Ridley Turtle*	Unid. Mako Shark
Cigarfish	Opah	Unid. Snake Mackerel
Common Mola	Other Identified Bird	Unid. Thresher Shark
Common Thresher Shark	Other Identified Bony Fish	Unidentified Beaked Whale
Cookie Cutter Shark	Other Identified Shark	Unidentified Billfish
Crestfish	Pelagic Puffer	Unidentified Bony Fish
Crocodile Shark	Pelagic Stingray	Unidentified Common Dolphin
Dagger Pomfret	Pelagic Thresher Shark	Unidentified Dolphin
Deepwater Dogfishes	Pomfret, Brama spp.	Unidentified Dolphin or Whale
Dogfish, Velvet	Pompano Dolphinfish	Unidentified Gull
Dolphinfish	Rainbow Runner	Unidentified Hardshell Turtle
Escolar	Remora/Suckerfish	Unidentified Kogia Whale
False Killer Whale	Risso's Dolphin	Unidentified Pinniped
Fanfish	Roudi's Escolar	Unidentified Pomfret
Fin Whale*	Rough Pomfret	Unidentified Ray
Flying Fish	Rough-Toothed Dolphin	Unidentified Sea Lion
Galapagos Shark	Sailfish	Unidentified Shark
Giant Manta Ray	Salmon Shark	Unidentified Shearwater
Gray Reef Shark	Sandbar Shark	Unidentified Snake Mackerel
Great Barracuda	Scalloped Hammerhead Shark	Unidentified Tuna
Green/Black Turtle*	Scalloped Ribbonfish	Unidentified Whale
Guadalupe Fur Seal*	Sharptail Mola	Unspecified Kahala (Amberjack)
Hammerjaw	Short-beaked Common Dolphin	Wahoo
Humpback Whale*	Shortbill Spearfish	White Shark
Laysan Albatross	Shortfin Mako Shark	Yellowfin Tuna
Leatherback Turtle*	Shortnose Lancetfish	Yellowtail

B. List of all 119 species or species categories caught in the Hawaii Deep-Set Longline fishery from 2007-April 2017. Species listed as endangered or threatened under the Endangered Species Act are indicated (*).

Catch Species (common name)

Albacore Tuna	Louvar	Skipjack Tuna
Bigeye Sand Tiger Shark	Lustrous Pomfret	Slender Mola
Bigeye Thresher Shark	Mackerel (incl. Chub, Spotted Chub)	Smooth Hammerhead Shark
Bigeye Tuna	Manta/Mobula	Snake Mackerel
Bignose Shark	Mobula (Devil Ray)	Sperm Whale*
Bigtooth Pomfret	Oceanic White-Tip Shark*	Spotter Dolphin
Black Gemfish	Oilfish	Striped Dolphin
Black Marlin	Olive Ridley Turtle*	Striped Marlin
Black-footed Albatross	Opah	Swallowers
Blacktip Shark	Other Identified Bird	Swordfish
Blue Marlin	Other Identified Bony Fish	Tapertail Ribbonfish
Blue Shark	Other Identified Ray	Tiger Shark
Bluefin Tuna	Other Identified Shark	Unid. Dolphin or Whale
Bottlenose Dolphin	Pacific Pomfret	Unid. Hammerhead Shark
Brama spp. Pomfret	Pelagic Puffer	Unid. Mako Shark
Cigarfishes	Pelagic Stingray	Unid. Thresher Shark
Common Mola	Pelagic Thresher Shark	Unidentified Albatross
Common Thresher Shark	Pompano Dolphinfish	Unidentified Beaked Whale
Cookie Cutter Shark	Pygmy Killer Whale	Unidentified Billfish
Cottonmouth Jack	Rainbow Runner	Unidentified Bird
Crestfish	Razorback Scabbardfish	Unidentified Bony Fish
Crocodile Shark	Red-footed Booby	Unidentified Dolphin
Dagger Pomfret	Remora/Suckerfish	Unidentified Hardshell Turtle
Dolphinfish	Risso's Dolphin	Unidentified Kogia Whale
Escolar	Roudi's Escolar	Unidentified Pomfret
False Killer Whale	Rough Pomfret	Unidentified Puffer
Fanfishes	Rough Triggerfish	Unidentified Ray
Galapagos Shark	Rough-toothed Dolphin	Unidentified Scabbardfish
Giant Manta Ray	Sailfish	Unidentified Shark
Great Barracuda	Salmon Shark	Unidentified Shearwater
Green/Black Turtle*	Sandbar Shark	Unidentified Snake Mackerel
Grey Reef Shark	Scalloped Hammerhead Shark	Unidentified Tuna
Hammerjaw	Scalloped Ribbonfish	Unidentified Whale
Humpback Whale*	Sharptail Mola	Unspecified (Amberjacks) Kahala
Laysan Albatross	Shortbill Spearfish	Velvet Dogfish
Leatherback Turtle*	Shortfin Mako Shark	Wahoo
Loggerhead Turtle*	Short-finned Pilot Whale	White Shark
Longfin Escolar	Shortnose Lancetfish	Yellowfin Tuna
Longfin Mako Shark	Sickle Pomfret	Yellowtail
Longnose Lancetfish	Silky Shark	

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April 1, 2019

Mr. Phil Anderson, Chair
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 101
Portland, OR 97220

Agenda Item D.7: Future Council Meeting Agenda and Workload Planning, High Seas Pelagic Longlines

Dear Chair Anderson and Council Members:

Oceana requests that scoping for a high-seas pelagic longline fishery be removed from the June 2019 and all future Pacific Fishery Management Council agendas. Oceana strongly opposes efforts to introduce pelagic longlines off the U.S. West Coast, inside and outside the Exclusive Economic Zone (EEZ). At past Council meetings, we presented the PFMC with public comments and reports documenting that this gear is an unselective fishing method with a wide suite of severe bycatch concerns.[1] This gear is broadly opposed by our members and supporters as evidenced by petitions submitted to the Council signed by tens of thousands of individuals[2] and it has long been opposed by many other organizations and individuals who have expressed similar concerns to the Council over the years.

Due to the risks pelagic longlines pose, this gear is prohibited inside the U.S. West Coast EEZ; and vessels managed under the Highly Migratory Species (HMS) Fishery Management Plan are prohibited from using shallow-set longline gear on the High Seas of the North Pacific Ocean.[3] In 2009 the Council maintained the pelagic longline prohibitions when it took final action to reject authorization of a West Coast-based shallow set longline fishery on the high seas by adopting the "no-action" alternative to a range of alternatives that would have authorized a new pelagic longline fishery.[4] Since then the reasons for rejecting this fishery have only magnified.

Illustrating this point is the current closure of the Hawaii-based shallow-set longline fishery due to the fishery taking 17 loggerhead sea turtles.[5] This is the second year in a row the fishery

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[1] E.g. Agenda Item B.1.b, Supplemental Public Comment 6: Letter from Oceana re: Bycatch in Pelagic Longline Fisheries

[2] E.g. Agenda Item B.1.b Supplemental Public Comment 3: Letter and Petition from Oceana – Opposition to Pelagic Longlines off the U.S. West Coast

[3] 50 C.F.R. § 660.712(2). 69 Fed. Reg. 11540 (March 11, 2004); 50 C.F.R. § 223.206(d)(9). And, PFMC (2018). Highly Migratory Species Fishery Management Plan, at 51. Available: https://www.pcouncil.org/wp-content/uploads/2018/04/HMS_FMP_thru_A5_Apr18.pdf

[4] https://www.pcouncil.org/wp-content/uploads/0409decisions.pdf

[5] 84 Fed. Reg. 11,654 (March 28, 2019). *"This final rule closes the Hawaii shallow-set pelagic longline fishery north of the Equator for all vessels registered under the Hawaii longline limited access program. The shallow-set fishery has reached the annual limit of 17 physical interactions with North Pacific loggerhead sea turtles, so NMFS must close the fishery for the remainder of the calendar year, or until further notice."*

has closed to comply with a federal court order limiting the interactions the fishery has with endangered sea turtles.[6] Loggerhead sea turtles takes, however, are not the only concern. From 2007 to 2017, the Hawaii-based fleet caught 193 sea turtles including endangered loggerheads and leatherbacks, 755 seabirds, 92 marine mammals and it discarded tens of thousands of sharks, rays and other fish.[7] Overall 46 percent of the animals caught by this fishery were discarded during this time span, often dead or dying (31 percent of discards).[8]

At the March 2019 HMS management team meeting, we learned that California-based vessels can obtain a Hawaii permit and fish shallow-set longline gear on the high seas. It was represented at that meeting that the need for a U.S. West Coast-based permit is based on those Hawaii permits being "too expensive". Permit cost is not a legitimate reason for this region to authorize a new fishery, issue additional permits and increase fishing effort.

Due to the inherent bycatch concerns associated with this gear and because the Hawaii-based fishery is now closed due to excessive turtle takes, the Council should cease further consideration of authorizing a high seas shallow-set longline fishery. At the very least, the National Marine Fisheries Service Protected Resource Division must first assure that additional fishing effort would comply with the Endangered Species Act and Western Pacific fishery managers must agree to reduce Hawaii-based fishing effort or take caps to accommodate for a new U.S. West Coast-based fishery.

Simply put, it is a waste of valuable time and resources to further pursue an ill-founded idea, particularly when there are avenues to promote sustainable swordfish fishing that have broad stakeholder support. Rather than investing further management resources on expanded pelagic longline fishing, we urge the PFMC to focus its efforts on reducing bycatch in the U.S. West Coast swordfish fishery by authorizing and promoting deep-set buoy gear and phasing out drift gillnets.

Thank you for the opportunity to provide comments on this important issue.

Sincerely,

Geoffrey Shester, Ph.D.
California Campaign Director
& Senior Scientist

Ben Enticknap
Pacific Campaign Mgr. & Senior Scientist

[6] 83 Fed. Reg. 21,939 (May 11, 2018).
[7] NOAA 2014. Pacific Islands Regional Office Observer Program. Hawaii Longline Shallow-set Quarterly and Annual Status Reports. http://www.fpir.noaa.gov/OBS/obs_hi_ll_ds_rprts.html
[8] NMFS. 2017. Hawaii Shallow-set Longline Data (2007-2017). Unpublished data.

John Pennisi
Pennis Bros. Inc.
05/22/2019 04:37 PM PDT

RE: Comments on Non-Agenda Items

Please find my comments in the two attached letters regarding Groundfish Trawl Gear Switching and the 36 line for sablefish. Thank you.

Letter submitted by Giovanni (John) Pennisi,
Elaine Pennisi, and Giuseppe (Joe) Pennisi

To Pacific fishery Management Council

1. Gear switching, this would not be good management to consider not allowing it to be an option needed for Trawlers to harvest highly marketable + valuable Black Cod. For those of us in California that don't have a Dover market, there would be a huge bycatch that would have to go overboard. I believe millions of pounds of Dover, Long spine, Rexsole and other species will have to go overboard until we can establish Dover markets again. This is not limiting those who took advantage of the fishery, with the intent to only harvest one species of the trawl complex. Gear switching was supported as a good management option needed for trawlers to get their Black cod with a zero rate of bycatch. We need to continue this option to fish responsibly until markets are rebuilt for our other deep water complex species. For those who bought a trawl permit with the intent to take advantage of an option that the trawl fleet needs to sustain itself until full recovery. This was the wrong reason for gear switching The permits that did not make landings

Letter submitted by Giovanni (John) Pennisi,
Elaine Pennisi, and Giuseppe (Joe) Pennisi

2.

under gear switching does not reflect the need for those who really need this option in the future, to survive as a trawl operation, until our markets are re-established. Putting a control date of September of 2017 or by giving an endorsement on those permits, only favors in those for the wrong reasons. Those who took advantage of an option needed by trawlers without Dover markets, who needed this to harvest their most valuable species on their portfolio in a responsible way. We are asking for Status Quo, until our markets are rebuilt for all deep-water species.

thank you Sincerely

the Pennisi family
Giovanni John Pennisi
F/V IRenes Way

Elaine Pennisi
F/V San Giovanni & owner of Royal Seafood

Giuseppe Joe Pennisi
F/V Pioneer

Letter submitted by Giovanni (John) Pennisi,
Elaine Pennisi, and Giuseppe (Joe) Pennisi

1. To Pacific fishery Management Council

My name is John Pennisi, I'm a third generation trawl fisherman from Monterey Ca. I started running one of my dads trawlers when I was 16, along with two of my brothers. I am now 54 years old. This trawl fishery has been my family's way of life for over 100 years, starting in San Francisco. My grandfather moved to Monterey where my father continued trawling along with two more of his own boats. He had a Marine Store to supply the local fishing fleet with their needs. He owned and operated "Royal Seafood", one of about 7 fishmarkets in the area processing groundfish. There were 8 to 10 trawlers between Monterey and Moss landing, fishing year round, and about the same fishing traps for Blackcod. After the Groundfish fishery was declared a disaster, and the buybacks were over, the IFQ's were finally attached to the permits that were still left in 2011. Monterey and Morro Bay area's found there were no more fish processing markets,

Letter submitted by Giovanni (John) Pennisi,
Elaine Pennisi, and Giuseppe (Joe) Pennisi

Marine Stores, and no more ice available on the docks. and Just 3 independently owned boats with trawl permits were left. These family owned boats with permit and IFQ that can still have oppurtunity and with local community Support. It will take time to rebuild our fishery in these area's, after such a loss of infrastructure.

Today I see the community in Monterey and Morro Bay working hard together with their resources and money, to restore and bring back this fishery before it is completely gone. The 5 year review of this matter does not give enough time for the southern fishing sector to rebuild its fishing communities. The oppurtunity is needed for the future. If you eliminate the 36° line and make Blackcod coast wide, more of the Blackcod harvest will be taken in the North where the larger catch capacity is and stronger fishing communities are. This action will take away the oppurtunity and availabilities

from this area for a future worth doing and encouraging, if there is going to be a next generation.

In conclusion, once structure is back the fish will be caught, which will create jobs for the towns where fishing started. We have lost so much for the few independent trawl fishermen that are left in these areas, this would not be good. It would also directly hurt the future of these two Historical fishing towns that their counties share, — The 36° Line for fishing Black cod.

thank you Sincerely

the Pennisi family

Giovanni John Pennisi
F/V IRenes Way

Elaine Pennisi
F/V San Giovanni & owner of Royal Seafood

Giuseppe Joe Pennisi
F/V Pioneer

Lisa Damrosch
California Groundfish Collective
06/10/2019 03:18 PM PDT

RE: Comments on Non-Agenda Items

Attached please find a letter from the California Groundfish Collective. Thank You Lisa Damrosch

June 10, 2019

est. 2011
. CALIFORNIA .
GROUNDFISH
COLLECTIVE
cagroundfish.org

Dear Pacific Fishery Management Council:

The California Groundfish Collective (CGC) is comprised of members from the ports of Fort Bragg, Half Moon Bay, and Morro Bay, and since 2011 has proven successful in maintaining a low utilization rate of overfished species through a risk pooling approach in the West Coast Groundfish IFQ program. Members of the CGC pride themselves in being pragmatic, solutions-oriented fishing community members committed to creating healthier oceans and better, more productive fisheries.

At the June 2018 and April 2019 Council meetings, we provided public comment to bring your attention to a serious concern that is unique to our California ports South of the 40º 10' management line. Existing vessel limits for Cowcod south of 40º 10' are severely constraining fishing operations and could result in ending fishing seasons significantly early. This could be devastating not only for these fishing businesses, but also for markets in California that are finally demanding a steady supply of local groundfish. Fortunately, there are solutions that could mitigate this significant risk, and further demonstrate the value of voluntary collective agreements for solving local management challenges. We appreciate the Council's awareness of this issue and would like to take this opportunity to provide another public comment that includes our proposal for a mitigating solution.

The region where the CGC operates off the coast of California (south of the 40º 10' management line) is the only area where Cowcod (*Sebastes levis*) are encountered and managed as an individual IFQ species. As we work to rebuild the groundfish fishery in California ports and establish new markets for our fish, we are finding the Cowcod vessel limit of 858 lbs to be extremely limiting. While the CGC vessels have historically encountered Cowcod in this region – and have taken voluntary measures to successfully reduce the catch of this constraining stock over the last nine years – we have experienced a significant increase in catches of Cowcod in 2018 and 2019 as the stock rebuilds. For example, the CGC has experienced a 416% increase in the amount of Cowcod caught by this point in the season from 2017 to 2019. In 2017, the CGC had seven member vessels and had collectively caught 151 lbs of Cowcod by June 1st; whereas in 2019 the CGC has five member vessels and has caught 780 lbs of Cowcod to date. It is also important to note that Cowcod represents less than 1% of the total catch for CGC vessels in 2019 to date. This means that a vessel can have a successful tow, set or trip that is 99.9% marketable target species and still have to leave the fishing grounds early during good weather and good fishing to avoid Cowcod. The fear of a season ending encounter of Cowcod is already reducing economic opportunity, damaging new markets in California, and limiting fishing opportunities for important target species such as Chillipepper rockfish, Bocaccio and Petrale Sole.

The current vessel cap for Cowcod was calculated under a rebuilding scenario for an overfished species. The issue of the Cowcod vessel cap being extremely constraining was raised at the Community Advisory Board meetings during the 5-year review, and this topic was discussed when prioritizing recommendations for follow on actions as part of the 5-year review process. The decision at the time was that the situation affected such a small group of vessels and would rectify itself through the expected near-term rebuilding of the Cowcod population. However, this situation has become dire now and requires immediate action for the remainder of the 2019 season in the interim period before the TAC is adjusted based on the new assessment that projects the species to be rebuilt this year.

To address this situation, the CGC is will be seeking an EFP from NMFS. Below we describe the EFP proposal.

- Background: The CGC has successfully operated a risk pool of constraining species quota pounds since 2011. Fishermen in the CGC operate under voluntary conservation fishery management plans that include detailed spatial plans with zoned risk mitigation behaviors, such as 30-minute test tows in areas where Cowcod and Yelloweye may be encountered, and voluntary closures of high-risk areas. The CGG has also successfully

managed an electronic monitoring EFP since 2015 using a Collective Enforcement Agreement to ensure all participating vessels comply with the terms of the EFP.

- EFP Proposal 1: We will be seeking a new EFP using a Collective Enforcement Agreement that allows the CGC to collectively pool its five members' vessel limits for Cowcod into a single pool. This would include an exemption for CGC vessels from the individual vessel limit for Cowcod (CFR 660.140 (b)(1)(iii-v)) and permit the CGC to manage and independently allocate its five vessel limits worth of Cowcod quota to member vessels as necessary. Collectively, the CGC vessels' catch would not be permitted to exceed the five vessel limits (858 lbs x 5 = 4,290 lbs), but an individual vessel could exceed the existing individual vessel limit of 858 lbs. This proposal would allow the CGC to continue its risk pooling operations while being able to independently allocate quota for this constraining species to its vessels. This proposal would require no additional quota allocation. To be clear, the CGC is not asking for a single pound of Cowcod beyond what is currently held by CGC members or is available on the open market. The actual amount of quota pounds pooled will be constrained by market availability. The EFP would simply allow CGC vessels that have a proven track record of compliance, collaboration and innovative management measures to test if collectively managing a combined annual harvest cap under a rebuilding paradox is an effective measure to mitigate the risk of being forced out of the fishery early.

- EFP Proposal 2: Alternatively, NMFS could amend the CGC's existing electronic monitoring EFP to include the provisions described in Proposal 1.

We are requesting that the Council support this EFP. With 6 months left in this fishing season, and the heart of the season yet to begin, fishermen in California South of the 40º 10' management line are already unable to prosecute the fishery and are now facing the very real possibility of a single devastating encounter of Cowcod that would end their season. This would irreparably damage not only these individual businesses but market and infrastructure growth that has been hard fought to achieve in California. We believe that the use of a collective agreement could successfully mitigate this risk and support the successful rebuilding of the West Coast groundfish fishery.

Sincerely,

Michelle Norvell, Project Manager
Fort Bragg Groundfish Association

Lisa Damrosch, Executive Director
Half Moon Bay Groundfish Marketing A

Marc Schmidt

06/09/2019 09:40 PM PDT

RE: Comments on Non-Agenda Items

Councilmembers, These comments are to express my current thoughts to improve opportunity for small boat hook and line fisherman from the 40.10 to 42.00 region of which I am a very active participant. As Yelloweye (YE) stocks rebuild I would encourage the council to relax the RCA boundaries to allow more access to rebuilt stocks. Specifically I would like to see the inside boundary adjusted out to 40 fathoms and the outside boundary adjusted to 75 fathoms. I saw talk of the outer boundary change to 75 fathoms in past briefing books and would like to see it brought forth for discussion again as well as 40 fathoms. The RCA has worked well for rebuilding stocks and I know there is talk of it going away at some point but I have reservations to see it go away without YE stocks rebuilt completely. My major concern is if YE incidental harvest/bycatch trended to exceed an annual limit for the sector the YE conservation areas in our region could be enacted and shut down the areas where I make my living for all other species. Also it leaves me scratching my head why a trawler can run right down the RCA dragging nets but I can't lay a longline or use rod and reel gear within those boundaries. The additional depth ranges would allow us to better access pacific halibut in this region when the weather is bad on an opener, besides the bigger picture groundfish opportunities it would create year around. A winter extension to 40 fathoms could be worth entertaining if opening if year around isn't possible. Other areas that would help open access fishermen in our region would be to separate out widows from the minor shelf trip limits and give them their own quota or include them with yellowtail rockfish (YT) trip limits or a combination of some sort. This would be important if we could get us out to 40 fathoms as I would guess we could contact quite a few more of them. It may also be worth adding widows to YT trip limits for salmon trolling purposes in the CA KMZ, we do contact them when trolling here and we have to discard them due to current regulations. Another limiting factor is canary quota, I was very happy with the additional canary limits at the beginning of this year, but we could use more to allow us to access other species trip limits such as YT especially if we could get out to 40 fathoms even if as little as 100 lbs or less. Thanks you for your consideration, Marc Schmidt Eureka, CA

Theresa Labriola
Wild Oceans
06/19/2019 03:12 PM PDT

RE: Comments on Non-Agenda Items

June 19, 2019

Phil Anderson, Chair
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 101
Portland, OR 97220

Barry Thom, Regional Administrator
NOAA Fisheries West Coast Region
7600 Sand Point Way NE, Bldg. 1
Seattle, WA 98115

Re: Agenda Item B.1: Open Public Comment - Shallow Set Longline Fishery Scoping

Dear Mr. Anderson and Mr. Thom,

As leading local, national, and international recreational fishing organizations, we are writing to express our concern about permitting industrial pelagic longline vessels to operate from West Coast ports. While we support sustainable commercial fishing practices, industrial pelagic longlining has an abhorrent record of wasteful bycatch and unsustainability. This practice contravenes our collective goals of reducing bycatch and protecting fishing opportunities for the future. Therefore, we are against the use of any pelagic longlines off the California coast. We also do not want to see any development of a pelagic longline infrastructure.

The use of industrial pelagic longlines will increase bycatch. Industrial longlining for highly migratory species involves either shallow set longlines (SSLL), targeting swordfish, or deep set longlines (DSLL), targeting bigeye tuna. Since 2007, the Hawaii SSLL fishery has caught and discarded 46% of its catch and at least 88 different non-target species. This includes the bycatch of striped marlin, blue marlin, sailfish and spearfish. The Billfish Conservation Act of 2012 and its technical amendment passed in 2018 prohibits the importation, landing or sale of these fish in the continental United States. Hawaii is now the only state that may land and sell marlin, sailfish and spearfish, and these fish must be retained there. This Act intended to reduce the demand and subsequent fishing mortality for these species, thereby protecting them for recreational catch and release fishing. Increasing longline activity will concomitantly increase the bycatch of billfish, for which there is no legal market for in the continental United States, thus contravening the intent of the Act. By any reasonable standard, the wasteful mortality associated with bycatch and dead discards of marine life in pelagic longline fisheries throughout the world is appalling.

Ecologically, longlines can fundamentally change the California Current Large Marine Ecosystem. Unlike Hawaii or the western Atlantic and Gulf of Mexico, the California Current has never been subjected to an industrial longline fishery for swordfish or tunas and adjacent areas outside the EEZ have experienced relatively light fishing effort. The removal of top pelagic predators, which would certainly result from longlining, can negatively impact the oceanic food webs. The California Current ecosystem still teems with sharks, seals, tunas, swordfish, whales, albatross and sea turtles in part because of limited industrial longline activity. This diversity and abundance fuels a multi-billion dollar recreational fishing economy, as well as other ocean-based activities including whale and bird watching.

The extensive bycatch and damage to open ocean ecosystems caused by pelagic longlines is well-documented in scientific literature. As forward-thinking fisheries managers, we urge you to look ahead towards innovative gear like deep-set buoy gear to increase our domestic seafood production and domestic job opportunities for the next generation of US fishermen, not behind at indiscriminate gear like pelagic longlines. If we cannot sustainably regulate longlines, then the Council must choose sustainable gear.

Sincerely,

Theresa Labriola
Pacific Program Director
Wild Oceans

Jason Schratwieser
Conservation Director
The International Game Fish Association

Bill Shedd
Chairman
Coastal Conservation Association of California

Danielle Cloutier
Pacific Fisheries Policy Director
American Sportfishing Association

Mike Parks
President
Balboa Angling Club

Robert Chavers
President
Laguna Niguel Billfish Club

Chris Bailey
President
Dana Angling Club

Alan Baron
President
Tuna Club of Avalon

cc. California Governor Gavin Newsom
Wade Crowfoot, California Secretary for Natural Resources
Chuck Bonham, Director, California Department of Fish and Wildlife

Josh Madeira
Monterey Bay Aquarium
06/10/2019 03:44 PM PDT

RE: Legislative Matters

Please find a letter attached. Thank you for your consideration.

Monterey Bay Aquarium
886 Cannery Row
Monterey, CA 93940
831.648.4800

June 10, 2019

Mr. David Hanson
Chair, Legislative Committee
Pacific Fishery Management Council

RE: Letter of support for equitable Highly Migratory Species research funding and Management Strategy Evaluation for Pacific bluefin tuna

Dear Mr. Hanson,

I am writing to request a letter of support from the Pacific Fishery Management Council (PMFC) to the U.S. House and Senate Committees on Appropriations to recognize the importance of equitable funding for Highly Migratory Species (HMS) research in the Pacific and increased scientific capacity for Management Strategy Evaluation (MSE) to advance recovery and U.S. stakeholder engagement on Pacific bluefin tuna. This request dovetails with PFMC Agenda Item J.2 regarding the upcoming international negotiations at the Inter-American Tropical Tuna Commission (IATTC) and the Western and Central Pacific Fisheries Commission (WCPFC) Northern Committee. A letter from the PFMC would reinforce the importance of equitable resources for HMS research, as well as the need for a transparent, science-based and stakeholder-driven MSE process to advance recovery and U.S. interests on Pacific bluefin tuna.

Pacific bluefin tuna are critical to California's economy and key top predator in the ocean, but the population has been depleted to 3.3% of historic size – the lowest of all commercially harvested tunas globally. The U.S. has been a leader in advocating to recover the species to sustainable levels through the IATTC and WCPFC, and in 2017 the U.S. secured an international agreement to recover the population to sustainable levels by 2034 – a major achievement. However, this hard-won recovery plan is at risk if countries do not follow a precautionary, science-based approach, and risks significant impacts on U.S. stakeholders.

Management Strategy Evaluation is a process that brings scientists, managers and stakeholders together to identify approaches that can achieve a range of objectives. MSE has been identified globally as an optimal "next-generation" fishery management process to build consensus, transparency and support for science-based management, and it has been implemented in several international highly migratory species, particularly tunas. Importantly, the MSE process will improve the ability to meet the needs of U.S. stakeholders and ensure population recovery. Increased MSE scientific

Monterey Bay Aquarium
886 Cannery Row
Monterey, CA 93940
831.648.4800

capacity within NOAA would enhance U.S. stakeholder engagement in the international management process, advance scientific best practices, increase transparency and position the U.S. to lead MSE for other valuable tunas and highly migratory species.

In the last two years, Congress emphasized Atlantic and Gulf of Mexico highly migratory species research and issues in their Appropriations reports, but unfortunately did not recognize the key threats and the need for research in the Pacific. Pacific HMS species, including Pacific bluefin, need additional scientific capacity and a more equitable, transparent process in the face of increasing pressure from non-U.S. fishing vessels and interests. In addition, there is continued need to ensure appropriate resources for PFMC staff and representatives to participate in the international management process.

A letter of support from the PFMC would reinforce the importance of equitable scientific research for Pacific HMS species, the value of MSE capacity and the need for PFMC engagement in the international negotiations, particularly Pacific bluefin tuna. In May, the Aquarium requested that the U.S. House and Senate Committees on Appropriations address these HMS research and management needs, and I would appreciate your support for a letter to recognize these priority requests.

Thank you for consideration of this request and please contact Josh Madeira (jmadeira@mbayaq.org) on my staff if you have any questions or need further information.

Sincerely,

Margaret Spring

Margaret Spring
Chief Conservation and Science Officer
Monterey Bay Aquarium

nathan perez

06/10/2019 02:59 PM PDT

RE: Legislative Matters

please see attached

May 6, 2019

Via hand-delivery

The Honorable Diane Feinstein
United States Senate
331 Hart Senate Office Building
Washington, DC 20510

RE: S. 906 – Driftnet Modernization and Bycatch Reduction Act

Dear Senator Feinstein:

We are participants in the experimental Deep-Set Buoy Gear ("DSBG") fishery off the California Coast. A majority of us participate in, or have participated in, the drift gillnet fishery. We are writing to express our concerns regarding S. 906, the Driftnet Modernization and Bycatch Reduction Act. S.906 includes language which will phase-out the use of drift gillnets ("DGN") to harvest swordfish and require the "…adoption of alternative fishing practices that minimize the incidental catch of living marine resources". Our concern is based on the fact that while there is potential for alternative gear to be used in this fishery, currently there is no existing gear that can be substituted for the DGN gear and still allow fishermen to earn a living.

The Pacific Fishery Management Council ("PFMC") is currently working towards authorizing Deep-Set Buoy Gear ("DSBG"), a swordfish gear type that was developed to provide west coast fishers with an additional gear option for use during periods of reduced landings. DSBG has been allowed to operate under an Exempted Fishing Permit ("EFP") since 2015. As noted in the initial EFP application DSBG was designed to "…provide fishers with a complementary gear type that can be used in conjunction with harpooning ….and also compliment ongoing DGN activities.[1]"

Participants in the initial EFP had extensive experience targeting swordfish with DGN and harpoon gears and participated in the research trials so that they could expand domestic fishery options for the West Coast. This continues to be a priority for managers and the fishing community, as current restrictions limit summertime harvest off California waters, forcing markets to import swordfish even when the resource is available in local waters. The coupling of DSBG, harpoon and DGN techniques provides the tools needed to capitalize on this federal resource throughout the entire fishery season. This is critical given that different gear types have different seasons in which they work optimally.

Because DSBG landings peak in the months prior to that of the DGN fishery, our community has largely supported the advent and trial of new techniques, as they have the potential to augment and revitalize our declining fishery. Now that S. 906 proposes to phase out DGN and replace it with DSBG, we are concerned that this will further impact the viability of west coast swordfish operations all together. We are certain that the DGN market share will be filled with additional unregulated foreign-caught swordfish. As shown in 2018, increases in unregulated imports drives market price down, reduces domestic profitability and deters participation our US fisheries. Collectively, we feel that S. 906 will negatively impact local livelihoods, increase our reliance upon foreign fleets and decrease the productivity and of our west coast fishery.

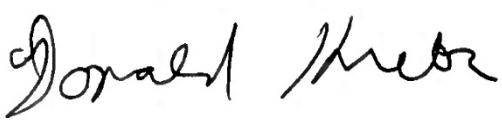
[1] See Page 2 - http://www.pcouncil.org/wp-content/uploads/H3a_Att2_PIER_MAR2015BB.pdf

We are also concerned over the proposed transition of the traditional DGN fleet to a future DSBG fishery. Some of the DGN vessels are larger than those currently used in the DSBG fishery and many of them only fish for swordfish during the fall window in which DGN works optimally. We are troubled that the proposed transition will create an inequity among the fleet and negatively impact fishing operations and profitability. We feel that S. 906 is premature and should be contemplated only after it is demonstrated that DSBG can be profitable for the entire DGN community. Until then, we hope to continue to provide domestic west coast swordfish caught using highly regulated techniques that continue to operate in full federal and state compliance.

Sincerely,

Chugey Sepulveda, PhD
EFP Lead
Pfleger Institute of Environmental Research
Oceanside, CA.

William Sutton
F/V Aurelia
Ojai, CA.



Donald Krebbs
F/V Goldcoast
San Diego, CA.

Nathan Perez
F/V Bear Flag II
Newport Beach, CA.

Ben Stephens
F/V Tres Mujeres
Vista, CA.

Jack Stephens
F/V DEA
Vista, CA.

Freddie Hepp
F/V Plumeria
Santa Barbara, CA.

Kelly Fukushima
F/V Three Boys
San Diego, CA.

Ben Enticknap
Oceana
05/21/2019 04:34 PM PDT

RE: NMFS Report

May 3, 2019

Mr. Chris Oliver
Assistant Administrator for Fisheries
NOAA Fisheries
1315 East-West Highway
Silver Spring, MD 20910

RE: Pacific sardine, declaration of overfishing and overfished

Dear Mr. Oliver:

On April 12, 2019, the Pacific Fishery Management Council adopted the 2019 Pacific sardine stock assessment,[1] which determined that the northern subpopulation of Pacific sardine is overfished. The 2019 assessment also indicates that the cumulative coastwide exploitation rate (including landings from Mexico and the U.S.) exceeded both the maximum sustainable yield and allowable biological catch (ABC) for the northern subpopulation of Pacific sardine in 2017 and 2018, meeting the definition of "overfishing" in the Pacific Coast Coastal Pelagic Species Fishery Management Plan (CPS FMP). In accordance with the Magnuson Stevens Fishery Conservation and Management Act (MSA), the National Marine Fisheries Service (NMFS) must immediately notify the Pacific Fishery Management Council (Council) that the northern subpopulation of Pacific sardine is overfished and request that the Council immediately develop measures to end overfishing and rebuild the stock. [2] In addition, because international fishing pressure on this Pacific sardine stock is a significant factor in the stock's overfished condition, NMFS must immediately take appropriate action at the international level to end overfishing.[3] Consistent with the requirements of the MSA, we request immediate action be taken to end overfishing in the fishery. Further, NMFS must implement conservation and management measures to rebuild Pacific sardine to biomass levels consistent with producing maximum sustainable yield (MSY) in as short a time as possible.

Oceana and Earthjustice have been deeply invested in the conservation and management of forage species off the U.S. West Coast for more than twelve years, and in particular, we have been closely involved in management issues surrounding Pacific sardine. Forage species, such as sardine, are critical to healthy ocean ecosystems and sustainable fisheries. We appreciated that the National Marine Fisheries Service and the Council acted quickly in 2015 to close the directed sardine fishery in accordance with the CPS FMP. However, we remain troubled by the agency's persistent denial and obfuscation about the status of the stock, at first claiming that the sardine stock was not collapsing[4] and

[1] Hill, KT, PR Crone, and JP Zwolinski (NMFS). 2019. Assessment of the Pacific sardine resource in 2019 for Management in 2019-20. Available: Agenda Item E.3, Supplemental REVISED Attachment 1 (Full Version Electronic Only)
[2] 16 U.S.C §§1854(e)(2) and (i), MSA § 304(e)(2) and § 304(i)
[3] 16 U.S.C. § 1854(i).
[4] Koch, K. Deputy Director, NOAA SWFSC. June 2013 letter and comments to the PFMC. Agenda Item I.4.c Supplemental SWFSC Report June 2013. Stating in response to published scientific literature predicting the sardine collapse, "*As stated last March 2012…the population of Pacific sardines…* ***is not currently in a state of imminent collapse as referenced in the PNAS article of March 2012.***"

then that overfishing was not occurring.[5] The agency has ignored and even refuted studies produced by its own scientists and published in the peer-reviewed literature regarding the collapse of the sardine population[6] and subsequent retrospective analyses indicating that exploitation rates exceeded MSY during the collapse (2011-2014). It is time to take immediate action at both the domestic and international level to rebuild the stock, and revise the Pacific sardine harvest control rule to prevent overfishing in the future.

1. Pacific sardine are overfished

The most recent stock assessment[7] finds the sardine population has collapsed by 98 percent since 2006 (figure 1). The NMFS 2019 assessment estimates the population dropped below the "cutoff" of 150,000 metric tons in early 2014, leading to the directed commercial sardine fishery being closed pursuant to the CPS FMP. In addition, the CPS FMP includes a Minimum Stock Size Threshold (MSST) of 50,000 mt for Pacific sardine. The MSST is the level of biomass below which the stock is overfished and below which the capacity of the stock to produce MSY on a continuing basis has been jeopardized.[8] When the stock falls below the MSST, it is overfished and NMFS is obligated to notify the Council of the stock's overfished status immediately. Notably, the 2019 stock assessment indicates that the stock is well below MSST now and has been below it since 2017 (figure 2).

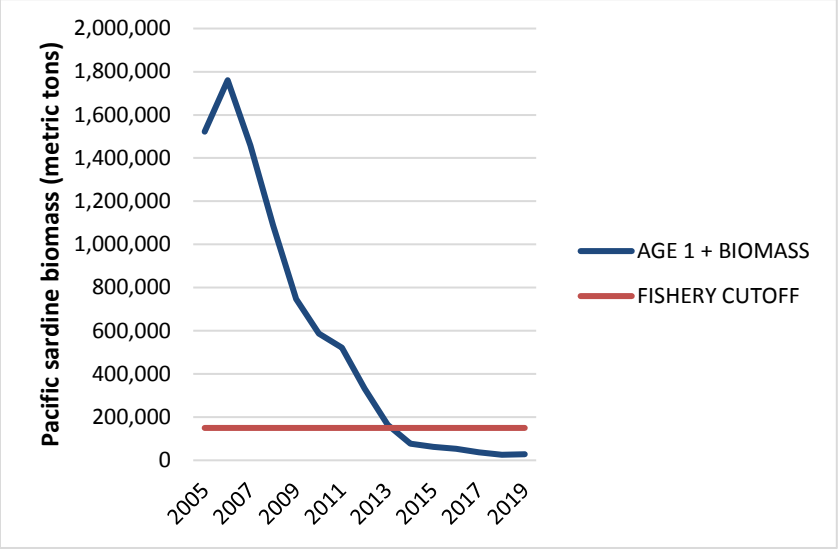


Figure 1. Pacific sardine biomass (age 1+) compared with the 150,000 mt fishery 'cutoff'. The population has collapsed 98% since 2006. Data from NMFS 2019 sardine assessment.

[5] Eileen Sobeck 2015 (National Marine Fisheries Service). Letter to S. Murray (Oceana). June 19, 2015. Stating, "Annual catch has never exceeded the harvest guidelines and overfishing has not occurred."
[6] Zwolinski, J and DA Demer. 2012. A cold oceanographic regime with high exploitation rates in the Northeast Pacific forecasts a collapse of the sardine stock. Proceedings of the National Academy of Sciences (PNAS) 109 (11). 4175-4180.
[7] NMFS 2019, *supra note* 1.
[8] 50 C.F.R. §600.310(e)(2)(E) and §600.310(e)(2)(F)

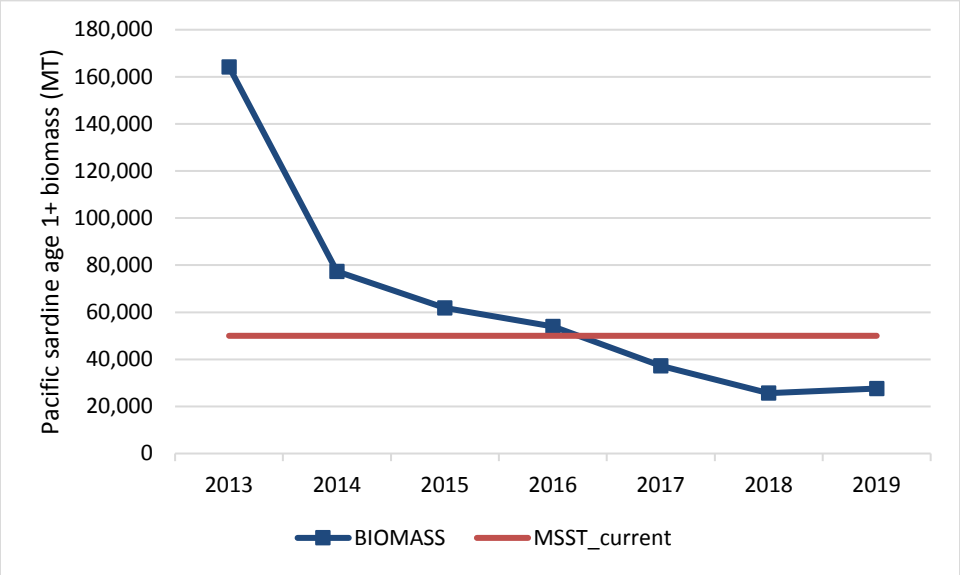


Figure 2. Pacific sardine age 1+ biomass (2013-2019) compared with the 50,000 mt overfished threshold (MSST). Data are from the NMFS 2019 sardine assessment.

2. Overfishing occurred during the sardine collapse and international overfishing is now occurring

The CPS FMP states, "By definition, overfishing occurs in a fishery whenever fishing occurs over a period of one year or more at a rate that is high enough to jeopardize the capacity of the stock to produce MSY on a continuing basis if applied in the long term."[9] The FMP also states, "Overfishing occurs whenever the total catch (U.S., Mexico, Canada, and international fisheries) exceeds ABC [allowable biological catch] or whenever fishing occurs at a rate that is high enough to jeopardize the capacity of the stock to produce MSY."[10] The Pacific sardine stock is experiencing overfishing under each of these definitions.

According to the 2019 stock assessment, the total catch by the U.S., Mexico, and Canada exceeded MSY in the years leading up to the collapse, beginning in 2010 and through 2014. More recently, the combined catch of Mexico and the U.S. exceeded the maximum fishing rate that would support the stock's ability to produce MSY in 2017 and 2018 (Figure 3). By definition, ABC is less than MSY, therefore the total catch also exceeded ABC.

From 2012 through 2014, annual U.S. and coastwide exploitation exceeded 25% of the total biomass, with coastwide exploitation peaking in 2013 at 44.5%. While the U.S. fishery never exceeded U.S. overfishing limits set at the time, we now know U.S. overfishing limits (OFL) and allowable biological catch (ABC) levels were consistently set too high and failed to prevent overfishing on a collapsing stock. This is especially concerning because while forage fish populations exhibit large natural fluctuations

[9] PFMC CPS FMP (February 2018) § *4.3 Definition of overfishing, at 36*
[10] PFMC CPS FMP (February 2018) § *4.6.1 Default CPS Harvest Control Rule, at 37. See also* 16 U.SC. § 1802(34) (MSA definition of "overfished" and "overfishing")

driven by environmental factors, excessive fishing on a declining forage fish population magnifies forage fish population collapse.[11]

Of immediate concern is that the Pacific sardine stock assessment shows that landings of northern subpopulation of Pacific sardines by the U.S. and Mexico exceeded MSY fishing rates in 2017 and 2018.[12] The NMFS Southwest Fisheries Science Center also identified an error in the acoustic trawl abundance estimate used in the 2018 stock assessment, which inflated the OFL and ABC by approximately 1,000 mt.[13] The 2019 assessment shows that the July 2018 biomass estimate in last year's assessment (52,065 mt) was approximately double the updated July 2018 biomass estimate calculated in the 2019 assessment (approx. 26,000 mt) (Figure 4). Therefore, in addition to the coastwide fishing rate exceeding MSY fishing rates (Figure 3), combined U.S. and Mexico sardine landings exceeded the OFL set at the time and what would amount to the corrected OFL.

As shown in various Pacific sardine simulation model runs[14], excessive fishing pressure— particularly during periods of low recruitment and/or abundance— can significantly exacerbate natural sardine population declines. Overfishing on a collapsed, overfished stock is of major concern. It can impede the recovery of the stock and the fishery, and recent management strategy evaluations indicate it can render the population extinct.[15]

Based on the best available science on the 2017 and 2018 total catch by the U.S., Mexico, and Canada relative to MSY in the approved 2019 stock assessment and the definition of overfishing in the CPS FMP, NMFS must immediately declare overfishing to be occurring on the northern subpopulation of Pacific sardine.

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[11] Essington et al. 2015. *Fishing amplifies forge fish population collapses*, PNAS Early Edition, available at http://www.pnas.org/content/early/2015/04/01/1422020112.full.pdf.
[12] NMFS 2019. Draft Pacific Sardine Stock Assessment showing at p14, showing Mexico with a 22.7% harvest rate in 2017 and a 35.1% harvest rate in 2018.
[13] NMFS 2019. NMFS Guidance on Process for Changing Stock Status, MSA requirements when a stock is declared overfished, and 2019-2020 sardine specifications. Agenda Item. E.3.a, Supplemental NMFS Report 1, April 2019. Available: https://www.pcouncil.org/wp-content/uploads/2019/04/E3a_Supp_NMFS_Rpt1_APR2019BB.pdf
[14] Hurtado-Ferro & Punt 2014. Revised Analyses Related to Pacific Sardine Harvest Parameters. Agenda Item I.1.b, March 2014 PFMC meeting.
[15] Hurtado-Ferro & Punt 2014. Revised Analyses Related to Pacific Sardine Harvest Parameters. Agenda Item I.1.b, March 2014 PFMC meeting.

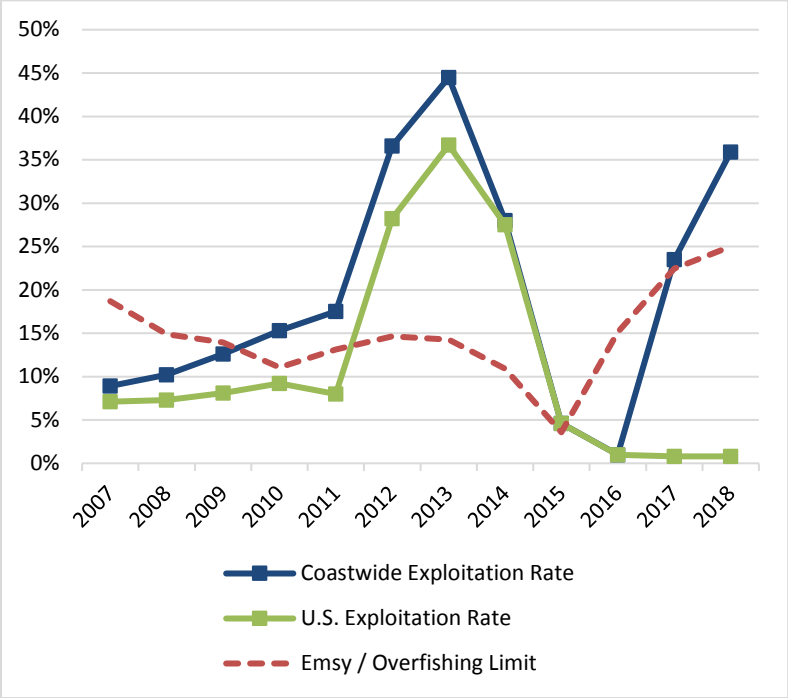

Figure 3. U.S. and coastwide (U.S., Mexico and Canada) Pacific sardine fishery exploitation rates compared with the E_{MSY} fishing rate (that uses the CalCOFI 3-year average index). Fishing rates exceeding E_{MSY} constitute overfishing. Data are from the NMFS 2019 sardine assessment.

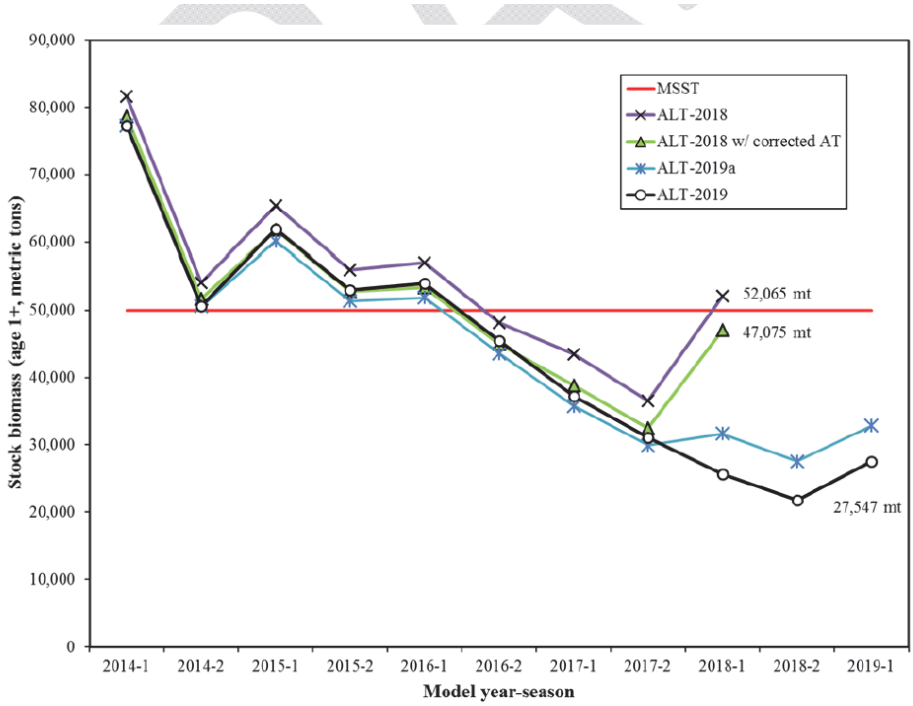

Figure 4. Estimated stock biomass (age 1+ fish, mt) time series from 2014-2019 (Fig 29b in NMFS 2019 Assessment)

3. NMFS must now notify the Council that the Pacific sardine population is overfished, international overfishing is occurring, and take steps to immediately end overfishing and rebuild the stock.

Under the MSA, "'overfishing and overfished' mean a rate or level of fishing mortality that jeopardizes the capacity of a fishery to produce the maximum sustainable yield on a continuing basis."[16] As explained above, the agency had enough information two years ago to determine that the stock was approaching an overfished condition[17] because abundance trends from past assessments clearly indicated the stock was heading toward the MSST or had already dropped below MSST. In fact, last year it was so apparent to all involved in CPS management that the stock was nearing the overfished threshold that Council rushed to approve FMP Amendment 17 to allow directed fishing in the live bait fishery should the stock be declared overfished. NMFS stated in the March 22, 2019 federal register notice for CPS FMP Amendment 17:

> "At the June 2018 Council meeting, in anticipation that the Northern subpopulation of Pacific sardine might be declared overfished if there were even a minor decline in the 2019 biomass estimate, the Council initiated an FMP amendment to address the prosecution of the live bait sector of the CPS fishery (primarily consisting of Pacific sardine and northern anchovy) after a stock is declared overfished."[18]

It should be alarming that NMFS reacted to the knowledge of sardine approaching an overfished condition not by notifying the Council of its obligations to end overfishing and rebuild, as required by the MSA, but by supporting an FMP amendment to remove existing protections for an overfished stock. Nevertheless, now that the stock is unequivocally below the MSST, "the Secretary shall i*mmediately* notify the appropriate Council and request that action be taken to end overfishing in the fishery and to implement conservation and management measures to rebuild affected stocks of fish."[19]

Generally, the MSA requires that within two years the Council (or Secretary) prepare and implement rebuilding plan for the fishery to end overfishing immediately and rebuild the stock.[20] The rebuilding plan shall "specify a time period for rebuilding the fishery that shall (i) be as short as possible, taking into account the status and biology of any overfished stocks of fish, the needs of fishing communities… and the interaction of the overfished stock of fish within the marine ecosystem; and (ii) not exceed 10 years, except in cases where the biology of the stock of fish, other environmental conditions, or management measures under an international agreement in which the United States participates dictate otherwise."[21]

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[16] 16 U.S.C. § 1802(34).
[17] 16 U.S.C 1854 MSA § 304(e)(1) "A fishery shall be classified as approaching a condition of being overfished if, based on trends in fishing effort, fishery resource size, and other appropriate factors, the Secretary estimates that the fishery will become overfished within two years."
[18] 84 Fed Reg 10,768 (March 22, 2019). Available: https://www.federalregister.gov/documents/2019/03/22/2019-05455/fisheries-off-west-coast-states-coastal-pelagic-species-fisheries-amendment-17-to-the-coastal
[19] 16 U.S.C 1854 MSA § 304(e)(2)
[20] 16 U.S.C 1854 MSA § 304(e)(3)
[21] 16 U.S.C 1854 MSA § 304(e)(4)

If NMFS determines that the stock is overfished due to excessive international fishing pressure and there are no management measures to end overfishing under an international agreement to which the United States is a party, the MSA requires immediate action to address the situation. NMFS must, "in cooperation with the Secretary of State, immediately take appropriate action at the international level to end the overfishing." Within one year, the Council must develop recommendations for domestic regulations to address the relative impact of fishing vessels of the United States on the stock and… develop and submit recommendations to the Secretary of State, and to the Congress, for international actions that will end overfishing in the fishery and rebuild…"[22] the Pacific sardine stock.

4. **Pacific sardine management reform is needed to prevent future overfishing and achieve optimum yield**

We repeatedly brought to the agency's and Council's attention the predicted sardine collapse[23] and the many shortcomings in sardine management[24] that led to catch levels exceeding MSY during this collapse, such as overly optimistic projections of recruitment in stock assessments, underestimating foreign catches due to the use of a constant 87% "distribution" parameter in U.S. management, an MSST not based on the best available science, and an incorrect temperature index that falsely predicted high sardine productivity as the population was collapsing,[25]among others.

The severity of the sardine collapse could have been reduced had there been a more precautionary harvest control rule in place, had the collapse been acknowledged earlier, and had the U.S. cooperatively managed the fishery with Mexico and Canada or acted independently in a manner to avoid international overfishing. Specifically, as recommended in Essington et al. 2015[26], cutoff levels set at approximately 50% of the mean unfished biomass would prevent fishing from exacerbating forage fish collapses, and Demer & Zwolinski 2017[27] provide a superior method to the current static 87% distribution for setting U.S. catch limits to achieve coastwide target catch rates. The closure of the directed sardine fishery now provides an opportunity to learn from this experience and focus agency resources on systemic improvements to the sardine harvest control rule. Please consider this information and direct your agency to undertake changes to Pacific sardine management and the treatment of published scientific literature and the advice and analysis of scientific experts within NMFS to prevent similar situations in the future.

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[22] 16 U.S.C 1854 MSA § 304(i)

[23] Zwolinski, J. and D.A. Demer. 2012. A cold oceanographic regime with high exploitation rates in the Northeast Pacific forecasts a collapse of the sardine stock. Proceedings of the National Academy of Sciences (PNAS) 109 (11). 4175-4180. Available at: http://www.pnas.org/content/early/2012/02/24/1113806109.full.pdf and PFMC, Agenda Item C.1b8, supplemental public comment. March 2012. http://www.pcouncil.org/wp-content/uploads/C1b_SUP_PC8_SHESTER_MAR2012BB.pdf

[24] E.g. Oceana (March 30, 2017) letter to Herb Pollard (PFMC) on Pacific sardine management, available: http://www.pcouncil.org/wp-content/uploads/2017/03/G5c_Sup_Pub_Cmnt2_Apr2017BB.pdf and Oceana (June 11, 2018) letter to Barry Thom (NMFS). RIN 0648-XG121; Fisheries Off West Coast States; Coastal Pelagic Species Fisheries; Annual Specifications. Available:

[25] Zwolinski, JP and DA Demer. 2019. Re-evaluation of the environmental dependence of Pacific sardine recruitment. Fisheries Research 216 (120-125).

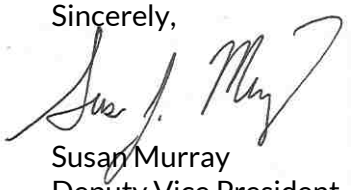
[26] Essington et al. 2015. *Fishing amplifies forge fish population collapses*, PNAS Early Edition, available at http://www.pnas.org/content/early/2015/04/01/1422020112.full.pdf.

[27] David A. Demer & Juan P. Zwolinski. 2017. A Method to Consistently Approach the Target Total Fishing Fraction of Pacific Sardine and Other Internationally Exploited Fish Stocks, North American Journal of Fisheries Management, 37:2, 284-293.

Importantly, at this time, the law is clear the agency must now immediately notify the Council that the stock is overfished, NMFS must immediately take action at the international level in coordination with the Secretary of State to end and prevent overfishing, and the Council must begin the process of developing a plan to end overfishing and rebuild the stock and amending its CPS FMP to fix the errors identified above that contributed to the collapse. We request that NMFS take rapid corrective action to end U.S and international overfishing, rebuild the sardine population and improve Pacific sardine management into the future.

Thank you for your commitment to sustainable fisheries, upholding the MSA, and your attention to this serious issue.

Sincerely,



Susan Murray
Deputy Vice President, Pacific
Oceana

Andrea A. Treece
Staff Attorney, Oceans Program
Earthjustice

cc: Barry Thom, Regional Administrator, NMFS West Coast Region
Ryan Wulff, Assistant Regional Administrator, Sustainable Fisheries Division
Aja Szumylo, National Marine Fisheries Service Coastal Pelagic Species Branch Lead
Chuck Tracy, Pacific Fishery Management Council, Executive Director

Diane Pleschner-Steele
California Wetfish Producers Association
06/10/2019 03:10 PM PDT

RE: NMFS Report

Dear Mr. Anderson and Council members, I am submitting for your information the comments that CWPA submitted re: the NMFS Proposed Rule for sardine annual catch limits. We would greatly appreciate your consideration of our concerns. Thank you.

Geoff Shester
Oceana
06/07/2019 05:07 PM PDT

RE: NMFS Report

EARTHJUSTICE OCEANA Protecting the World's Oceans

April 23, 2019

Barry A. Thom
Regional Administrator
West Coast Region
National Marine Fisheries Service
501 W. Ocean Blvd., Ste. 420
Long Beach, CA 90802-4250
Attn: Joshua Lindsay

RE: RIN 0648-BI73; Fisheries Off West Coast States; Coastal Pelagic Species Fisheries; Multi-Year Specifications for Central Subpopulation of Northern Anchovy

Dear Mr. Thom:

The National Marine Fisheries Service's ("NMFS's") proposed rule specifying new values for the overfishing limit ("OFL"), acceptable biological catch ("ABC"), and annual catch limit ("ACL") for the central subpopulation of northern anchovy ("CSNA" or "anchovy") violates the Magnuson-Stevens Fishery Conservation and Management Act and fails to address core findings of the district court opinion that required NMFS to issue the new rule. NMFS proposes to set values for the OFL, ABC, and ACL (collectively, "catch limits") that will remain in place indefinitely, yet are based on only three years of abundance data and blatantly omit available, recent abundance data that reflect substantial dips in abundance levels. More significantly, the proposed rule's reliance on an average biomass estimate fails to account for the fact that the anchovy population could again quickly decline well below that average, meaning the OFL, ABC, and ACL would no longer be rationally related to the size of the anchovy population. Compounding this problem is NMFS reliance on the 75% buffer between the OFL and ABC to reflect population variability, when recent population data shows that anchovy can decline by 99% in just four years. The proposed rule—and, indeed, the fishery management plan framework it purports to implement—are not based on the best available scientific information, and will not prevent overfishing or achieve optimum yield by providing adequate forage for marine predators.

We urge NMFS to make substantial changes before issuing the final rule. If NMFS intends the rule to stay in place indefinitely, it must reduce the OFL, ABC, and ACL substantially to levels that would prevent overfishing when the stock is collapsed and that would ensure adequate forage for predators. Alternatively, if NMFS wishes to rely only on recent abundance data, it must ensure that it prevents overfishing and accounts for the substantial variability in anchovy abundance by specifying that the catch limit values in the proposed rule will remain in place only until January 1, 2021, upon which date the ABC value will decrease to a *de minimis* level of no more than 6,487 mt until such time as NMFS specifies new updated catch limits based on updated data.

50 CALIFORNIA STREET, SUITE 500 SAN FRANCISCO, CA 94111
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I. The Proposed Rule Must Satisfy MSA Requirements that NMFS Base Catch Limits on the Best Available Science, Ensure They Prevent Overfishing, and Account for Needs of Marine Predators

The Magnuson-Stevens Act requires that "[c]onservation and management measures [are] based on the best scientific information available."[1] When taking management action, NMFS must make "a thorough review of all the relevant information available at the time. NMFS may not disregard superior data in reaching its conclusion."[2] Courts have emphasized that NMFS "must utilize the best scientific data *available*, not the best scientific data *possible*."[3] In other words, NMFS may not decline to use available information for management simply because it is uncertain or could be improved by more research or analysis. "It is well settled . . . that the Secretary can act when the available science is incomplete or imperfect, even where concerns have been raised about the accuracy of the methods or models employed."[4]

The Act also requires that all management measures, including the proposed rule, prevent overfishing and achieve optimum yield by reducing catch to account for ecological and socioeconomic needs.[5] As the district court found when it vacated NMFS's prior catch limits, the size of the anchovy population is "the critical variable" in determining whether the OFL, ABC, and ACL will prevent overfishing.[6] In other words, whether or not the proposed catch limits will prevent overfishing depends on how those limits relate to the size of the anchovy population in a given year. Moreover, NMFS may not rely on the 75% reduction from a static OFL to assume that the ABC and ACL will prevent overfishing when the anchovy population size changes substantially, such that the OFL no longer reflects an accurate estimate of the MSY the current population can sustain.[7]

II. The Proposed Rule and the Coastal Pelagic Species Fishery Management Plan's "Monitored" Approach the Rule Seeks to Implement, Including Authorization of Indefinite Catch Limits, Violate the Magnuson-Stevens Act

NMFS states that it is issuing the proposed rule pursuant to the Coastal Pelagic Species Fishery Management Plan ("CPS FMP") and its implementing regulations. Yet the CPS FMP's management framework for anchovy is fundamentally ill-suited to the biology and ecological role of this crucial species. The FMP does not account for the fact that the anchovy population changes significantly year-to-year or the fact that the stock has historically declined by more than 75% below its long-term average biomass; nor does it consider whether predator needs are being

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[1] 16 U.S.C. § 1851(a)(2).
[2] *Guindon v. Pritzker*, 31 F. Supp. 3d 169, 195-96 (D.D.C. 2014) (quotations and citations omitted).
[3] *Blue Water Fishermen's Assn. v. Nat'l Marine Fisheries Serv.*, 226 F.Supp.2d 330, 338 (D. Mass. 2002) (quoting *Building Indus, Ass'n of Superior California v. Norton*, 247 F.3d 1241, 1246-47 (D.C.Cir.2001)) (emphasis in original).
[4] *General Category Scallop Fishermen v. Secretary, U.S. Dept. of Commerce*, 635 F.3d 106, 115 (3rd Cir.2011) (citing *North Carolina Fisheries Ass'n, Inc. v. Gutierrez*, 518 F.Supp.2d 62, 85 (D.D.C. 2007)).
[5] 16 U.S.C. § 1851(a)(1).
[6] *Oceana, Inc. v. Ross*, 16-CV-06784-LHK, 2018 WL 1989575, at *16 (N.D. Cal. Jan. 18, 2018), *enforcement granted*, 359 F. Supp. 3d 821 (N.D. Cal. 2019).
[7] *Id.*

met, whether other fisheries that target anchovy predators are being affected, or the potential for local depletion. In short, the way the FMP currently manages anchovy is contrary to everything we know about this species and the Magnuson-Stevens Act's most basic requirements. Because the proposed rule largely relies on the FMP's invalid management approach, it suffers the same scientific and legal flaws as the FMP itself.

A. Specifying a Static Catch over an Indefinite Period and Relying on a 75% Buffer Between the OFL and ABC/ACL Is Contrary to the Best Available Science on Variability of the Anchovy Population, and Will Not Prevent Overfishing or Account for Predator Needs When the Anchovy Population Experiences Declines.

Setting static catch limits based on a long-term average will not prevent overfishing on a species that frequently (and rapidly) drops to less than 10% of long-term average levels. As the district court recognized, catch limits must be rationally, scientifically related to the size of the anchovy population in order to prevent overfishing. The best available science on anchovy biology and population dynamics shows that its population fluctuates frequently, quickly, and significantly.[8] Even more so than other species, forage fish like anchovy are highly vulnerable to overfishing and collapse.[9] Due to their schooling behavior and technological advances in fishing methods, catch per unit effort for anchovy usually remains steady or even increases even as the species' abundance plummets.[10] A recent study of forage species around the world, including northern anchovy, found that fishing forage species during a decline can increase the rate and magnitude of population collapses.[11]

Historical stock assessments and recent updated time series clearly show that CSNA experiences dramatic fluctuations in biomass, both increases and collapses, over a very short time period. NMFS completed its last formal stock assessment of CSNA in 1995, which estimated the spawning stock biomass in U.S. and Mexican waters.[12] According to the spawning biomass estimate time series in that assessment, spawning stock biomass values ranged from 145,000 mt to 1,069,000 mt over the years 1963-1994, indicating a wide range in abundance. The assessment also indicated the stock can drop very rapidly. For example, the stock declined

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[8] Thayer et al. 2017. California Anchovy Population Remains Low, 2012-2016. CalCOFI Rep., Vol. 58, 2017. 8pp. *and* MacCall, A. D., W. J. Sydeman, P. C. Davison, and J. A. Thayer. 2016. Recent collapse of northern anchovy biomass off California. Fish. Res. 175:87–94.

[9] See Pinsky et al. 2011. Unexpected patterns of fisheries collapse in the world's ocean. PNAS: 108(20):8317-8322 and Lenfest Forage Fish Task Force Report: Pikitch et al. 2012. Little Fish, Big Impact: Managing a Crucial Link in Ocean Food Webs. Lenfest Ocean Program. Washington, DC. 108 pp.; Pinsky ML, Byler D. 2015. Fishing, fast growth and climate variability increase the risk of collapse. Proc. R. Soc. B 282: 20151053. http://dx.doi.org/10.1098/rspb.2015.1053

[10] Pikitch et al., 2012, *Little Fish, Big Impact: Managing a Crucial Link in Ocean Food Webs*, Lenfest Ocean Program, Washington, D.C., 108 pp.

[11] Essington et al. 2015. *Fishing amplifies forage fish population collapses*, PNAS Early Edition, available at http://www.pnas.org/content/early/2015/04/01/1422020112.full.pdf .

[12] Jacobson, L.D., Lo, N.C.H. Herrick, Jr., S.F. and T. Bishop. 1995. Spawning biomass of the northern anchovy in 1995 and status of the coastal pelagic fishery during 1994. NMFS, SWFSC Admin. Rep. LJ-95-11. 52 pp.. Biomass values presented in Punt et al. 2019, Table 1, https://www.pcouncil.org/wp-content/uploads/2019/03/E4_Att1_Emsy-paper_APRIL2019BB.pdf

from 715,000 mt to 167,000 mt over a three-year period (a 77% decline from 1985-1988).[13] As these numbers demonstrate, reducing a static overfishing limit by 75% is not sufficient to prevent overfishing. For example, had an overfishing limit and associated catch limits been set based on the 1985 biomass of 715,000 mt and the 75% ABC buffer in the current CPS FMP, they would not have prevented overfishing in 1988 because the stock had declined by more than the 75% buffer between the OFL and ABC.

Furthermore, we now know that the 1995 stock assessment underestimated the variability in the stock. Notably, the 1963-1994 period upon which the 1995 stock assessment was based reflected high relative biomass because it omitted prior and subsequent years when the anchovy population dropped far below long-term averages to levels that experts refer to as a "collapse" of the population.[14] The time series of abundance estimates in Thayer et al. 2017 includes these low years in the early 1950s and the 2009-2015 period, indicating a range in abundance from below 30,000 mt to over 2,000,000 mt.

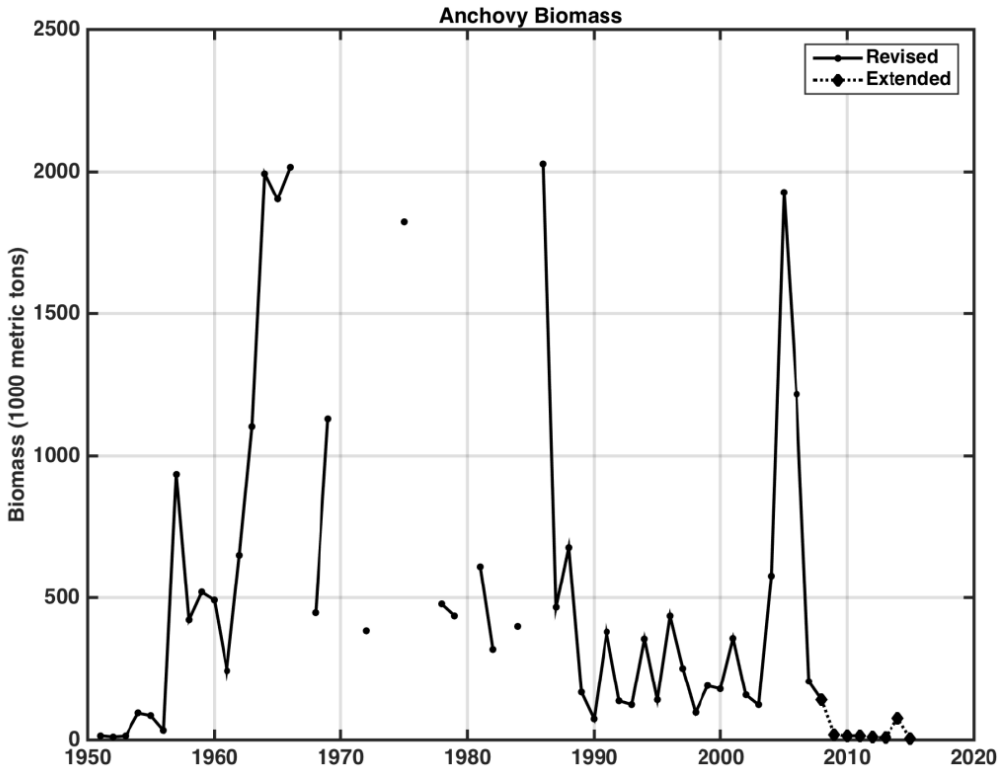

Figure 1: CSNA biomass in the U.S. and Mexico from 1951 to 2015. From Thayer et al. 2017.

[13] Jacobson, L.D., Lo, N.C.H. Herrick, Jr., S.F. and T. Bishop. 1995. Spawning biomass of the northern anchovy in 1995 and status of the coastal pelagic fishery during 1994. NMFS, SWFSC Admin. Rep. LJ-95-11. 52 pp. Biomass values presented in Punt et al. 2019, Table 1, https://www.pcouncil.org/wp-content/uploads/2019/03/E4_Att1_Emsy-paper_APRIL2019BB.pdf

[14] MacCall, A. D., W. J. Sydeman, P. C. Davison, and J. A. Thayer. 2016. Recent collapse of northern anchovy biomass off California. Fish. Res. 175:87–94.

This updated time series also indicates the population has declined more rapidly than recognized in the 1995 stock assessment.. Thayer et al. (2017) found that CSNA biomass dropped by 77% in a single year (1986-1987), dropped by 90% over a two year period (2005-2007), and dropped by 99% over a four year period (2005-2009).

These figures underscore the fact that the 75% buffer between the OFL and ABC/ACL is not scientifically supported or adequate to prevent overfishing when catch limits are left in place indefinitely. Any time the biomass drops greater than 75% below the mean biomass used to calculate OFL, an ABC or ACL that is 75% below the OFL will not prevent overfishing. Therefore, since the proposed rule sets OFL based on a mean biomass of 394,519 mt, the proposed ACL will not prevent overfishing in all years in which the biomass is below 98,630 mt. The best available scientific evidence shows that the CSNA spawning stock was below the proposed annual catch limit in five of the last 10 years (2008-2017) and below the proposed overfishing limit in seven of the last 10 years (2008-2017).[15]

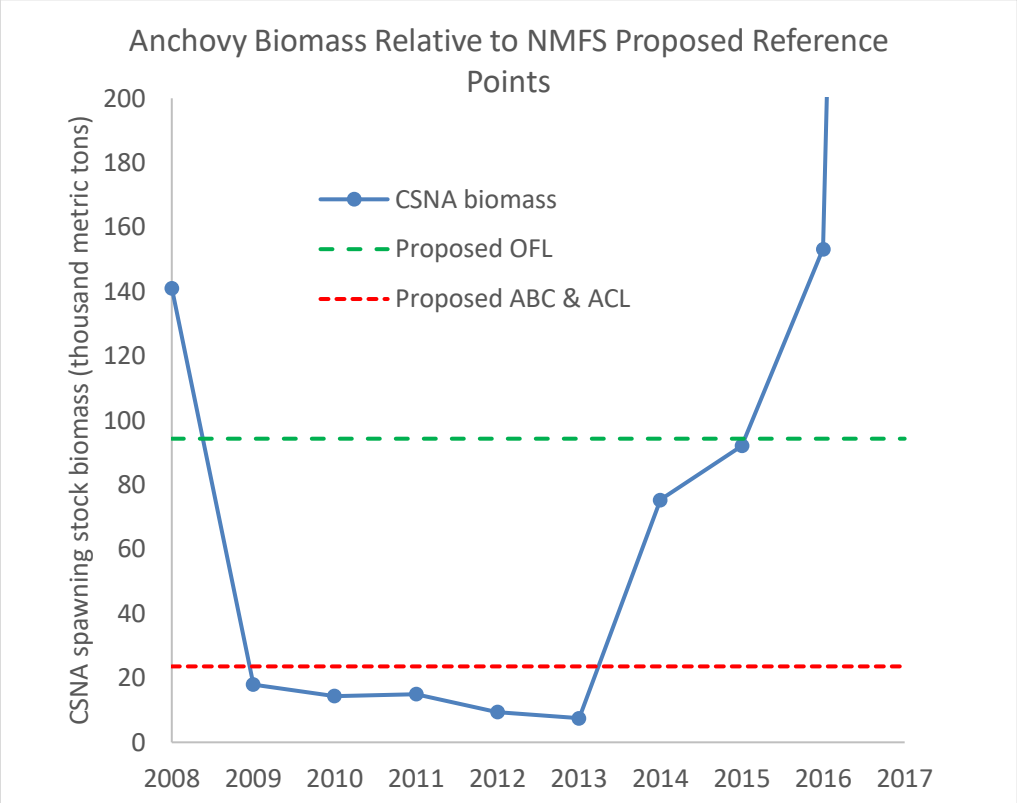

Figure 2: Anchovy spawning stock biomass (SSB) from 2008-2017 from Thayer et al. 2017 relative to NMFS proposed overfishing limit (OFL), acceptable biological catch (ABC) and annual catch limit (ACL). Setting an indefinite OFL, ABC and ACL as proposed fails to prevent overfishing during periods of low anchovy abundance.

[15] Thayer et al (2017). California Anchovy Population Remains Low, 2012-2016. CalCOFI Rep., Vol. 58, 2017. 8pp.

It is well established in the fisheries and natural resource literature that constant quotas that are not regularly updated are not sustainable for fluctuating populations, and therefore fail to prevent overfishing. As stated in May et al. 1978:[16]

> "An alternative strategy is to aim for constant yield (constant catch, constant quotas, constant Y). Many people have noted that *such a strategy, if pursued rigidly, will extinguish the population if the target yield is inadvertently set above the actual MSY value. Even if the yield is set below the MSY, the system will collapse if the population ever happens to fluctuate below a threshold value* (see, e.g., [R.M. May, 1977][17] and references therein)."

More recently, Siple et al. 2019 found that harvest strategies designed to maintain stability in catches will result in more severe collapses for forage fish stocks that fluctuate naturally.[18]

The proposed catch limits also risk harm to numerous marine predators when anchovy numbers decline. Northern anchovy is a keystone forage species in the California Current marine ecosystem ("CCE"). They are preyed upon by a wide variety of marine wildlife, including commercially and recreationally valuable fish, mammals, and sea birds. Forage species play an immense role in supporting the productivity and sustainability of other commercially and recreationally important fish species, including species managed by NMFS and the Council in the Groundfish, Highly Migratory Species, and Salmon FMPs. According to diet studies of 32 different marine predators conducted over multiple regions and multiple years, anchovy may be the most important forage fish throughout the CCE.[19] Another study published in the journal *Science* looked at the impacts of fishing forage species on seabird predators, and concluded that forage fish populations should be kept above one third of historic maximum levels to sustain seabird productivity over the long-term.[20]

Furthermore, the proposed catch limits do not consider or address the best available science on predator consumption of northern anchovy or the impacts of localized depletion on predators. Warzybok et al. 2018[21] examined seabird prey consumption from Bodega Bay to Año Nuevo, California and found that seabird forage fish consumption for this area alone tripled from about 15,000 mt in 1995 to 60,000 mt in 2015. They also found that taking most of the allowed

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[16] R.M. May, J.R. Beddington, J.W. Horwood, and J.G. Shepherd. 1978. Exploiting natural populations in an uncertain world. Mathematical Biosciences 42:219-252, at 240 (emphasis added).

[17] R. M. May. 1977. Thresholds and breakpoints in ecosystems with a multiplicity of stable states, Nature 269: 47 l-477 (1977).

[18] Siple, et al. 2019. Forage fish fisheries management requires a tailored approach to balance trade-offs. Fish and Fisheries 20(1):110-124. https://onlinelibrary.wiley.com/doi/epdf/10.1111/faf.12326

[19] Ainley, D. et al. 2015. California current system – predators and the preyscape. *Journal of Marine Systems* 146:1-2.

[20] Cury, P.M., I.L. Boyd, S. Bonhommeau, T. Anker-Nilssen, R.J.M. Crawford, R.W. Furness, J.A. Mills, E.J. Murphy, H. Österblom, M. Paleczny, J.F. Piatt, J.P. Roux, L. Shannon, and W.J. Sydeman. 2011. Global Seabird Response to Forage Fish Depletion – One-Third for the Birds. Science (334)6063 1703-1706.

[21] Warzybok et al. 2018. Prey switching and consumption by seabirds in the central California Current upwelling ecosystem: Implications for forage fish management. Journal of Marine Systems: 185:25-39.

catch at a single location can negatively affect predators in that region. This is particularly relevant and concerning given the public comments by anchovy fishermen at the April 2019 Council meeting that their entire catch is taken within a few miles from ports such as Moss Landing and Monterey. For example, over 99.9% of the entire US catch of CSNA (17,039 mt) was caught in Northern California in 2018, the majority of which occurs at these two ports.[22] Recognizing the risks of local forage depletion, Oceana and the U.S. Fish and Wildlife Service have urged the establishment of time-area closures to protect breeding sea birds, pinnipeds, and large whales. We reiterate our previous requests here by reference.[23]

B. The Context of the Coastal Pelagic Species Fishery Management Plan and Recent Failure to Update Management Measures in Response to New Scientific Information Underscore the Inadequacy of the FMP and the Rule NMFS Proposes to Implement the FMP

As noted above, the CPS FMP and proposed rule contemplate that NMFS will specify values for the OFL, ABC, and ACL that remain in place indefinitely.[24] While the FMP states that these limits "may" be revised based on best available science, it does not set forth any clear trigger to require that they be revisited or revised to reflect changes in biomass, or any time intervals for doing so.[25] In fact, the FMP's current management structure does not call for ever revisiting catch limit values unless catch levels exceed the ACL.[26] However, simply tracking catch levels against a catch limit that may not reflect the current size of the anchovy population does nothing to prevent overfishing or provide adequate forage for marine predators. In fact, neither the draft 2019 annual CPS Stock Assessment and Fishery Evaluation (CPS SAFE) Reports[27] nor previous CPS SAFE Reports[28] contain any information on the current status of the CSNA stock from ATM surveys, CalCOFI surveys, or DEPM surveys, providing further evidence that NMFS and the Council do not have a mechanism in place for evaluating stock status for CSNA. Moreover, recent history has shown that NMFS and the Pacific Fishery Management Council have been unwilling to revise values for the OFL, ABC, and ACL based

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[22] California Dept. of Fish and Wildlife. 2019. 2018 California Coastal Pelagic Species Fishery Landings. No. Cal Landings compared to Total Landings of Northern Anchovy. Moss Landing and Monterey are the primary Northern California ports where anchovy is landed. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=154299&inline

[23] Letter from Stephen P. Henry, Field Supervisor, United States Fish and Wildlife Service, to Herb Pollard, Chair, Pacific Fishery Management Council (Aug. 18, 2016); Letter from Oceana *et al* to Herb Pollard, Chair, Pacific Fishery Management Council re Stock Assessment Workshop Report and Anchovy Management Update (Sept. 6, 2016) (with attachments); Letter from Oceana and Earthjustice to Herb Pollard, Chair, Pacific Fishery Management Council, and Barry Thom, Regional Administrator, NMFS re Central Subpopulation of Northern Anchovy Overfishing Limit Process (Mar. 30, 2017) (with attachment).

[24] CPS FMP at 40 (Stating that "ACLs would be specified for multiple years until such time as the species becomes actively managed or new scientific information becomes available" and default MSY proxies, ABCs, and ACLs "may be revised based on the best available science).

[25] *Id*.

[26] CPS FMP at 40. Curiously, the FMP also states with respect CPS management, "The primary focus is on biomass, rather than catch, because most CPS (Pacific sardine, northern anchovy, and market squid) are very important in the ecosystem for forage." CPS FMP at 37.

[27] PFMC. 2019. Draft Status of the CPS Fishery and Recommended Acceptable Biological Catches. 2018.https://www.pcouncil.org/wp-content/uploads/2019/04/2018-CPS-SAFE-DRAFT-April-2019.pdf

[28] PFMC. 2018. Status of the CPS Fishery and Recommended Acceptable Biological Catches. 2017. https://www.pcouncil.org/wp-content/uploads/2018/01/CPS_SAFE_December2017.pdf

on the best scientific information currently available, no matter how compelling or dramatic it is. The U.S. Fish and Wildlife Service, independent scientists, and multiple conservation groups repeatedly brought such information to the attention of NMFS and the Council when anchovy numbers plummeted and predators suffered obvious harm; neither the Council nor NMFS applied any of that information to revisiting the values for the OFL, ABC, and ACL.[29]

The FMP's management framework violates multiple Magnuson-Stevens Act requirements, including requirements to ensure that every stock in the fishery have a specified optimum yield that accounts for relevant ecological, economic, and social factors; status determination criteria; acceptable biological catch that fully accounts for scientific uncertainty in determining the overfishing limit; and a mechanism for specifying annual catch limits that effectively prevent overfishing and measures to ensure accountability with those limits. Of particular significance here, the CPS FMP's approach to managing northern anchovy violates the MSA's requirement that management be based on best available science. As explained above, that science does not support setting static, indefinite catch limits for a species whose populations can and do fluctuate significantly from year to year. In addition, the 75% "buffer" between the OFL and ABC is not sufficient to the amount by which anchovy numbers can decline over a very short time period. Setting a multiyear ACL by reducing the OFL estimate by a 75% buffer cannot prevent overfishing or achieve optimum yield when the species plummets by 90% over a couple of years, resulting in immediate food shortages and associated effects on marine predators.

As described above, the well-established science on anchovy population dynamics demonstrates that anchovy abundance fluctuates considerably on its own, and more dramatically when fishing pressure is added to natural fluctuations. The best available science also demonstrates that anchovy abundance can change by up to 99% in just a few years. Further, the best available science tells us that relying on catch levels to detect a change in anchovy abundance is folly. Due to their schooling behavior and technological advances in fishing methods, catch per unit effort for anchovy usually remains steady or even increases even as the species' abundance plummets.[30] And despite the anchovy's extreme sensitivity to changes in ocean conditions and El Niño events, the FMP provides no required mechanism for adjusting management measures in response to unfavorable ocean conditions. NMFS cannot continue to manage anchovy with a static catch limit through this legally invalid "monitored" framework in

[29] *See, e.g.*, Letter from Stephen P. Henry, Field Supervisor, United States Fish and Wildlife Service, to Dorothy Lowman, Chair, Pacific Fishery Management Council (May 14, 2015); Letter from Stephen P. Henry, Field Supervisor, United States Fish and Wildlife Service, to Dorothy Lowman, Chair, Pacific Fishery Management Council (Nov. 12, 2015); Letter from Stephen P. Henry, Field Supervisor, United States Fish and Wildlife Service, to Herb Pollard, Chair, Pacific Fishery Management Council (Aug. 18, 2016); Letter from Oceana *et al* to Dorothy Lowman, Chair, Pacific Fishery Management Council re Anchovy General Status Overview (Oct. 16, 2015) (with attachment); Letter from Oceana and Earthjustice to William W. Stelle, Jr., Regional Administrator, NMFS West Coast Region re Proposed Multi-Year Specifications for Monitored and Prohibited Harvest Species Stock Categories (Dec. 21, 2015) (with attachments); Letter from Oceana *et al* to Herb Pollard, Chair, Pacific Fishery Management Council re Stock Assessment Workshop Report and Anchovy Management Update (Sept. 6, 2016) (with attachments). *See also Oceana, Inc. v. Ross*, 16-CV-06784-LHK, 2018 WL 1989575, at *16 (N.D. Cal. Jan. 18, 2018), *enforcement granted*, 359 F. Supp. 3d 821 (N.D. Cal. 2019).

[30] Pikitch et al., 2012, *Little Fish, Big Impact: Managing a Crucial Link in Ocean Food Webs*, Lenfest Ocean Program, Washington, D.C., 108 pp.

the FMP. Instead, as described below, NMFS should dedicate its resources to develop and adopt a management regime for CSNA that is responsive to the best available science; one that requires managers to apply what they know about the abundance of this vital population on an annual basis, and which ensures that the annual catch limit fulfills its fundamental purpose of preventing overfishing.

III. The Proposed Catch Limits Are Inconsistent with the Coastal Pelagic Species Fishery Management Plan NMFS Claims to Be Implementing

Despite these fundamental flaws, NMFS claims to be implementing the CPS FMP's so-called "Monitored" approach to setting catch limits for northern anchovy in the proposed rule. But NMFS's proposed rule is not even consistent with the FMP it purports to implement. Under the CPS FMP, "OFL will be based on species-specific MSY proxies" and ABC is set at a value 75% lower than the OFL (ABC = OFL*0.25).[31] By default, ACL is equal to the ABC (though it can be reduced to account for OY factors).[32] The FMP defines "MSY stock size" as "the long-term average size of the stock or stock complex, measured in terms of spawning biomass or other appropriate units that would be achieved under an MSY control rule in which the fishing mortality rate is constant."[33] The MSY used in Amendments 8 and 13 was based on a long-term estimate of MSY from Conrad 1991, which produced model estimates of SSBmsy and MSY using the time series from 1964-1990.

While the prior MSY estimate for CSNA was based on about four decades of data, the proposed rule calculates an updated MSY value and OFL based on only three years of anchovy abundance data—conveniently omitting prior years when available estimates show low population levels. Three years is not "long-term"—it barely even encompasses the lifespan of a single anchovy, much less the population cycles the species experiences. And, as explained elsewhere in this letter, setting a longer-term, indefinite set of limits based on only three years of data is arbitrary.

The OFL, ABC, and ACL values set in the proposed rule are based on abundance data from 2016, 2017, and 2018 derived from the acoustic trawl method ("ATM") survey and the daily egg production model ("DEPM") analysis of California Cooperative Oceanic Fisheries Investigations ("CalCOFI") survey data. NMFS's choice to use only three years of data to specify catch limit values that could remain in place for much longer is inconsistent with the CPS FMP's use of long-term averages and, more significantly, conflicts with its duties to base management decisions on the best available science and ensure management measures prevent overfishing when the stock inevitably declines below NMFS's selected average biomass. NMFS does not explain why it chose not to use other available data that more fully reflects recent anchovy biomass or longer term data, including its own 2015 ATM-based abundance estimate, long-term averages calculated by NMFS scientists and members of the Pacific Fishery Management Council's Scientific and Statistical Committee ("SSC"), and peer-reviewed,

[31] PFMC. February 2018. Coastal Pelagic Species Fishery Management Plan as Amended through Am. 16 (CPS FMP) at 40. *See also* 50 C.F.R. § 660.508 (regulations on annual specifications).
[32] CPS FMP at 40.
[33] CPS FMP at 37 (emphasis added).

published estimates from independent scientists. As shown in Table 1 below, using any of these longer term estimates would produce lower catch limit values than the ones NMFS now proposes.

The SSC reviewed NMFS's proposed rule at the Council's April 2019 meeting, and expressed similar concerns with the biomass estimates used in the proposed rule to determine the OFL:[34]

> *The SSC recommends that long-term biomass estimates be included in the calculation of the overfishing limit (OFL) in the proposed rule…Consideration should also be given to including the 2015 AT survey and earlier biomass estimates.*

The "2015 AT survey" biomass estimate was derived by NMFS's Southwest Fisheries Science Center ("SWFSC") and presented to the Council in November 2016.[35] It estimated that the biomass of CSNA in United States waters in 2015 was 31,427 mt. We understand this may be an overestimate, meaning that actual abundance was significantly lower (i.e., less than 20,000 mt), as the SWFSC later revised the target strength values in subsequent survey years.[36] Nonetheless, the inclusion of this single year's biomass estimate would reduce the proposed OFL to 72,595 mt, a 23% reduction.

The proposed rule also fails to take into account peer-reviewed, published studies providing longer term estimates of anchovy abundance in recent years. Thayer et al (2017)[37] provides abundance estimates based on CalCOFI data on egg and larval densities for 1951-2015. The lead author, Dr. Julie Thayer, submitted updated figures to the Council in November 2018 calculated with new data for 2015-2017, providing a consistent time series from 1951-2017 (Appendix 1).[38, 39] This time series uses the CalCOFI ichthyoplankton-based methods in MacCall et al. 2016, and provides estimates of spawning stock biomass ("SSB") for the full range of the CSNA, including the portion of the stock off Mexico. Using the most recent 10-years of this time series to calculate mean biomass would result in a much lower OFL than the one NMFS proposes. Using mean biomass from Thayer et al. 2017 over the 2008-2017 period,

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[34] PFMC Agenda Item E.5.a, Supplemental SSC Report 1, April 2019. Available at: https://www.pcouncil.org/wp-content/uploads/2019/04/E5a_Supp_SSC_Rpt1_APR2019BB.pdf

[35] Zwolinski et al. 2016. Draft NOAA Technical Memorandum. The Distribution and Biomass of the Central-Stock Northern Anchovy During Summer 2015, Estimated From Acoustic-Trawl Sampling. Agenda Item G.4.a. Supplemental SWFSC Report Appendix 1, November 2016. http://www.pcouncil.org/wp-content/uploads/2016/11/G4a_Sup_SWFSC_Rpt2_NOV2016BB.pdf

[36] Zwolinski et al. 2017. Distribution, Biomass, and Demography of the Central-Stock of Northern Anchovy During Summer 2016, Estimated from Acoustic-Trawl Sampling. NOAA Technical Memorandum NOAA-TM-NMFS-SWFSC-572. PFMC Agenda Item G.1.b. Supplemental SWFSC Report, April 2017. http://www.pcouncil.org/wp-content/uploads/2017/04/G1b_Sup_SWFSC_Rpt_Apr2017BB.pdf.

[37] Thayer et al. 2017. California Anchovy Population Remains Low, 2012-2016. CalCOFI Rep., Vol. 58, 2017. 8pp.

[38] Thayer 2018. Updated Biomass Estimates of CSNA. PFMC Agenda Item E.1, Public Comment. Farallon Institute. Available at: https://pfmc.psmfc.org/CommentReview/DownloadFile?p=e982e162-4ec2-4b3b-8f1a-1da42a0bb81e.pdf&fileName=FI%20Letter%20to%20PFMC%20for%20Nov%202018%2C%20CSNA%20biomass%20update.pdf

[39] In this letter, references to Thayer et al (2017) include the full updated 1951-2017 time series of CSNA biomass from Thayer 2018.

the OFL would be 33,226 mt and the ABC would be 8,307 mt. Using the median spawning stock biomass from a longer time series representing a full population cycle (1957-2017) as Dr. Thayer presented to the PFMC in April 2019[40], the median SSB is estimated to be 380,100 mt; the OFL and ABC corresponding to this biomass would be 74,492 mt and 18,623 mt, respectively. As discussed below, however, anchovy abundance often falls to less than 10% of these long-term values, therefore an ABC set 75% below these long-term OFLs would fail to prevent overfishing when the stock reaches low abundances at the levels recently observed over the 2009-2015 period (mean = 33,100 mt SSB). As a result, setting catch limits based on the long-term values without an adequate buffer between the OFL and ABC to account for the wide natural fluctuations in this stock will not prevent overfishing or provide adequate forage for predators when abundance falls substantially below the long-term average.

The proposed rule also ignores long-term estimates of the biomass at maximum sustainable yield ("Bmsy") and the fishing rate that produces MSY ("Fmsy") that were recently calculated by NMFS and the SSC. In 2016, NMFS developed and provided updated estimates of Bmsy and Fmsy using the time series from 1963-1994 from the 1995 Jacobsen et al. stock assessment and updated methods (SRFIT model).[41] The analysis used eight different stock recruitment relationship scenarios, with a mean Fmsy of 0.266 (MSY Exploitation Rate [Emsy] = 0.234)[42] and a mean spawning stock biomass at MSY ("SSBmsy") of 139,561 mt (Table 6). Notably, the Jacobsen et al. 1995 time series includes the portion of the CSNA stock in Mexican waters. Under the CPS FMP formula for calculating the OFL, a "Distribution" factor would be applied to reflect the portion of the stock in U.S. waters. Therefore, the OFL would be the product of the SSBmsy, Emsy, and Distribution in U.S. waters (0.82).[43] Using the results of this analysis of a long-term MSY would produce a U.S. OFL of 26,779 mt. Application of the default ABC buffer in the CPS FMP would produce an ABC of 6,695 mt.

In 2019, SSC Chair Dr. Andre Punt produced an analysis[44] that builds on the NMFS 2016 analysis to provide long-term MSY, Emsy, and Bmsy, based on the same Jacobsen et al. 1995 time series. The SSC reviewed the analysis in April 2019 and recommended it for use in setting OFL in the near-term.[45] Using six different stock recruitment scenarios, Dr. Punt's analysis produced Emsy (median) values ranging from 0.14 to 0.35 and SSBmsy from 96,000 mt to

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[40] Thayer, J. 2019. Central Stock Northern Anchovy. PFMC Agenda Item E.4.b, Supplemental Public Presentation 3. April 2019. https://www.pcouncil.org/wp-content/uploads/2019/04/E4b_Supp_PubPresentation3_Farallon_Institute_Apr2019BB.pdf

[41] NMFS 2016. Review and Re-evaluation of Minimum Stock Size Thresholds for Finfish in the Coastal Pelagic Species Fishery Management Plan for the U.S. West Coast. PFMC Agenda Item E.1.a, Supplemental NFMS Report, Sept 2016. http://www.pcouncil.org/wp-content/uploads/2016/09/E1a_Sup_NMFS_Rpt_MSSTs_SEPT2016BB.pdf

[42] Since Fmsy is an instantaneous fishing rate, it is necessary to convert to an annual exploitation rate (Emsy) for the purpose of setting annual specifications. The formula is Emsy = $1 - e^{(-Fmsy)}$

[43] CPS FMP. Section 4.2. Definition of Overfishing Limits or MSY, and ABC Control Rules *and* Section 4.6.4.1 Northern Anchovy - Central Subpopulation.

[44] Punt, A.E. 2019. An approach for computing Emsy, Bmsy, and MSY for the CSNA. PFMC Agenda Item E.4, Attachment 1, April 2019. https://www.pcouncil.org/wp-content/uploads/2019/03/E4_Att1_Emsy-paper_APRIL2019BB.pdf

[45] Scientific and Statistical Committee Report on CSNA Management Update. PFMC Agenda Item E.4.a, Supplemental SSC Report 1, April 2019. https://www.pcouncil.org/wp-content/uploads/2019/04/E4a_Supp_SSC_Rpt1_APR2019BB.pdf

137,000 mt (Table 4a in Punt 2019). These results also produced long-term MSY values with medians ranging from 18,000 to 36,000 mt (Table 4a in Punt 2019). Using these median results multiplied by the 82% distribution factor in the CPS FMP would produce U.S. OFLs ranging from 14,760 mt to 29,520 mt. Application of the default 75% ABC buffer in the CPS FMP would produce U.S. ABC values ranging from of 3,690 mt to 7,380 mt. Using the single point value from the Beverton-Holt stock recruit relationship with the U(-0.99, 0.99) autocorrelation method would produce a U.S. OFL of 27,027 mt and U.S. ABC of 6,757, while a single point value using the Ricker stock recruit relationship with the U(-0.99, 0.99) autocorrelation method would produce a U.S. OFL of 12,398 mt and a U.S. ABC of 3,100 mt (see Table 1).

For comparison, the Conrad 1991[46] analysis used a 1964-1990 time series from a 1991 stock assessment and was the basis of the recently vacated catch rule. It produced an OFL of 101,136 mt and an ABC of 25,284, which were rounded to 100,000 and 25,000 respectively in Amendment 8 to the CPS FMP. These values were the basis of the previous catch rule the district court invalidated because they were not based on the best available science and failed to prevent overfishing.

One of the fundamental problems with using average biomass to set catch limits for anchovy is that the value of the average biomass, and thus the catch limits, varies widely depending on the time period used. The following table demonstrates the substantial differences in OFL and ABC values resulting from different available data sources, methods, and years selected. The wide range of values resulting from the use of various time periods and the fact that the anchovy population inevitably falls well below the average in some years underscore the need to use up-to-date annual abundance data rather than average biomass estimates to set catch limits.

Method/Data Source	Years	Biomass (mt)	Emsy	Distribution	OFL (mt)	ABC (mt)
Conrad 1991[+]	1964-1990	733,410	0.168	82%	101,136	25,284
*NMFS ATM/DEPM**	*2016-2018*	*394,519*	*0.239*	*100%*	*94,290*	*23,573*
Thayer et al 2017 biomass	2016-2018	471,560	0.239	82%	92,416	23,104
Thayer et al 2017 biomass	1957-2017	380,100	0.239	82%	74,492	18,623
NMFS ATM/DEPM	2015-2018	303,746	0.239	100%	72,595	18,149
Thayer et al 2017 biomass	2008-2017	169,540	0.239	82%	33,226	8,307
Punt 2019 (Beverton-Holt)	1963-1994	103,000	0.32	82%	27,027	6,757
NMFS 2016 (MSST Report)	1963-1994	139,561	0.234	82%	26,779	6,695
Punt 2019 (Ricker)	1963-1994	108,000	0.14	82%	12,398	3,100
Thayer et al 2017 biomass	2009-2015	33,100	0.239	82%	6,487	1,622

Table 1: OFL and ABC values resulting from different data sources, methods, and years selected. Distribution is the portion of the biomass in U.S. waters is set at 100% for data sources that only measure biomass in U.S. waters. Emsy is 0.239 as in the NMFS proposed rule unless otherwise specified. All ABCs are calculated using the CPS FMP formula ABC = 0.25*OFL. [+]Prior OFL and ABC values based on Conrad 1991 were vacated by the court because they were not based on the best available science. *The NMFS proposed rule uses ATM/DEPM for years 2016-

[46] Conrad, J.M. 1991. A Bioeconomic Analysis of the Northern Anchovy. Working Papers in Agricultural Economics. September 1991. Cornell University, Ithaca, New York. 37pp.

2018, shown here in *italics*. Figures for Punt 2019 use median values for SSBmsy and Emsy under the U(-0.99, 0.99) autocorrelation method, based on estimates of spawning stock biomass. Calculations referencing Thayer et al. 2017 use updated biomass through 2017 based on Thayer 2018, and apply NMFS' proposed Emsy and the Distribution factor from the CPS FMP, as Thayer et al. 2017 did not recommend a method for setting OFL or ABC.

Lastly, NMFS has collected ATM survey information on the biomass and distribution of CSNA since 2006. While the SWFSC has not released biomass estimates for CSNA from 2014 to date since "the numbers of anchovy and herring in the catches were too low to allow reliable estimations of their biomass"[47], these surveys provide important data indicating that the anchovy population was low. In particular, "on the basis of the low number of catches with these species and the low acoustic backscatter in the vicinity of those catches, their biomasses were likely much lower than those of sardine, Pacific mackerel, and jack mackerel."[48] Similarly, for 2006-2013, "The abundance of northern anchovy was not reliably estimated because in all years too few trawl samples included that species…."[49] Furthermore, NMFS scientists produced a relative index of CSNA abundance based on CalCOFI egg production data for the years 1981-2015.[50] At the November 2018 Council meeting, NMFS SWFSC staff presented data on 2017 egg production and corresponding spawning stock biomass estimates for CSNA, indicating the agency is able to convert the relative egg production index to absolute biomass.[51] This presentation also included time series of CSNA spawning biomass from DEPM, DEPM Light, and CalCOFI eggs & larvae for 1982, 1983, 1984, 2009-2011, and 2017, including a spawning biomass of 15,000 mt from 2009-2011. Yet, of this information, only the much higher 2017 DEPM estimate (308,173 mt) is used in the formulation of a "long-term" MSY in the proposed rule.

IV. NMFS Must Ensure that the Annual Catch Limit Does Not Jeopardize Species Protected Under the Endangered Species Act

NMFS's proposed multiyear ACL of 23,573 mt may affect marine predators listed under the Endangered Species Act ("ESA"), including Chinook salmon, California least tern, marbled murrelet, and humpback whales, particularly in years when anchovy biomass drops below the 3-year average NMFS uses as the basis for the proposed rule. Anchovy provides a critical food source for these species. Removing anchovy through fishing, particularly when alternate prey like Pacific sardine are also scarce, poses a risk to these predators. Reducing availability of preferred (and more nutritious) food sources may decrease the listed predators' reproductive success and drive localized population declines. Furthermore, continuing to allow significant levels of catch during a time of low anchovy abundance increases the risk that the anchovy

[47] Zwolinski et al. 2012: Distributions and abundances of Sardinops sagax and other pelagic fishes in the California Current Ecosystem. Fish. Bull. 110:110-122.
[48] *Id*.
[49] Zwolinski, J.P., D.A. Demer, G.R. Cutter Jr., K. Stierhoff, and B.J. Macewicz. 2014. Building on fisheries acoustics for marine ecosystem surveys. Oceanography 27(4):68–79, http://dx.doi.org/10.5670/oceanog.2014.87.
[50] Weber, E. 2016. Egg and Larval Production of CPS in the California Current. May 2, 2016 Public Presentation given at PFMC CPS Stock Assessment Methodology Workshop.
[51] NMFS SWFSC. 2018. NMFS Report SWFSC Activities, Gerard DiNardo & Dale Sweetnam. PFMC Agenda Item E.1.b. Supplemental SWFSC Presentation November 2018. Slides 8-13. https://www.pcouncil.org/wp-content/uploads/2018/11/E1b_Supp_SWFSC_Presentation1_Gerard_NOV2018BB.ppsx

population will be unable to recover to a robust level in the near future, and thus increases the risk that marine predators will continue to experience food shortages in coming years.

ESA Section 7(a)(2) requires federal agencies to ensure that no action they authorize, fund, or carry out is likely to "jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of [critical habitat]."[52] Therefore, regulations implementing Section 7 provide that: "[e]ach Federal agency shall review its actions at the earliest possible time to determine whether any action *may affect* listed species or critical habitat. If such a determination is made, formal consultation is required . . . ."[53] The "may affect" standard "is a relatively low threshold for triggering consultation."[54] If the proposed action has a "possible" effect on listed species, the consultation requirement is triggered.[55] Formal consultation may only be avoided if, as a result of the preparation of a biological assessment under 50 C.F.R. § 402.12, or as a result of informal consultation under 50 C.F.R. § 402.13, "the Federal agency determines, with the written concurrence of [the Service], that the proposed action is not likely to adversely affect any listed species . . . ."[56]

Where the agency has previously completed ESA consultation on an action, it must reinitiate consultation when, among other circumstances, "new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered."[57] NMFS has not completed prior ESA consultation on the effects on listed marine predators of the proposed multi-year ACL levels for northern anchovy and other species in the CPS FMP. Even if it had, any prior look that NMFS took at the issue did not account for the "bust" periods in the anchovy's "boom and bust" population cycle—the effects of which became very obvious in 2009-2016, when multiple predators experienced mass starvation and breeding failures due to lack of forage. NMFS must apply recent scientific evidence regarding the significant adverse effects of low anchovy abundance on marine predators, including changes in marine predator behavior, the synergistic effects of low anchovy abundance and low abundance levels for sardines and other prey species, reduced breeding success, and starvation events to assess the effects of its indefinitely specified ACL on listed species.

V. Options for Complying with the Magnuson-Stevens Act

A lawful management framework for anchovy would use data from annual surveys to update OFL, ABC, and ACL every year through a regulatory annual specification process. Among other things, it would also specify status determination criteria, including a minimum stock size threshold, based on the best available science, and explicitly account for predator

[52] 16 U.S.C. § 1536(a)(2).
[53] 50 C.F.R. § 402.14(a) (emphasis added).
[54] *Karuk Tribe of California v. United States Forest Service*,681 F.3d 1006, 1027 (9th Cir. 2012) (*en banc*).
[55] *Id., citing Cal ex. Rel. Lockyer v. U.S. Dep't of Agric.*, 575 F.3d 999, 1018 (9th Cir. 2009).
[56] 50 C.F.R. § 402.14(b).
[57] 50 C.F.R. § 402.16(b).

needs in setting ACLs.[58] NMFS should instruct the Council to expedite changes to the CPS FMP needed to bring it into compliance with the Magnuson-Stevens Act. If the Council declines to take swift action, NMFS should exercise its authority to develop a Secretarial amendment to correct the FMP's legal flaws.

In the shorter term, if NMFS chooses to base its catch limits on only three years of recent anchovy abundance data, it must account for the fact that the anchovy population could drop significantly below that three-year average in just a couple of years. This option reflects that current anchovy biomass levels appear healthy but that biomass can drop by over 90% in just two years—and to prevent overfishing and account for predator needs, the ACL must account for the possibility of a very large and rapid drop in anchovy abundance.

NMFS could do this by specifying an ABC[59] of 23,573 mt for 2019-2020, and specifying that after 2020, the ABC will be no more than 6,487 mt until such time as a new ACL is specified based on the best available science. For a static catch limit to prevent overfishing on a fluctuating stock, it must be set below MSY levels that reflect the worst-case scenario of a collapsed stock. Thayer et al. 2017 provides estimates of both long-term biomass and biomass during the recent period of collapse that can form the basis calculating a static catch limit that would prevent overfishing over the long term. Thayer et al produced a long-term spawning stock biomass estimate of 380,100 mt based on the median value from 1957-2017. While authors caution against using a single year's biomass estimate based on statistical variability when the population is at low levels, it is possible to estimate the mean size of the population during a multi-year collapse, the most recent of which occurred from 2009-2015. During this period of collapse, the mean population size was 33,100 mt, which is on par with NMFS's 2015 ATM survey estimate of 31,427 mt, and represents 8.7% of the long-term biomass calculated from 1957-2017. Therefore, using this long-term biomass to set OFL, the ABC must be set at or below 8.7% of OFL to prevent overfishing while accounting for uncertainty in annual biomass, reflecting the extent to which the population may decline below the long-term average. Based on the best available estimates of the CSNA spawning stock biomass during the recent collapse

[58] Oceana has presented these concepts and reforms to NMFS and the Council on numerous occasions. For more detail, see Letter from Oceana and Earthjustice to William W. Stelle, Jr., Regional Administrator, NMFS West Coast Region re Proposed Multi-Year Specifications for Monitored and Prohibited Harvest Species Stock Categories (Dec. 21, 2015) (with attachments); Letter from Oceana *et al* to Herb Pollard, Chair, Pacific Fishery Management Council re Stock Assessment Workshop Report and Anchovy Management Update (Sept. 6, 2016) (with attachments); Letter from Oceana and Earthjustice to Herb Pollard, Chair, Pacific Fishery Management Council, and Barry Thom, Regional Administrator, NMFS re Central Subpopulation of Northern Anchovy Overfishing Limit Process (Mar. 30, 2017) (with attachment); Letter from Oceana and Earthjustice to Barry Thom, Regional Administrator, NMFS West Coast Region re Proposed Multi-Year Annual Catch Limits for Finfish Stocks in Monitored Stock Category (Feb. 8, 2018); Letter from Oceana and Earthjustice to Phil Anderson, Chair, Pacific Fishery Management Council re Process for Review of Reference Points for Monitored Stocks (Mar. 28, 2018); Letter from Oceana and Earthjustice to Phil Anderson, Chair, Pacific Fishery Management Council re Central Subpopulation of Northern Anchovy Management Update (Apr. 1, 2019). *See also* Letter from Stephen P. Henry, Field Supervisor, United States Fish and Wildlife Service, to Phil Anderson, Chair, Pacific Fishery Management Council (Mar. 29, 2018); Letter from Stephen P. Henry, Field Supervisor, United States Fish and Wildlife Service, to Phil Anderson, Chair, Pacific Fishery Management Council (Apr. 1. 2019).

[59] While the CPS FMP allows the ACL to be set equal to the ABC, the ACL can (and should) be set below the ABC to account for the needs of marine predators and fisheries that target anchovy-eating fish species such as salmon. CPS FMP at 40.

(33,100 mt), and applying NMFS's proposed Emsy rate of 0.239 and the 0.82 distribution parameter set forth in the CPS FMP, a de minimis ABC that would prevent overfishing would be 6,487 mt. (Mathematically, this ABC is equivalent to setting an annual OFL for a collapsed stock using a SSB of 33,100 mt.) The calculations of OFL and ABC based on these data are as follows:

OFL = Biomass * Emsy * Distribution = 380,100 mt * 0.239 * 0.82 = 74,492 mt
ABC = OFL * ABC buffer = 74,492 mt * 0.087 = 6,487 mt

Furthermore, NMFS should set the ACL below ABC to account for predator needs and relevant ecological, economic, and social factors to achieve optimum yield.

CONCLUSION

We urge NMFS to take this opportunity to bring anchovy management into compliance with the Magnuson-Stevens Act and other applicable law. This is critical to the long-term health and resilience of the California Current Ecosystem and the communities that depend on it. Thank you for your consideration. Please contact us if you would like to discuss the issues or information presented in this letter.

Sincerely,

Andrea A. Treece
Staff Attorney, Oceans Program
Earthjustice

Geoff Shester, Ph.D.
California Campaign Director & Senior Scientist
Oceana

Cc: Charlton Bonham, Director, California Department of Fish and Wildlife
Chuck Tracy, Executive Director, Pacific Fishery Management Council

Attachments: This letter is being submitted via Regulations.gov with eight (8) PDF attachments containing the documents cited. Attachments 1-3 contain scientific studies. Attachments 4-5 contain Council documents. Attachment 6 contains prior comments on anchovy management submitted by the U.S. Fish and Wildlife Service. Attachments 7-8 contain prior comments on anchovy management submitted by Oceana and Earthjustice.

Appendix 1

Estimates of Annual Spawning Stock Biomass for the CSNA (including U.S. and Mexico) from 1951-2017, from Thayer et al. 2017 as updated by Thayer 2018. Blank cells indicate an estimate was not calculated for that year.

Year	CNSA Spawning Stock Biomass (thousands of metric tons)	Coefficient of Variation (CV)
1951	14.9	1.51
1952	10.7	1.78
1953	13.7	1.57
1954	93.8	0.61
1955	85	0.64
1956	32.8	1.02
1957	936	0.4
1958	422	0.31
1959	519.4	0.28
1960	491	0.29
1961	243.8	0.39
1962	650	0.26
1963	1102.7	0.21
1964	1993.7	0.18
1965	1902.6	0.18
1966	2015.5	0.18
1967		
1968	447.8	0.56
1969	1130.1	0.21
1970		
1971		
1972	384.3	0.32
1973		
1974		
1975	1822.1	0.3
1976		
1977		
1978	477	0.29
1979	436.2	0.3
1980		
1981	610.9	0.26

1982	318.2	0.66
1983		
1984	400	0.31
1985		
1986	2028	0.28
1987	465.4	0.55
1988	677.6	0.25
1989	167.4	0.46
1990	73.2	1.36
1991	380.1	0.61
1992	136.9	0.51
1993	123.6	0.54
1994	355.6	0.33
1995	140.7	0.5
1996	435.7	0.3
1997	251.7	0.39
1998	96.3	0.6
1999	190.3	0.44
2000	179.3	0.87
2001	357.9	0.63
2002	158.1	0.93
2003	122.8	1.05
2004	577.2	0.5
2005	1927.7	0.29
2006	1216.4	0.68
2007	205.2	0.82
2008	141.1	0.98
2009	18	5.47
2010	14.4	3.06
2011	15	3
2012	9.4	0.12
2013	7.5	0.5
2014	75.3	1.3
2015	92.1	0.14
2016	153.2	0.95
2017	1169.4	0.36

Geoff Shester
Oceana
06/10/2019 01:37 PM PDT

RE: Stock Assessment Prioritization Process

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June 10, 2019

Mr. Phil Anderson, Chair
Pacific Fishery Management Council
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Portland, OR 97220

RE: Agenda Item F.2 - CPS Stock Assessment Prioritization Process

Dear Chair Anderson and Council members:

Thank you for your discussion of a stock assessment prioritization (SAP) process for the coastal pelagic species (CPS) assemblage. Given the recent advances in the Southwest Fisheries Science Center (SWFSC) acoustic-trawl method (ATM) survey, particularly the approval of annual ATM survey estimates for use directly in annual management of all five CPS stocks, the context of this discussion has evolved significantly. To summarize our remarks:

1. The central stock of northern anchovy (CSNA) should unquestionably be the top priority for the next full integrated stock assessment. The Council should request NMFS immediately initiate a CSNA stock assessment based on best available science, even if it means foregoing other CPS stock assessments in the interim.
2. Moving to an annual specifications process using ATM survey estimates would reduce the need for frequent stock assessments of Pacific sardine or Pacific mackerel, freeing up resources to produce stock assessments for the other CPS stocks.
3. The "active" vs. "monitored" categories are no longer necessary or justifiable, should be removed, and should therefore not inform stock assessment prioritization. All CPS finfish stocks should be periodically assessed with an integrated stock assessment model to ensure management frameworks and harvest control rules reflect best available science.
4. The completion of any future stock assessments for CPS stocks should be accompanied by simulations to update estimates of minimum stock size thresholds (MSSTs), maximum sustainable yield (MSY) fishing rates, and harvest control rule parameters.

The Council has repeatedly requested, beginning in 2013, that NMFS complete a stock assessment for the CSNA. The fact that NMFS several times committed[1] to completing a CSNA stock assessment, did not subsequently complete a CSNA assessment, then after several years

[1] See e.g., NMFS Supplemental FSC Powerpoint (Werner). PFMC Agenda Item E.1.c, November 2013. Slide 8. http://www.pcouncil.org/wp-content/uploads/E1c_SUP_FSC_PPT_NOV2013BB.pdf *and* NMFS Supplemental SWFSC Powerpoint, PFMC Agenda Item H.3.a, November 2015. Slide 2: NMFS Actions include "conduct a northern anchovy stock assessment intended for completion in Fall 2016". http://www.pcouncil.org/wp-content/uploads/2015/11/H3a_Sup_SWFSC_PPT_ElectricOnly_Gerard_Nov2015BB.pdf

indicated to the Council that a CSNA assessment is not on the assessment schedule through 2022[2] has created frustration and confusion among the Council and stakeholders.

Based on recent discussions, our understanding of the rationale for not conducting a CSNA assessment to date is two-fold:

1. The perceived requirement to conduct Pacific sardine assessments every year and Pacific mackerel assessments every two years has exhausted SWFSC stock assessment resources.
2. Age composition data for CSNA has not been collected in recent years.

In response to the first point, as we explain more thoroughly in our comments on Agenda Item F.4, the Council should move toward an annual specifications process based on annual estimates of abundance from ATM surveys. Not only would this improve management of all CPS to better reflect current population sizes, but would obviate the need for frequent assessments of Pacific sardine and Pacific mackerel. Now that the SWFSC has completed Pacific sardine and Pacific mackerel assessments using ATM survey data as the primary index of abundance, the SWFSC should not do another Pacific mackerel or Pacific sardine stock assessment until it has completed full assessments for CSNA, the northern stock of northern anchovy (NSNA), and jack mackerel.

In response to the second point, while additional age composition data could help reduce uncertainty in the future, it is possible to conduct a fully integrated stock assessment with information that is available now. In fact, other stock assessments are regularly conducted with far less data. Furthermore, dockside sampling of anchovy and size class information from ATM surveys provides significant data that can be used to estimate or infer age compositions. NMFS should complete a stock assessment based on the best available data as required by the Magnuson-Stevens Fishery Conservation and Management Act, and can identify data needs to improve future assessments. The perfect should not be the enemy of the good.

The 2019 Pacific mackerel assessment represents a significant advance in CPS science and management, as it is the first assessment for a species other than Pacific sardine to use the NMFS SWFSC ATM survey as the primary index of abundance. This assessment provides a template that will enable integrated stock assessments for the other CPS finfish, including the central stock of northern anchovy (CSNA), northern stock of northern anchovy (NSNA), and jack mackerel.

Given the time since the last stock assessment, identified deficiencies with current management, the ecological importance of each stock, and recent fishery landings, we suggest the following prioritization and sequence for future integrated stock assessments of CPS:

Year	**CSNA**	**NSNA**	**J mack**	**P sardine**	**P mack**
2019	N/A	N/A	N/A	Update assessment	**Full assessment**
2020	**Full assessment**	Survey-only	Survey-only	Survey-only	Survey-only
2021	Survey-only	**Full assessment**	Survey-only	Survey-only	Survey-only
2022	Survey-only	Survey-only	**Full assessment**	Survey-only	Survey-only
2023	Survey-only	Survey-only	Survey-only	**Full assessment**	Survey-only
2024	Survey-only	Survey-only	Survey-only	Survey-only	**Full assessment**
2025	**Full assessment**	Survey-only	Survey-only	Survey-only	Survey-only

[2] See NMFS Supplemental SWFSC Presentation 1. PFMC Agenda Item C.1.b, April 2018. Slide 7 Stock Assessments and Schedule. https://www.pcouncil.org/wp-content/uploads/2018/04/C1b_Supp_SWFSC_Presentation1_Dinardo_APR2018.pdf

Based on recent recommendations of the SWFSC, stock assessment models are not needed for informing annual harvest specifications, as the survey-based approach is superior. However, survey-based approaches do not inform key management parameters such as MSST, MSY fishing rates, or harvest control rule formulas. These require simulation models, such as those used in management strategy evaluations. Because stock assessments are crucial for developing and updating such simulation models, we suggest that a basic simulation model be developed to accompany each future stock assessment so that the Council and NMFS may update MSST, MSY fishing rates, and harvest control rule parameters (e.g., fraction, cutoff).

In conclusion, the successful investment in ATM surveys by the SWFSC allows the Council to manage the full suite of CPS fish on a real-time basis, including annual updates to harvest specifications without completing new stock assessments. This fundamentally changes the role of stock assessments in the management process and how future stock assessments should be prioritized. We urge the Council to take advantage of this new opportunity by adopting an annual survey-based harvest specifications process for all five CPS fish stocks and reprioritizing full, integrated assessments for the stocks that have not been formally assessed for decades.

Sincerely,

Geoffrey Shester, Ph.D.
California Campaign Director & Senior Scientist

cc:. Kristen Koch, Director, NMFS Southwest Fisheries Science Center

Gilly Lyons
Audubon California, The Pew Charitable Trusts, Wild Oceans, Ocean Conservancy, and Sea and Sage Audubon Society
06/10/2019 04:59 PM PDT

RE: Stock Assessment Prioritization Process

Please accept these public comments on Agenda Item F.2 on behalf of Audubon California, The Pew Charitable Trusts, Wild Oceans, Ocean Conservancy, and Sea and Sage Audubon Society. Thank you very much.






June 10, 2019

Mr. Phil Anderson, Chair
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 101
Portland, OR 97220

RE: Agenda Item F.2 – Stock Assessment Prioritization Process for Coastal Pelagic Species and Agenda Item F.4 – Review of Management Categories for Coastal Pelagic Species

Dear Chair Anderson and Members of the Council:

Thank you for the opportunity to submit these comments to the Pacific Fishery Management Council (Council) on its consideration of a stock assessment prioritization process for coastal pelagic species (CPS) and its review of management categories in the CPS Fishery Management Plan (FMP). We encourage the Council to use the opportunity provided by the June 2019 meeting to continue to take the steps necessary to transition management of the CPS finfish assemblage to a framework that is more transparent, legally compliant, based on best-available science, and that meets the CPS FMP's objective to ensure adequate forage for dependent predators. Over the past several years, our organizations have called for the Council to adopt such a framework for CSNA in particular, and for Monitored CPS stocks more generally.

Consistent with these requests, we ask that the Council initiate an FMP amendment at the June 2019 meeting, for adoption in June 2020, that includes the following in its scope:

- Remove the distinction between the Monitored and Actively Managed stock categories in the CPS FMP.
- Establish a single annual specifications process for all CPS finfish stocks that are the subject of a directed fishery.
- Set or update Minimum Stock Size Thresholds (MSST) for all CPS finfish stocks, based on best available science.

We also reiterate our request that NOAA Fisheries complete an integrated stock assessment for the central subpopulation of northern anchovy (CSNA) for use in future updates and revisions to MSST, F_{MSY}, and harvest control rules. Such a stock assessment will be helpful in ensuring future management remains robust and responsive to changes in CSNA stock structure, stock-recruit relationships, and predator-prey dynamics; however, we note that a stock assessment is not a prerequisite to complete the FMP amendment described here.

The Monitored stock category was added to the CPS FMP in 1999 as part of Amendment 8, and was described at the time as a way to focus management attention and limited Council and agency resources where they were most needed.[1] However, rather than assisting managers and scientists in their stewardship of CPS stocks, the Monitored category has instead created inefficiencies, generated confusion, and placed obstacles to setting science-based catch limits and other key reference points. In an effort to address some of these concerns, the Council tasked the CPS Management Team (CPSMT) last November with "developing a proposed process and timeline to modify CPS stock management categories, to provide flexibility relative to revising stock-specific management strategies, and to promote consistency with other Council FMPs."[2]

We appreciate the Council's attention to and interest in resolving these issues, and we thank the CPSMT for its Report 1 under Agenda Item F.4. In order to better reflect core Magnuson-Stevens Fishery Conservation and Management Act (MSA) responsibilities, as well as advancements in scientific information regarding CPS abundance, we recommend that the Council consider modifying its draft Purpose and Need statement from the November motion to include the following language:

> *"With the availability of annual abundance estimates for all CPS finfish that are the subject of a directed fishery, the distinction between the Actively Managed and Monitored categories in the CPS FMP is no longer necessary. Therefore, the purpose of the proposed action is to 1) eliminate the Active and Monitored category terms; 2) utilize best available science and prevent overfishing by establishing an annual specifications process to set OFLs, ABCs, and ACLs informed by annual estimates of abundance; and 3) identify when stocks are overfished and demonstrate compliance with National Standard 1 guidelines by adopting Minimum Stock Size Thresholds for all CPS finfish stocks in the FMP."*

Below, we discuss in greater detail our recommended scope for an FMP amendment.

A. Remove the distinction between the Monitored and Actively Managed stock categories in the CPS FMP.

Our organizations have long supported eliminating the Monitored stock category from the CPS FMP. The distinction between Actively Managed and Monitored is a unique feature of the CPS FMP that has no clear basis in the MSA, and can actually impede the Council's efforts to meet its core MSA responsibilities. While we understand that the original rationale for the Monitored category was to tailor management and scientific attention to the importance of a stock to the CPS fishery, the resulting two-tiered framework has instead had the practical effect of allowing Monitored stocks – two subpopulations of northern anchovy and jack mackerel – to be managed with outdated information (or information that could easily become outdated within one to two years) that doesn't always reflect current stock size or status. Given the availability of annual abundance data for all five CPS finfish stocks, there is no need to differentiate between Active

[1] Pacific Fishery Management Council, February 2018, Coastal Pelagic Species Fishery Management Plan, at 9.
[2] Pacific Fishery Management Council, November 2018, November 2018 Council Meeting Decision Summary Document at 2.

and Monitored management; the Council now has the ability to set annual harvest specifications for all of these stocks, using timely information that NOAA Fisheries gathers every year.

By bringing all CPS finfish stocks that are the subject of directed fisheries under a management framework that includes regular abundance estimates and an annual specifications process, the Council can greatly improve its ability to manage these stocks using the best available science and in a manner that achieves Optimum Yield and prevents overfishing, per the goals and objectives of the CPS FMP and the requirements of the MSA.[3]

In November 2018, several of our organizations submitted public comment to the Council that detailed our concerns with the Monitored stock category.[4] Here we provide a summary of those concerns:

- *Static, multi-year catch limits for highly variable stocks can lead to overfishing*. The Monitored category uses a default harvest control rule that relies on a long-term average Maximum Sustained Yield (MSY) value to determine the Overfishing Limit (OFL).[5] These OFLs are used to derive fixed catch limits that are set indefinitely, and are therefore not responsive to changes in stock status or abundance. Basic fisheries science has long held that applying static, long-term catch limits to highly dynamic stocks, such as northern anchovy and jack mackerel, can lead to overfishing – and, if a declining stock is subject to a constant rate of catch (as permitted by a fixed catch limit) over time, it can also lead to a population's collapse, particularly "if the population ever happens to fluctuate below a threshold value."[6] Further, static catch limits can exacerbate collapses of widely-fluctuating stocks, even if they are not the cause of the collapse.[7]

- *Setting long-term catch limits in the absence of regular biomass updates may fail to prevent overfishing*. Because the Monitored category calls for tracking landings against a long-term Annual Catch Limit (ACL), "without periodic stock assessments or periodic adjustments to target harvest levels,"[8] it becomes difficult to determine whether catch is exceeding MSY levels, especially when biomass is low. This may lead to a situation where the Council is unable to ensure the prevention of overfishing, and therefore unable to meet its obligations under the MSA.

- *Setting catch limits without regard to current stock size is contrary to the requirements of the MSA.* The MSA mandates that federal fisheries management be based on the best scientific information available (BSIA).[9] In a 2018 federal court decision regarding catch limits for CSNA, the court noted that the most consequential factor in determining an

[3] See, e.g., 16 U.S.C. §§ 1851(a) and 1853(a).
[4] Pacific Fishery Management Council, November 2018, Supplemental Public Comment under Agenda Item E.5.
[5] CPS FMP at 40.
[6] May, R.M., J.R. Beddington, J.W. Horwood, and J.G. Shepherd. 1978. Exploiting natural populations in an uncertain world. Mathematical Biosciences 42:219-252, at 240.
[7] Siple, Margaret C., T.E. Essington, and E.E. Plagányi. 2018. Forage fish fisheries management requires a tailored approach to balance trade-offs. Fish and Fisheries. 2018;1-15.
[8] CPS FMP at 9.
[9] 16 U.S.C. § 1851(a)(2); 50 C.F.R. Part 600.315.

appropriate OFL, ABC, and ACL for a stock is the size of that stock.[10] The court's decision, and others before it emphasizing that NOAA Fisheries "must utilize the best scientific data *available*, not the best scientific data *possible*,"[11] call into question the validity of the Monitored category's reliance on default reference points and multi-year harvest specifications that can be wholly unrelated to current stock status.

- *The Monitored stock default harvest control rule's uncertainty buffer is not sufficiently protective.* The Monitored category's default harvest control rule includes a 75% reduction from OFL to ABC, a buffer that was originally intended to be precautionary by accounting for the uncertainty associated with using a long-term MSY value to determine OFL, but which did not anticipate the speed or steepness with which some CPS populations can collapse.[12] Given the demonstrated capacity of at least one Monitored stock, CSNA, to decline by as much as 97% in just a few years,[13] the default control rule's 75% buffer between OFL and ABC cannot be described as sufficiently precautionary.

- *A lack of regular biomass estimates leaves the Council without a means to assess stock status relative to OFL, ABC, and ACL.* While the CPS FMP's Monitored category doesn't preclude conducting stock assessments or regular abundance estimates for Monitored stocks, one clear legacy of the category has been a redistribution of all stock assessment resources to the two stocks that are actively managed. This general lack of scientific attention to Monitored stocks since 1999, coupled with the Monitored category's reliance on outdated information or information that may soon become outdated, leaves fishery managers without a clear way to evaluate status determination criteria and reference points. This in turn can put Monitored stocks at risk of overfishing, especially if the Council is unable to detect whether a stock has fallen below a biomass that would support MSY.

- *The Monitored category does not adequately consider the needs of dependent predators.* Fishing on a fluctuating forage stock when it is at low abundance hinders recovery and can further deprive predators of food resources.[14] Any level of commercial forage fish catch can be potentially biologically significant, particularly if the stock is in a collapsed or depressed state, or if fisheries are highly concentrated in an area important to central place foragers.[15] These impacts on predator-prey dynamics underscore the importance of managing forage species – including those currently classified as Monitored in the CPS

[10] *Oceana, Inc. v. Ross*, Case No. 16-CV-06784-LHK (N.D. Cal. Jan. 18, 2018).
[11] *Blue Water Fishermen's Assn. v. Nat'l Marine Fisheries Serv.*, 226 F.Supp.2d 330, 338 (D. Mass. 2002) (quoting *Building Indus, Ass'n of Superior California v. Norton*, 247 F.3d 1241, 1246-47 (D.C.Cir.2001)) (emphasis in original).
[12] MacCall, A. D., W. J. Sydeman, P. C. Davison, J. A. Thayer. 2016. Recent collapse of northern anchovy biomass off California. Fisheries Research. 175:87-94.
[13] *Id.*
[14] Essington et al. 2015. Fishing amplifies forage fish population collapses. Proceedings. Nat. Acad. Sci. May 26; 112(21): 6648–6652.
[15] Bertrand et al. 2012. Local depletion by a fishery can affect seabird foraging. Journal of Applied Ecology 49: 1168-1177.

FMP – with up-to-date abundance data and catch limits that correspond to the status of the stock.

B. Establish a single annual specifications process for all CPS finfish stocks that are the subject of a directed fishery.

In addition to removing the distinction between the Active and Monitored categories, we request that the FMP amendment also establish an annual specifications process for all five stocks of CPS finfish. The availability and suitability of Acoustic Trawl (AT) survey and other data – which is newer, better, and more reflective of current stock status than the long-term average MSY values upon which existing Monitored stock OFLs and ABCs are based – provides a path forward for managing all CPS stocks under the same annual management framework. AT survey data in particular represents "the best scientific information available on an annual basis for assessing abundance of all members of the CPS assemblage (except Pacific herring)."[16]

In order to set annual OFLs for each of the five CPS finfish stocks, we recommend utilizing an approach similar to one identified by the Council's Scientific and Statistical Committee (SSC) for updating CSNA's OFL;[17] this would entail multiplying the most recent estimate of a stock's U.S. biomass, derived from the AT survey, by the best estimate of that stock's F_{MSY}. As an example of the latter, the average F_{MSY} (0.266) included in Table 6 of NMFS's 2016 CPS MSST Report[18] and the E_{MSY} values described in Punt 2019[19] provide readily available starting points for calculating an updated OFL for CSNA. ABCs could then be calculated using a P* approach based on uncertainty in both the AT survey and the F_{MSY} estimate. Finally, we suggest that ACLs be set below ABC to account for Optimum Yield considerations and to achieve the goals of the FMP, including ensuring adequate forage for dependent predators.

We note that this shift to annual management for all CPS finfish can be implemented with the suite of tools and data currently available to fishery managers. Rather than being driven by stock assessments, an annual CPS specifications process would instead be informed by annual estimates of abundance for each of the five stocks. In fact, the authors of the most recent stock assessments for Pacific sardine and Pacific mackerel recommend using survey-based biomass estimates (specifically from the AT survey), and not model-based estimates, as a basis for setting annual OFLs, ABCs, and ACLs.[20] We appreciate that the CPSMT discusses this

[16] Pacific Fishery Management Council, June 2019, Pacific mackerel (*Scomber japonicus*) stock assessment for U.S. management in the 2019-20 and 2020-21 fishing years, Attachment 1 Under Agenda Item F.3, at 2 (describing the conclusions of the 2018 Acoustic Trawl Methodology Review).
[17] Pacific Fishery Management Council, April 2018, Supplemental SSC Report Under Agenda Item C.4; Pacific Fishery Management Council, April 2019, Supplemental SSC Report Under Agenda Item E.4.
[18] NOAA Fisheries, September 2016, *Review and Re-evaluation of Minimum Stock Size Threshold for Finfish in the Coastal Pelagic Fisheries Management Plan for the U.S.* Agenda Item E.1.a, Supplemental NMFS Report.
[19] Punt, A.E., April 2019, *An Approach for Computing E_{MSY}, B_{MSY} and MSY for the CSNA*, Attachment 1 Under Agenda Item E.4.
[20] Pacific Fishery Management Council, April 2019, Assessment of the Pacific Sardine Resource in 2018 for U.S. Management in 2019-20, Supplemental Revised Attachment 1 Under Agenda Item E.3, at 26; Pacific Fishery Management Council, June 2019, Pacific mackerel (*Scomber japonicus*) stock assessment for U.S. management in the 2019-20 and 2020-21 fishing years, Attachment 1 Under Agenda Item F.3, at 22-23.

recommendation in its Report on Stock Assessment Prioritization Process under Agenda Item F.2.[21]

While frequent stock assessments are not necessary to undertake this transition to annual management, we continue to support the completion of a stock assessment for CSNA within the next two to three years, and suggest that CSNA should be "next in line" for a benchmark assessment; such an assessment will be vital to developing a long-term strategy for sustainably managing this fishery, including future development and adoption of an ecosystem-based harvest control rule and CUTOFF that reflects current biological conditions. This assessment would not need to be updated annually or even semi-annually. Instead, it could be part of a CPS stock assessment schedule that focuses on one stock per year in sequenced rotation, such that each stock is fully assessed once every five years. While annual management would be informed by survey-based abundance estimates, as described above, less frequent assessments would then be utilized to enhance understanding of stock structure, stock-recruit relationships, predator-prey dynamics, and other elements important to developing and updating ecosystem-based management frameworks.

C. Set or update Minimum Stock Size Thresholds for all CPS finfish stocks, based on best available science.

Minimum Stock Size Threshold (MSST) is the fundamental tool used by NOAA Fisheries to determine whether stocks are overfished; when crossed, MSSTs also trigger the MSA's requirement to rebuild overfished stocks. The National Standard 1 guidelines provide clear formulas to set quantitative MSSTs based on current stock size; in order to be relevant in a management context, however, MSSTs need to be compared to a current estimate of abundance. In 2016, NOAA Fisheries produced updated estimates of MSSTs for several CPS finfish stocks, based on the best available science.[22] However, the Council has not yet adopted those updated values. As part of the FMP amendment described here, we request that the Council establish new or updated MSSTs for all CPS finfish.

Conclusion

In conclusion, we request that the Council initiate an amendment to the CPS FMP that removes the distinction between the Active and Monitored management categories, establishes an annual specifications process for all CPS finfish stocks, and sets or updates MSSTs for those same stocks. These improvements to the FMP will advance the Council's broader efforts to ensure its management of CPS stocks prevents overfishing, uses the best available science, responds to changes in stock status, and accounts for the needs of dependent predators. We also ask that CSNA be next in line for a benchmark stock assessment, as part of a rolling assessment schedule for each of the five CPS finfish stocks.

[21] Pacific Fishery Management Council, June 2019, CPSMT Report 1 Under Agenda Item F.2.
[22] NOAA Fisheries, September 2016, *Review and Re-evaluation of Minimum Stock Size Threshold for Finfish in the Coastal Pelagic Fisheries Management Plan for the U.S.* Agenda Item E.1.a, Supplemental NMFS Report.

Thank you for your consideration of our comments, and for your work to ensure sustainable fisheries and healthy ocean ecosystems.

Sincerely,

Anna Weinstein
Marine Program Director
Audubon California

Paul Shively
Project Director, U.S. Oceans, Pacific
The Pew Charitable Trusts

Theresa Labriola
Pacific Program Director
Wild Oceans

Corey Ridings
Manager, Fish Conservation
Ocean Conservancy

Susan Sheakley
Conservation Chair
Sea and Sage Audubon

Diane Pleschner-Steele
California Wetfish Producers Association
05/23/2019 12:35 PM PDT

RE: Pacific Mackerel Assessment, Harvest Specifications, and Management Measures - Final Action

Chair Anderson and Council members, I'm submitting these comments and recommendations on behalf of CWPA and California's wetfish industry. We would greatly appreciate your consideration of our concerns and acknowledge the need for more flexibility in both the stock assessment priority process and Terms of Reference for update assessments. Thank you.

Agenda Item F.3.b.
Public Comment
June 2019

CALIFORNIA WETFISH PRODUCERS ASSOCIATION
PO Box 1951 • Buellton, CA 93427 • Office: (805) 693-5430 • Mobile: (805) 350-3231 • Fax: (805) 686-9312 • www.californiawetfish.org

May 22, 2019

Mr. Phil Anderson, Chair
And Members of the Pacific Fishery Management Council
7700 NE Ambassador Place #200
Portland OR 97220-1384

RE: Agenda Item F.3 ~ Pacific Mackerel Assessment and Management Measures

Dear Mr. Anderson and Council members,

On behalf of the members of CWPA and California's wetfish industry, I'm writing to express the serious concerns that I'm hearing from both fishermen and processors regarding the reduction in biomass estimated in the 2019 benchmark Pacific mackerel stock assessment. This leads to a sharply reduced proposed harvest guideline, despite the 'vast' abundance of one to two pound mackerel that albacore fishermen have seen and reported for the past couple of years, breezing near the surface from 30 to 75 miles offshore in the Pacific Northwest.

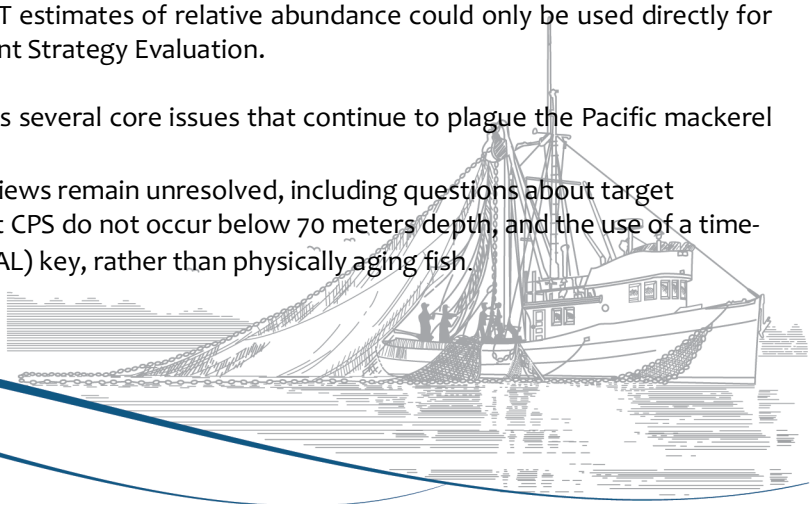
The root of this problem is the continuing deficiencies in Acoustic Trawl (AT) surveys and assumptions. The issues deliberated in this review largely mirror problems experienced at the 2011 and 2015 Pacific mackerel STAR panel meetings, as well as the 2018 Acoustic Trawl (AT) methods review. As the CPS Advisory Subpanel representative on the recent Pacific Mackerel STAR Panel, I highlighted many of the industry's concerns in the CPSAS statement in the STAR Panel Report. We would appreciate the Council's consideration of these comments.

The 2015 benchmark assessment attempted to assess the Pacific mackerel population with a model based primarily on CPFV surveys that didn't report much of the mackerel caught. Including Acoustic Trawl surveys in the 2015 model scaled biomass downward, but provided little information on biomass. Thus, the AT survey was dropped from the 2015 assessment.

This 2019 benchmark now attempts to assess age 1+ biomass with a new Model Alt that is based mainly on the AT survey. However, although the Stock Assessment Team (STAT) strongly advocates for a survey-based assessment, the 2018 AT methods review recommended that AT estimates of relative abundance could only be used directly for management of CPS after conducting a Management Strategy Evaluation.

The CPSAS statement in the STAR Panel Report lists several core issues that continue to plague the Pacific mackerel stock assessment. In part:

- Issues identified at the AT methods reviews remain unresolved, including questions about target strength, the incorrect assumption that CPS do not occur below 70 meters depth, and the use of a time-invariant conditional age-at-length (CAAL) key, rather than physically aging fish.



- There's also the issue that biological composition data, specifically age, are only available from California. Incidental catch data from the whiting fishery are available, but those fish have not been aged, hence age data from the Pacific Northwest beyond the AT survey's CAAL data do not inform the model.

The final straw: there was not enough time during this STAR panel meeting to resolve the conflict in Model Alt between fishery age data, particularly age 0's collected in California fishery landings (but sometimes also in AT surveys), with the time-invariant CAAL key used to assigned age to a relatively small sample size of fish captured in AT surveys. This review struggled with how to down-weight the increase in recruitment of age 0 fish observed in 2018 in light of model sensitivity, and how to fit Model Alt (to the degree possible) to the AT survey.

Although mackerel fishery catches have been relatively low in recent years in California, it is well known that Pacific mackerel are characterized by sharp spikes in abundance, particularly when anchovy are as abundant as they are now. Fishermen are very concerned that the reduced harvest limits prescribed in this stock assessment may be in effect for another four years, with harvest limits declining even further in the meantime. This condition could preclude harvest opportunity if the Pacific mackerel population spikes in the interim. Pacific mackerel are a key alternative fishery in southern California when sardine and market squid are unavailable.

With the closure of the sardine fishery, and a potential decline in squid abundance due to the current El Niño cycle, effort could increase on Pacific mackerel in 2019, if pure mackerel schools are available (the 20-percent bycatch rate soon to be required for incidental catch of sardine will likely preclude fishing on mixed-fish schools). As Council members heard during open public comment, California's wetfish industry is now asking for help under the socio-economic Point of Concern framework to avoid a cascade of bankruptcies and further decline in the CPS fleet.

If the Pacific mackerel fishery expands, either in California, the Pacific Northwest or both places at once, the potential for premature fishery closure exists at the low harvest limit proposed in this stock assessment. This is another compelling reason to develop a systematic aging program that includes mackerel from the full range of the stock, including the Pacific Northwest.

We support the recommendations made in the CPSAS statement in STAR Panel Report:

- Data collection programs need to be substantially expanded to include ageing Pacific mackerel captured incidentally in the whiting fishery, as well as Pacific mackerel captured in the Pacific northwest fishery. This information should be included in the next update assessment.
- AT survey methodology should be improved as recommended in the 2018 AT methods review, including the issues mentioned above.
- Also, AT surveys should increase the spatial boundaries of the survey grid, ideally into Mexico either independently or cooperatively, as well as adding side-looking sonar acoustics to capture fish in the upper water column. Sample size in AT surveys also should be increased.
- Likewise, efforts should be continued to encourage collaborative Tri-national research and data exchanges, and to collaborate with the fishing industry toward improving the knowledge of Pacific mackerel.
- Finally, increased collaboration with industry, both in expanding surveys and acknowledging fishermen's observations of CPS stock presence / abundance on the fishing grounds, and focusing surveys accordingly, would improve the accuracy of future stock assessments.

One further recommendation that we agree is critical, in light of recognized 'spikes' in Pacific mackerel abundance in favorable conditions, is to allow the Council sufficient flexibility to adjust the timing of update reviews and management measures as needed between scheduled benchmark assessments. The Terms of Reference for update assessments also need more flexibility built into the process to enable the STAT, SSC and Council to consider common-sense alternative approaches that are now off limits except in benchmark assessments. These issues are ripe for further consideration under Agenda Item F.2 ~ the Stock Assessment Prioritization Process.

We appreciate the Council's consideration of these concerns and recommendations.

Best regards,

Diane Pleschner-Steele
Executive Director

Geoff Shester
Oceana
06/10/2019 01:39 PM PDT

RE: Pacific Mackerel Assessment, Harvest Specifications, and Management Measures - Final Action

see attached.

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June 10, 2019

Mr. Phil Anderson, Chair
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 101
Portland, OR 97220

RE: Agenda Item F.3 – Pacific mackerel assessment, harvest specifications, and management measures

Dear Chair Anderson and Members of the Council:

Pacific mackerel is an important component of the coastal pelagic species (CPS) assemblage off the U.S. West Coast, providing a key food source for large pelagic sharks and tunas, seabirds, and marine mammals. The Council must ensure that it manages CPS stocks in a way that provides adequate forage for predators, consistent with requirements of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and the goals of the Coastal Pelagic Species Fishery Management Plan (CPS FMP). Setting catch limits based on best available science is critical to satisfying these requirements.

To summarize our position on Pacific mackerel harvest specifications:

1. We support the use of Acoustic Trawl Method (ATM) survey estimates of Pacific mackerel biomass for use in the 2019 Pacific mackerel stock assessment and for use in setting annual harvest specifications;
2. For the 2019-2020 season, the Council should use the 2018 survey-based biomass estimate of 33,351 metric tons (mt) for setting harvest specifications. If the Council chooses to use the model-based projection estimates of 71,089 mt for July 2019 and 56,098 mt for July 2020, the Council should substantially reduce the 2019-2020 and 2020-2021 ACL below the Harvest Guideline and increase the acceptable biological catch (ABC) uncertainty buffer to account for the uncertainty in the projection;
3. As soon as possible, the Council should work closely with the Southwest Fisheries Science Center (SWFSC) and its Scientific and Statistical Committee (SSC) to implement the SWFSC recommendation to use annual ATM survey estimates to update harvest specifications for Pacific mackerel every November and change the season start date from July 1 to January 1.

After reviewing the 2019 draft Pacific mackerel stock assessment,[1] we are pleased to see that the ATM survey data is being used to inform the management of Pacific mackerel. This constitutes a major improvement over the use of recreational fishing catch data used in previous stock assessments. As indicated in the Pacific mackerel stock assessment, the 2018 ATM methodology

[1] Crone et al. 2019. Pacific mackerel (*Scomber japonicus*) stock assessment for U.S. management in the 2019-2020 and 2020-2021 fishing years. May 2019. NOAA Fisheries. Available: Agenda Item F.3, Attachment 1, June PFMC meeting.

review[2] conducted by the Council and Center for Independent Experts concluded that "AT [acoustic trawl] data represented the *best scientific information available* on an annual basis for assessing abundance of all members of the CPS assemblage (except Pacific herring), and approved the use of these data for directly (survey-based) or indirectly (model-based) assessing the status of the stock" (emphasis added).[3] Furthermore, as stated in the assessment:

> "Irrespective of the assessment approach adopted in the future, the AT summer surveys will continue to have the highest relevance for Pacific mackerel management. Unarguably, there exist no other scientifically collected abundance data for assessing this stock's status on a regular basis. As presented below, past assessments have included various seriously flawed 'survey' indices of abundance that have been slowly omitted from models over time."[4]

We appreciate the investment the SWFSC has put into developing the Acoustic Trawl Survey and the new assessment, which have significantly improved the scientific basis for Pacific mackerel fishery management.

The Council and NMFS should move to a survey-based assessment that uses summer ATM estimates of Pacific mackerel biomass to set annual specifications (OFL, ABC, and ACL) with a season start date of January 1 as recommended by the stock assessment. Under this approach, integrated stock assessments would still occur periodically to inform the overall management framework. An annual specification based on annual ATM estimates is unequivocally superior to the current approach to specifying catch limits, which uses projected model-based estimates from integrated stock assessments with a July 1 start date. According to the 2019 assessment, "the STAT\SWFSC strongly feel that the most efficient scientific assessment for regularly advising management regarding the status (abundance) of any member of the CPS assemblage is the AT survey-based approach. The survey-based assessment was generally considered the better long-term approach…." The authors further state that relative to a survey-based approach, "a model-based assessment includes considerable additional uncertainty associated with the estimate of recent stock biomass needed for regularly advising management".[5] In addition, model-based assessments include process error and de-emphasize the most recent indices of abundance.

An annual, survey-based approach to setting specifications would address the industry's stated concern with the current model-based approach that if Pacific mackerel experiences a major increase, the industry will be unfairly constrained.[6] Under a survey-based approach, once the population increase is detected, catch limits can be more rapidly increased to allow for increased fishing opportunities, which is particularly important when other CPS are at lower levels. This "real-time" management approach can provide fishing opportunities while being responsive to natural stock fluctuations. Since the ATM surveys can provide estimates of the biomass of Pacific mackerel in U.S. waters, the survey-based assessment would eliminate the need for a "distribution" parameter in the harvest specifications formulas, further reducing scientific and management uncertainty. With the completion of the 2019 Pacific mackerel assessment and a shift to a survey-based approach, there would no longer be a need to conduct a new Pacific mackerel assessment for the next 5-10 years, freeing up SWFSC resources to produce stock

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[2] Methodology Review Panel Report: Acoustic Trawl Methodology Review for Use in Coastal Pelagic Species Stock Assessments. Available: PFMC Agenda Item C.3., Attachment 2. April 2018.
[3] Crone et al. 2019, *supra note* 1.
[4] *Id.*
[5] *Id.*
[6] California Wetfish Producers Association May 29, 2019 letter to PFMC Chair Phil Anderson, Available: Agenda Item F.3.b, Public comment, PFMC June 2019.

assessments for higher priority CPS stocks like the central stock of northern anchovy. In the meantime, the Council should urge the SWFSC and state agencies to collect additional age composition data on Pacific mackerel as described in the data needs section of the stock assessment to improve future assessments.

While we support the adoption of the 2019 integrated stock assessment model to inform Pacific mackerel management, in the near-term we are concerned by the large difference between the most recent 2018 summer ATM survey-based estimate of 33,351 mt and the model-based projection estimate of 71,089 mt for July 2019 that is being proposed for use in setting the 2019-2020 specifications. We support the use of the 2018 ATM survey-based biomass estimate of 33,351 mt for setting 2019-2020 specifications. The July 2019 projection is more than double the summer 2018 ATM survey estimate because it is based on highly uncertain recruitment predictions. If the Council adopts the 71,089 mt projection-based estimates from model ALT, a significant additional uncertainty buffer should be added in determining the ABC buffer, and the Council should set the ACL well below what is specified in the HG formula to ensure that the ACL does not result in overfishing if the actual recruitment turns out to be less than predicted. Given the additional time lag between the data informing this 2019 assessment and the start of the 2020-2021 season, the ABC buffer should be substantially larger in 2020-2021.

Last, the harvest guideline formula for Pacific mackerel has not been updated or re-evaluated with new analysis since 1998, when it was put in place with adoption of the original CPS FMP. We are concerned that the cutoff of 18,200 mt may not be sufficient to protect the stock or to provide adequate forage, and the fraction parameter of 30% may not reflect the productivity of the stock under current oceanic conditions. With the completion of the 2019 Pacific mackerel assessment, the Council has new updated science to perform simulations and update these parameters which have not been re-assessed for over 20 years.

In conclusion, while Pacific mackerel may not always be the dominant CPS stock, it can be an important forage species and should be managed with utmost precaution using best available science to achieve optimum yield as required by the MSA. With the approval of the annual ATM survey for direct use in annual management, the stock assessment authors and SWFSC have laid out a path to significantly improve Pacific mackerel fishery management. We urge the Council to take this opportunity to consider reforming the management of Pacific mackerel based on the recommendations of NMFS scientists.

Sincerely,

Geoffrey Shester, Ph.D.
California Campaign Director & Senior Scientist

cc: Kristen Koch, Director, Southwest Fisheries Science Center
Dr. John Field, Chair, Scientific and Statistical Committee

Bobby Hayden
The Pew Charitable Trusts
06/10/2019 04:39 PM PDT

RE: Review of Management Categories

THE PEW CHARITABLE TRUSTS

111 SW Columbia Street, Suite 200
Portland, Oregon 97201
pewtrusts.org

June 10, 2019

Mr. Phil Anderson, Chair
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 101
Portland, OR 97220-1384

RE: Agenda Item F.4: Review of Management Categories

Dear Chair Anderson and Council Members,

The Pew Charitable Trusts is submitting public comment on behalf of 10,140 ocean advocates in support of ecosystem-based fisheries management for northern anchovy.

The original message is posted below. Use this link to access the PDF of the full comments, including many personal messages from people on the U.S. west coast and around the country:

http://bit.ly/Anchovy_Comments_June_2019

Thank you for your time and consideration. We appreciate the opportunity to work with you to maintain sustainable fisheries and healthy ocean ecosystems.

Bobby Hayden
Senior Associate, U.S. Oceans, Pacific
The Pew Charitable Trusts
rhayden@pewtrusts.org

June 10, 2019

Mr. Phil Anderson, Chair
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 101
Portland, OR 97220-1384

RE: Agenda Item F.4: Review of Management Categories
Dear Chair Anderson and Council Members,

I'm writing to ask that at the June Council meeting, you initiate changes to the federal plan for managing northern anchovy and other important West Coast forage fish species. These changes should allow catch limits for all these species to be updated annually based on the best available science, while removing the unnecessary distinction between the plan's active and monitored management categories.

Anchovy populations are known to rise and fall sharply over short periods of time, yet they are managed using fixed catch limits that can remain the same for years, potentially harming dependent predators and running a risk of overfishing when populations are low. Forage fish like anchovy are simply too important to be managed this way. By amending the fishery management plan (FMP) for anchovy and other coastal pelagic species, the Council can begin to actively manage this crucial forage fish by using readily available, up-to-date estimates of anchovy numbers and setting catch limits accordingly. These limits should be reviewed annually and updated as needed in response to significant population changes.

Please eliminate the distinction between the active and monitored stock categories in the FMP and shift anchovy to annual management so that catch limits are updated regularly using the best available science. By ensuring that management of this essential forage fish is active, science-based, and considers the broader marine ecosystem, the Council can help maintain both a healthy Pacific Ocean and productive, sustainable fisheries.

Sincerely,

We the undersigned
View a full PDF of public comments.

Geoff Shester
Oceana
06/10/2019 01:41 PM PDT

RE: Review of Management Categories

see attached.

June 10, 2019

Mr. Phil Anderson, Chair
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 101
Portland, OR 97220

Mr. Barry Thom, West Coast Regional Administrator
National Marine Fisheries Service
1201 NE Lloyd Boulevard, Suite 1100
Portland, OR 97232

RE: Agenda Item F.4: Review of CPS Management Categories

Dear Chair Anderson, Mr. Thom, and Council members:

Thank you for your reconsideration of the "active" and "monitored" management categories in the Coastal Pelagic Species Fishery Management Plan (CPS FMP). As you are aware, we have repeatedly raised concerns about these categories with the Council and the decision in *Oceana v. Ross* identified significant legal deficiencies in the way the National Marine Fisheries Service (NMFS) and the Council currently manage the central subpopulation of northern anchovy.[1] In this letter, we request the Council initiate a CPS FMP amendment to bring the FMP into compliance with the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and base management on the best available science.

The CPS FMP initially placed Pacific sardine and Pacific mackerel in the "active" category and the central stock of northern anchovy (CSNA), the northern stock of northern anchovy (NSNA) and jack mackerel in the "monitored" category, and has not changed the categorization of these stocks since the FMP was adopted in 1998. We have presented the reasons why the "monitored" category violates the MSA in various comments to the Council[2] and in our public comments on recent NMFS regulations setting "monitored" specifications (Attachments 1 and 2). Briefly, the legal and scientific deficiencies in the "monitored" approach include the following:

> ***Fails to identify when stocks are overfished.*** The CPS FMP currently does not specify Minimum Stock Size Thresholds for any "monitored" stocks. Minimum stock size thresholds are the status determination criterion that NMFS uses to identify when stocks are overfished. This violates Section 303(a) of the MSA. Furthermore, even if there were MSSTs in place, there is no annual or regular review of stock sizes by NMFS or the Council to evaluate current stock size relative to MSST. Specifically, while the CPS Stock Assessment and Fishery Evaluations to date provide landings information, they include no information on stock abundance from ATM surveys or other indices for monitored stocks.

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[1] *Oceana v. Ross*, 359 F. Supp. 3d 821 (N.D. Cal. 2018).
[2] See, e.g., Oceana Powerpoint. April 2019. Agenda Item E.4. https://www.pcouncil.org/wp-content/uploads/2019/04/E4b_Supp_PubPresentation2_Oceana_Shester_Pub_Cmt_April2019BB.pdf
Oceana/Earthjustice letter to PFMC, April 1, 2019. Agenda Item E.4. https://pfmc.psmfc.org/CommentReview/DownloadFile?p=68a3b823-7dd1-448d-9071-d456d6a32904.pdf&fileName=oceana-earthjusticeE4-anchovy_4-1-19.pdf
Oceana/Earthjustice letter to PFMC, October 23, 2018. PFMC Agenda Item E.5. https://pfmc.psmfc.org/CommentReview/DownloadFile?p=70fe3867-9e76-45ff-b68e-ccdb297a6f6a.pdf&fileName=E5b_Supp_PubComm_1_NOV2018BB%20E-Only.pdf

Not reflective of the current population size. Setting multi-year catch limits for CPS stocks that have the potential to fluctuate drastically every year means that catch limits are not set based on the current population size and thus may not prevent overfishing when the stocks drop significantly below the average biomass assumed as the basis for the multi-year catch limits.

Does not require regular review of management measures to ensure they incorporate best available science. Because any update or decision to revise specifications for "monitored" stocks is not required by the CPS FMP or part of a mandatory schedule, there is no way to ensure that newly available information on stock size, productivity, age compositions, or ecological concerns regarding insufficient forage are incorporated into management. Evaluating and basing management measures on best available science is a non-discretionary requirement of the MSA on an ongoing basis.

Fails to prevent overfishing when stocks are low. Unless catch limits were set at truly de minimis levels that would prevent any significant directed commercial fishing, static catch limits for highly fluctuating stocks will not prevent overfishing at times when the stock is at low levels. The default 75% buffer between ABC and OFL will not prevent overfishing in any years where the stock size is less than 75% of the biomass on which the long-term OFL is based. While NMFS has argued that NMFS and/or the Council could always take new action to reduce catch limits if a monitored stock collapses, the FMP treats such updates as discretionary. The MSA requirement to prevent overfishing is not discretionary.

Does not account for ecosystem needs / optimum yield considerations. Optimum yield is defined in the MSA as the "maximum sustainable yield from the fishery, as reduced by any relevant economic, social, or ecological factor."[3] For all "monitored" stocks, the ACL has been set equal to the ABC since the CPS FMP has been in place, despite the CPS FMP indicating that the ACL may be set equal to ABC or "reduced by OY considerations."[4] Any suggestion that OY considerations are somehow implicit in the "monitored" ACLs has no legitimate basis, as the formula in the FMP itself makes clear that "OY considerations" would be deducted after the ABC is calculated.[5] Furthermore, the argument NMFS has recently advanced that OY considerations are implicit in the buffer between ABC and OFL is simply false, as the ABC buffer is intended solely to account for scientific uncertainty in the OFL. Furthermore, while the CPS FMP generally recognizes the importance of CPS as forage fish for larger predators, it does not provide any requirements or even guidance for ensuring that OY considerations are explicitly considered and incorporated when setting the ACL.

Availability of annual estimates of biomass that comprise the best available information on stock abundance and have been approved for use in management eliminates the previous rationale used to justify multi-year catch limits. The original rationale for the monitored category was to prioritize limited resources at a time when annual abundance estimates were not readily available for all five CPS finfish. That rationale no longer applies because data and methods are available to estimate the abundance of all CPS fish stocks on an annual basis.[6] As

[3] 16 U.S.C § 1802(33)(B).
[4] Coastal Pelagic Species Fishery Management Plan as Amended Through Amendment 16 (Feb. 2018) at 40.
[5] *Id*.
[6] *See, e.g.,* Stierhoff et al. 2019. Distribution, biomass, and demography of coastal pelagic fishes in the California Current Ecosystem during Summer 2018 based on acoustic-trawl sampling. NOAA Tech Memo NOAA-TM-NMFS-SWFSC-613. PFMC April 2019 Meeting Agenda Item E.4.a. https://www.pcouncil.org/wp-content/uploads/2019/04/E4a_Supp_SWFSC_Rpt2_2018-NOAA-Acoustic-Trawl-Survey-Electronic-OnlyAPR2019BB.pdf

most recently reiterated in the Pacific mackerel assessment, the 2018 ATM methodology review conducted by the Council and Center for Independent Experts concluded that "AT [Acoustic trawl] data represented the best scientific information available on an annual basis for assessing abundance of all members of the CPS assemblage (except Pacific herring), and approved the use of these data for directly (survey-based) or indirectly (model-based) assessing the status of the stock".[7] Relative to any other index of abundance for CPS, the ATM survey is considered by the SWFSC as the most objective and comprehensive. We commend the SWFSC for its immense amount of work and expertise in developing a world class ATM survey using state of the art echosounders and a careful field design. This successful effort led to the survey's approval by the ATM review panel. Yet the "monitored" category fails to use this best available scientific information to regularly update management specifications for monitored CPS stocks.

Support for CPS FMP Amendment

The Council has repeatedly acknowledged the shortcomings of the "monitored" category, and we are encouraged by the Council's November 2018 motion to consider a CPS FMP amendment at this meeting. This agenda item is the time to take decisive action to resolve the longstanding concerns with the "monitored" category.

We request the Council initiate an FMP amendment at this June 2019 meeting for final adoption in June 2020. We believe this timeline is reasonable given how much Council time, analysis, resources, and white papers have already been devoted to this issue over the last five years. In particular, we note that the Council was able to take final action on Amendment 17 to the CPS FMP in less than one year from the initial decision to amend the FMP. If the Council effectively prioritizes resources, the Council can resolve the long-standing flaws with the "monitored" category and bring the CPS FMP into compliance with the MSA.

Purpose and Need of the CPS FMP Amendment

We appreciate that the Council requested comments from its advisory bodies and the public on a draft purpose and need statement for an FMP amendment at its November 2018 meeting.[8] Based on the Council's November 2018 draft Purpose and Need statement and the points raised above, we recommend the Council consider the following revised Purpose and Need statement for a CPS FMP amendment:

With the availability of annual estimates of abundance for all CPS finfish representing best available science on stock status and providing the scientific basis for annual management, there is no longer justification or need for the "monitored" category. Therefore, the purpose of the proposed action is to 1) establish an annual specifications process to set OFLs, ABCs, and ACLs informed by annual estimates of abundance; 2) establish and/or update Minimum Stock Size Thresholds for all stocks of CPS finfish in the FMP; and 3) eliminate the "active" and "monitored" management category terms. The proposed action will ensure consistency with National Standards 1 and 2, ensuring that the CPS FMP prevents overfishing, includes clear status

[7] Crone et al. 2019. Pacific mackerel (*Scomber japonicus*) stock assessment for U.S. management in the 2019-2020 and 2020-2021 fishing years. May 2019. NOAA Fisheries. Agenda Item F.3, Attachment 1, June PFMC meeting. p. 14. https://www.pcouncil.org/wp-content/uploads/2019/05/F3_Att1_Mackerel_Stock-Assessment_Full_Electric_Only_Jun2019BB.pdf

[8] PFMC November 2018 Draft Purpose and Need Statement can be found in CPSMT Report on CPS FMP Categories. June 2019. PFMC Agenda Item F.4.a. CPSMT Report 1. https://www.pcouncil.org/wp-content/uploads/2019/05/F4a_CPSMT_Rpt1_Jun2019BB.pdf

determination criteria for when stocks are overfished, and uses best available science. This action will also promote consistency with terminology across the Council's fishery management plans (FMPs) and clarify the management strategies that the Council intends to use for the stocks managed under the CPS FMP.

Scope of CPS FMP Amendment

Consistent with the above proposed Purpose and Need Statement, we request the Council amend the CPS FMP to accomplish the following:

1. ***Set or update MSSTs for all CPS finfish***.
   In 2016, pursuant to a court settlement regarding Amendment 13 to the CPS FMP, NMFS produced updated values for MSSTs for Pacific sardine, Pacific mackerel, CSNA, and jack mackerel. The CPS FMP should adopt these values or newer values that have been updated since the 2016 MSST report. For NSNA, the amendment should establish an MSST based on the best available science.

2. ***Establish a single annual specifications process for all CPS finfish***.
   The Council already conducts 1-2 specifications every year for CPS (Pacific sardine and Pacific mackerel). A single CPS specifications agenda item covering all five species could streamline workload, and would provide a venue for considering and incorporating the best available science into management. An annual specification process (as opposed to biennial or less frequent) would ensure that the OFL, ABC, and ACL reflect the rapid, significant fluctuations these stocks experience over very short time periods and match the frequency of annual abundance indices such as the ATM survey. It would also minimize the uncertainty introduced by projecting future biomass given the unpredictable recruitment patterns of CPS stocks.

   As discussed, we believe the Council should move toward using survey-based biomass estimates to directly set annual specifications, consistent with the recommendations of the Pacific sardine stock assessment team (STAT) and the Pacific mackerel stock assessment: "the STAT\SWFSC strongly feel that the most efficient scientific assessment for advising management on an annual basis regarding the status (abundance) of any member of the CPS assemblage is the AT survey-based approach."[9] Another advantage of using ATM survey-based biomass estimates is that the ATM survey provides an estimate of the biomass of the stock in U.S. waters only, therefore it is unnecessary to apply a Distribution term in setting OFL, ABC, and ACLs, further reducing uncertainty. Given the timing of the summer ATM surveys, the Council should work with the SWFSC to conduct annual specifications at the November meeting and move the start date of all CPS fisheries to January 1, consistent with the recommendations made by the stock assessment authors of the Pacific sardine and Pacific mackerel assessments.[10]

   Annual specifications should set OFLs, ABCs, and ACLs for each of the five CPS finfish stocks. As has been recommended by the SSC, under such an approach, the OFL would be set based on multiplying the most recent estimate of biomass in U.S. waters (e.g., ATM survey estimate) by the annual exploitation rate that achieves MSY (Emsy). Consequently, the ABC would be set using the Council's existing P* framework used for Groundfish and CPS, whereby the sigma values would be set based on the combined uncertainty in the survey biomass estimates and the

[9] Crone et al. 2019. Pacific mackerel (*Scomber japonicus*) stock assessment for U.S. management in the 2019-2020 and 2020-2021 fishing years. May 2019. NOAA Fisheries. Agenda Item F.3, Attachment 1, June PFMC meeting at 2
[10] *Id*. at 18

Emsy. Notably, this approach would likely result in a much smaller buffer between OFL and ABC than the current 75% default for monitored stocks in the CPS FMP due to the decreased uncertainty in current year biomass. The FMP amendment would need to specify new formulas for setting ACLs such that ACLs are set below ABC values in a manner that achieves optimum yield as required by the MSA, and achieves the FMP's stated goals by accounting for ecological factors like ensuring adequate forage for marine predators, and socioeconomic factors like ensuring adequate forage for other important commercial fish species like salmon. The Council should consider the default harvest control rule formula for actively managed species (Biomass – Cutoff) * Fraction, as well as other potential frameworks such as a tier-based approach.

3. ***Remove the "active" and "monitored" categories***.
   To avoid any further confusion, and given the lack of justification for distinguishing between active and monitored CPS stocks, these categories should be removed from the FMP. We do not suggest any changes to the existing ecosystem component species category (herring, jack smelt) or the prohibited species category (krill). This request is consistent with Option 3 as described in the CPSMT June 2019 statement on this agenda item.[11]

In summary, the CPS FMP's "monitored" category is inherently problematic, violates the MSA, and has created inefficiency and confusion that have taken up significant airtime at the Council. After discussing this issue for the last five years, it is time for the Council to initiate a CPS FMP amendment that takes advantage of the state of the art scientific information produced by the SWFSC and recommendations of the CPS stock assessment scientists. We urge the Council to initiate an FMP amendment now as described above and develop a range of alternatives at the November 2019 meeting. We look forward to participating in this process to help bring the CPS FMP in line with modern science and into compliance with the MSA.

Sincerely,

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Earthjustice
50 California St #500
San Francisco, CA 94111

cc: Wade Crowfoot, California Secretary of Natural Resources
Eric Sklar, President, California Fish and Game Commission
Chuck Bonham, Director, California Department of Fish and Wildlife

Attachments:
1. Oceana/Earthjustice February 8, 2018 comments to NMFS on Multi-Year ACLs for Monitored CPS
2. Oceana/Earthjustice April 23, 2019 comments to NMFS on Multi-Year Specifications for CSNA

[11] CPSMT Report on CPS FMP Categories. June 2019. PFMC Agenda Item F.4.a. CPSMT Report 1. https://www.pcouncil.org/wp-content/uploads/2019/05/F4a_CPSMT_Rpt1_Jun2019BB.pdf

EARTHJUSTICE OCEANA Protecting the World's Oceans

February 8, 2018

Mr. Barry A. Thom
Regional Administrator
West Coast Region
National Marine Fisheries Service
501 W. Ocean Blvd., Ste. 420
Long Beach, CA 90802-4250
Attn: Joshua Lindsay

RE: NOAA-NMFS-2017-0155-0001; Fisheries off West Coast States; Coastal Pelagic Species Fisheries; Multi-Year Annual Catch Limits for Finfish Stocks in Monitored Stock Category

Dear Mr. Thom:

We request that you reject the proposed rule to set multi-year annual catch limits for so-called "monitored" stocks in the West Coast Coastal Pelagic Species (CPS) fishery, immediately promulgate new regulations to establish interim catch limits for the central stock of northern anchovy (CSNA) that comply with the recent court order in *Oceana, Inc. v. Ross,*[1] and initiate development of a new, lawful rule in cooperation with the Pacific Fishery Management Council (Council) that establishes a system to specify annual, ecosystem-based management reference points for CSNA, the northern subpopulation of northern anchovy (NSNA), and jack mackerel. The proposed rule is virtually identical to the rule the court recently struck down with respect to the CSNA as unlawful, arbitrary, and not based on the best scientific information available. In fact, the propose rule is, if anything, more flawed that the rule the court has vacated, because it adopts an invalid management framework for an indefinite number of years and fails to take into account the effects of removing forage species at the specified levels for an indefinite period. The same flaws the court identified in the prior rule for CSNA apply to NMFS's current proposed rule for the CSNA, the NSNA and jack mackerel: in particular, the proposed limits are not based on best available science and do not prevent overfishing. In addition, the proposed rule again fails entirely to account for the needs of marine predators.

NMFS's proposed rule would freeze in place a static catch limit for a species whose average long-term abundance has declined significantly in recent decades and which can decline by well over 90 percent within two years. NMFS does not offer any scientific rationale for doing this other than to posit that it is relying on default values established twenty years ago in Amendment 8 and recommended (with reservations) by the Council in 2010. As the court's recent decision makes clear, NMFS may not simply rely on "default" values that lack a sound scientific basis. NMFS should not waste more public resources on this failed management path.

[1] *Oceana, Inc. v. Ross*, Case No. 16-CV-06784-LHK (N.D. Cal. Jan. 18, 2018) (hereinafter *Oceana v. Ross*).

Rather, it should use the ample science available to it to manage the species in a scientifically sound, lawful manner.

Factual Background

As detailed below, the "monitored" framework is not consistent with the best available science regarding these stocks' basic biology and ecological importance, contradicts basic fishery management principles, and does not meet basic MSA standards for preventing overfishing and accounting for predator needs. Recent data underscores the inadequacy of this approach as well as the urgent need to develop a new approach to protect the stocks and the predators that rely on them.

It is well established in the fisheries and natural resource literature that static catch limits that are not regularly updated are not sustainable for fluctuating populations, and therefore fail to prevent overfishing. As stated in the seminal paper on this topic, May et al. 1978:

> An alternative strategy is to aim for constant yield (constant catch, constant quotas, constant Y). Many people have noted that *such a strategy, if pursued rigidly, will extinguish the population if the target yield is inadvertently set above the actual MSY value. Even if the yield is set below the MSY, the system will collapse if the population ever happens to fluctuate below a threshold value* (see, e.g., [R.M. May, 1977][2] and references therein). In general, for an arbitrary population growth curve, a strategy of constant Y will lead to longer return times and greater population fluctuations than the constant effort strategy producing the same average yield."[3]

May et al.'s warning is especially compelling in light of recent data, which indicate that multiple CPS stocks have declined in the past decade and remain at low levels relative to the past. These data and trends are described below.

Moreover, the Council's original basis for establishing the "monitored" framework — lack of abundance information for certain stocks — no longer applies and was never legally valid in any case. The "monitored" framework in the CPS FMP is predicated on the absence of annual biomass estimates due to fishery managers assigning lower management priority to these stocks.[4] Yet NMFS currently collects data necessary to produce updated abundance estimates each year for all CPS finfish stocks and reliable methods are available for producing such annual estimates. The Council recently concluded an Acoustic Trawl Methodology (ATM) review which took place on January 29-February 2, 2018. The panel, composed of SSC members and reviewers from the Center for Independent Experts unanimously concluded that the ATM surveys are ready for use in management for jack mackerel, CSNA, and NSNA, both as relative biomass indices

[2] R. M. May. 1977. Thresholds and breakpoints in ecosystems with a multiplicity of stable states, Nature 269: 47 l-477 (1977).
[3] R.M. May, J.R. Beddington, J.W. Horwood, and J.G. Shepherd. 1978. Exploiting natural populations in an uncertain world. Mathematical Biosciences 42:219-252, at 240 (emphasis added).
[4] As discussed below, the MSA requires NMFS to evaluate the status of all stocks in FMPs and use that evaluation to inform management measures.

for use in stock assessments and as survey-based biomass estimates to directly inform management. The results from the 2017 ATM survey have already been analyzed to distinguish all the CPS stocks, and can readily provide estimates of abundance. The workshop compiled background literature, data, and responses to review panel requests, all of which are relevant to this proposed rule and should be part of the record.[5] We are providing a subset of these relevant materials as attachments to this letter.

At the review, NMFS representatives stated that their management goal is to develop estimates of stock biomass for primary CPS (CSNA, NSNA, jack mackerel, Pacific mackerel, and Pacific sardine) on an annual basis, that the "N. Anchovy transition to "actively managed" has begun and J. mackerel expected in near future" and that the highest quality data available for meeting that stated goal is the AT survey.[6]

It is high time for NMFS to abandon the "monitored" framework and move to real-time, science- and ecosystem-based management. Since 2013, NMFS has expressed its intent to complete stock assessments for all CPS stocks, including the CSNA.[7] Initially, this assessment was scheduled for 2016.[8] In November 2015, the Council asked the SWFSC to conduct a stock assessment for presentation at the November 2016 Council meeting, including plans to convene a scientific workshop to be held in Spring 2016 to develop the best approach for the assessment.[9] The Council also asked the CPS management team to explore alternative management and policy approaches and report back to the Council in Fall 2016, and asked Council staff to place consideration of more active management of anchovy on a future meeting agenda.[10] In November 2016, the SWFSC committed to completing an integrated stock assessment "as soon as the appropriate biological information can be collected, verified, and processed . . . .[11] Furthermore, in November 2016 and April 2017, the SWFSC provided biomass estimates for the CSNA to the Council for 2015 and 2016 respectively. And in 2017, the Council asked the SSC to review methods for developing an OFL for the CSNA, evaluate the results of the January 2018 acoustic-trawl survey methodology review to determine whether it can be used to calculate a biomass estimate and F_{MSY} for CSNA, with a report due to the Council in 2018.[12] As described above, that review concluded that the ATM surveys are ready for use in management for jack mackerel, CSNA, and NSNA, both as relative biomass indices for use in stock assessments and as survey-based biomass estimates to directly inform management.

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[5] Available publicly on the PFMC website: ftp://ftp.pcouncil.org/pub/2018%20ATM%20Methodology%20Review/
[6] NMFS SWFSC Powerpoint. 2018. Stock assessments of coastal pelagic species in CCE for advising management: Utility of acoustic-trawl data. ftp://ftp.pcouncil.org/pub/2018%20ATM%20Methodology%20Review/Supplemental%20PPTs%20and%20other%20materials/AT%20Review_Assmt-Mgt%20Intro_Jan%2029%202018.pptx
[7] *See* Summary of Pacific Fishery Management Council Reports and Motions on Management of CSNA (Attached).
[8] *Id.*
[9] *Id.*
[10] *Id.*
[11] *Id.*
[12] *Id.*

Central Subpopulation of Northern Anchovy (CSNA)

Like the previously promulgated management measures for the central subpopulation of northern anchovy, the proposed OFL, ABC, and ACL for this stock are based on a bioeconomic analysis from 1991.[13] This analysis uses an age-structured stock synthesis model incorporating spawning stock biomass (SSB) estimates for 1964-1990 to derive estimates of maximum sustainable yield and the biomass at maximum sustainable yield. These biomass estimates are based on CalCOFI egg and larval data collected from offshore southern California, beginning just north of Point Conception and ending south near San Diego, covering the upper water column. Although this study does not recommend using this specification for the purpose of management, Conrad 1991 found that the spawning stock biomass at MSY for anchovy over this timeframe was over 733,000 mt. According to the biomass estimates used in the model, the population of anchovy increased from 1964-1974 followed by a steady decline until 1985. In 1990, the biomass estimate for CSNA was 299,410 mt, the lowest estimate since 1964.

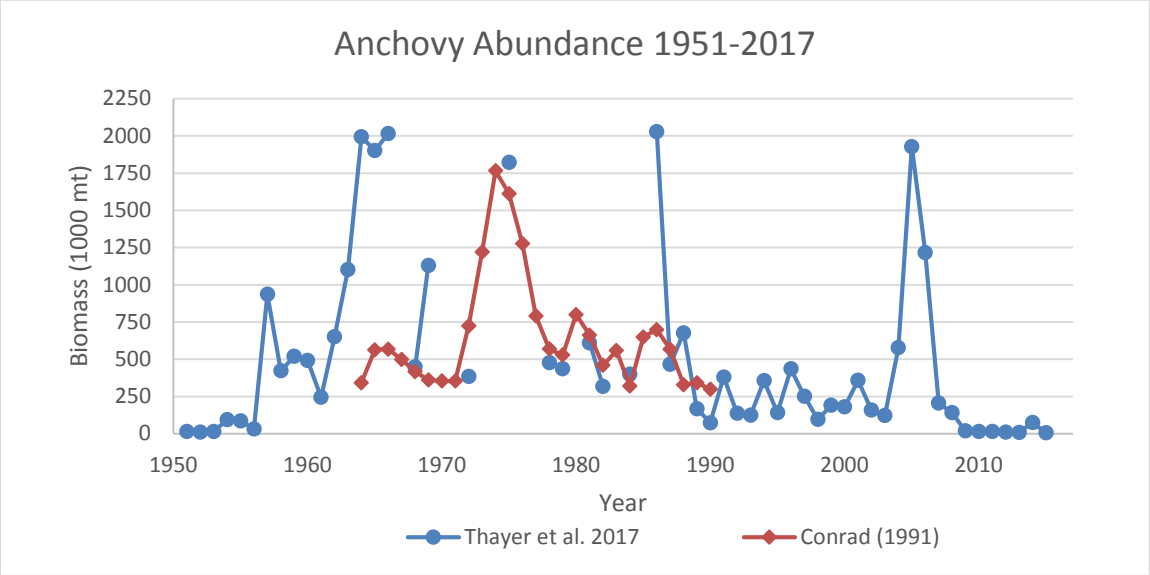

Figure 1 Overlay of Thayer et al. 2017 and Conrad 1991 time series of the central subpopulation northern anchovy spawning stock biomass estimates, 1951-2015 and 1964-1990 respectively.

A 2017 study by Thayer et al., updating MacCall et al. 2016 from 2012-2015, shows consistent estimates to Conrad 1991 for the 1964-1990 period, then a drastically different population of northern anchovy during the post-1990 era.[14, 15] Thayer et al. used CalCOFI egg and larval data to estimate annual spawning biomass (SSB), with a correction factor to scale biomass estimates north to Point Reyes, CA. This time series shows low levels of anchovy abundance beginning in 1989 and remaining low until a spike in spawning abundance in 2006, followed by a steep decline in 2008. This collapse resulted in anchovy spawning biomasses below 100,000 mt through 2015, with estimates indicating the spawning biomass had collapsed

[13] J. M. Conrad. 1991. A Bioeconomic Analysis of the Northern Anchovy. NMFS, SWFSC Admin. Report. Working Papers in Agricultural Economics 21 pp.
[14] Thayer et al. 2017. California anchovy population remains low, 2012-16. CalCOFI Report, Vol. 58, 2017.
[15] MacCall et al. 2016. Recent collapse of northern anchovy biomass off California. Fisheries Research 175: 87-94.

as low as 5,000 mt. The Thayer et al. 2017 abundance time series for CSNA, which represents the most complete, up-to-date time series of abundance, indicates the mean spawning biomass was 902,941 mt during the 1964-1990 period, and only 20,700 mt for the 2009-2015 period. In other words, the most recent 7 years in the time series are 97.7% lower than the period on which the proposed ACL is based. Clearly any reference points based on the 1964-1990 data do not reflect recent stock conditions.

The Southwest Fisheries Science Center (SWFSC) began conducting acoustic-trawl surveys to measure CPS biomass in 2006, however, until 2015 did not produce estimates of CSNA biomass due to low stock size and low management priority. The SWFSC produced acoustic trawl survey biomass estimates for CSNA in 2015, 2016, and 2017.[16] Survey results for 2015 determined a stock size of 31,427 mt, further confirming the collapse of CSNA observed in Thayer et al. 2017. Notably, the target strength[17] used to scale the 2015 estimate was significantly increased in the 2016-17 surveys. The biomass estimate would have been far lower if the currently used target strength was used. Consistent with other sources of information indicating that some recruitment has occurred since the stock hit a record low, the 2016 estimate increased to 151,000 mt, and the preliminary estimate of biomass from the summer 2017 survey is 180,000 mt. The most recent 2017 total biomass estimate of 180,000 mt is below any biomass estimate during the 1964-1990 period, is more than 80% lower than the 1964-1990 mean biomass, and is 40% below the cutoff biomass of 300,000 mt used in previous management. Moreover, the acoustic trawl biomass estimates include juvenile as well as adult fish, whereas only spawning adult biomass (age 1+) are generally counted for management purposes.

[16] Zwolinski et al. 2016. The distribution and biomass of the central-stock northern anchovy during summer 2015, estimated from Acoustic Trawl Sampling. Draft NOAA Tech Memo, Appendix 1 of Agenda Item G.4.a, Supplemental SWFSC Report 2. November 2016. http://www.pcouncil.org/wp-content/uploads/2016/11/G4a_Sup_SWFSC_Rpt2_NOV2016BB.pdf *and* Zwolinski et al. 2017. Distribution, biomass, and demography of the central-stock of northern anchovy during Summer 2016, estimated from acoustic trawl sampling. April 2017. NOAA-TM-NMFS-SWFSC-572. *and* Steirhoff et al. 2018. Report on the collection of data during the summer 2017 California Current Ecosystem Survey (1706RL), 19 June to 11 August 2017, conducted aboard fisheries survey Reuben Lasker. January 2018. NOAA Technical Memorandum NOAA-TM-NMFS-SWFSC-593.

[17] In acoustic trawl surveys, target strength describes the acoustic reflectivity of a single target. Measurements of target strength are used to scale acoustic estimates into numbers or weight of the target species per unit area.

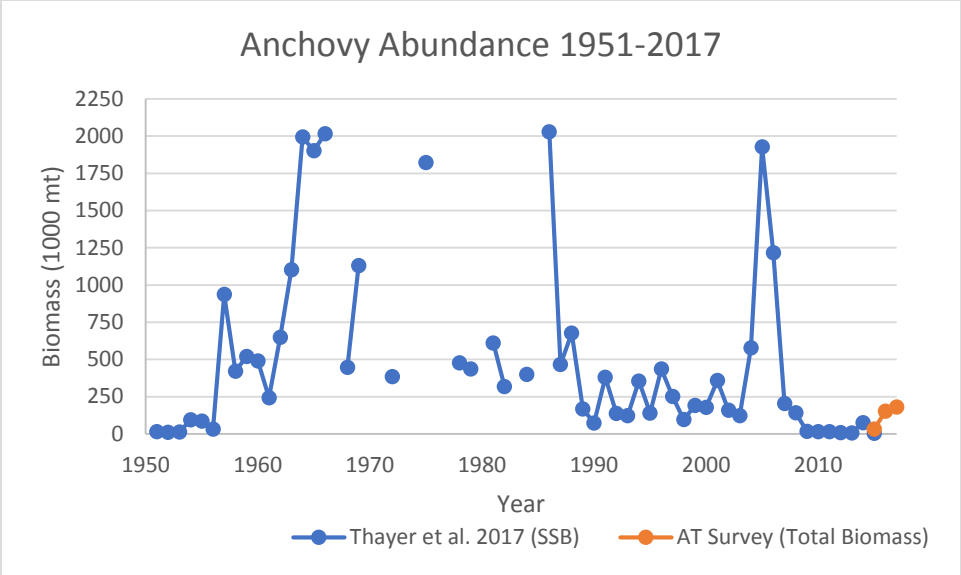

Figure 2 Annual anchovy spawning biomass estimates from Thayer et al. 2017 and recent annual total biomass estimates from acoustic-trawl surveys. Note Thayer et al. 2017 estimates are in spawning stock biomass, while the AT survey estimates are measured in total biomass, including non-spawning fish.

In addition to egg/larval data and ATM surveys, the California Department of Fish and Wildlife and California Wetfish Producers Association have produced biomass estimates using aerial surveys from 2012 to 2017. Estimates ranged from 0-67,684 mt for anchovy. [18] In 2017, the Southern California Coastal Pelagic Species Aerial Survey Methodology Review provided recommendations on potential uses of this information in management.[19]

Anchovy is a critical food source for many marine wildlife species, including commercially and recreationally valuable fish, mammals, and sea birds.[20] According to diet studies of 32 different marine predators, anchovy is the most important forage fish throughout the California Current Ecosystem.[21] Some predators, such as the California brown pelican, rely heavily on anchovy to provide the nutrition they need to breed successfully.[22] Anchovy is part of a small suite of preferred prey species that provide especially high energy to predators; other

[18] Lynn et al. 2018. Southern California Coastal Pelagic Species Aerial Survey. Powerpoint Presentation given at PFMC February 2018 Acoustic Trawl Survey Methodology Review.
[19] http://www.pcouncil.org/wp-content/uploads/2017/05/D2_Att1_Meth_Review_Panel_Rpt_Jun2017BB.pdf
[20] The Coastal Pelagic Species Fishery Management Plan, Am. 8 at A-2—A-3 (Dec. 1998).
[21] Ainley, D. et al. 2015. California current system – predators and the preyscape. Journal of Marine Systems 146: 1-2.
[22] Anderson, D.W. et al. 1980. Brown pelicans as anchovy stock indicators and their relationships to commercial fishing. CalCOFI Rep., Vol. XXI: 54-61; Letter from Stephen P. Henry, Field Supervisor, United States Fish and Wildlife Service, to Dorothy Lowman, Chair, Pacific Fishery Management Council (May 14, 2015); Letter from Stephen P. Henry, Field Supervisor, United States Fish and Wildlife Service, to Dorothy Lowman, Chair, Pacific Fishery Management Council (Nov. 12, 2015); Letter from Stephen P. Henry, Field Supervisor, United States Fish and Wildlife Service, to Herb Pollard, Chair, Pacific Fishery Management Council (Aug. 18, 2016).

species include Pacific sardine and Pacific mackerel.[23] If these other species are highly abundant and available at times of low anchovy abundance, some predators may be able to switch prey and obtain adequate nutrition. However, in recent years, these alternative forage species have also declined to relatively low levels.[24] The Pacific sardine population (age 1+ biomass) fell by over 95% from 2007 to 2015 and has remained so low that the sardine fishery has been closed since then. 80 Fed. Reg. 22926 (Apr. 24, 2015), 80 Fed. Reg. 36933 (June 29, 2015).

In reports to the Pacific Fishery Management Council, including NMFS, the United States Fish and Wildlife Service (FWS) has presented information on brown pelican mortality events and breeding failures and has requested that fishery managers consider what additional management measures they should take "to ensure that an adequate forage reserve of northern anchovy…is maintained over the long term for California brown pelicans and other marine predators in the California Current Ecosystem."[25]

The brown pelican was removed from Endangered Species Act protection in 2009, partly on the premise that the Coastal Pelagic Species FMP would ensure adequate food supplies.[26] However, unusually large numbers of adult brown pelicans died of starvation in 2008, 2009, and 2010, and adult pelicans continued to exhibit abnormal behaviors associated with limited prey availability, such as preying on common murre chicks and increased scavenging, in more recent years.[27] FWS explained that, in addition to adults suffering malnutrition, brown pelicans had experienced breeding failures since 2009 that were directly linked to lack of available anchovy.[28]

Recently published analyses of seabird and forage fish distribution and abundance in the CCE show that a substantial decline in seabird abundance in the northern portion of the southern CCE (from around Point Conception, California, northward) – a rate of decline of 2.2% per year from 1987-2011 – is attributable to declines in anchovy abundance and availability.[29] FWS has pointed out that many other marine predators, including Brandt's cormorants appear to have suffered from "the generally reduced availability of northern anchovy . . . in the [California

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[23] The Coastal Pelagic Species Fishery Management Plan, Am. 8 at A-2—A-3, A-10—A-11, A-14 (Dec. 1998).
[24] McClatchie, S. Thompson, A.R., Bograd, S.J., Siedlecki, S., Alin, S.R., Bowlin, N., and Watson, W. 2015. Fish diversity and corrosive Pacific Equatorial Water in the southern California Current System. Presentation at CalCOFI Annual Conference, December 15, 2015, Moss Landing, CA; Juan P. Zwolinski, et al., Acoustic-trawl Surveys for Coastal Pelagic Species in the California Current (May 2-5, 2016) (presenting data at NOAA Southwest Fisheries Science Center and Pacific Fishery Management Council Workshop on CPS Assessments).
[25] Letter from Stephen P. Henry, Field Supervisor, United States Fish and Wildlife Service, to Dorothy Lowman, Chair, Pacific Fishery Management Council (May 14, 2015); Letter from Stephen P. Henry, Field Supervisor, United States Fish and Wildlife Service, to Dorothy Lowman, Chair, Pacific Fishery Management Council (Nov. 12, 2015); Letter from Stephen P. Henry, Field Supervisor, United States Fish and Wildlife Service, to Herb Pollard, Chair, Pacific Fishery Management Council (Aug. 18, 2016).
[26] Endangered and Threatened Wildlife and Plants; Removal of the Brown Pelican (*Pelecanus occidentalis*) From the Federal List of Endangered and Threatened Wildlife 74 Fed. Reg. 59,444 at 59,450 (Nov. 17, 2009).
[27] Letter from Stephen P. Henry, Field Supervisor, United States Fish and Wildlife Service, to Dorothy Lowman, Chair, Pacific Fishery Management Council 2 (May 14, 2015)
[28] *Id.; see also* Letter from Stephen P. Henry, Field Supervisor, United States Fish and Wildlife Service, to Herb Pollard, Chair, Pacific Fishery Management Council 1-2 (Aug. 18, 2016) (presenting information updated through August 2015, showing continued low anchovy availability and poor pelican reproductive success).
[29] Sydeman, W. et al. 2015. Climate–ecosystem change off southern California: Time-dependent seabird predator–prey numerical responses. Deep-Sea Research II 112:158-170.

Current Ecosystem]."[30] FWS also explained that an unprecedented die-off had occurred in 2015 among common murre chicks, which rely on anchovy for about half their diet.[31] These concerns led FWS to highlight as early as May 2015 that an updated assessment of anchovy abundance was essential to determine whether the ACL of 25,000 mt would protect the anchovy population or the predators that depend on it.[32]

Sea birds are not the only marine predators that suffer from a lack of available anchovy. In a report to the Pacific Fishery Management Council, NMFS itself documented mass starvation and die-offs among California sea lions from 2013 through 2016, leading it to declare "unusual mortality events" under the Marine Mammal Protection Act. NMFS scientists determined these events were caused by insufficient availability of high energy forage, particularly anchovy and sardine.[33] Moreover, a leading whale expert, as well as numerous whale watch professionals, have notified NMFS and the Council that anchovy fishing in Monterey Bay posed a risk of direct competition between humpback whales and the anchovy fishery, both through depleting the whales' food source and through driving the whales away from their prey with boats and "acoustic deterrent" devices (also called seal bombs).[34] Oceana and other conservation groups have pointed out that low anchovy abundance could also harm Chinook salmon and coho, which are both protected under the Endangered Species Act and the subject of an important commercial fishery that NMFS is responsible for conserving and managing.[35] A recent study showed that anchovy has comprised as much as 20% of the diet of salmon in the CCE.[36]

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[30] Letter from Stephen P. Henry, Field Supervisor, United States Fish and Wildlife Service, to Dorothy Lowman, Chair, Pacific Fishery Management Council 3 (May 14, 2015).

[31] Letter from Stephen P. Henry, Field Supervisor, United States Fish and Wildlife Service, to Herb Pollard, Chair, Pacific Fishery Management Council 2 (Aug. 18, 2016).

[32] Letter from Stephen P. Henry, Field Supervisor, United States Fish and Wildlife Service, to Dorothy Lowman, Chair, Pacific Fishery Management Council 3 (May 14, 2015); see also Letter from Stephen P. Henry, Field Supervisor, United States Fish and Wildlife Service, to Dorothy Lowman, Chair, Pacific Fishery Management Council 1-2 (Nov. 12, 2015)(expressing concern that as of October 15, 2015, anchovy abundance was estimated to be less than 20,000 mt, statewide landings had reached 13,508 mt, and "continued fishing pressure may affect the ability of the central subpopulation [of northern anchovy] to support dependent predators such as brown pelicans or compromise the resilience of the stock itself."); Letter from Stephen P. Henry, Field Supervisor, United States Fish and Wildlife Service, to Herb Pollard, Chair, Pacific Fishery Management Council (Aug. 18, 2016) (highlighting continued harm to predators and need for management action to protect anchovy forage base).

[33] National Oceanic and Atmospheric Administration, California Current Integrated Ecosystem Team, State of the California Current Report 14-15 (March 2016); McClatchie, S. et al. 2016. Food limitation of sea lion pups and the decline of forage off central and southern California; *see also* Letter from Stephen P. Henry, Field Supervisor, United States Fish and Wildlife Service, to Herb Pollard, Chair, Pacific Fishery Management Council 2 (Aug. 18, 2016); Letter from Stephen P. Henry, Field Supervisor, United States Fish and Wildlife Service, to Dorothy Lowman, Chair, Pacific Fishery Management Council 3 (May 14, 2015) (commenting that die-off among California sea lions "coincided with reduced availability of Pacific sardine and northern anchovy").

[34] Letter from John Calambokidis, Cascadia Research Collective to Dorothy Lowman, Chair, Pacific Fishery Management Council 1-2 (Nov. 11, 2015); Letter from Nancy Black, Monterey Bay Whale Watch, to Dorothy Lowman, Chair, Pacific Fishery Management Council 1-7 (Nov. 13, 2015).

[35] Letter from Oceana et al. to Herb Pollard, Chair, Pacific Fishery Management Council 7 (Sept. 6, 2016).

[36] Koehn, L.E., T.E. Essington, K.N. Marshall, I.C. Kaplan, W.J. Sydeman, A.I. Szoboszlai, J.A. Thayer. 2016. Developing a high taxonomic resolution food web model to assess the functional role of forage fish in the California Current ecosystem. *Ecological Modelling* 335:87-100.

Jack mackerel

Like the other monitored CPS stocks, the most recent biomass estimate for jack mackerel is so outdated that control rules and management reference points based on it bear no rational relationship to the current status of the stock. The proposed rule relies on the default management framework established in 1998 as part of Amendment 8 to the CPS FMP to set the US OFL for jack mackerel at 126,000 mt, the US ABC at 31,000 mt (a 75 percent reduction from MSY), and the ACL at 31,000 mt.

This stock has not received much management attention due to low catches since 1990.[37] The most recent estimate of biomass was produced in 1983—more than three decades ago.[38] State fishery managers have cautioned that "[t]hese estimates must be viewed as tentative approximations of the population" because "at the time, the spawning frequency of jack mackerel was not known, and estimates were based on the spawning frequencies of northern anchovy" and because "estimates were derived from plankton surveys for eggs and larvae in the Southern California Bight, which did not cover the entire range of the spawning population, and assumptions were made for the contribution of older jack mackerel outside the survey area."[39] A later study using more accurate spawning frequency would have yielded a lower biomass in 1983, but no later biomass estimates have been produced since then.[40] In 2015, NMFS SWFSC scientist Edward Weber reported in his presentation at the CalCOFI conference that the most recent spring and summer larval surveys of jack mackerel within the Southern California Bight have remained at very low relative levels since their last noticeable peak in 2006, and are well below the levels observed in the 1950s -1980s period.[41]

As with both stocks of northern anchovy, NMFS has not explained how it is accounting for scientific uncertainty in implementing the jack mackerel stock's ACL, nor justified why a 75% ABC/OFL buffer is sufficient to prevent overfishing for this highly fluctuating stock, which is also known to rapidly fluctuate by several orders of magnitude. Furthermore, the OFL is based on an estimated biomass from a period when jack mackerel were clearly far more abundant than they have been in recent years. Recent catch levels of jack mackerel have been on the order of 1,000 metric tons.[42]

NMFS does not explain why it chooses to rely on outdated numbers when it has more recent data to inform management measures. In 2014, NMFS scientists published results of 8 acoustic trawl surveys conducted from 2006 to 2013 with coastwide U.S. biomass estimates for

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[37] CPS FMP (Amendment 8 to the Northern Anchovy FMP), at 4-5 (Dec. 1998); CPS FMP at 42 (Sept. 2011) (reciting same rationale from 1998 Amendment 8).
[38] California Department of Fish and Game, California's Living Marine Resources: A Status Report 310 (Dec. 2001), *referencing* MacCall, A.D., Stauffer, G.D. 1983 Biology and Fishery Potential of Jack Mackerel (*Trachurus symmetricus*).
[39] *Id.*
[40] *Id.*
[41] Weber, E.D. 2015. NMFS Southwest Fisheries Science Center. Larval production and habitat distribution of Jack mackerel Trachurus symmetricus in the Southern California Bight. Presentation at CalCOFI Conference, Moss Landing, CA, December 14, 2015.
[42] *Id.*

jack mackerel, ranging from 9,000 metric tons to 389,000 metric tons, with a mean of approximately 167,000 tons.[43] Notably, the most recent available biomass estimates for this stock are below NMFS's proposed OFL and even below its proposed ACL. See figures 3 and 4 below.

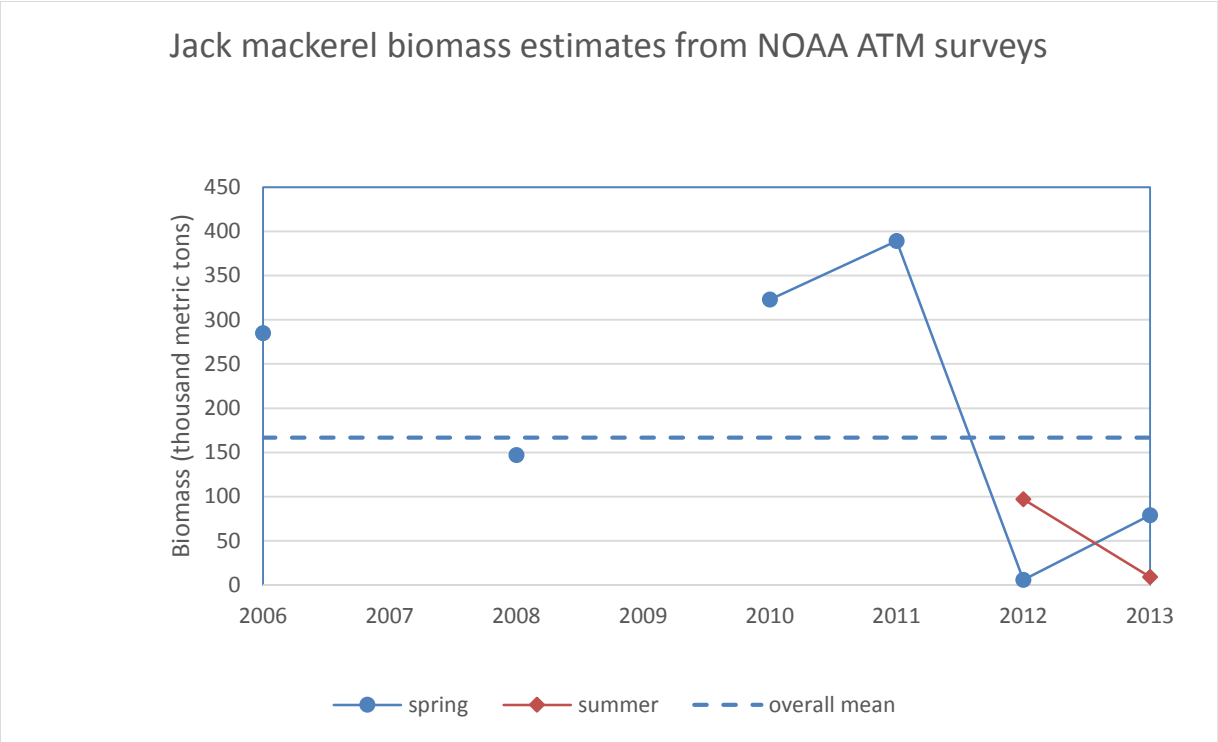

Figure 3. Plot of spring and summer ATM survey biomass estimates for jack mackerel from 2006-2013 from Zwolinski et al. 2014. Overall mean (167,000 mt) is for all surveys combined.

[43] Zwolinski, J.P., D.A. Demer, G.R. Cutter Jr., K. Stierhoff, and B.J. Macewicz. 2014. Building on fisheries acoustics for marine ecosystem surveys. Oceanography 27(4):68–79, http://dx.doi.org/10.5670/oceanog.2014.87.

TABLE 2. Acoustic-Trawl Method (ATM) survey estimates of biomass (million metric tons, Mt) for Pacific sardine (*Sardinops sagax*), jack mackerel (*Trachurus symmetricus*), Pacific mackerel (*Scomber japonicus*), northern anchovy (*Engraulis mordax*), and Pacific herring (*Clupea pallasii*) and their coefficient of variation (*CV*) and 95% confidence intervals ($CI_{95\%}$) for the 2006, 2008, 2010, 2011, 2012, and 2013 surveys. *Note*: Abundant CPS targets beyond the integration range in regions with Pacific herring suggest that the values presented here represent a small, but unknown, fraction of the stock. Future knowledge about the vertical distribution of the species will provide more accurate results.

Species	Survey	Biomass (Mt)	*CV* (%)	$CI_{95\%}$ (Mt)
Pacific sardine (*Sardinops sagax*)	2006 Spring	1.947	30.4	0.897–3.139
	2008 Spring	0.751	9.2	0.611–0.870
	2010 Spring	0.357	43.3	0.094–0.690
	2011 Spring	0.494	30.4	0.221–0.816
	2012 Spring	0.469	28.6	0.224-0.750
	2012 Summer	0.341	33.4	0.188–0.688
	2013 Spring	0.305	24.4	0.167–0.454
	2013 Summer	0.314	27.5	0.166-0.517
Jack mackerel (*Trachurus trachurus*)	2006 Spring	0.285	35.8	0.078–0.378
	2008 Spring	0.147	28.4	0.075–0.232
	2010 Spring	0.323	36.7	0.132–0.586
	2011 Spring	0.389	34.0	0.157–0.650
	2012 Spring	0.006	35.7	0.002–0.009
	2012 Summer	0.097	23.4	0.053–0.140
	2013 Spring	0.079	26.7	0.044–0.130
	2013 Summer	0.009	54.0	0.002–0.020
Pacific mackerel (*Scomber japonicus*)	2006 Spring	0.047	61.6	0.006–0.109
	2008 Spring	0.018	51.8	0.005–0.037
	2010 Spring	0.018	45.7	0.001–0.034
	2011 Spring	0.257	29.3	0.120–0.418
	2012 Spring	0.014	53.2	0.005-0.031
	2012 Summer	0.109	34.1	0.055–0.181
	2013 Spring	0.013	31.5	0.005–0.019
	2013 Summer	0.008	61.2	0.001–0.020
Pacific herring (*Clupea pallasii*)	2012 Summer	0.065	30.8	0.038–0.126
	2013 Summer	0.050	28.3	0.024–0.085

Figure 4. Biomass estimates for CPS species, including jack mackerel, as reported in Zwolinski et al. 2014.

Based on these peer reviewed and published biomass estimates, the MSY proxies used in Amendment 8, which serve as the basis for the proposed ACL for jack mackerel are grossly outdated, and well above current levels. Of significance is that in 5 of the 8 surveys, the biomass is below the OFL established in the FMP, and 2 of the 8 survey estimates are below the proposed ACL of 31,000 mt. This clearly does not prevent overfishing. Yet NMFS has not considered any of this information in the proposed rule.

Northern Subpopulation of Northern Anchovy (NSNA)

Like management measures for the other two stocks, the proposed limits for the NSNA rely in part on outdated assumptions and unexplained assumptions regarding current biomass and productivity.

NMFS does not explain what estimated abundance or MSY underlies its proposed ACL for the NSNA. As noted above, the 2018 acoustic trawl survey methodology review approved the ATM survey for generating relative indices of biomass for stock assessments and for providing direct survey estimates of biomass for use in management of all CPS finfish stocks. Preliminary results of the 2017 survey (CUFES and trawl) indicated a discrete distribution of NSNA.[44] We understand that the SWFSC is now analyzing the 2017 ATM survey data to provide a biomass estimate for the NSNA, and that analysis of previous ATM surveys will allow biomass estimates for prior years. NMFS does not explain why it has chosen to move ahead with specifying multi-year catch limits for this stock without any basis in scientific data when its own scientists could produce updated abundance estimates in the very near term, and those estimates are essential to rational, science-based management.

In addition, NMFS fails to explain why it relies in the proposed rule on an F_{MSY} fishing rate that conflicts with its own updated analysis. The CPS FMP describes OFLs for CPS as being "based on MSY or MSY proxy harvest rates applied to the best available estimate of biomass."[45] In response to a court order, the Council amended the CPS FMP in Amendment 14 to establish an F_{MSY} proxy for NSNA of 0.3, based on the F_{MSY} proxy used for Pacific mackerel.[46] However, this MSY proxy was based on the productivity of Pacific mackerel, not northern anchovy, in the absence of recent biological reference points for northern anchovy.

In contrast, the NMFS report on MSSTs (Hill et al. 2016) calculated an average instantaneous F_{MSY} fishing rate of 0.266 for CSNA, equivalent to an annual exploitation rate (or "E_{MSY}") of 23.4%. It is not clear why NMFS would continue to use the higher proxy of 0.3 for the NSNA based on a different species instead of the estimate for the CSNA, especially when NMFS itself recently updated that parameter.

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[44] Steirhoff et al. 2018. Report on the collection of data during the summer 2017 California Current Ecosystem Survey (1706RL), 19 June to 11 August 2017, conducted aboard fisheries survey Reuben Lasker. January 2018. NOAA Technical Memorandum NOAA-TM-NMFS-SWFSC-593.

[45] *Id.* at 35.

[46] Fisheries Off West Coast States; Coastal Pelagic Species Fisheries; Amendment 14 to the Coastal Pelagic Species Fishery Management Plan, 80 Fed. Reg. 17,352 (Apr. 1, 2015).

Legal Requirements that the Proposed Rule Must Satisfy

Magnuson-Stevens Fishery Conservation and Management Act

The MSA requires that "[c]onservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery…." *Id.* at § 1851(a)(1). The term "overfishing" means "a rate or level of fishing mortality that jeopardizes the capacity of a fishery to produce the maximum sustainable yield on a continuing basis." *Id.* at 1802(34). *See also* 50 C.F.R. § 600.310(e)(2)(i)(B). Maximum sustainable yield ("MSY") is the "largest long-term average catch or yield that can be taken from a stock or stock complex under prevailing ecological, environmental conditions and fishery technological characteristics…." 50 C.F.R. § 600.310(e)(1)(i)(A).

To determine optimum yield, NMFS must reduce MSY "by any relevant social, economic, or ecological factor" and "tak[e] into account the protection of marine ecosystems." 16 U.S.C. § 1802(33)(A)-(B). NMFS regulatory guidelines recognize that, with respect to forage fish, the greatest overall benefit to the Nation is served by leaving a higher biomass in the water to fulfill their critical ecological role. Those guidelines specifically acknowledge the unique ecological value of forage fish like anchovy, 50 C.F.R. § 600.310(e)(3)(iii)(B)(*3*), and direct NMFS to give "serious attention" to "maintaining adequate forage for all components of the ecosystem" and reduce the annual catch limit below the acceptable biological catch to maintain adequate forage for marine predators. *Id*. at §§ 600.310(e)(3)(iii)(A)(*3*), 600.310(f)(3)(iv). In addition, the Coastal Pelagic Species FMP states that one of the goals of the FMP is to "[p]rovide adequate forage for dependent species" and specifies that the annual catch limit is set equal to the acceptable biological catch or "*reduced* by [optimum yield] considerations."[47]

Setting an appropriate ACL is critical to meeting the MSA's National Standard 1 requirements. The statute requires that the FMP "establish a mechanism for specifying annual catch limits…at a level such that overfishing does not occur." 16 U.S.C. § 1853(a)(15). Setting an appropriate ACL, in turn, depends on setting an appropriate OFL and ABC. The overfishing limit ("OFL") is an estimate of the maximum catch level that will not jeopardize the fish population's ability to produce maximum sustainable yield. 50 C.F.R. § 600.310(e)(2)(i)(D). Acceptable biological catch ("ABC") must account for scientific uncertainty in estimating the overfishing limit, as well as other sources of scientific uncertainty, and must be set lower than the OFL. 50 C.F.R. § 600.310(f)(2)(ii). The annual catch limit ("ACL") may not exceed the ABC and often should be set at a lower value, both to prevent overfishing and to account separately for reductions in catch necessary to meet ecological, economic, and social needs necessary to achieve optimum yield. 16 U.S.C. § 1851(a)(1); 50 C.F.R. §§ 600.310(e)(3)(ii), 600.310(e)(3)(iii)(A)(*3*), 600.310(e)(3)(iii)(B)(*3*), 600.310(f)(3)(iii).

The Magnuson-Stevens Act requires that "[c]onservation and management measures shall be based on the best scientific information available."[48] Courts have emphasized that

[47] CPS FMP at 12, 40.
[48] 16 U.S.C. § 1851(a)(2); *See Oceana v. Ross*, Slip Op. at 17-18.

NMFS "must utilize the best scientific data *available*, not the best scientific data *possible*."[49] In other words, NMFS may not decline to take actions to conserve and manage the fishery on the basis that the available information is uncertain or could be improved by more research or analysis. "It is well settled . . . that the Secretary can act when the available science is incomplete or imperfect, even where concerns have been raised about the accuracy of the methods or models employed."[50] The agency has a particular responsibility to take "urgent action" in times when immediate measures are needed to conserve a stock. In such instances, NMFS must act even if the data are "incomplete or imperfect."[51]

As the court in *Oceana v. Ross* explained, NMFS has a duty under the MSA to thoroughly review all relevant information available at the time of its decision and may not disregard data that is superior or contrary to the data underlying its proposal. "Nor is it enough for [NMFS] to simply note contrary scientific evidence's existence without providing a reason for rejecting it."[52] Rather, NMFS must weigh the available evidence, rationally determine what the best available science is, and explain how its decision reflects that best available science. Continued reliance on information that the agency knows is outdated and inaccurate is arbitrary and capricious.[53]

Endangered Species Act

NMFS's proposed multiyear annual catch limit specifications for both subpopulations of northern anchovy and jack mackerel may have an adverse effect on marine predators listed under the Endangered Species Act (ESA), including Chinook salmon, California least tern, marbled murrelet, and humpback whales. Anchovy provides a critical food source for these species. Removing anchovy and jack mackerel through fishing, particularly when alternate prey like Pacific sardine and Pacific mackerel are also scarce, poses a risk to these predators. Reducing availability of preferred (and more nutritious) food sources may decrease the listed predators' reproductive success and drive localized population declines.

ESA Section 7(a)(2) requires federal agencies to ensure that no action they authorize, fund, or carry out is likely to "jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of [critical habitat]."[54] Therefore, regulations implementing Section 7 provide that: "[e]ach Federal agency shall review

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[49] *Blue Water Fishermen's Assn. v. Nat'l Marine Fisheries Serv.*, 226 F.Supp.2d 330, 338 (D. Mass. 2002) (quoting *Building Indus, Ass'n of Superior California v. Norton*, 247 F.3d 1241, 1246-47 (D.C.Cir.2001)) (emphasis in original).

[50] *General Category Scallop Fishermen v. Secretary, U.S. Dept. of Commerce*, 635 F.3d 106, 115 (3rd Cir.2011) (citing *North Carolina Fisheries Ass'n, Inc. v. Gutierrez*, 518 F.Supp.2d 62, 85 (D.D.C. 2007)). *See also Oceana v. Ross*, Slip Op. at 24-25.

[51] *Massachusetts v. Pritzker*, 10 F. Supp. 3d 208, 220 (D. Mass. 2014).

[52] *Oceana v. Ross*, Slip Op. at 18.

[53] *Oceana v. Ross*, Slip Op. at 27-32; *Guindon v. Pritzker*, 31 F. Supp. 3d 169, 195-96 (D.D.C. 2014); *Ctr. for Biological Diversity v. Lohn*, 296 F. Supp. 2d 1223, 1240 (W.D. Wash. 2003) (finding that NMFS must take action in accord with the Endangered Species Act best available science requirement "without reliance upon science that its own scientists unanimously agreed is inaccurate").

[54] 16 U.S.C. § 1536(a)(2).

its actions at the earliest possible time to determine whether any action *may affect* listed species or critical habitat. If such a determination is made, formal consultation is required . . . ."[55] The "may affect" standard "is a relatively low threshold for triggering consultation."[56] If the proposed action has a "possible" effect on listed species, the consultation requirement is triggered.[57] Formal consultation may only be avoided if, as a result of the preparation of a biological assessment under 50 C.F.R. § 402.12, or as a result of informal consultation under 50 C.F.R. § 402.13, "the Federal agency determines, with the written concurrence of [the Service], that the proposed action is not likely to adversely affect any listed species . . . ."[58]

Where the agency has previously completed ESA consultation on an action, it must reinitiate consultation when, among other circumstances, "new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered."[59] NMFS has not completed prior ESA consultation on the effects on listed marine predators of the proposed multi-year ACL levels for northern anchovy and other species in the CPS FMP. Even if it had, any prior look that NMFS took at the issue assumed that anchovy abundance was several times greater than the best available science indicates that it is now and well over an order of magnitude above levels recently observed in the 2009-2015 period. NMFS has yet to consider newer information, including egg, larval, and adult surveys, MacCall et al. (2016), Thayer et al. (2017), acoustic trawl survey estimates produced by the agency for 2015-2017, changes in predator populations and their relative consumption of coastal pelagic species, and changes in marine predator behavior, reduced breeding success, and starvation events, which demonstrate that anchovy are at low abundance relative to the period on which NMFS's measures are based. In addition, NMFS must consider new information regarding the worsened status of listed salmon species, as well as the effects of removing anchovy from the CSNA and NSNA both in terms of directly removing prey and displacing predation by cormorants and other sea birds that normally feed on anchovy onto juvenile salmon. It must also consider new information concerning breeding failures and deaths among least terns due to lack of anchovy. All in all, NMFS must consider that the levels of fishing NMFS now proposes to authorize in its proposed rule may have much more significant effects on listed predators than NMFS has considered in the past.

National Environmental Policy Act

The National Environmental Policy Act (NEPA) sets forth an environmental review process that is "intended to help public officials make decisions that are based on understanding of environmental consequences, and take actions that protect, restore, and enhance the environment."[60] To achieve this goal, NEPA requires federal agencies to fully consider and disclose the environmental consequences of an agency action before proceeding with that

[55] 50 C.F.R. § 402.14(a) (emphasis added).
[56] *Karuk Tribe of California v. United States Forest Service*,681 F.3d 1006, 1027 (9th Cir. 2012) (*en banc*).
[57] *Id., citing Cal ex. Rel. Lockyer v. U.S. Dep't of Agric.*, 575 F.3d 999, 1018 (9th Cir. 2009).
[58] 50 C.F.R. § 402.14(b).
[59] 50 C.F.R. § 402.16(b).
[60] 40 C.F.R. § 1500.1(c).

action.[61] Agencies' evaluation of environmental consequences must be based on scientific information that is both "[a]ccurate" and of "high quality."[62] In addition, federal agencies must notify the public of proposed projects and provide the public the opportunity to comment on the environmental impacts of their actions.[63]

An environmental impact statement (EIS) is required for all "major Federal actions significantly affecting the quality of the human environment."[64] It must provide a "full and fair discussion of significant environmental impacts and . . . inform decision makers and the public of the reasonable alternatives which would avoid or minimize adverse impacts or enhance the quality of the human environment."[65] In an EIS, the federal agency must identify the direct, indirect, and cumulative impacts of the proposed action, and consider alternative actions and their impacts.[66]

An agency may determine, after preparing an Environmental Assessment (EA) and Finding of No Significant Impact (FONSI), that preparation of an EIS is unnecessary. However, an agency may rely on an EA/FONSI only if its proposed action will not have significant environmental effects.[67] Moreover, the agency may not rely upon the analysis performed in a prior EIS regarding the agency action if "the agency makes substantial changes in the proposed action that are relevant to environmental concerns," or "[t]here are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action and its impacts."[68]

Because the proposed rule would authorize the removal of multiple key forage stocks over an indefinite period of years, and substantial new information has emerged regarding the status of forage fish stocks, dependent predators, and ocean conditions, NMFS must analyze the effects of the proposed rule pursuant to NEPA.

The Proposed Rule Violates Basic Legal Requirements

The Proposed Rule Features the Same Flaws as the 2017 Specification Rule, Which a Federal Court Invalidated and Vacated

On January 19, 2018, a federal court ruled that NMFS's specification of an annual catch limit of 25,000 mt for the central subpopulation of northern anchovy violated the basic requirements of the MSA and the Administrative Procedure Act. The court found that NMFS's prior rule violates National Standard Two's requirement that management actions must be based on the best scientific information available. The court further found that the agency did not provide a reasoned explanation for rejecting the scientific information presented, including the peer reviewed study prepared by Alec MacCall, et al., acoustic trawl survey information

[61] 42 U.S.C. § 4332(2)(C); 40 C.F.R. §§ 1501.2, 1502.5.
[62] 40 C.F.R. § 1500.1(b).
[63] 40 C.F.R. § 1506.6.
[64] 42 U.S.C. § 4332(2)(C); 40 C.F.R. § 1501.4.
[65] 40 C.F.R. § 1502.1.
[66] *See* 42 U.S.C. § 4332(C).
[67] 40 C.F.R. § 1508.13.
[68] 40 C.F.R. § 1502.9(c).

estimating very low abundance, and Fish and Wildlife Service and National Marine Fisheries Service reports that anchovy predators were being adversely affected by the anchovy decline.

The court also found that the overfishing limit, allowable biological catch and annual catch limit violate National Standard One because they do not prevent overfishing. In so holding, Judge Koh noted that substantial evidence showed the anchovy population had declined well below the 733,410 metric tons MSY biomass estimate used in the 1991 anchovy management model. The court also rejected NMFS's arguments that the recent increase in anchovy abundance to about 151,000 mt supported its rule, noting that this value is still far below abundance values analyzed by Conrad (1991) and used as the basis for the "default" MSY, OFL, and ABC values. Because the court invalidated the "default" OFL and ABC values, NMFS and the Council must produce new values based on the best scientific information currently available.

The proposed rule is just as defective as the one the court struck down. If anything, it is more fundamentally flawed, because it proposes to freeze in place annual catch limits that have no basis in current scientific information and bear no relationship to the crucial variable in determining whether any ACL will prevent overfishing and account for ecosystem needs: the size of the fish stock.[69]

The "Monitored" Approach Implemented by the Proposed Rule Is Unlawful and Must Be Changed

The "monitored" framework that NMFS seeks to implement in the proposed rule fails to meet fundamental MSA requirements for conserving and managing fish stocks. The multiple, fundamental flaws inherent in the "monitored" approach include the following.

First, setting static, long-term catch limits for stocks that fluctuate significantly and frequently is contrary to basic fisheries science. It has long been established that setting a constant catch limit over time for a fluctuating fish population will lead to the population's collapse.[70] As May et al. (1978) pointed out, "[e]ven if yield is set below the MSY, the system will collapse if the population ever happens to fluctuate below a threshold value." These conclusions were reaffirmed in Clark 1990 seminal work "Mathematical Bioeconomics" and remain widely accepted today, for example regularly being cited as a basis for recent studies.[71]

Using average biomass over a time series as the input into the OFL formula would be equivalent to setting OFL greater than MSY for all years in which the stock is below average, and would therefore fail to prevent overfishing in violation of the MSA. As shown in MacCall et al. 2016, Thayer et al. 2017, the CSNA biomass can decline by over 90% within a 2-year period [91.2% decline from 2007-2009]; and by over 99% in as few as four years [96.4% reduction from 1986-1990; 99.1% reduction from 2005-2009].[72] Furthermore, biomass can remain at low

[69] *Oceana v. Ross*, Slip Op. at 31.
[70] May et al. 1978 at 240.
[71] Clark 1990. Mathematical Bioeconomics. United States; see Anderson et al. 2008. Why fishing magnifies fluctuations in abundance. Nature 452:835-839; Hsieh et al. 2006. Fishing elevates variability in the abundance of exploited species. Nature 443:859-862.
[72] Thayer et al. 2017. Appendix I. Table 1. Results calculated using updated biomass values.

levels (below 100,000 mt) for extended periods of at least 7 consecutive years, as observed from 2009-2015. [73]

Second, the best available science regarding anchovy abundance shows that the 75% buffer between the ACL and ABC and the OFL is wholly inadequate to prevent overfishing, given that this species can fluctuate by 99% within a period of a few years.

Third, setting catch limits without regard to the current size of the stock violates the MSA. As the recent decision in *Oceana v. Ross* emphasized, the critical variable for determining an appropriate OFL, ABC, and ACL is the size of the stock.[74] Furthermore, abundance data are available for all CPS stocks. Since 2006, NMFS has conducted acoustic trawl surveys twice per year that provide information on the stock size of CSNA, NSNA, and jack mackerel. The 2018 ATM review panel unanimously concluded that the summer ATM survey could be used to provide a biomass estimate for jack mackerel to directly inform management, and that the ATM survey could be used to provide total biomass estimates for CSNA and NSNA, if nearshore areas are addressed. Multiple options exist for addressing nearshore areas, including using mean densities or density trends from survey transects to develop nearshore estimates, or using additional acoustic information if feasible. NMFS may not simply rely on outdated "default" values to set the ACL in the proposed rule when it has updated data available to it. Instead, NMFS must work with the Council to update all management values based on best available science.

Third, the FMP's and proposed rule's failure to provide for any regular evaluation of stock status violates the duty to assess stock status relative to the ACL, ABC, OFL, and status determination criteria. *See* 16 U.S.C. §§ 1853(a)(3) (FMP must assess and specify "present and probable future condition of" the stock); 1853(a)(10) (FMP must specify objective and measurable criteria for identifying when the fishery is overfished (i.e. MSST)). In order to determine if a stock is overfished, meaning that it has fallen below a biomass that would support MSY, fishery managers must know the status of the stock. Yet under the "monitored" approach, fishery managers only track landings. NMFS admits in the proposed rule that landings are <u>not</u> a reliable indicator of stock status for anchovy. 83 Fed. Reg. 1009,1010 (Jan. 9, 2018). Well-established science demonstrates that landings are not a reliable indicator of abundance for anchovy or any other CPS species, since their tendency to travel in schools as well as the use of fish finding technology and purse seine gear renders them easy to catch even when they are at low abundance.[75] It is impossible to prevent a stock from becoming overfished or subject to overfishing if the agency does not regularly evaluate the actual abundance of the stock relative to catch levels and actively manage fishing based on the latest information.[76]

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[73] Thayer et al. 2017. Appendix I. Table 1. Results calculated using updated biomass values.
[74] *Oceana v. Ross*, Slip Op. at 31.
[75] Lenfest Forage Fish Task Force. Pikitch et al. 2012. Little Fish, Big Impact: Managing a Crucial Link in Ocean Food Webs. Lenfest Ocean Program. Washington, DC. Summary. *See also* Essington et al. 2015. Fishing amplifies forage fish population collapses, PNAS Early Edition, available at http://www.pnas.org/content/early/2015/04/01/1422020112.full.pdf.
[76] Furthermore, NMFS has failed to adopt MSSTs or other criteria for determining when the stock is overfished for CSNA, NSNA, and jack mackerel, despite these measures being required by the MSA and having produced options for doing calculating MSST and other values. Hill et al. (2016) (2016 MSST Report).

NMFS has no excuse for failing to produce regular abundance estimates for all CPS stocks. NMFS already collects the data necessary to estimate abundance every year for all of these stocks through its acoustic trawl survey and other surveys, and has readily available, reliable means for using that data to produce abundance estimates. NMFS must use that data to regularly evaluate the status of CPS stocks and conserve and manage those stocks in a way that effectively prevents overfishing and accounts for ecosystem needs.

Fourth, the lack of any effective trigger for reevaluating numerical catch limits to ensure that they are consistent with the best available science on stock status violates the MSA.[77] The framework implemented in the proposed rule only provides that the ACL will be reconsidered if landings "consistently reach the ABC/ACL level" for an unspecified period of time, "if new scientific information becomes available to warrant changes, or if changes are made in the future to the existing ABCs or OFLs."[78] As discussed above, simply monitoring landings and comparing them to the ACL may prevent overfishing on paper, but does nothing to prevent overfishing in the water; that is, it does not prevent catch from exceeding MSY levels when stocks are at low levels. To the contrary, this trigger for revisiting the ACL value is guaranteed not to prevent overfishing. As we have seen in the case of the central subpopulation of northern anchovy, the stock abundance may drop below the static OFL and even below ACL value. In that case, the fishery cannot possibly catch the full ACL. In other words, using landings as the measure of whether the ACL value should change is guaranteed to fail at exactly the time it is most crucial: when the stock has hit a critical low.

Furthermore, to see the inadequacy of the vague "new scientific information that warrants change" trigger, one need look no further than NMFS's continued refusal to reconsider the ACL value for the central subpopulation despite multiple sources of scientific information demonstrating that the stock declined to a historical low and remains low relative to 1964-1990, as well as a formal request from the USFWS to initiate the Point of Concern Framework under the CPS FMP. Moreover, so long as the agency only monitors landings while neglecting to use its own available data to produce annual abundance estimates, declines in abundance are likely to go unnoticed for significant periods of time before "new scientific information" comes to light. And at that point, the decline is likely to be severe.

NMFS's reliance on changes to OFLs and ABCs as a trigger for reevaluating the ACL suffers from a similar defect. Namely, without a required, regular evaluation of current abundance, or the timely introduction and serious consideration of new, real-time data, the Council will have little impetus to change the OFL and ABC, especially in circumstances where data indicates stocks are low and such consideration would likely result in a lower ACL. More to the point, with respect to the central subpopulation of northern anchovy, the court has already invalidated the "default" OFL and ABC values, compelling NMFS and the Council to produce new values based on the best scientific information currently available.

Finally, the proposed rule entirely fails to account for ecosystem needs despite the well-established importance of these stocks as key food sources for dozens of marine predators. The failure to consider whether the static values set in the proposed rule would provide adequate food

[77] Setting indefinite, multi-year catch limits is also inconsistent with the FMP itself, which suggests that the OFL, ABC, and ACL may be revised through the "annual" specification process. The proposed rule eliminates any such annual process.
[78] 83 Fed. Reg. at 1011.

for marine predators violates the MSA, NMFS regulatory guidelines, the assumptions made in the delisting decision for the California brown pelican, and the CPS FMP itself.

Recommendations

For all the reasons stated above, the "monitored" category under the CPS FMP violates the MSA, and the proposed rule violates the MSA, ESA, and NEPA. NMFS should eliminate this faulty "monitored" management framework entirely, and manage all species based on the most current estimates of stock size. We understand that in light of the approval by the 2018 ATM Methodology Review, the Southwest Fisheries Science Center is currently preparing 2017 biomass estimates for all CPS finfish stocks, including jack mackerel, NSNA, and CNSA, based on results of the 2017 surveys. We expect that NMFS will use this best available science to evaluate the current status of these stocks and craft a management framework, including updated OFL, ABC, and ACL that prevent overfishing and achieve optimum yield. NMFS should immediately begin working with the Council to develop new management measures for the central subpopulation of northern anchovy, northern subpopulation of northern anchovy, and jack mackerel that contain the same features and annual updates as the so-called "actively managed" framework in the CPS FMP. In other words, NMFS and the Council must develop an updated, ecosystem-based harvest control rule for these stocks, updated reference points, and a system for updating and specifying reference points on an annual basis based on annually updated abundance estimates.

The ACL NMFS previously promulgated for the central subpopulation has been vacated by the court. As we explained above, bringing the management of the CSNA and the other two stocks currently designated as "monitored" into full compliance with the MSA will require NMFS to overhaul the management framework for these stocks. In the meantime, NMFS may not allow fishing to continue in the absence of an ACL that will prevent overfishing and account for predator needs. To the extent NMFS intends to allow continued fishing on this stock, it must promulgate an interim ACL that will prevent overfishing and account for predator needs based on the current condition of the stock. We emphasize that NMFS's current approach to "monitored" stocks, including the specification of static, indefinite catch limits, the use of outdated data, the use of an insufficient buffer to account for uncertainty in the OFL, and reliance on landings to track the stock, is illegal and must be revised.

However, should NMFS find it necessary to use existing formulas in the FMP to establish a short-term, interim OFL, ABC, and ACL for the CSNA while it completes the needed changes to the management framework, it could use published recent multi-year biomass averages from recent studies such as Thayer et al. 2017, multiplied by the most recent estimates of F_{MSY} from the Hill et al. 2016 MSST Report to determine OFL,[79] and use data on the extent of population

[79] NMFS report on MSSTs (Hill et al. 2016) calculated an average instantaneous F_{MSY} fishing rate of 0.266 for CSNA, equivalent to an annual exploitation rate (or "E_{MSY}") of 23.4%. While these recent values are based on the Jacobsen et al. 1995 stock assessment, and do not include recent data from the period where the stock collapsed, this F_{MSY} provides stock-specific information for use in deriving an OFL for the CSNA. NMFS should include recent information on stock productivity (post-1995) to develop a proxy for F_{MSY} based on current stock and oceanic conditions. Importantly, this average is derived from eight different models with different stock-recruitment relationship scenarios, ranging from 0.190 to 0.455, indicating that the F_{MSY} proxy is highly uncertain. Therefore, this scientific uncertainty in the F_{MSY} must be accounted for in the buffer between OFL and ABC.

fluctuations to determine a sufficient ABC buffer to account for uncertainty in the stock (we note that NMFS has not explained how the 75% reduction is sufficient to account for uncertainty in stocks that can decline by over 90% in a two year period). NMFS would then need to determine what further reduction from the ABC was necessary to account for predator needs.

NMFS could also consider basing an interim ACL on the pre-Amendment 8 management framework for anchovy. That framework included a 300,000 mt CUTOFF value. When the stock fell below 300,000 mt, the fishery was allowed to catch no more than 7,000 mt. If NMFS were to use this approach, NMFS would need to revisit whether allowing 7,000 mt of catch is appropriate given what we know about stock condition and dependent predators. If NMFS permits any level of fishing for the CSNA, it must fully explain how the limits it establishes will prevent overfishing and account for predator needs.

Furthermore, in light of recent predator impacts, requests from the public to address impacts to non-CPS species, and requests from the USFWS to initiate the Point of Concern Framework in Section 2.1.2 of the CPS FMP, NMFS should consider additional time/area closures to protect CPS dependent predators. We also request that NMFS immediately establish MSSTs for all finfish stocks in the CPS fishery, including NSNA, CSNA, and jack mackerel as required by the MSA.

We look forward to working with NMFS and the Council to bring CPS management into line with the best available scientific information regarding the biology, ecological importance, and current status of the central and northern subpopulations of northern anchovy and jack mackerel, and into compliance with the MSA and other applicable law.

Sincerely,

Andrea A. Treece
Staff Attorney, Oceans Program
Earthjustice

Mariel J. Combs
Pacific Counsel
Oceana

Attachments

Attachments:

1. MacCall, A.D., W.J. Sydeman, P.C. Davison, J.A. Thayer. (2016). Recent collapse of northern anchovy biomass off California. Fisheries Research 175, 97-94.

2. Ainley, D. et al. 2015. California current system – predators and the preyscape. *Journal of Marine Systems* 146: 1-2.

3. Lenfest Forage Fish Task Force. Pikitch et al. 2012. Little Fish, Big Impact: Managing a Crucial Link in Ocean Food Webs. Lenfest Ocean Program. Washington, DC. Summary.

4. Essington et al. 2015. Fishing amplifies forage fish population collapses, PNAS Early Edition, available at http://www.pnas.org/content/early/2015/04/01/1422020112.full.pdf.

5. Curry, P.M., I.L. Boyd, S. Bonhommeau, T. Anker-Nilssen, R.J.M. Crawford, R.W. Furness, J.A. Mills, E.J. Murphy, H. Österblom, M. Paleczny, J.F. Piatt, J.P. Roux, L. Shannon, and W.J. Sydeman. 2011. Global Seabird Response to Forage Fish Depletion – One-Third for the Birds. Science (334)6063 1703-1706.

6. McClatchie, S. et al. 2015. Food limitation of sea lion pups and the decline of forage off central and southern California. Available at: https://www.researchgate.net/publication/267899031_Food_limitation_of_sea_lion_pups_and_the_decline_of_forage_off_central_and_southern_California

7. Koslow, J.A., Miller, E.F., and McGowan, J.A. 2015. Dramatic declines in coastal and oceanic fish communities off California. 2015. Marine Ecology Progress Series 538:221-227.

8. Sydeman, W.J., Thompson, S.A., Santora, J.A., Koslow, J.A., Goericke, R., and Ohman, M.D. 2015. Climate-ecosystem change off Southern California: Time-dependent seabird predator-prey numerical responses. Deep Sea Research II. 112:158-170.

9. Conrad, J.M. 1991. A Bioeconomic Analysis of the Northern Anchovy. Working paper in agricultural economics. Department of Agricultural Economics. New York State College, Ithaca New York.

10. Restrepo et al. 1998. Technical Guidance on the Use of Precautionary Approaches to Implementing National Standard 1 of the Magnuson-Stevens Fishery Conservation and Management Act. NOAA Tech Memorandum. July 17, 1998. Available at: http://www.nmfs.noaa.gov/sfa/NSGtkgd.pdf .

11. Bertrand et al. 2012. Local depletion by a fishery can affect seabird foraging. Journal of Applied Ecology 49:1168-1177.

12. Fimrite, P. December 10, 2015. Sea lions in trouble, again, off California coast. San Francisco Chronicle. Available at: http://www.sfgate.com/bayarea/article/Sea-lions-in-trouble-again-off-California-coast-6690177.php.

13. Henry, S.P., 2015. Letter from Stephen P. Henry, United States Fish and Wildlife Service to Dorothy Lowman, Pacific Fishery Management Council (May 14, 2015).

14. Henry, S.P., 2015. Letter from Stephen P. Henry, United States Fish and Wildlife Service to Dorothy Lowman, Pacific Fishery Management Council (November 12, 2015).

15. May, R. M., J. R. Beddington, J. W. Horwood, J. G. Shepherd. 1978. Exploiting Natural Populations in an Uncertain World. Mathematical Biosciences 42: 219-252.

16. Thayer et al. 2017. California anchovy population remains low, 2012-16. CalCOFI Report, Vol. 58, 2017. +

17. Lynn et al. 2018. Southern California Coastal Pelagic Species Aerial Survey. CDFW. CWPA.

18. NMFS. 2018. Acoustic-Trawl Methodology Review. Stock assessments of coastal pelagic species in CCE for advising management: Utility of acoustic-trawl data.

19. Demer et al. 2018. NMFS 2018 Methods Review: Acoustic-Trawl Survey.

20. Steirhoff et al. 2018. Report on the collection of data during the summer 2017 California Current Ecosystem Survey (1706RL), 19 June to 11 August 2017, conducted aboard fisheries survey Reuben Lasker. January 2018. NOAA Technical Memorandum NOAA-TM-NMFS-SWFSC-593.

21. Stierhoff. 2018. ATM Methods Review- Responses to Some Requests. CPS catch, by season.

22. NMFS. 2018. Acoustic-Trawl Method- Target Strength.

23. Zwolinski et al. 2014. Building on fisheries acoustics for marine ecosystem surveys. Oceanography 27(4):68-79.

24. Zwolinski et al. 2017. Distribution, biomass and demography of the central-stock of northern anchovy during summer 2016, estimated from acoustic-trawl sampling. NOAA Tech. Mem. NMFS.

25. Stierhoff et al. 2017. Report on the collection of data during the acoustic-trawl and daily egg production methods survey of coastal pelagic fish species and krill (1704RL) within the California Current Ecosystem, 21 March to 22 April 2017. NOAA Tech. Mem. NMFS.

26. Stierhoff et al. 2017. Report on the collection of data during the acoustic-trawl and daily egg production methods survey of coastal pelagic fish species and krill (1604RL) within the California Current Ecosystem, 22 March to 22 April 2016. NOAA Tech. Mem. NMFS.

27. Stierhoff et al. 2017. Report on the collection of data during the acoustic-trawl and daily egg production methods survey of coastal pelagic fish species and krill (1504SH) within the California Current Ecosystem, 28 March to 1 May 2015, conducted aboard fisheries survey vessel Bell M. Shimada. NOAA Tech. Mem. NMFS.

28. Cutter and Demer. 2008. California Current Ecosystem Survey 2006 Acoustic Cruise Reports for NOAA FSV Oscar Dyson and NOAA FRV David Starr Jordan. NOAA Tech. Mem. NMFS.

29. Koehn et al. 2016. Developing a high-taxonomic resolution food web model to assess the functional role of forage fish in the California Current Ecosystem. Ecological Modelling 335: 87-100.

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April 23, 2019

Barry A. Thom
Regional Administrator
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National Marine Fisheries Service
501 W. Ocean Blvd., Ste. 420
Long Beach, CA 90802-4250
Attn: Joshua Lindsay

RE: RIN 0648-BI73; Fisheries Off West Coast States; Coastal Pelagic Species Fisheries; Multi-Year Specifications for Central Subpopulation of Northern Anchovy

Dear Mr. Thom:

The National Marine Fisheries Service's ("NMFS's") proposed rule specifying new values for the overfishing limit ("OFL"), acceptable biological catch ("ABC"), and annual catch limit ("ACL") for the central subpopulation of northern anchovy ("CSNA" or "anchovy") violates the Magnuson-Stevens Fishery Conservation and Management Act and fails to address core findings of the district court opinion that required NMFS to issue the new rule. NMFS proposes to set values for the OFL, ABC, and ACL (collectively, "catch limits") that will remain in place indefinitely, yet are based on only three years of abundance data and blatantly omit available, recent abundance data that reflect substantial dips in abundance levels. More significantly, the proposed rule's reliance on an average biomass estimate fails to account for the fact that the anchovy population could again quickly decline well below that average, meaning the OFL, ABC, and ACL would no longer be rationally related to the size of the anchovy population. Compounding this problem is NMFS reliance on the 75% buffer between the OFL and ABC to reflect population variability, when recent population data shows that anchovy can decline by 99% in just four years. The proposed rule—and, indeed, the fishery management plan framework it purports to implement—are not based on the best available scientific information, and will not prevent overfishing or achieve optimum yield by providing adequate forage for marine predators.

We urge NMFS to make substantial changes before issuing the final rule. If NMFS intends the rule to stay in place indefinitely, it must reduce the OFL, ABC, and ACL substantially to levels that would prevent overfishing when the stock is collapsed and that would ensure adequate forage for predators. Alternatively, if NMFS wishes to rely only on recent abundance data, it must ensure that it prevents overfishing and accounts for the substantial variability in anchovy abundance by specifying that the catch limit values in the proposed rule will remain in place only until January 1, 2021, upon which date the ABC value will decrease to a *de minimis* level of no more than 6,487 mt until such time as NMFS specifies new updated catch limits based on updated data.

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I. The Proposed Rule Must Satisfy MSA Requirements that NMFS Base Catch Limits on the Best Available Science, Ensure They Prevent Overfishing, and Account for Needs of Marine Predators

The Magnuson-Stevens Act requires that "[c]onservation and management measures [are] based on the best scientific information available."[1] When taking management action, NMFS must make "a thorough review of all the relevant information available at the time. NMFS may not disregard superior data in reaching its conclusion."[2] Courts have emphasized that NMFS "must utilize the best scientific data *available*, not the best scientific data *possible*."[3] In other words, NMFS may not decline to use available information for management simply because it is uncertain or could be improved by more research or analysis. "It is well settled . . . that the Secretary can act when the available science is incomplete or imperfect, even where concerns have been raised about the accuracy of the methods or models employed."[4]

The Act also requires that all management measures, including the proposed rule, prevent overfishing and achieve optimum yield by reducing catch to account for ecological and socioeconomic needs.[5] As the district court found when it vacated NMFS's prior catch limits, the size of the anchovy population is "the critical variable" in determining whether the OFL, ABC, and ACL will prevent overfishing.[6] In other words, whether or not the proposed catch limits will prevent overfishing depends on how those limits relate to the size of the anchovy population in a given year. Moreover, NMFS may not rely on the 75% reduction from a static OFL to assume that the ABC and ACL will prevent overfishing when the anchovy population size changes substantially, such that the OFL no longer reflects an accurate estimate of the MSY the current population can sustain.[7]

II. The Proposed Rule and the Coastal Pelagic Species Fishery Management Plan's "Monitored" Approach the Rule Seeks to Implement, Including Authorization of Indefinite Catch Limits, Violate the Magnuson-Stevens Act

NMFS states that it is issuing the proposed rule pursuant to the Coastal Pelagic Species Fishery Management Plan ("CPS FMP") and its implementing regulations. Yet the CPS FMP's management framework for anchovy is fundamentally ill-suited to the biology and ecological role of this crucial species. The FMP does not account for the fact that the anchovy population changes significantly year-to-year or the fact that the stock has historically declined by more than 75% below its long-term average biomass; nor does it consider whether predator needs are being

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[1] 16 U.S.C. § 1851(a)(2).
[2] *Guindon v. Pritzker*, 31 F. Supp. 3d 169, 195-96 (D.D.C. 2014) (quotations and citations omitted).
[3] *Blue Water Fishermen's Assn. v. Nat'l Marine Fisheries Serv.*, 226 F.Supp.2d 330, 338 (D. Mass. 2002) (quoting *Building Indus, Ass'n of Superior California v. Norton*, 247 F.3d 1241, 1246-47 (D.C.Cir.2001)) (emphasis in original).
[4] *General Category Scallop Fishermen v. Secretary, U.S. Dept. of Commerce*, 635 F.3d 106, 115 (3rd Cir.2011) (citing *North Carolina Fisheries Ass'n, Inc. v. Gutierrez*, 518 F.Supp.2d 62, 85 (D.D.C. 2007)).
[5] 16 U.S.C. § 1851(a)(1).
[6] *Oceana, Inc. v. Ross*, 16-CV-06784-LHK, 2018 WL 1989575, at *16 (N.D. Cal. Jan. 18, 2018), *enforcement granted*, 359 F. Supp. 3d 821 (N.D. Cal. 2019).
[7] *Id.*

met, whether other fisheries that target anchovy predators are being affected, or the potential for local depletion. In short, the way the FMP currently manages anchovy is contrary to everything we know about this species and the Magnuson-Stevens Act's most basic requirements. Because the proposed rule largely relies on the FMP's invalid management approach, it suffers the same scientific and legal flaws as the FMP itself.

A. Specifying a Static Catch over an Indefinite Period and Relying on a 75% Buffer Between the OFL and ABC/ACL Is Contrary to the Best Available Science on Variability of the Anchovy Population, and Will Not Prevent Overfishing or Account for Predator Needs When the Anchovy Population Experiences Declines.

Setting static catch limits based on a long-term average will not prevent overfishing on a species that frequently (and rapidly) drops to less than 10% of long-term average levels. As the district court recognized, catch limits must be rationally, scientifically related to the size of the anchovy population in order to prevent overfishing. The best available science on anchovy biology and population dynamics shows that its population fluctuates frequently, quickly, and significantly.[8] Even more so than other species, forage fish like anchovy are highly vulnerable to overfishing and collapse.[9] Due to their schooling behavior and technological advances in fishing methods, catch per unit effort for anchovy usually remains steady or even increases even as the species' abundance plummets.[10] A recent study of forage species around the world, including northern anchovy, found that fishing forage species during a decline can increase the rate and magnitude of population collapses.[11]

Historical stock assessments and recent updated time series clearly show that CSNA experiences dramatic fluctuations in biomass, both increases and collapses, over a very short time period. NMFS completed its last formal stock assessment of CSNA in 1995, which estimated the spawning stock biomass in U.S. and Mexican waters.[12] According to the spawning biomass estimate time series in that assessment, spawning stock biomass values ranged from 145,000 mt to 1,069,000 mt over the years 1963-1994, indicating a wide range in abundance. The assessment also indicated the stock can drop very rapidly. For example, the stock declined

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[8] Thayer et al. 2017. California Anchovy Population Remains Low, 2012-2016. CalCOFI Rep., Vol. 58, 2017. 8pp. *and* MacCall, A. D., W. J. Sydeman, P. C. Davison, and J. A. Thayer. 2016. Recent collapse of northern anchovy biomass off California. Fish. Res. 175:87–94.

[9] See Pinsky et al. 2011. Unexpected patterns of fisheries collapse in the world's ocean. PNAS: 108(20):8317-8322 and Lenfest Forage Fish Task Force Report: Pikitch et al. 2012. Little Fish, Big Impact: Managing a Crucial Link in Ocean Food Webs. Lenfest Ocean Program. Washington, DC. 108 pp.; Pinsky ML, Byler D. 2015. Fishing, fast growth and climate variability increase the risk of collapse. Proc. R. Soc. B 282: 20151053. http://dx.doi.org/10.1098/rspb.2015.1053

[10] Pikitch et al., 2012, *Little Fish, Big Impact: Managing a Crucial Link in Ocean Food Webs*, Lenfest Ocean Program, Washington, D.C., 108 pp.

[11] Essington et al. 2015. *Fishing amplifies forage fish population collapses*, PNAS Early Edition, available at http://www.pnas.org/content/early/2015/04/01/1422020112.full.pdf .

[12] Jacobson, L.D., Lo, N.C.H. Herrick, Jr., S.F. and T. Bishop. 1995. Spawning biomass of the northern anchovy in 1995 and status of the coastal pelagic fishery during 1994. NMFS, SWFSC Admin. Rep. LJ-95-11. 52 pp.. Biomass values presented in Punt et al. 2019, Table 1, https://www.pcouncil.org/wp-content/uploads/2019/03/E4_Att1_Emsy-paper_APRIL2019BB.pdf

from 715,000 mt to 167,000 mt over a three-year period (a 77% decline from 1985-1988).[13] As these numbers demonstrate, reducing a static overfishing limit by 75% is not sufficient to prevent overfishing. For example, had an overfishing limit and associated catch limits been set based on the 1985 biomass of 715,000 mt and the 75% ABC buffer in the current CPS FMP, they would not have prevented overfishing in 1988 because the stock had declined by more than the 75% buffer between the OFL and ABC.

Furthermore, we now know that the 1995 stock assessment underestimated the variability in the stock. Notably, the 1963-1994 period upon which the 1995 stock assessment was based reflected high relative biomass because it omitted prior and subsequent years when the anchovy population dropped far below long-term averages to levels that experts refer to as a "collapse" of the population.[14] The time series of abundance estimates in Thayer et al. 2017 includes these low years in the early 1950s and the 2009-2015 period, indicating a range in abundance from below 30,000 mt to over 2,000,000 mt.

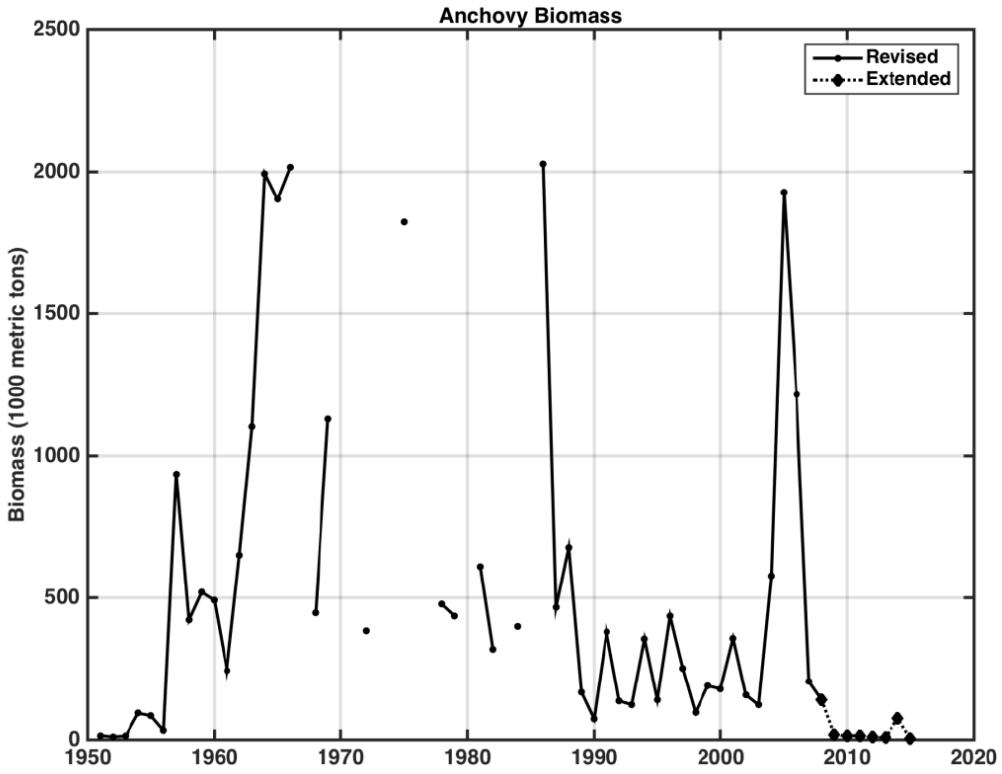

Figure 1: CSNA biomass in the U.S. and Mexico from 1951 to 2015. From Thayer et al. 2017.

[13] Jacobson, L.D., Lo, N.C.H. Herrick, Jr., S.F. and T. Bishop. 1995. Spawning biomass of the northern anchovy in 1995 and status of the coastal pelagic fishery during 1994. NMFS, SWFSC Admin. Rep. LJ-95-11. 52 pp. Biomass values presented in Punt et al. 2019, Table 1, https://www.pcouncil.org/wp-content/uploads/2019/03/E4_Att1_Emsy-paper_APRIL2019BB.pdf

[14] MacCall, A. D., W. J. Sydeman, P. C. Davison, and J. A. Thayer. 2016. Recent collapse of northern anchovy biomass off California. Fish. Res. 175:87–94.

This updated time series also indicates the population has declined more rapidly than recognized in the 1995 stock assessment.. Thayer et al. (2017) found that CSNA biomass dropped by 77% in a single year (1986-1987), dropped by 90% over a two year period (2005-2007), and dropped by 99% over a four year period (2005-2009).

These figures underscore the fact that the 75% buffer between the OFL and ABC/ACL is not scientifically supported or adequate to prevent overfishing when catch limits are left in place indefinitely. Any time the biomass drops greater than 75% below the mean biomass used to calculate OFL, an ABC or ACL that is 75% below the OFL will not prevent overfishing. Therefore, since the proposed rule sets OFL based on a mean biomass of 394,519 mt, the proposed ACL will not prevent overfishing in all years in which the biomass is below 98,630 mt. The best available scientific evidence shows that the CSNA spawning stock was below the proposed annual catch limit in five of the last 10 years (2008-2017) and below the proposed overfishing limit in seven of the last 10 years (2008-2017).[15]

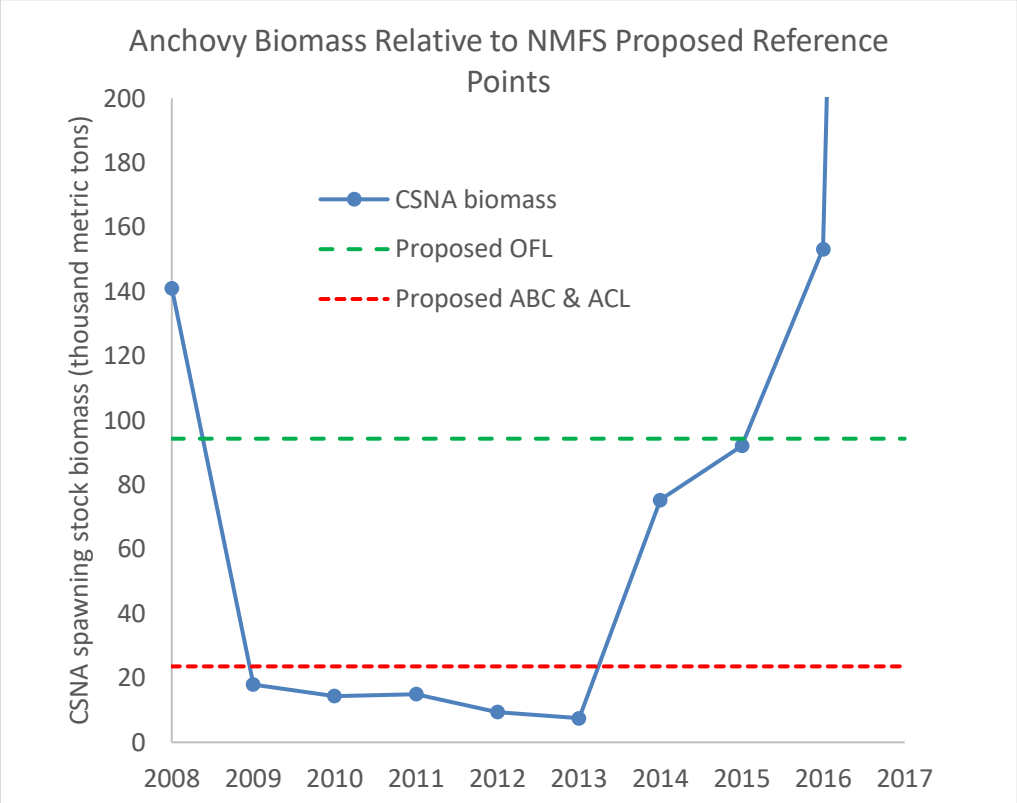

Figure 2: Anchovy spawning stock biomass (SSB) from 2008-2017 from Thayer et al. 2017 relative to NMFS proposed overfishing limit (OFL), acceptable biological catch (ABC) and annual catch limit (ACL). Setting an indefinite OFL, ABC and ACL as proposed fails to prevent overfishing during periods of low anchovy abundance.

[15] Thayer et al (2017). California Anchovy Population Remains Low, 2012-2016. CalCOFI Rep., Vol. 58, 2017. 8pp.

It is well established in the fisheries and natural resource literature that constant quotas that are not regularly updated are not sustainable for fluctuating populations, and therefore fail to prevent overfishing. As stated in May et al. 1978:[16]

> "An alternative strategy is to aim for constant yield (constant catch, constant quotas, constant Y). Many people have noted that *such a strategy, if pursued rigidly, will extinguish the population if the target yield is inadvertently set above the actual MSY value. Even if the yield is set below the MSY, the system will collapse if the population ever happens to fluctuate below a threshold value* (see, e.g., [R.M. May, 1977][17] and references therein)."

More recently, Siple et al. 2019 found that harvest strategies designed to maintain stability in catches will result in more severe collapses for forage fish stocks that fluctuate naturally.[18]

The proposed catch limits also risk harm to numerous marine predators when anchovy numbers decline. Northern anchovy is a keystone forage species in the California Current marine ecosystem ("CCE"). They are preyed upon by a wide variety of marine wildlife, including commercially and recreationally valuable fish, mammals, and sea birds. Forage species play an immense role in supporting the productivity and sustainability of other commercially and recreationally important fish species, including species managed by NMFS and the Council in the Groundfish, Highly Migratory Species, and Salmon FMPs. According to diet studies of 32 different marine predators conducted over multiple regions and multiple years, anchovy may be the most important forage fish throughout the CCE.[19] Another study published in the journal *Science* looked at the impacts of fishing forage species on seabird predators, and concluded that forage fish populations should be kept above one third of historic maximum levels to sustain seabird productivity over the long-term.[20]

Furthermore, the proposed catch limits do not consider or address the best available science on predator consumption of northern anchovy or the impacts of localized depletion on predators. Warzybok et al. 2018[21] examined seabird prey consumption from Bodega Bay to Año Nuevo, California and found that seabird forage fish consumption for this area alone tripled from about 15,000 mt in 1995 to 60,000 mt in 2015. They also found that taking most of the allowed

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[16] R.M. May, J.R. Beddington, J.W. Horwood, and J.G. Shepherd. 1978. Exploiting natural populations in an uncertain world. Mathematical Biosciences 42:219-252, at 240 (emphasis added).

[17] R. M. May. 1977. Thresholds and breakpoints in ecosystems with a multiplicity of stable states, Nature 269: 47 l-477 (1977).

[18] Siple, et al. 2019. Forage fish fisheries management requires a tailored approach to balance trade-offs. Fish and Fisheries 20(1):110-124. https://onlinelibrary.wiley.com/doi/epdf/10.1111/faf.12326

[19] Ainley, D. et al. 2015. California current system – predators and the preyscape. *Journal of Marine Systems* 146:1-2.

[20] Cury, P.M., I.L. Boyd, S. Bonhommeau, T. Anker-Nilssen, R.J.M. Crawford, R.W. Furness, J.A. Mills, E.J. Murphy, H. Österblom, M. Paleczny, J.F. Piatt, J.P. Roux, L. Shannon, and W.J. Sydeman. 2011. Global Seabird Response to Forage Fish Depletion – One-Third for the Birds. Science (334)6063 1703-1706.

[21] Warzybok et al. 2018. Prey switching and consumption by seabirds in the central California Current upwelling ecosystem: Implications for forage fish management. Journal of Marine Systems: 185:25-39.

catch at a single location can negatively affect predators in that region. This is particularly relevant and concerning given the public comments by anchovy fishermen at the April 2019 Council meeting that their entire catch is taken within a few miles from ports such as Moss Landing and Monterey. For example, over 99.9% of the entire US catch of CSNA (17,039 mt) was caught in Northern California in 2018, the majority of which occurs at these two ports.[22] Recognizing the risks of local forage depletion, Oceana and the U.S. Fish and Wildlife Service have urged the establishment of time-area closures to protect breeding sea birds, pinnipeds, and large whales. We reiterate our previous requests here by reference.[23]

B. The Context of the Coastal Pelagic Species Fishery Management Plan and Recent Failure to Update Management Measures in Response to New Scientific Information Underscore the Inadequacy of the FMP and the Rule NMFS Proposes to Implement the FMP

As noted above, the CPS FMP and proposed rule contemplate that NMFS will specify values for the OFL, ABC, and ACL that remain in place indefinitely.[24] While the FMP states that these limits "may" be revised based on best available science, it does not set forth any clear trigger to require that they be revisited or revised to reflect changes in biomass, or any time intervals for doing so.[25] In fact, the FMP's current management structure does not call for ever revisiting catch limit values unless catch levels exceed the ACL.[26] However, simply tracking catch levels against a catch limit that may not reflect the current size of the anchovy population does nothing to prevent overfishing or provide adequate forage for marine predators. In fact, neither the draft 2019 annual CPS Stock Assessment and Fishery Evaluation (CPS SAFE) Reports[27] nor previous CPS SAFE Reports[28] contain any information on the current status of the CSNA stock from ATM surveys, CalCOFI surveys, or DEPM surveys, providing further evidence that NMFS and the Council do not have a mechanism in place for evaluating stock status for CSNA. Moreover, recent history has shown that NMFS and the Pacific Fishery Management Council have been unwilling to revise values for the OFL, ABC, and ACL based

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[22] California Dept. of Fish and Wildlife. 2019. 2018 California Coastal Pelagic Species Fishery Landings. No. Cal Landings compared to Total Landings of Northern Anchovy. Moss Landing and Monterey are the primary Northern California ports where anchovy is landed. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=154299&inline

[23] Letter from Stephen P. Henry, Field Supervisor, United States Fish and Wildlife Service, to Herb Pollard, Chair, Pacific Fishery Management Council (Aug. 18, 2016); Letter from Oceana *et al* to Herb Pollard, Chair, Pacific Fishery Management Council re Stock Assessment Workshop Report and Anchovy Management Update (Sept. 6, 2016) (with attachments); Letter from Oceana and Earthjustice to Herb Pollard, Chair, Pacific Fishery Management Council, and Barry Thom, Regional Administrator, NMFS re Central Subpopulation of Northern Anchovy Overfishing Limit Process (Mar. 30, 2017) (with attachment).

[24] CPS FMP at 40 (Stating that "ACLs would be specified for multiple years until such time as the species becomes actively managed or new scientific information becomes available" and default MSY proxies, ABCs, and ACLs "may be revised based on the best available science).

[25] *Id*.

[26] CPS FMP at 40. Curiously, the FMP also states with respect CPS management, "The primary focus is on biomass, rather than catch, because most CPS (Pacific sardine, northern anchovy, and market squid) are very important in the ecosystem for forage." CPS FMP at 37.

[27] PFMC. 2019. Draft Status of the CPS Fishery and Recommended Acceptable Biological Catches. 2018.https://www.pcouncil.org/wp-content/uploads/2019/04/2018-CPS-SAFE-DRAFT-April-2019.pdf

[28] PFMC. 2018. Status of the CPS Fishery and Recommended Acceptable Biological Catches. 2017. https://www.pcouncil.org/wp-content/uploads/2018/01/CPS_SAFE_December2017.pdf

on the best scientific information currently available, no matter how compelling or dramatic it is. The U.S. Fish and Wildlife Service, independent scientists, and multiple conservation groups repeatedly brought such information to the attention of NMFS and the Council when anchovy numbers plummeted and predators suffered obvious harm; neither the Council nor NMFS applied any of that information to revisiting the values for the OFL, ABC, and ACL.[29]

The FMP's management framework violates multiple Magnuson-Stevens Act requirements, including requirements to ensure that every stock in the fishery have a specified optimum yield that accounts for relevant ecological, economic, and social factors; status determination criteria; acceptable biological catch that fully accounts for scientific uncertainty in determining the overfishing limit; and a mechanism for specifying annual catch limits that effectively prevent overfishing and measures to ensure accountability with those limits. Of particular significance here, the CPS FMP's approach to managing northern anchovy violates the MSA's requirement that management be based on best available science. As explained above, that science does not support setting static, indefinite catch limits for a species whose populations can and do fluctuate significantly from year to year. In addition, the 75% "buffer" between the OFL and ABC is not sufficient to the amount by which anchovy numbers can decline over a very short time period. Setting a multiyear ACL by reducing the OFL estimate by a 75% buffer cannot prevent overfishing or achieve optimum yield when the species plummets by 90% over a couple of years, resulting in immediate food shortages and associated effects on marine predators.

As described above, the well-established science on anchovy population dynamics demonstrates that anchovy abundance fluctuates considerably on its own, and more dramatically when fishing pressure is added to natural fluctuations. The best available science also demonstrates that anchovy abundance can change by up to 99% in just a few years. Further, the best available science tells us that relying on catch levels to detect a change in anchovy abundance is folly. Due to their schooling behavior and technological advances in fishing methods, catch per unit effort for anchovy usually remains steady or even increases even as the species' abundance plummets.[30] And despite the anchovy's extreme sensitivity to changes in ocean conditions and El Niño events, the FMP provides no required mechanism for adjusting management measures in response to unfavorable ocean conditions. NMFS cannot continue to manage anchovy with a static catch limit through this legally invalid "monitored" framework in

[29] *See, e.g.*, Letter from Stephen P. Henry, Field Supervisor, United States Fish and Wildlife Service, to Dorothy Lowman, Chair, Pacific Fishery Management Council (May 14, 2015); Letter from Stephen P. Henry, Field Supervisor, United States Fish and Wildlife Service, to Dorothy Lowman, Chair, Pacific Fishery Management Council (Nov. 12, 2015); Letter from Stephen P. Henry, Field Supervisor, United States Fish and Wildlife Service, to Herb Pollard, Chair, Pacific Fishery Management Council (Aug. 18, 2016); Letter from Oceana *et al* to Dorothy Lowman, Chair, Pacific Fishery Management Council re Anchovy General Status Overview (Oct. 16, 2015) (with attachment); Letter from Oceana and Earthjustice to William W. Stelle, Jr., Regional Administrator, NMFS West Coast Region re Proposed Multi-Year Specifications for Monitored and Prohibited Harvest Species Stock Categories (Dec. 21, 2015) (with attachments); Letter from Oceana *et al* to Herb Pollard, Chair, Pacific Fishery Management Council re Stock Assessment Workshop Report and Anchovy Management Update (Sept. 6, 2016) (with attachments). *See also Oceana, Inc. v. Ross*, 16-CV-06784-LHK, 2018 WL 1989575, at *16 (N.D. Cal. Jan. 18, 2018), *enforcement granted*, 359 F. Supp. 3d 821 (N.D. Cal. 2019).

[30] Pikitch et al., 2012, *Little Fish, Big Impact: Managing a Crucial Link in Ocean Food Webs*, Lenfest Ocean Program, Washington, D.C., 108 pp.

the FMP. Instead, as described below, NMFS should dedicate its resources to develop and adopt a management regime for CSNA that is responsive to the best available science; one that requires managers to apply what they know about the abundance of this vital population on an annual basis, and which ensures that the annual catch limit fulfills its fundamental purpose of preventing overfishing.

III. The Proposed Catch Limits Are Inconsistent with the Coastal Pelagic Species Fishery Management Plan NMFS Claims to Be Implementing

Despite these fundamental flaws, NMFS claims to be implementing the CPS FMP's so-called "Monitored" approach to setting catch limits for northern anchovy in the proposed rule. But NMFS's proposed rule is not even consistent with the FMP it purports to implement. Under the CPS FMP, "OFL will be based on species-specific MSY proxies" and ABC is set at a value 75% lower than the OFL (ABC = OFL*0.25).[31] By default, ACL is equal to the ABC (though it can be reduced to account for OY factors).[32] The FMP defines "MSY stock size" as "the long-term average size of the stock or stock complex, measured in terms of spawning biomass or other appropriate units that would be achieved under an MSY control rule in which the fishing mortality rate is constant."[33] The MSY used in Amendments 8 and 13 was based on a long-term estimate of MSY from Conrad 1991, which produced model estimates of SSBmsy and MSY using the time series from 1964-1990.

While the prior MSY estimate for CSNA was based on about four decades of data, the proposed rule calculates an updated MSY value and OFL based on only three years of anchovy abundance data—conveniently omitting prior years when available estimates show low population levels. Three years is not "long-term"—it barely even encompasses the lifespan of a single anchovy, much less the population cycles the species experiences. And, as explained elsewhere in this letter, setting a longer-term, indefinite set of limits based on only three years of data is arbitrary.

The OFL, ABC, and ACL values set in the proposed rule are based on abundance data from 2016, 2017, and 2018 derived from the acoustic trawl method ("ATM") survey and the daily egg production model ("DEPM") analysis of California Cooperative Oceanic Fisheries Investigations ("CalCOFI") survey data. NMFS's choice to use only three years of data to specify catch limit values that could remain in place for much longer is inconsistent with the CPS FMP's use of long-term averages and, more significantly, conflicts with its duties to base management decisions on the best available science and ensure management measures prevent overfishing when the stock inevitably declines below NMFS's selected average biomass. NMFS does not explain why it chose not to use other available data that more fully reflects recent anchovy biomass or longer term data, including its own 2015 ATM-based abundance estimate, long-term averages calculated by NMFS scientists and members of the Pacific Fishery Management Council's Scientific and Statistical Committee ("SSC"), and peer-reviewed,

[31] PFMC. February 2018. Coastal Pelagic Species Fishery Management Plan as Amended through Am. 16 (CPS FMP) at 40. *See also* 50 C.F.R. § 660.508 (regulations on annual specifications).
[32] CPS FMP at 40.
[33] CPS FMP at 37 (emphasis added).

published estimates from independent scientists. As shown in Table 1 below, using any of these longer term estimates would produce lower catch limit values than the ones NMFS now proposes.

The SSC reviewed NMFS's proposed rule at the Council's April 2019 meeting, and expressed similar concerns with the biomass estimates used in the proposed rule to determine the OFL:[34]

> *The SSC recommends that long-term biomass estimates be included in the calculation of the overfishing limit (OFL) in the proposed rule…Consideration should also be given to including the 2015 AT survey and earlier biomass estimates.*

The "2015 AT survey" biomass estimate was derived by NMFS's Southwest Fisheries Science Center ("SWFSC") and presented to the Council in November 2016.[35] It estimated that the biomass of CSNA in United States waters in 2015 was 31,427 mt. We understand this may be an overestimate, meaning that actual abundance was significantly lower (i.e., less than 20,000 mt), as the SWFSC later revised the target strength values in subsequent survey years.[36] Nonetheless, the inclusion of this single year's biomass estimate would reduce the proposed OFL to 72,595 mt, a 23% reduction.

The proposed rule also fails to take into account peer-reviewed, published studies providing longer term estimates of anchovy abundance in recent years. Thayer et al (2017)[37] provides abundance estimates based on CalCOFI data on egg and larval densities for 1951-2015. The lead author, Dr. Julie Thayer, submitted updated figures to the Council in November 2018 calculated with new data for 2015-2017, providing a consistent time series from 1951-2017 (Appendix 1).[38, 39] This time series uses the CalCOFI ichthyoplankton-based methods in MacCall et al. 2016, and provides estimates of spawning stock biomass ("SSB") for the full range of the CSNA, including the portion of the stock off Mexico. Using the most recent 10-years of this time series to calculate mean biomass would result in a much lower OFL than the one NMFS proposes. Using mean biomass from Thayer et al. 2017 over the 2008-2017 period,

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[34] PFMC Agenda Item E.5.a, Supplemental SSC Report 1, April 2019. Available at: https://www.pcouncil.org/wp-content/uploads/2019/04/E5a_Supp_SSC_Rpt1_APR2019BB.pdf

[35] Zwolinski et al. 2016. Draft NOAA Technical Memorandum. The Distribution and Biomass of the Central-Stock Northern Anchovy During Summer 2015, Estimated From Acoustic-Trawl Sampling. Agenda Item G.4.a. Supplemental SWFSC Report Appendix 1, November 2016. http://www.pcouncil.org/wp-content/uploads/2016/11/G4a_Sup_SWFSC_Rpt2_NOV2016BB.pdf

[36] Zwolinski et al. 2017. Distribution, Biomass, and Demography of the Central-Stock of Northern Anchovy During Summer 2016, Estimated from Acoustic-Trawl Sampling. NOAA Technical Memorandum NOAA-TM-NMFS-SWFSC-572. PFMC Agenda Item G.1.b. Supplemental SWFSC Report, April 2017. http://www.pcouncil.org/wp-content/uploads/2017/04/G1b_Sup_SWFSC_Rpt_Apr2017BB.pdf.

[37] Thayer et al. 2017. California Anchovy Population Remains Low, 2012-2016. CalCOFI Rep., Vol. 58, 2017. 8pp.

[38] Thayer 2018. Updated Biomass Estimates of CSNA. PFMC Agenda Item E.1, Public Comment. Farallon Institute. Available at: https://pfmc.psmfc.org/CommentReview/DownloadFile?p=e982e162-4ec2-4b3b-8f1a-1da42a0bb81e.pdf&fileName=FI%20Letter%20to%20PFMC%20for%20Nov%202018%2C%20CSNA%20biomass%20update.pdf

[39] In this letter, references to Thayer et al (2017) include the full updated 1951-2017 time series of CSNA biomass from Thayer 2018.

the OFL would be 33,226 mt and the ABC would be 8,307 mt. Using the median spawning stock biomass from a longer time series representing a full population cycle (1957-2017) as Dr. Thayer presented to the PFMC in April 2019[40], the median SSB is estimated to be 380,100 mt; the OFL and ABC corresponding to this biomass would be 74,492 mt and 18,623 mt, respectively. As discussed below, however, anchovy abundance often falls to less than 10% of these long-term values, therefore an ABC set 75% below these long-term OFLs would fail to prevent overfishing when the stock reaches low abundances at the levels recently observed over the 2009-2015 period (mean = 33,100 mt SSB). As a result, setting catch limits based on the long-term values without an adequate buffer between the OFL and ABC to account for the wide natural fluctuations in this stock will not prevent overfishing or provide adequate forage for predators when abundance falls substantially below the long-term average.

The proposed rule also ignores long-term estimates of the biomass at maximum sustainable yield ("Bmsy") and the fishing rate that produces MSY ("Fmsy") that were recently calculated by NMFS and the SSC. In 2016, NMFS developed and provided updated estimates of Bmsy and Fmsy using the time series from 1963-1994 from the 1995 Jacobsen et al. stock assessment and updated methods (SRFIT model).[41] The analysis used eight different stock recruitment relationship scenarios, with a mean Fmsy of 0.266 (MSY Exploitation Rate [Emsy] = 0.234)[42] and a mean spawning stock biomass at MSY ("SSBmsy") of 139,561 mt (Table 6). Notably, the Jacobsen et al. 1995 time series includes the portion of the CSNA stock in Mexican waters. Under the CPS FMP formula for calculating the OFL, a "Distribution" factor would be applied to reflect the portion of the stock in U.S. waters. Therefore, the OFL would be the product of the SSBmsy, Emsy, and Distribution in U.S. waters (0.82).[43] Using the results of this analysis of a long-term MSY would produce a U.S. OFL of 26,779 mt. Application of the default ABC buffer in the CPS FMP would produce an ABC of 6,695 mt.

In 2019, SSC Chair Dr. Andre Punt produced an analysis[44] that builds on the NMFS 2016 analysis to provide long-term MSY, Emsy, and Bmsy, based on the same Jacobsen et al. 1995 time series. The SSC reviewed the analysis in April 2019 and recommended it for use in setting OFL in the near-term.[45] Using six different stock recruitment scenarios, Dr. Punt's analysis produced Emsy (median) values ranging from 0.14 to 0.35 and SSBmsy from 96,000 mt to

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[40] Thayer, J. 2019. Central Stock Northern Anchovy. PFMC Agenda Item E.4.b, Supplemental Public Presentation 3. April 2019. https://www.pcouncil.org/wp-content/uploads/2019/04/E4b_Supp_PubPresentation3_Farallon_Institute_Apr2019BB.pdf

[41] NMFS 2016. Review and Re-evaluation of Minimum Stock Size Thresholds for Finfish in the Coastal Pelagic Species Fishery Management Plan for the U.S. West Coast. PFMC Agenda Item E.1.a, Supplemental NFMS Report, Sept 2016. http://www.pcouncil.org/wp-content/uploads/2016/09/E1a_Sup_NMFS_Rpt_MSSTs_SEPT2016BB.pdf

[42] Since Fmsy is an instantaneous fishing rate, it is necessary to convert to an annual exploitation rate (Emsy) for the purpose of setting annual specifications. The formula is Emsy = $1 - e^{(-Fmsy)}$

[43] CPS FMP. Section 4.2. Definition of Overfishing Limits or MSY, and ABC Control Rules *and* Section 4.6.4.1 Northern Anchovy - Central Subpopulation.

[44] Punt, A.E. 2019. An approach for computing Emsy, Bmsy, and MSY for the CSNA. PFMC Agenda Item E.4, Attachment 1, April 2019. https://www.pcouncil.org/wp-content/uploads/2019/03/E4_Att1_Emsy-paper_APRIL2019BB.pdf

[45] Scientific and Statistical Committee Report on CSNA Management Update. PFMC Agenda Item E.4.a, Supplemental SSC Report 1, April 2019. https://www.pcouncil.org/wp-content/uploads/2019/04/E4a_Supp_SSC_Rpt1_APR2019BB.pdf

137,000 mt (Table 4a in Punt 2019). These results also produced long-term MSY values with medians ranging from 18,000 to 36,000 mt (Table 4a in Punt 2019). Using these median results multiplied by the 82% distribution factor in the CPS FMP would produce U.S. OFLs ranging from 14,760 mt to 29,520 mt. Application of the default 75% ABC buffer in the CPS FMP would produce U.S. ABC values ranging from of 3,690 mt to 7,380 mt. Using the single point value from the Beverton-Holt stock recruit relationship with the U(-0.99, 0.99) autocorrelation method would produce a U.S. OFL of 27,027 mt and U.S. ABC of 6,757, while a single point value using the Ricker stock recruit relationship with the U(-0.99, 0.99) autocorrelation method would produce a U.S. OFL of 12,398 mt and a U.S. ABC of 3,100 mt (see Table 1).

For comparison, the Conrad 1991[46] analysis used a 1964-1990 time series from a 1991 stock assessment and was the basis of the recently vacated catch rule. It produced an OFL of 101,136 mt and an ABC of 25,284, which were rounded to 100,000 and 25,000 respectively in Amendment 8 to the CPS FMP. These values were the basis of the previous catch rule the district court invalidated because they were not based on the best available science and failed to prevent overfishing.

One of the fundamental problems with using average biomass to set catch limits for anchovy is that the value of the average biomass, and thus the catch limits, varies widely depending on the time period used. The following table demonstrates the substantial differences in OFL and ABC values resulting from different available data sources, methods, and years selected. The wide range of values resulting from the use of various time periods and the fact that the anchovy population inevitably falls well below the average in some years underscore the need to use up-to-date annual abundance data rather than average biomass estimates to set catch limits.

Method/Data Source	Years	Biomass (mt)	Emsy	Distribution	OFL (mt)	ABC (mt)
Conrad 1991[+]	1964-1990	733,410	0.168	82%	101,136	25,284
*NMFS ATM/DEPM**	*2016-2018*	*394,519*	*0.239*	*100%*	*94,290*	*23,573*
Thayer et al 2017 biomass	2016-2018	471,560	0.239	82%	92,416	23,104
Thayer et al 2017 biomass	1957-2017	380,100	0.239	82%	74,492	18,623
NMFS ATM/DEPM	2015-2018	303,746	0.239	100%	72,595	18,149
Thayer et al 2017 biomass	2008-2017	169,540	0.239	82%	33,226	8,307
Punt 2019 (Beverton-Holt)	1963-1994	103,000	0.32	82%	27,027	6,757
NMFS 2016 (MSST Report)	1963-1994	139,561	0.234	82%	26,779	6,695
Punt 2019 (Ricker)	1963-1994	108,000	0.14	82%	12,398	3,100
Thayer et al 2017 biomass	2009-2015	33,100	0.239	82%	6,487	1,622

Table 1: OFL and ABC values resulting from different data sources, methods, and years selected. Distribution is the portion of the biomass in U.S. waters is set at 100% for data sources that only measure biomass in U.S. waters. Emsy is 0.239 as in the NMFS proposed rule unless otherwise specified. All ABCs are calculated using the CPS FMP formula ABC = 0.25*OFL. [+]Prior OFL and ABC values based on Conrad 1991 were vacated by the court because they were not based on the best available science. *The NMFS proposed rule uses ATM/DEPM for years 2016-

[46] Conrad, J.M. 1991. A Bioeconomic Analysis of the Northern Anchovy. Working Papers in Agricultural Economics. September 1991. Cornell University, Ithaca, New York. 37pp.

2018, shown here in *italics*. Figures for Punt 2019 use median values for SSBmsy and Emsy under the U(-0.99, 0.99) autocorrelation method, based on estimates of spawning stock biomass. Calculations referencing Thayer et al. 2017 use updated biomass through 2017 based on Thayer 2018, and apply NMFS' proposed Emsy and the Distribution factor from the CPS FMP, as Thayer et al. 2017 did not recommend a method for setting OFL or ABC.

Lastly, NMFS has collected ATM survey information on the biomass and distribution of CSNA since 2006. While the SWFSC has not released biomass estimates for CSNA from 2014 to date since "the numbers of anchovy and herring in the catches were too low to allow reliable estimations of their biomass"[47], these surveys provide important data indicating that the anchovy population was low. In particular, "on the basis of the low number of catches with these species and the low acoustic backscatter in the vicinity of those catches, their biomasses were likely much lower than those of sardine, Pacific mackerel, and jack mackerel."[48] Similarly, for 2006-2013, "The abundance of northern anchovy was not reliably estimated because in all years too few trawl samples included that species…."[49] Furthermore, NMFS scientists produced a relative index of CSNA abundance based on CalCOFI egg production data for the years 1981-2015.[50] At the November 2018 Council meeting, NMFS SWFSC staff presented data on 2017 egg production and corresponding spawning stock biomass estimates for CSNA, indicating the agency is able to convert the relative egg production index to absolute biomass.[51] This presentation also included time series of CSNA spawning biomass from DEPM, DEPM Light, and CalCOFI eggs & larvae for 1982, 1983, 1984, 2009-2011, and 2017, including a spawning biomass of 15,000 mt from 2009-2011. Yet, of this information, only the much higher 2017 DEPM estimate (308,173 mt) is used in the formulation of a "long-term" MSY in the proposed rule.

IV. NMFS Must Ensure that the Annual Catch Limit Does Not Jeopardize Species Protected Under the Endangered Species Act

NMFS's proposed multiyear ACL of 23,573 mt may affect marine predators listed under the Endangered Species Act ("ESA"), including Chinook salmon, California least tern, marbled murrelet, and humpback whales, particularly in years when anchovy biomass drops below the 3-year average NMFS uses as the basis for the proposed rule. Anchovy provides a critical food source for these species. Removing anchovy through fishing, particularly when alternate prey like Pacific sardine are also scarce, poses a risk to these predators. Reducing availability of preferred (and more nutritious) food sources may decrease the listed predators' reproductive success and drive localized population declines. Furthermore, continuing to allow significant levels of catch during a time of low anchovy abundance increases the risk that the anchovy

[47] Zwolinski et al. 2012: Distributions and abundances of Sardinops sagax and other pelagic fishes in the California Current Ecosystem. Fish. Bull. 110:110-122.
[48] *Id*.
[49] Zwolinski, J.P., D.A. Demer, G.R. Cutter Jr., K. Stierhoff, and B.J. Macewicz. 2014. Building on fisheries acoustics for marine ecosystem surveys. Oceanography 27(4):68–79, http://dx.doi.org/10.5670/oceanog.2014.87.
[50] Weber, E. 2016. Egg and Larval Production of CPS in the California Current. May 2, 2016 Public Presentation given at PFMC CPS Stock Assessment Methodology Workshop.
[51] NMFS SWFSC. 2018. NMFS Report SWFSC Activities, Gerard DiNardo & Dale Sweetnam. PFMC Agenda Item E.1.b. Supplemental SWFSC Presentation November 2018. Slides 8-13. https://www.pcouncil.org/wp-content/uploads/2018/11/E1b_Supp_SWFSC_Presentation1_Gerard_NOV2018BB.ppsx

population will be unable to recover to a robust level in the near future, and thus increases the risk that marine predators will continue to experience food shortages in coming years.

ESA Section 7(a)(2) requires federal agencies to ensure that no action they authorize, fund, or carry out is likely to "jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of [critical habitat]."[52] Therefore, regulations implementing Section 7 provide that: "[e]ach Federal agency shall review its actions at the earliest possible time to determine whether any action *may affect* listed species or critical habitat. If such a determination is made, formal consultation is required . . . ."[53] The "may affect" standard "is a relatively low threshold for triggering consultation."[54] If the proposed action has a "possible" effect on listed species, the consultation requirement is triggered.[55] Formal consultation may only be avoided if, as a result of the preparation of a biological assessment under 50 C.F.R. § 402.12, or as a result of informal consultation under 50 C.F.R. § 402.13, "the Federal agency determines, with the written concurrence of [the Service], that the proposed action is not likely to adversely affect any listed species . . . ."[56]

Where the agency has previously completed ESA consultation on an action, it must reinitiate consultation when, among other circumstances, "new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered."[57] NMFS has not completed prior ESA consultation on the effects on listed marine predators of the proposed multi-year ACL levels for northern anchovy and other species in the CPS FMP. Even if it had, any prior look that NMFS took at the issue did not account for the "bust" periods in the anchovy's "boom and bust" population cycle—the effects of which became very obvious in 2009-2016, when multiple predators experienced mass starvation and breeding failures due to lack of forage. NMFS must apply recent scientific evidence regarding the significant adverse effects of low anchovy abundance on marine predators, including changes in marine predator behavior, the synergistic effects of low anchovy abundance and low abundance levels for sardines and other prey species, reduced breeding success, and starvation events to assess the effects of its indefinitely specified ACL on listed species.

V. Options for Complying with the Magnuson-Stevens Act

A lawful management framework for anchovy would use data from annual surveys to update OFL, ABC, and ACL every year through a regulatory annual specification process. Among other things, it would also specify status determination criteria, including a minimum stock size threshold, based on the best available science, and explicitly account for predator

[52] 16 U.S.C. § 1536(a)(2).
[53] 50 C.F.R. § 402.14(a) (emphasis added).
[54] *Karuk Tribe of California v. United States Forest Service*,681 F.3d 1006, 1027 (9th Cir. 2012) (*en banc*).
[55] *Id., citing Cal ex. Rel. Lockyer v. U.S. Dep't of Agric.*, 575 F.3d 999, 1018 (9th Cir. 2009).
[56] 50 C.F.R. § 402.14(b).
[57] 50 C.F.R. § 402.16(b).

needs in setting ACLs.[58] NMFS should instruct the Council to expedite changes to the CPS FMP needed to bring it into compliance with the Magnuson-Stevens Act. If the Council declines to take swift action, NMFS should exercise its authority to develop a Secretarial amendment to correct the FMP's legal flaws.

In the shorter term, if NMFS chooses to base its catch limits on only three years of recent anchovy abundance data, it must account for the fact that the anchovy population could drop significantly below that three-year average in just a couple of years. This option reflects that current anchovy biomass levels appear healthy but that biomass can drop by over 90% in just two years—and to prevent overfishing and account for predator needs, the ACL must account for the possibility of a very large and rapid drop in anchovy abundance.

NMFS could do this by specifying an ABC[59] of 23,573 mt for 2019-2020, and specifying that after 2020, the ABC will be no more than 6,487 mt until such time as a new ACL is specified based on the best available science. For a static catch limit to prevent overfishing on a fluctuating stock, it must be set below MSY levels that reflect the worst-case scenario of a collapsed stock. Thayer et al. 2017 provides estimates of both long-term biomass and biomass during the recent period of collapse that can form the basis calculating a static catch limit that would prevent overfishing over the long term. Thayer et al produced a long-term spawning stock biomass estimate of 380,100 mt based on the median value from 1957-2017. While authors caution against using a single year's biomass estimate based on statistical variability when the population is at low levels, it is possible to estimate the mean size of the population during a multi-year collapse, the most recent of which occurred from 2009-2015. During this period of collapse, the mean population size was 33,100 mt, which is on par with NMFS's 2015 ATM survey estimate of 31,427 mt, and represents 8.7% of the long-term biomass calculated from 1957-2017. Therefore, using this long-term biomass to set OFL, the ABC must be set at or below 8.7% of OFL to prevent overfishing while accounting for uncertainty in annual biomass, reflecting the extent to which the population may decline below the long-term average. Based on the best available estimates of the CSNA spawning stock biomass during the recent collapse

[58] Oceana has presented these concepts and reforms to NMFS and the Council on numerous occasions. For more detail, see Letter from Oceana and Earthjustice to William W. Stelle, Jr., Regional Administrator, NMFS West Coast Region re Proposed Multi-Year Specifications for Monitored and Prohibited Harvest Species Stock Categories (Dec. 21, 2015) (with attachments); Letter from Oceana *et al* to Herb Pollard, Chair, Pacific Fishery Management Council re Stock Assessment Workshop Report and Anchovy Management Update (Sept. 6, 2016) (with attachments); Letter from Oceana and Earthjustice to Herb Pollard, Chair, Pacific Fishery Management Council, and Barry Thom, Regional Administrator, NMFS re Central Subpopulation of Northern Anchovy Overfishing Limit Process (Mar. 30, 2017) (with attachment); Letter from Oceana and Earthjustice to Barry Thom, Regional Administrator, NMFS West Coast Region re Proposed Multi-Year Annual Catch Limits for Finfish Stocks in Monitored Stock Category (Feb. 8, 2018); Letter from Oceana and Earthjustice to Phil Anderson, Chair, Pacific Fishery Management Council re Process for Review of Reference Points for Monitored Stocks (Mar. 28, 2018); Letter from Oceana and Earthjustice to Phil Anderson, Chair, Pacific Fishery Management Council re Central Subpopulation of Northern Anchovy Management Update (Apr. 1, 2019). *See also* Letter from Stephen P. Henry, Field Supervisor, United States Fish and Wildlife Service, to Phil Anderson, Chair, Pacific Fishery Management Council (Mar. 29, 2018); Letter from Stephen P. Henry, Field Supervisor, United States Fish and Wildlife Service, to Phil Anderson, Chair, Pacific Fishery Management Council (Apr. 1. 2019).

[59] While the CPS FMP allows the ACL to be set equal to the ABC, the ACL can (and should) be set below the ABC to account for the needs of marine predators and fisheries that target anchovy-eating fish species such as salmon. CPS FMP at 40.

(33,100 mt), and applying NMFS's proposed Emsy rate of 0.239 and the 0.82 distribution parameter set forth in the CPS FMP, a de minimis ABC that would prevent overfishing would be 6,487 mt. (Mathematically, this ABC is equivalent to setting an annual OFL for a collapsed stock using a SSB of 33,100 mt.) The calculations of OFL and ABC based on these data are as follows:

OFL = Biomass * Emsy * Distribution = 380,100 mt * 0.239 * 0.82 = 74,492 mt
ABC = OFL * ABC buffer = 74,492 mt * 0.087 = 6,487 mt

Furthermore, NMFS should set the ACL below ABC to account for predator needs and relevant ecological, economic, and social factors to achieve optimum yield.

CONCLUSION

We urge NMFS to take this opportunity to bring anchovy management into compliance with the Magnuson-Stevens Act and other applicable law. This is critical to the long-term health and resilience of the California Current Ecosystem and the communities that depend on it. Thank you for your consideration. Please contact us if you would like to discuss the issues or information presented in this letter.

Sincerely,

Andrea A. Treece
Staff Attorney, Oceans Program
Earthjustice

Geoff Shester, Ph.D.
California Campaign Director & Senior Scientist
Oceana

Cc: Charlton Bonham, Director, California Department of Fish and Wildlife
Chuck Tracy, Executive Director, Pacific Fishery Management Council

Attachments: This letter is being submitted via Regulations.gov with eight (8) PDF attachments containing the documents cited. Attachments 1-3 contain scientific studies. Attachments 4-5 contain Council documents. Attachment 6 contains prior comments on anchovy management submitted by the U.S. Fish and Wildlife Service. Attachments 7-8 contain prior comments on anchovy management submitted by Oceana and Earthjustice.

Appendix 1

Estimates of Annual Spawning Stock Biomass for the CSNA (including U.S. and Mexico) from 1951-2017, from Thayer et al. 2017 as updated by Thayer 2018. Blank cells indicate an estimate was not calculated for that year.

Year	CNSA Spawning Stock Biomass (thousands of metric tons)	Coefficient of Variation (CV)
1951	14.9	1.51
1952	10.7	1.78
1953	13.7	1.57
1954	93.8	0.61
1955	85	0.64
1956	32.8	1.02
1957	936	0.4
1958	422	0.31
1959	519.4	0.28
1960	491	0.29
1961	243.8	0.39
1962	650	0.26
1963	1102.7	0.21
1964	1993.7	0.18
1965	1902.6	0.18
1966	2015.5	0.18
1967		
1968	447.8	0.56
1969	1130.1	0.21
1970		
1971		
1972	384.3	0.32
1973		
1974		
1975	1822.1	0.3
1976		
1977		
1978	477	0.29
1979	436.2	0.3
1980		
1981	610.9	0.26

1982	318.2	0.66
1983		
1984	400	0.31
1985		
1986	2028	0.28
1987	465.4	0.55
1988	677.6	0.25
1989	167.4	0.46
1990	73.2	1.36
1991	380.1	0.61
1992	136.9	0.51
1993	123.6	0.54
1994	355.6	0.33
1995	140.7	0.5
1996	435.7	0.3
1997	251.7	0.39
1998	96.3	0.6
1999	190.3	0.44
2000	179.3	0.87
2001	357.9	0.63
2002	158.1	0.93
2003	122.8	1.05
2004	577.2	0.5
2005	1927.7	0.29
2006	1216.4	0.68
2007	205.2	0.82
2008	141.1	0.98
2009	18	5.47
2010	14.4	3.06
2011	15	3
2012	9.4	0.12
2013	7.5	0.5
2014	75.3	1.3
2015	92.1	0.14
2016	153.2	0.95
2017	1169.4	0.36

Gilly Lyons
Audubon California, The Pew Charitable Trusts, Wild Oceans, Ocean Conservancy, and Sea and Sage Audubon Society
06/10/2019 04:58 PM PDT

RE: Review of Management Categories

Please accept these public comments on Agenda Item F.4 on behalf of Audubon California, The Pew Charitable Trusts, Wild Oceans, Ocean Conservancy, and Sea and Sage Audubon Society. Thank you very much.






June 10, 2019

Mr. Phil Anderson, Chair
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 101
Portland, OR 97220

RE: Agenda Item F.2 – Stock Assessment Prioritization Process for Coastal Pelagic Species and Agenda Item F.4 – Review of Management Categories for Coastal Pelagic Species

Dear Chair Anderson and Members of the Council:

Thank you for the opportunity to submit these comments to the Pacific Fishery Management Council (Council) on its consideration of a stock assessment prioritization process for coastal pelagic species (CPS) and its review of management categories in the CPS Fishery Management Plan (FMP). We encourage the Council to use the opportunity provided by the June 2019 meeting to continue to take the steps necessary to transition management of the CPS finfish assemblage to a framework that is more transparent, legally compliant, based on best-available science, and that meets the CPS FMP's objective to ensure adequate forage for dependent predators. Over the past several years, our organizations have called for the Council to adopt such a framework for CSNA in particular, and for Monitored CPS stocks more generally.

Consistent with these requests, we ask that the Council initiate an FMP amendment at the June 2019 meeting, for adoption in June 2020, that includes the following in its scope:

- Remove the distinction between the Monitored and Actively Managed stock categories in the CPS FMP.
- Establish a single annual specifications process for all CPS finfish stocks that are the subject of a directed fishery.
- Set or update Minimum Stock Size Thresholds (MSST) for all CPS finfish stocks, based on best available science.

We also reiterate our request that NOAA Fisheries complete an integrated stock assessment for the central subpopulation of northern anchovy (CSNA) for use in future updates and revisions to MSST, F_{MSY}, and harvest control rules. Such a stock assessment will be helpful in ensuring future management remains robust and responsive to changes in CSNA stock structure, stock-recruit relationships, and predator-prey dynamics; however, we note that a stock assessment is not a prerequisite to complete the FMP amendment described here.

The Monitored stock category was added to the CPS FMP in 1999 as part of Amendment 8, and was described at the time as a way to focus management attention and limited Council and agency resources where they were most needed.[1] However, rather than assisting managers and scientists in their stewardship of CPS stocks, the Monitored category has instead created inefficiencies, generated confusion, and placed obstacles to setting science-based catch limits and other key reference points. In an effort to address some of these concerns, the Council tasked the CPS Management Team (CPSMT) last November with "developing a proposed process and timeline to modify CPS stock management categories, to provide flexibility relative to revising stock-specific management strategies, and to promote consistency with other Council FMPs."[2]

We appreciate the Council's attention to and interest in resolving these issues, and we thank the CPSMT for its Report 1 under Agenda Item F.4. In order to better reflect core Magnuson-Stevens Fishery Conservation and Management Act (MSA) responsibilities, as well as advancements in scientific information regarding CPS abundance, we recommend that the Council consider modifying its draft Purpose and Need statement from the November motion to include the following language:

> *"With the availability of annual abundance estimates for all CPS finfish that are the subject of a directed fishery, the distinction between the Actively Managed and Monitored categories in the CPS FMP is no longer necessary. Therefore, the purpose of the proposed action is to 1) eliminate the Active and Monitored category terms; 2) utilize best available science and prevent overfishing by establishing an annual specifications process to set OFLs, ABCs, and ACLs informed by annual estimates of abundance; and 3) identify when stocks are overfished and demonstrate compliance with National Standard 1 guidelines by adopting Minimum Stock Size Thresholds for all CPS finfish stocks in the FMP."*

Below, we discuss in greater detail our recommended scope for an FMP amendment.

A. Remove the distinction between the Monitored and Actively Managed stock categories in the CPS FMP.

Our organizations have long supported eliminating the Monitored stock category from the CPS FMP. The distinction between Actively Managed and Monitored is a unique feature of the CPS FMP that has no clear basis in the MSA, and can actually impede the Council's efforts to meet its core MSA responsibilities. While we understand that the original rationale for the Monitored category was to tailor management and scientific attention to the importance of a stock to the CPS fishery, the resulting two-tiered framework has instead had the practical effect of allowing Monitored stocks – two subpopulations of northern anchovy and jack mackerel – to be managed with outdated information (or information that could easily become outdated within one to two years) that doesn't always reflect current stock size or status. Given the availability of annual abundance data for all five CPS finfish stocks, there is no need to differentiate between Active

[1] Pacific Fishery Management Council, February 2018, Coastal Pelagic Species Fishery Management Plan, at 9.
[2] Pacific Fishery Management Council, November 2018, November 2018 Council Meeting Decision Summary Document at 2.

and Monitored management; the Council now has the ability to set annual harvest specifications for all of these stocks, using timely information that NOAA Fisheries gathers every year.

By bringing all CPS finfish stocks that are the subject of directed fisheries under a management framework that includes regular abundance estimates and an annual specifications process, the Council can greatly improve its ability to manage these stocks using the best available science and in a manner that achieves Optimum Yield and prevents overfishing, per the goals and objectives of the CPS FMP and the requirements of the MSA.[3]

In November 2018, several of our organizations submitted public comment to the Council that detailed our concerns with the Monitored stock category.[4] Here we provide a summary of those concerns:

- *Static, multi-year catch limits for highly variable stocks can lead to overfishing*. The Monitored category uses a default harvest control rule that relies on a long-term average Maximum Sustained Yield (MSY) value to determine the Overfishing Limit (OFL).[5] These OFLs are used to derive fixed catch limits that are set indefinitely, and are therefore not responsive to changes in stock status or abundance. Basic fisheries science has long held that applying static, long-term catch limits to highly dynamic stocks, such as northern anchovy and jack mackerel, can lead to overfishing – and, if a declining stock is subject to a constant rate of catch (as permitted by a fixed catch limit) over time, it can also lead to a population's collapse, particularly "if the population ever happens to fluctuate below a threshold value."[6] Further, static catch limits can exacerbate collapses of widely-fluctuating stocks, even if they are not the cause of the collapse.[7]

- *Setting long-term catch limits in the absence of regular biomass updates may fail to prevent overfishing*. Because the Monitored category calls for tracking landings against a long-term Annual Catch Limit (ACL), "without periodic stock assessments or periodic adjustments to target harvest levels,"[8] it becomes difficult to determine whether catch is exceeding MSY levels, especially when biomass is low. This may lead to a situation where the Council is unable to ensure the prevention of overfishing, and therefore unable to meet its obligations under the MSA.

- *Setting catch limits without regard to current stock size is contrary to the requirements of the MSA.* The MSA mandates that federal fisheries management be based on the best scientific information available (BSIA).[9] In a 2018 federal court decision regarding catch limits for CSNA, the court noted that the most consequential factor in determining an

[3] See, e.g., 16 U.S.C. §§ 1851(a) and 1853(a).
[4] Pacific Fishery Management Council, November 2018, Supplemental Public Comment under Agenda Item E.5.
[5] CPS FMP at 40.
[6] May, R.M., J.R. Beddington, J.W. Horwood, and J.G. Shepherd. 1978. Exploiting natural populations in an uncertain world. Mathematical Biosciences 42:219-252, at 240.
[7] Siple, Margaret C., T.E. Essington, and E.E. Plagányi. 2018. Forage fish fisheries management requires a tailored approach to balance trade-offs. Fish and Fisheries. 2018;1-15.
[8] CPS FMP at 9.
[9] 16 U.S.C. § 1851(a)(2); 50 C.F.R. Part 600.315.

appropriate OFL, ABC, and ACL for a stock is the size of that stock.[10] The court's decision, and others before it emphasizing that NOAA Fisheries "must utilize the best scientific data *available*, not the best scientific data *possible*,"[11] call into question the validity of the Monitored category's reliance on default reference points and multi-year harvest specifications that can be wholly unrelated to current stock status.

- *The Monitored stock default harvest control rule's uncertainty buffer is not sufficiently protective.* The Monitored category's default harvest control rule includes a 75% reduction from OFL to ABC, a buffer that was originally intended to be precautionary by accounting for the uncertainty associated with using a long-term MSY value to determine OFL, but which did not anticipate the speed or steepness with which some CPS populations can collapse.[12] Given the demonstrated capacity of at least one Monitored stock, CSNA, to decline by as much as 97% in just a few years,[13] the default control rule's 75% buffer between OFL and ABC cannot be described as sufficiently precautionary.

- *A lack of regular biomass estimates leaves the Council without a means to assess stock status relative to OFL, ABC, and ACL.* While the CPS FMP's Monitored category doesn't preclude conducting stock assessments or regular abundance estimates for Monitored stocks, one clear legacy of the category has been a redistribution of all stock assessment resources to the two stocks that are actively managed. This general lack of scientific attention to Monitored stocks since 1999, coupled with the Monitored category's reliance on outdated information or information that may soon become outdated, leaves fishery managers without a clear way to evaluate status determination criteria and reference points. This in turn can put Monitored stocks at risk of overfishing, especially if the Council is unable to detect whether a stock has fallen below a biomass that would support MSY.

- *The Monitored category does not adequately consider the needs of dependent predators.* Fishing on a fluctuating forage stock when it is at low abundance hinders recovery and can further deprive predators of food resources.[14] Any level of commercial forage fish catch can be potentially biologically significant, particularly if the stock is in a collapsed or depressed state, or if fisheries are highly concentrated in an area important to central place foragers.[15] These impacts on predator-prey dynamics underscore the importance of managing forage species – including those currently classified as Monitored in the CPS

[10] *Oceana, Inc. v. Ross*, Case No. 16-CV-06784-LHK (N.D. Cal. Jan. 18, 2018).
[11] *Blue Water Fishermen's Assn. v. Nat'l Marine Fisheries Serv.*, 226 F.Supp.2d 330, 338 (D. Mass. 2002) (quoting *Building Indus, Ass'n of Superior California v. Norton*, 247 F.3d 1241, 1246-47 (D.C.Cir.2001)) (emphasis in original).
[12] MacCall, A. D., W. J. Sydeman, P. C. Davison, J. A. Thayer. 2016. Recent collapse of northern anchovy biomass off California. Fisheries Research. 175:87-94.
[13] *Id.*
[14] Essington et al. 2015. Fishing amplifies forage fish population collapses. Proceedings. Nat. Acad. Sci. May 26; 112(21): 6648–6652.
[15] Bertrand et al. 2012. Local depletion by a fishery can affect seabird foraging. Journal of Applied Ecology 49: 1168-1177.

FMP – with up-to-date abundance data and catch limits that correspond to the status of the stock.

B. Establish a single annual specifications process for all CPS finfish stocks that are the subject of a directed fishery.

In addition to removing the distinction between the Active and Monitored categories, we request that the FMP amendment also establish an annual specifications process for all five stocks of CPS finfish. The availability and suitability of Acoustic Trawl (AT) survey and other data – which is newer, better, and more reflective of current stock status than the long-term average MSY values upon which existing Monitored stock OFLs and ABCs are based – provides a path forward for managing all CPS stocks under the same annual management framework. AT survey data in particular represents "the best scientific information available on an annual basis for assessing abundance of all members of the CPS assemblage (except Pacific herring)."[16]

In order to set annual OFLs for each of the five CPS finfish stocks, we recommend utilizing an approach similar to one identified by the Council's Scientific and Statistical Committee (SSC) for updating CSNA's OFL;[17] this would entail multiplying the most recent estimate of a stock's U.S. biomass, derived from the AT survey, by the best estimate of that stock's F_{MSY}. As an example of the latter, the average F_{MSY} (0.266) included in Table 6 of NMFS's 2016 CPS MSST Report[18] and the E_{MSY} values described in Punt 2019[19] provide readily available starting points for calculating an updated OFL for CSNA. ABCs could then be calculated using a P* approach based on uncertainty in both the AT survey and the F_{MSY} estimate. Finally, we suggest that ACLs be set below ABC to account for Optimum Yield considerations and to achieve the goals of the FMP, including ensuring adequate forage for dependent predators.

We note that this shift to annual management for all CPS finfish can be implemented with the suite of tools and data currently available to fishery managers. Rather than being driven by stock assessments, an annual CPS specifications process would instead be informed by annual estimates of abundance for each of the five stocks. In fact, the authors of the most recent stock assessments for Pacific sardine and Pacific mackerel recommend using survey-based biomass estimates (specifically from the AT survey), and not model-based estimates, as a basis for setting annual OFLs, ABCs, and ACLs.[20] We appreciate that the CPSMT discusses this

[16] Pacific Fishery Management Council, June 2019, Pacific mackerel (*Scomber japonicus*) stock assessment for U.S. management in the 2019-20 and 2020-21 fishing years, Attachment 1 Under Agenda Item F.3, at 2 (describing the conclusions of the 2018 Acoustic Trawl Methodology Review).
[17] Pacific Fishery Management Council, April 2018, Supplemental SSC Report Under Agenda Item C.4; Pacific Fishery Management Council, April 2019, Supplemental SSC Report Under Agenda Item E.4.
[18] NOAA Fisheries, September 2016, *Review and Re-evaluation of Minimum Stock Size Threshold for Finfish in the Coastal Pelagic Fisheries Management Plan for the U.S.* Agenda Item E.1.a, Supplemental NMFS Report.
[19] Punt, A.E., April 2019, *An Approach for Computing E_{MSY}, B_{MSY} and MSY for the CSNA*, Attachment 1 Under Agenda Item E.4.
[20] Pacific Fishery Management Council, April 2019, Assessment of the Pacific Sardine Resource in 2018 for U.S. Management in 2019-20, Supplemental Revised Attachment 1 Under Agenda Item E.3, at 26; Pacific Fishery Management Council, June 2019, Pacific mackerel (*Scomber japonicus*) stock assessment for U.S. management in the 2019-20 and 2020-21 fishing years, Attachment 1 Under Agenda Item F.3, at 22-23.

recommendation in its Report on Stock Assessment Prioritization Process under Agenda Item F.2.[21]

While frequent stock assessments are not necessary to undertake this transition to annual management, we continue to support the completion of a stock assessment for CSNA within the next two to three years, and suggest that CSNA should be "next in line" for a benchmark assessment; such an assessment will be vital to developing a long-term strategy for sustainably managing this fishery, including future development and adoption of an ecosystem-based harvest control rule and CUTOFF that reflects current biological conditions. This assessment would not need to be updated annually or even semi-annually. Instead, it could be part of a CPS stock assessment schedule that focuses on one stock per year in sequenced rotation, such that each stock is fully assessed once every five years. While annual management would be informed by survey-based abundance estimates, as described above, less frequent assessments would then be utilized to enhance understanding of stock structure, stock-recruit relationships, predator-prey dynamics, and other elements important to developing and updating ecosystem-based management frameworks.

C. Set or update Minimum Stock Size Thresholds for all CPS finfish stocks, based on best available science.

Minimum Stock Size Threshold (MSST) is the fundamental tool used by NOAA Fisheries to determine whether stocks are overfished; when crossed, MSSTs also trigger the MSA's requirement to rebuild overfished stocks. The National Standard 1 guidelines provide clear formulas to set quantitative MSSTs based on current stock size; in order to be relevant in a management context, however, MSSTs need to be compared to a current estimate of abundance. In 2016, NOAA Fisheries produced updated estimates of MSSTs for several CPS finfish stocks, based on the best available science.[22] However, the Council has not yet adopted those updated values. As part of the FMP amendment described here, we request that the Council establish new or updated MSSTs for all CPS finfish.

Conclusion

In conclusion, we request that the Council initiate an amendment to the CPS FMP that removes the distinction between the Active and Monitored management categories, establishes an annual specifications process for all CPS finfish stocks, and sets or updates MSSTs for those same stocks. These improvements to the FMP will advance the Council's broader efforts to ensure its management of CPS stocks prevents overfishing, uses the best available science, responds to changes in stock status, and accounts for the needs of dependent predators. We also ask that CSNA be next in line for a benchmark stock assessment, as part of a rolling assessment schedule for each of the five CPS finfish stocks.

[21] Pacific Fishery Management Council, June 2019, CPSMT Report 1 Under Agenda Item F.2.
[22] NOAA Fisheries, September 2016, *Review and Re-evaluation of Minimum Stock Size Threshold for Finfish in the Coastal Pelagic Fisheries Management Plan for the U.S.* Agenda Item E.1.a, Supplemental NMFS Report.

Thank you for your consideration of our comments, and for your work to ensure sustainable fisheries and healthy ocean ecosystems.

Sincerely,

Anna Weinstein
Marine Program Director
Audubon California

Paul Shively
Project Director, U.S. Oceans, Pacific
The Pew Charitable Trusts

Theresa Labriola
Pacific Program Director
Wild Oceans

Corey Ridings
Manager, Fish Conservation
Ocean Conservancy

Susan Sheakley
Conservation Chair
Sea and Sage Audubon

Megan Flaherty
San Diego Audubon Society
06/10/2019 04:52 PM PDT

RE: Review of Management Categories

This is also relevant to agenda item F.2 - Stock Assessment Prioritization.

Fostering the protection and appreciation of birds, other wildlife and their habitats...

SAN DIEGO AUDUBON SOCIETY

June 10, 2019

Mr. Phil Anderson, Chair
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 101
Portland, OR 97220

RE: Agenda Item F.4 – Review of Management Categories for Coastal Pelagic Species and Agenda Item F.2 – Stock Assessment Prioritization Process for Coastal Pelagic Species

Dear Chair Anderson and Members of the Council:

Thank you for the opportunity to submit these comments to the Pacific Fishery Management Council (Council) on its review of management categories in the Coastal Pelagic Species (CPS) Fishery Management Plan (FMP) and in its consideration of a stock assessment prioritization process for CPS. We appreciate being able to contribute to this process, which San Diego Audubon has been engaging with since 2016.

The San Diego Audubon Society is a local environmental non-profit organization, based in Mission Bay and serving much of San Diego County. Our programs span the breadth of education, restoration, and environmental stewardship, and are aimed at protecting birds, other wildlife, and the resources that they need to survive. On behalf of our 1,500+ members, we are writing to ask that the Pacific Fishery Management Council continue the ongoing efforts to update the assessment and management of coastal pelagic species, including the central subpopulation of northern anchovy (CSNA) - a critical forage species in the southern California Current Ecosystem, and a primary foraging resource for a number of threatened and endangered marine and coastal birds, including the federally endangered California least tern (CLTE).

Our specific asks are as follows:

- The Council initiate an FMP amendment at the June 2019 meeting, for adoption in June 2020, that includes the following in its scope:
    - Remove the distinction between the Monitored and Actively Managed stock categories in the CPS FMP.
    - Establish a single annual specifications process for all CPS finfish stocks that are the subject of a directed fishery.
    - Set or update Minimum Stock Size Thresholds (MSST) for all CPS finfish stocks, based on best available science.
- We also ask that NOAA Fisheries complete an integrated stock assessment for the central subpopulation of northern anchovy (CSNA) for use in future updates and revisions to MSST, F_{MSY}, and harvest control rules.

We are especially concerned by the potential implications of the current CPS management framework for the CSNA population, and how that management may affect the continued recovery and survival of the endangered California least tern.

San Diego Audubon has invested considerable time and energy to support the CLTE nesting population in our area, securing nearly $500,000 worth of state and local grants to support on-the-ground habitat restoration and monitoring efforts at San Diego's Mission Bay nesting sites, while engaging with thousands of local volunteers and community members. Southern California is the population center for this species, with nesting colonies within the Southern CA Bight representing nearly 90% of the productivity of the species range wide. While the overall California least tern population has increased since its endangered species listing in the 1970s, nesting productivity has been declining precipitously over the last several decades, with the fledgling per pair ratio (i.e. the number of chicks that are successfully fledged per nesting pair) falling from 0.89 in 2000 to 0.4 in 2017[1].

The nesting success of the California least tern relies heavily on the near-shore presence of forage fish, with age 1+ anchovies constituting the bulk of their diet. Dramatic declines in the CSNA stock therefore have the potential to significantly impact least tern nesting success, and a recent study from Point Blue Conservation Science has confirmed that as CLTE diet switches from anchovy to less energetically valuable prey items such as fish larva, nesting productivity decreases.[2] This study also found that CLTEs within the Southern CA Bight are having increased difficulty locating northern anchovies, as the stock appears to have become less abundant and/or more dispersed.

Northern anchovy stocks are inherently dynamic with natural boom and bust cycles, the instability of which appears to be exacerbated by changing oceanic conditions due to climate change[3]. Current management of northern anchovy within the existing Monitored stock category fails to take this into account, instead creating a static catch limit for this stock, regardless of current stock health. This does not uphold core Magnuson-Stevens Fishery Conservation and Management Act (MSA) responsibilities, specifically the utilization of best available science to prevent overfishing by establishing an annual specifications process to set OFLs, ABCs, and ACLs. Instead, this has resulted in static, multi-year catch limits based on outdated information which does not reliably reflect current stock size or status. For such a fluctuating and variable stock, this creates the perfect conditions for overfishing and stock decline and/or collapse.

The Monitored category also fails to account for dependent predators such as marine mammals, sea birds, and commercial fish, many of which are already struggling with the effects of climate change, ocean acidification, marine litter, pollution, and by-catch. This has the potential to further stress already threatened, endangered or declining species that rely on northern anchovy as their primary foraging resource, with the endangered California least tern and recently de-listed California brown pelican serving as prime examples.

In order to address these concerns, last November the Council tasked the CPS Management Team (CPSMT) with "developing a proposed process and timeline to modify CPS stock

management categories, to provide flexibility relative to revising stock-specific management strategies, and to promote consistency with other Council FMPs."[4] San Diego Audubon supports these proposed steps, but we also ask that the distinction between the Monitored and Actively Managed stock categories in the CPS FMP be removed, and that all CPS fish species that fall within the Monitored category receive the same type of monitoring and annual specifications process to set OFLs, ABCs, and ACLs as the species within the Actively Managed category. This should be done via an FMP amendment that also establishes an annual specifications process for all five stocks of CPS finfish. Acoustic Trawl (AT) surveys would be the perfect method for this, and this data is readily available from annual surveys by NOAA Fisheries. We also ask that the Council establish new or updated Minimum Stock Size Thresholds (MSSTs) for all CPS finfish, which will more accurately determine whether stocks are overfished.

Scientists estimate that the world's oceans have absorbed roughly 90% of the excess heat that has been trapped in our atmosphere due to the burning of fossil fuels, and as a consequence our oceans have warmed significantly over the last several decades, driving complex changes in primary and secondary productivity[5]. In light of these rapid and still poorly understood changes, we feel as though a holistic, cautionary, ecosystem-based approach to managing such an essential forage fish is very much warranted.

Our chapter and the Audubon network care deeply about marine and coastal birds like the CA least tern, and we understand that the recovery of this endangered species is dependent upon a healthy CSNA stock. We urge the Council to take the necessary steps to ensure that adequate forage fish will be available to support the threatened and endangered sea birds that our governmental and NGO communities have spent millions of dollars to protect. Elimination of the Monitored category would also better align northern anchovy management with the Council's broader goals of cautionary, ecosystem-based management, and would support the CPS Fishery Management Plan's goals of preventing overfishing, achieving optimum yield, and providing adequate forage for dependent predators.

Thank you for considering our comments and for your commitment to protecting our marine resources. Please notify us of future events, milestones, information, and opportunities to comment related to this decision-making process.

Respectfully,

Megan Flaherty
Restoration Program Manager
San Diego Audubon Society
flaherty@sandiegoaudubon.org
(858) 273-7800 x 206

[1]Frost, N. 2017. California least tern breeding survey, 2016 season. California Department of Fish and Wildlife, Wildlife Branch, Nongame Wildlife Program Report, 2017-03. Sacramento, CA. 20 pp + Appendices.

[2]Robinette, D. et al. 2017. Recent Changes in Diet and Breeding Productivity for California Least Terns Breeding in Southern California. Point Blue Conservation Science.

[2] Climate, Anchovy, and Sardine. David M. Checkley Jr., Rebecca G. Asch, Ryan R. Rykaczewski. Annual Review of Marine Science 2017 9:1, 469-493

[3] Cite to November 2018 Council Decision Summary

[4] See the Drastic Toll Climate Change is Taking on Our Oceans. Kennedy Elliot. National Geographic. 10 June 2019. <https://www.nationalgeographic.com/environment/2019/06/see-the-drastic-toll-climate-change-is-taking-on-our-oceans/?fbclid=IwAR3I80Iv_X_4HE36nhFs2jvEhkVWej-zLDJnaekwsf_w11MTKcrstXuY4Vg>

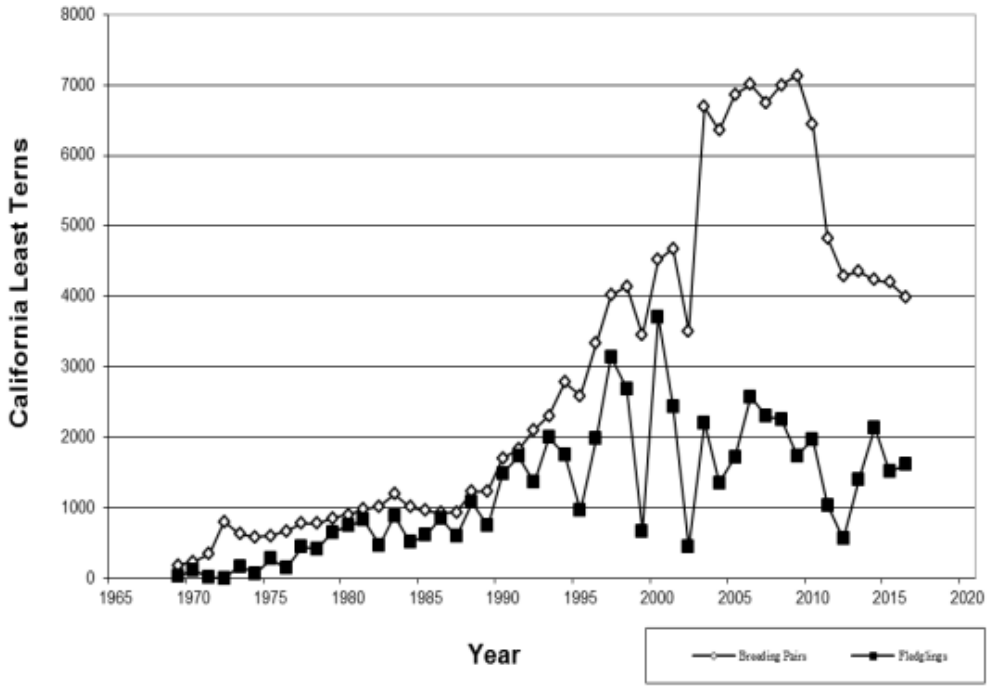

Figure 2. Minimum number of documented California least tern breeding pairs and fledglings in California during annual surveys, 1969-2016 (data from: Craig 1971; Bender 1974a, 1974b; Massey 1975, 1988, 1989b; Atwood *et al*. 1977; Jurek 1977; Atwood *et al*. 1979; Collins 1984, 1986, 1987; Gustafson 1986; Johnston and Obst 1992; Obst and Johnston 1992; Caffrey 1993, 1994, 1995b, 1997, 1998; Keane 1998, 2000, 2001; Patton 2002, 2004 unpublished table; Marschalek 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012; Frost 2013, 2014, 2015, 2016).

Amy Weaver
Life On Earth
05/23/2019 03:30 PM PDT

RE: Allocation Review Procedures - Final Action

Please provide allotments to feed the orcas that are dying at alarming rates as humans destroy the environment and their food sources. Thank you.

Amy Wood

05/22/2019 03:28 PM PDT

RE: Allocation Review Procedures - Final Action

It is of the utmost importance that the SRKW population is given an allotment of salmon this year. As they starve to death, this is the quickest and most effective means to get them the food they need. Giving them an allotment now will sustain them while longer-term measures are put in place. The orcas should be given priority of allotment, as they need upwards of 150000 salmon per year to sustain themselves as a population. Human greed has caused this problem and real solutions need to be given. These orcas feed almost exclusively on Chinook salmon and require them to live, humans do not.

Ari Deutchman
Private Citizen
05/22/2019 02:13 PM PDT

RE: Southern Resident Killer Whale Endangered Species Act Consultation Progress Report

Please consider setting aside an allocation of 250,000 Chinook salmon from the Fraser River for the endangered Southern Resident Killer Whales (SRKW). This is a matter of their survival. Commercial fisheries, and especially private fishing can survive with lower allotments for the time being. These Whales have a rightful position to be at this table, to be given a meaningful amount of food as anyone else present.. The Whales need a fixed number of salmon every season. The net result of this is in years of low return, the SRKW have to compete even harder with other user groups. This is something we can do NOW! It will take time to breach dams and restore addition salmon habitat. Even when these things are completed there is up to a 4 year wait before the salmon return. This is in your hands. I have chosen to take seafood off our plates until the SRKW populations stabilize. As well as many of my friends, and I have many friends!! Thank you for your time.

Barbara Smith
Individual
05/29/2019 12:44 AM PDT

RE: Allocation Review Procedures - Final Action

Request 250,000 salmon allotment for the southern resident Killer Whales from the Fraser River.

Ben Enticknap
Oceana
06/10/2019 03:50 PM PDT

RE: Southern Resident Killer Whale Endangered Species Act Consultation Progress Report

see letter attached.

OCEANA Protecting the World's Oceans

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June 10, 2019

Mr. Barry Thom, West Coast Regional Administrator
National Marine Fisheries Service
1201 NE Lloyd Boulevard, Suite 1100
Portland, OR 97232

Mr. Phil Anderson, Chair
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 101
Portland, OR 97220

RE: G.2, Southern Resident Killer Whale ESA Consultation

Dear Chair Anderson, Mr. Thom and Council members:

Oceana is encouraged that the National Marine Fisheries Service (NMFS) and the Pacific Fishery Management Council are considering the effects of ocean salmon fisheries on endangered Southern Resident killer whales (orcas). The goal, ultimately, is to recover Southern Resident orcas and have vibrant, sustainable salmon fisheries. In this letter, we provide background information on the Southern Resident orcas plus comments and recommendations on the analysis of the effects of ocean salmon fisheries. We request NMFS, the Council, and the Ad Hoc Southern Resident Killer Whale Working Group consider these comments in the assessment of ocean salmon fisheries on Southern Resident orcas, and in the development of conservation measures and tools to limit and reduce ocean fishery impacts on Chinook salmon prey availability. This work is critical and urgent. Southern Resident orcas are now at high risk of extinction and without bold, comprehensive actions, they could soon be lost forever.

I. Southern Resident Orcas

Southern Resident orcas range throughout coastal ocean waters off Washington, Oregon and Vancouver Island, as far north as Southeast Alaska, and south to Monterey Bay[1], California. They frequent the Salish Sea, but often travel between the outer coast of Vancouver Island to the mouth of the Columbia River, likely following the migration of their primary prey, Chinook salmon.

This distinct killer whale population was listed as endangered in 2006.[2] With two births this year[3], there are now 76 Southern Resident orcas in the population (figure 1). The historical *minimum*

[1] Runwall, P (April 5, 2019). Endangered Killer Whales Make and Appearance in Monterey Bay. Mercury News. Available: https://www.mercurynews.com/2019/04/05/endangered-killer-whales-make-an-appearance-in-monterey-bay/
[2] 70 Fed Reg. 69,903 (November 18, 2005)

population size was determined to consist of 140 whales.[4, 5] As part of its "Species in the Spotlight" program, NOAA identified this distinct orca population as one of eight endangered species likely to go extinct in the near future.[6]

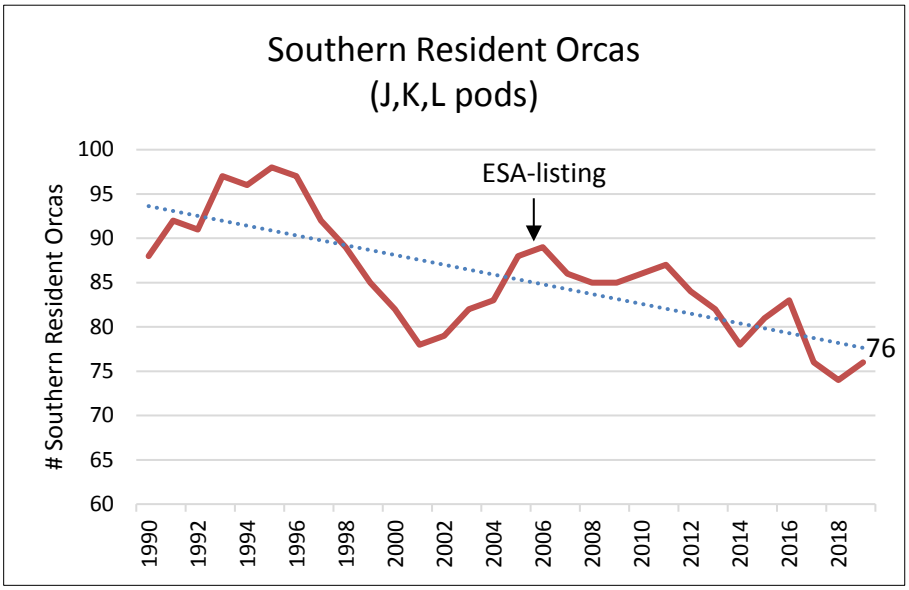

Figure 1. Southern Resident killer whale population size, 1990 to June 2019 (adapted from Center for Whale Research).

Southern Resident orcas have complex social structures which are important in understanding their population dynamics. The whales are a distinct population segment of the Northeast Pacific resident killer whale lineage or ecotype.[7, 8] Southern Resident orcas consist of one clan, each with distinct vocal dialects.[9] Within the clan, there are three pods (J, K, L) which socialize internally, and

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[3] Mapes, L. (May 31, 2019). New orca calf in Southern Resident J-pod. Seattle Times. Available: https://www.seattletimes.com/seattle-news/environment/new-orca-calf-reported-in-southern-resident-j-pod/

[4] Krahn, MM, MJ Ford, WF Perrin, PR Wade, RP Angliss, MB Hanson, BL Taylor, GM Ylitalo, ME Dahlheim, JE Stein, and RS Waples. 2004. 2004 Status review of Southern Resident killer whales (*Orcinus orca*) under the Endangered Species Act. U.S. Dept. Commer., NOAA Tech. Memo. NMFS- NWFSC-62, 73 p.

[5] NMFS. 2014. 10 Years of Conservation and Research: Southern Resident Killer Whales.

[6] NOAA Fisheries at: https://www.fisheries.noaa.gov/species/killer-whale#spotlight

[7] Barrett-Lennard, L. 2000. Population structure and mating patterns of killer whales (*Orcinus orca*) as revealed by DNA analysis. The University of British Columbia. 80 pp.

[8] Hoelzel, AR, J Hey, ME Dahlheim, C Nicholson, V Burkanov, and N Black. 2007. Evolution of population structure in a highly social top predator, the killer whale. *Molecular Biology and Evolution*, *24*(6), 1407–1415. http://doi.org/10.1093/molbev/msm063

[9] Ford, JKB. 2011. Overview of the life history, current status and trends of killer whale populations in coastal waters of the Northeastern Pacific. Evaluating the Effects of Salmon Fisheries on Southern Resident Killer Whales - Workshop 1. NMFS &DFO, Seattle, Washington.

migrate and forage as distinct groups.[10, 11] Orcas form families through matrilines, where an older female and all her progeny, including males, communicate, travel and feed in close association with one another.[12]

Lack of prey, particularly Chinook salmon; vessel noise and interactions; and bioaccumulation of toxins are the three major threats facing Southern Residents. Lack of prey is at the center of each of these stressors. With limited prey, vessel noise and interactions make it harder to forage successfully and toxin loads become more immediately dangerous as starvation releases chemical compounds stored in the orcas' blubber. Inherently low reproductive rates are further compounded by increasing rates of miscarriage linked to nutritional stress. Wasser et al. 2017 documented that up to 69% of detectable pregnancies were unsuccessful and that the low availability of Chinook salmon is a significant cause of late pregnancy failure.[13] What is more, Southern Residents have high newborn mortality rates; around 40% of calves do not survive past the first few years.

The health of Southern Resident orcas is strongly tied to Chinook salmon abundance. These specialized predators evolved in the Northeast Pacific side-by-side with salmon over tens of thousands of years.[14] They hunt cooperatively, and they engage in prey sharing between females and younger whales, roughly 76% of the time.[15] Diet studies show that 99% of their diet is salmonids, with roughly 80% being the largest and fattiest of fish, the Chinook (figure 2).[16]

Southern Resident orca births and deaths are closely linked with coastwide Chinook abundance. With lower Chinook abundance Southern Resident orca fecundity decreases and mortality increases (Ward et al. 2009, Ford et al. 2010).[17, 18] Recent low Chinook salmon returns have been

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[10] Bigg, MA, PF Olesiuk, GM Ellis, JKB Ford, and KC Balcomb. 1990. Social organization and genealogy of resident killer whales (*Orcinus orca*) in the coastal waters of British Columbia and Washington State. Report of the International Whaling Commission, Special, (12), 383–405.
[11] Parsons, K., K Balcomb, J Ford, and J Durban. 2009. The social dynamics of southern resident killer whales and conservation implications for this endangered population. *Animal Behaviour*, *77*, 963–971. http://doi.org/10.1016/j.anbehav.2009.01.018
[12] Id., Ford 2011, *supra note* 8.
[13] Wasser, SK, JI Lundin, K Ayres, E Seely, D Giles, K Balcomb, et al. 2017. Population growth is limited by nutritional impacts on pregnancy success in endangered Southern Resident killer whales (*Orcinus orca*). PLoS ONE. https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0179824
[14] Foote AD, PA Morin, JW Durban, E Willerslev, L Orlando, and MTP Gilbert. 2011. Out of the Pacific and back again: insights into the matrilineal history of Pacific killer whale ecotypes. PLoS One 6: e24980.
[15] Ford, JKB, & GM Ellis. 2006. Selective foraging by fish-eating killer whales *Orcinus orca* in British Columbia. *Marine Ecology Progress Series 316*, 185-199.
[16] Ford, MJ, J Hempelmann, MB Hanson, KL Ayres, RW Baird, CK Emmons, … LK Parlk. 2016. Estimation of a Killer Whale (*Orcinus orca*) Population's Diet Using Sequencing Analysis of DNA from Feces. *PLoS ONE*, *11*(1), 1–14. http://doi.org/10.5061/dryad.ds6gc
[17] Ward, EJ, EE Holmes, and KC Balcomb. 2009. Quantifying the Effects of Prey Abundance on Killer Whale Reproduction. *Source Journal of Applied Ecology Journal of Applied Ecology*, *46*(46), 632–640. http://doi.org/10.1111/J.1365-2664.2009.01647.X
[18] Ford, JKB, GM Ellis, PF Olesiuk, and KC Balcomb. 2009. Linking killer whale survival and prey abundance: food limitation in the oceans' apex predator? Biol. Lett. (2010) 6, 139-142 http://doi.org/10.1098/rsbl.2009.0468

perilous for the Southern Residents. There were no successful Southern Resident orca births from 2016 to 2018 and half of the ten orcas born in the 2014/ 2015 "baby boom" later died. Some orcas have visibly starved to death. Last summer, 3-year old Scarlet, or J50, died after she became so emaciated that she lost the fat at the base of her head - what scientists call "peanut head."

The Southern Resident orca recovery goal of an annual average 2.3% growth rate over 28 years is not being met and neither are the recovery goals for threatened Chinook prey. As you know, declines in Chinook salmon population have been driven by historical overfishing, habitat loss, dams and other obstructions, as well as climate change (Myers et al. 1998, Gustafson et al. 2007).[19,20] To meet Southern Resident orca recovery goals and prey requirements, Chinook abundance needs to increase by at least 75%.[21]

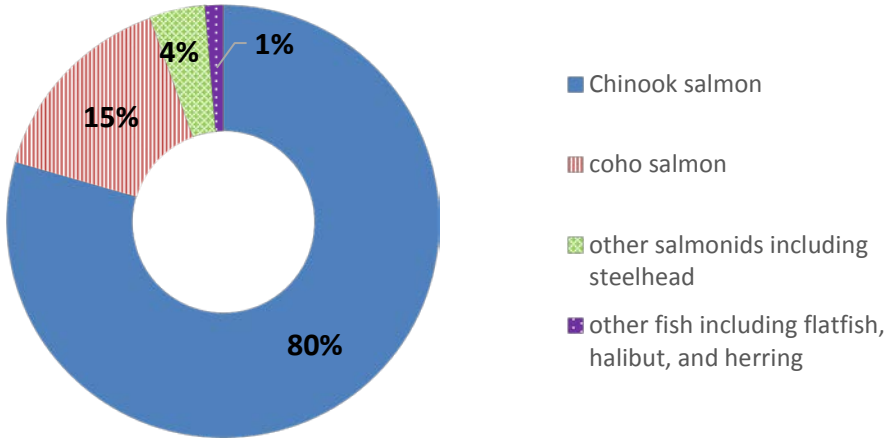

Figure 2. Southern Resident orca diet composition (99% salmonids, 80% Chinook). The average proportion of Chinook salmon in the orca's diet changes seasonally and in late summer, for example, it may be as low as 52% Chinook, and the proportion of coho in their diet increases (44%).[22]

II. Effects of ocean salmon fisheries on Southern Resident orcas

We appreciate that the Council and NMFS are considering the effects of ocean salmon fisheries on Southern Resident orcas. It was reported at the Council's May 23-24 Ad Hoc Southern Resident Killer Whale Working group meeting that even small reductions in Chinook salmon can lead to

[19] Myers, JM, RG Kope, GJ Bryant, D Teel, LJ Lierheimer, TC Wainwright, WS Grand, FW Waknitz, K Neely, ST Lindley, and RS Waples. 1998. Status review of chinook salmon from Washington, Idaho, Oregon, and California. NOAA Technical Memorandum NMFS-NWFSC-35, Seattle.
[20] Gustafson, RG, RS Waples, JM Myers, LA Weitkamp, GJ Bryant, OW Johnson, & JJ Hard. 2007. Pacific salmon extinctions: Quantifying lost and remaining diversity. *Conservation Biology*, *21*(4), 1009–1020. http://doi.org/10.1111/j.1523-1739.2007.00693.x
[21] Williams, R, M Krkosek, E Ashe, TA Branch, S Clark, PS Hammond, … and A Winship. 2011. Competing conservation objectives for predators and prey: Estimating killer whale prey requirements for chinook salmon. *PLoS ONE*, *6*(11). http://doi.org/10.1371/journal.pone.0026738
[22] Ford et al. 2016, *supra note* 15

reduced Southern Resident fitness, increased foraging effort, low energy and decreased socialization. Given the status and declining trends of Southern Resident orcas, the urgency to prevent extinction and begin recovery of this population is extremely high.

Chinook salmon populations are only a fraction of their once former abundance and many are threatened with extinction. Over half the wild salmon populations in the Columbia Basin, for example, are already extinct; some 37 genetically distinct salmon runs have been lost forever.[23] This year Chinook salmon runs continue to be low. The recent NMFS analysis of ocean salmon fisheries on Southern Resident orcas shows that 12 of 16 priority Chinook stocks are projected to be below the 1992-2016 median run size.[24] The Seattle Times reports a "Chinook bust on the Columbia River" with spring Chinook returns at less than 50% of the recent ten-year average.[25] Given the correlation between Chinook abundance and Southern Resident births and mortalities, this is a bad sign for the orcas.

Broad-scale actions are clearly needed to recover and restore salmon throughout their range, with long-term benefits to orcas, coastal communities and fisheries. While the threats to Chinook salmon are many, reducing salmon fisheries now would serve as a temporary mitigation measure to allow time for the implementation of other management actions to increase salmon productivity. A resident orca population viability analysis shows that while status quo conditions will likely lead to Southern Resident orca extinction, reduced Chinook salmon catch will likely result in increased orca fecundity, survival and a positive population growth rate.[26] Another indicates that Southern Resident orca recovery can be obtained through a combination of increased Chinook abundance and a reduction in other human threats like vessel noise.[27]

We reviewed the recent NMFS assessment of 2019 ocean salmon fisheries on Southern Resident orca and attended the Council's Ad Hoc Southern Resident Killer Whale working group meeting in Portland, Oregon May 23-24. With respect to future work of the Ad Hoc committee that will build off this 2019 assessment, and recommendations for conservation and management, we offer the following comments:

Recommendations for Analysis:

1. Comparing preseason priority Chinook salmon[28] abundance estimates to 1992-2016 post season run sizes using a stop light - 'red', 'yellow', 'green' – approach appears to be an

[23] http://www.psmfc.org/habitat/salmondam.html
[24] NMFS 2019. Assessment of 2019 PFMC Salmon Fisheries on Southern Resident Orca. Agenda Item F.1.e , Supplemental NMFS Presentation 1, April 2019. Available: https://www.pcouncil.org/wp-content/uploads/2019/04/F1e_Supp_NMFS_Presentation1_Jording_APR2019BB.pdf
[25] Mapes, L. May 30, 2019. Chinook bust on the Columbia: Spring returns worse than forecast on Northwest's largest river. Seattle Times. Available: https://www.seattletimes.com/seattle-news/environment/chinook-bust-on-the-columbia-spring-returns-worse-than-forecast-on-northwests-largest-river/
[26] Velez-Espino, L. A., J. K. B. Ford, H. A. Araujo, G. Ellis, C. K. Parken, and R. Sharma. 2014. Relative importance of Chinook salmon abundance on resident killer whale population growth and viability. Aquatic Conservation: Marine and Freshwater Ecosystems. 25(6): 756-780.
[27] Williams et al., supra note 21.
[28] NOAA Fisheries WC Region and Washington Department of Fish and Wildlife (June 22, 2018). Southern Resident Killer Whale Priority Chinook Stocks Report. Available: https://www.westcoast.fisheries.noaa.gov/publications/protected_species/marine_mammals/killer_whales/recovery/srkw_priority_chinook_stocks_conceptual_model_report__list_22june2018.pdf

insensitive measure of risk and an insensitive measure of Chinook salmon availability to Southern Resident orca. Even though 12 of the 16 priority Chinook stocks are projected to be below the median run size compared with the 1992-2016 baseline this year, NMFS concluded that because these runs were in the broader interquartile range (yellow), there is likely less risk to orca.[29] Below average priority Chinook runs should be a concern given the current state of the orca population.

2. Comparing current Chinook salmon run sizes to a 1992-2006 baseline is not appropriate given that this reflects a largely degraded system. Many Chinook ESA-listings occurred during this 'baseline', beginning in the early 1990s. In evaluating the threats to Southern Resident orcas, Lacey et al. suggested Chinook abundance may need to be sustained near the highest levels of the 1970s.[30]

3. Future analyses should consider all priority Chinook stocks. This year's analysis does not include consideration of Snake River Spring and Summer Chinook, Middle and Upper Columbia Spring Chinook, Central Valley (Sacramento) Spring Chinook or Washington Coast Spring Chinook. If these priority Chinook stocks are not taken by ocean salmon fisheries in any significant amounts, their abundance should still be tracked and reported, as low abundance levels of these runs will impact Southern Resident orcas, which should be considered in the overall level of risk.

4. Consider the cumulative effects of total U.S. and Canadian fisheries mortality on the availability of prey for Southern Resident orca including directed salmon fishing landings and bycatch mortality, and bycatch in other managed fisheries (e.g. groundfish, Alaska pollock). In 2016, for example, total mortality for all Pacific Salmon Treaty fisheries was 1.69 million Chinook salmon, of which 1.16 million Chinook were taken in U.S. fisheries.[31] A recent analysis of the genetics of Chinook bycatch in the Bering Sea pollock fishery found that 19 percent, or nearly 6,000 Chinook taken in the fishery as bycatch in 2017 were of West Coast origin.[32] NMFS must assess the total impact of combined Chinook salmon fisheries and bycatch mortality on Southern Resident orcas in order to ensure the management of ocean fisheries is not preventing the recovery of the species.

5. Coho salmon are also important in Southern Resident diet, especially in late summer. Attention must be given to coho salmon availability and competition with ocean coho fisheries. For example, when Chinook abundance is low like current conditions, higher allowable catch levels for coho could result in added competition and stress to the orcas.

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[29] NMFS 2019, *supra note* 23
[30] Lacy, RC, R Williams, E Ashe, KC Balcomb, JN Brent, CW Clark, … and PC Paquet. 2017. Evaluating anthropogenic threats to endangered killer whales to inform effective recovery plans. *Scientific Reports*, **7**, 14119. https://doi.org/10.1038/s41598-017-14471-0
[31] Pacific Salmon Commission. 2018. Thirty-Third Annual Report 2017/2018, at 169. Available: https://www.psc.org/publications/annual-reports/commission/
[32] Guthrie III, CM, Hv T Nguyen, M Marsh, JT Watson, and JR Guyon. 2019. Genetic stock composition analysis of the Chinook salmon bycatch samples from the 2017 Bering Sea trawl fisheries. U.S. Dep. Commer., NOAA Tech. Memo. NMFSAFSC-391, 36 p. Available: https://www.afsc.noaa.gov/Publications/AFSC-TM/NOAA-TM-AFSC-391.pdf

Recommendations for Conservation and Management:

6. As part of this process, identify and implement a *critical Chinook salmon abundance threshold*, below which Pacific Ocean salmon fisheries would close in order to maintain the prey base for Southern Resident orca. This is similar to the concept of a "CUTOFF" in the Council's Coastal Pelagic Species FMP and may be similar to times when the Council has drastically cut ocean salmon fisheries due to low Chinook abundance. Chinook salmon runs were low much of the 1990s and this was a time of increased Southern Resident mortality. The Ad Hoc working group should compare Southern Resident orca mortalities to Chinook abundance and identify thresholds for when to curtail and/or close fisheries.

7. Consider and implement time and area closures in Southern Resident orca foraging areas to minimize direct competition between ocean salmon fisheries and orcas during times of low Chinook abundance. This can also reduce the noise associated with fishing vessels, which can make it difficult for orca to locate their prey.

8. To guide future management, we request the Council update the Pacific Coast Salmon Fishery Management Plan with an objective of managing and regulating salmon fisheries in a manner that accounts for the foraging needs of Southern Resident orcas and ensures their protection into the future. We note that the Salmon FMP does not include objectives to account for orcas or consideration of ecological factors in determining Optimum Yield as required by the Magnuson-Stevens Fishery Conservation and Management Act.

9. Adopt a goal to fully recover all Chinook salmon stocks to support healthy fisheries, account for the needs of dependent predators, and fulfill the obligation to achieve optimum yield.

10. Beyond fishery management, we request NMFS and the Council support comprehensive and bold actions to recover Chinook salmon throughout the region by preventing any further loss or degradation to essential fish habitat and supporting actions to restore degraded or blocked salmon habitat including removing dams, like those on the Lower Snake River.

It is imperative actions are taken quickly to recover the Southern Resident orca population and Chinook. In the long run, this will benefit not only the orcas, but salmon fisheries and communities throughout the region. Now is a critical time to act. Thank you for attention to this important conservation issue.

Sincerely,

Ben Enticknap
Pacific Campaign Manager and Senior Scientist

cc. Chris Yates, NMFS Assistant Regional Administrator for Protected Resources

Bill James
PSLCFA
06/10/2019 02:35 PM PDT

RE: Southern Resident Killer Whale Endangered Species Act Consultation Progress Report

Mr Chairman, members of the Council: My name is Bill James. I am a commercial fisherman and fishery consultant for PSLCFA. The best ways to provide salmon for the SRKW group of killer whales in the short run is to #1 Increase hatchery production of salmon smolts to be released into as many rivers as possible. #2 Provide materials to help beavers build dams in our coastal streams to enhance the ability of salmon smolts to provide safety and forage until they grow old enough to travel down stream to the ocean. #3 Put "Hatch Boxes" in the upper reaches of smaller rivers to help increase the amount of salmon smolts that can latter go to the ocean. Note Smaller fish need less water and take a longer time to ocean thus building a stronger more adaptable smolt. #4 return as many adult salmon from hatchery returns to "fertilize" rivers so there is enough food for the salmon smolts released to go to the ocean. In the long run....Sea Lions and seals must be eliminated from the "Choke Points" in ALL rivers and river mouths that have Chinook Salmon runs. #2 In large rivers like the Columbia, Willamette,etc where Sea Lions travel long distances from the ocean to Dams to eat salmon going up fish ladders....Eliminate ALL Sea Lions that travel from salt water into fresh water to eat salmon. . Orcas eat the whole salmon. Sea Lions eat only oily part of the salmon. The salmon they eat are the spawning females.Adult Sea Lions eat 5% to 8% of their body weight per day (15-40 pounds). That is the salmon eggs and belly of about 10-20 salmon per day. There are about 4500 Sea Lions in the Columbia river eating salmon. It is estimated that Sea Lions consume up to 40% of certain runs of salmon yearly. This reduces the run each year as these are spawning fish. For example: In the year 2000 an estimated 20,000 winter run Steelhead that went over the Williamette Falls in Oregon opposed to just over 500 fish counted from the 2017 return.The 2017 run was about 5% of what the 2000 run was. The only variable that changed was the huge increased amount of Sea Lions eating salmon next to the fish ladder at the falls. Please DO NOT decrease the Commercial and Recreational fishermen's allowable take of Salmon. Thank You for giving me this opportunity to comment. Sincerely, Bill James

CATHLEEN BURNS

05/22/2019 04:13 PM PDT

RE: Allocation Review Procedures - Final Action

Please allocate 300,000 chinook salmon for the Southern Resident Killer Whales (SRKW). These animals are dying of starvation, because the commercial and recreational fishers are taking the few chinook by sophisticated fish finding means and not leaving enough for the orca. The SRKW need 100-300 lbs. of chinook each day, X 75 SRKW = 15,000 lbs. divided by 15 lbs. per fish (avg.) =1000 fish/day X 300 days/yr. = 300,000 fish. I realize there are not enough salmon available to satisfy all the demands for them. Humans have an almost infinite number of alternatives for food. Please allocate the small # of salmon to the SRKW and tribes. Please stop the commercial and recreational fishing until there are enough salmon to prevent the extinction of the SRKW.

Colleen Weiler
Whale and Dolphin Conservation
06/10/2019 11:47 AM PDT

RE: Southern Resident Killer Whale Endangered Species Act Consultation Progress Report

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WDC is a registered 501(c)3 non-profit organization.

Pacific Fisheries Management Council
June 19-25 Council meeting
Agenda item G.2: Southern Resident Killer Whale Endangered Species Act Consultation
Submitted electronically June 10, 2019

Whale and Dolphin Conservation (WDC) respectfully submits these comments to the Pacific Fishery Management Council (PFMC) regarding the Southern Resident killer whale Endangered Species Act Consultation. WDC appreciates the efforts by the PFMC and by the National Marine Fisheries Service (NMFS) to review and update the assessment of PFMC-managed ocean salmon fisheries on available prey for Southern Resident killer whales (orcas).

The Southern Resident orca community has been listed under the U.S. Endangered Species Act since 2005,[1] but they have continued to decline in the 14 years since their listing. Today, there are just 74 individuals in the population (not including two new calves observed since December 2018) – less than the population count of 89 in 2005 when they were listed, and far less than their highest observed population number of 98 in 1995.[2] Status quo management conditions are not working for Southern Resident orcas – they are struggling just to survive, let alone reach recovery.

The top threats to the Southern Residents are recognized as prey depletion – particularly that of their primary prey, Chinook salmon, environmental contaminants, noise and disturbance, and risk of oil spill in their habitat.[3] The cumulative impacts of these issues also pose a significant threat to the Southern Resident community, acting in a negative feedback loop to exacerbate the impacts of each individual issue and further impede recovery. For example, research has shown high rates of miscarriage in the population to be linked to nutritional stress, slowing recruitment to the Southern Resident community and increasing the risk of mortality for pregnant females.[4]

The Southern Residents' survival, reproductive success, and habitat use has been linked to the coastwide abundance of Chinook salmon, their preferred prey. Low abundance of salmon leads to higher mortality and decreased reproductive rates,[5] and the orcas' presence in core summer habitat has also decreased with a lack of available Chinook salmon, reducing the time that all three pods are present in the same area at the same time.[6] Abundant and reliable sources of prey are important not only for the health and survival of individual Southern Resident orcas, but also for maintaining their unique social and cultural identity and the overall health of the population.

Chinook salmon abundance in the Pacific Northwest and California has declined for a number of reasons, and salmon runs are also subject to the cumulative impacts of multiple pressures on survival and recovery. With the increasing threats of climate change and varying ocean conditions, which will take significant international resources to counteract, managers in the PFMC must take action now to give salmon their best chance of survival in our region. Measures to protect and restore habitat, reconnect watersheds, and maximize escapement to spawning areas can help Chinook salmon better withstand the uncertain impacts from climate change, and can increase prey availability for Southern Resident orcas.

With the variations in Chinook run sizes and the subsequent impacts to Southern Resident orcas, WDC requests that the PFMC consider actions to maximize the amount of prey available to orcas and reduce disturbance and direct competition. The PFMC should identify and implement abundance-based management thresholds for Chinook salmon, which would activate additional measures to maintain the prey base for orcas, including potential time and area closures or reduced effort in critical foraging areas. There is more information than ever before on the Southern Resident orcas' use of coastal and offshore areas, and hotspots have been identified including the Columbia River

[1] National Marine Fisheries Service (NMFS). 2005. Endangered Status for Southern Resident Killer Whales. National Marine Fisheries Service, Northwest Region, Seattle, Washington. 70 FR 69903.
[2] Population data from Center for Whale Research, accessed June 9, 2019.
[3] Fisheries and Oceans Canada. 2018. Amended Recovery Strategy for the Northern and Southern Resident Killer Whales (Orcinus orca) in Canada. Species at Risk Act Recovery Strategy Series, Fisheries and Oceans Canada, Ottawa, x + 94 pp.; National Marine Fisheries Service (NMFS). 2008. Recovery Plan for Southern Resident Killer Whales (Orcinus orca). National Marine Fisheries Service, Northwest Region, Seattle, Washington.
[4] Wasser SK, Lundin JI, Ayres K, Seely E, Giles D, Balcomb K, et al. (2017) Population growth is limited by nutritional impacts on pregnancy success in endangered Southern Resident killer whales (*Orcinus orca*). PLoS ONE 12(6): e0179824. https://doi.org/10.1371/journal.pone.0179824
[5] *Ibid.* and Ford, J.K.B et al. 2005. Linking prey and population dynamics: Did food limitation cause recent declines of 'resident' killer whales *(Orcinus orca)* in British Columbia. Fisheries and Oceans; Ford J.K.B. et al. 2010. Linking killer whale survival and prey abundance: food limitation in the oceans' apex predator? *Biology Letters* 6: 139–142; Ward E.J. et al. 2009. Quantifying the effects of prey abundance on killer whale reproduction. *Journal of Applied Ecology*, 46: 632–640.
[6] Shields, Monika W., Jimmie Lindell, and Julie Woodruff. 2018. "Declining spring usage of core habitat by endangered fish-eating killer whales reflects decreased availability of their primary prey." Pacific Conservation Biology https://doi.org/10.1071/PC17041

WHALE AND DOLPHIN CONSERVATION
WDC

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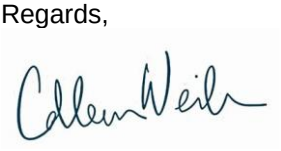
WDC is a registered 501(c)3 non-profit organization.

and the northern coasts of Washington and California.[7] The needs of Southern Resident orcas should be included in modeling efforts and the Salmon Fishery Management Plan, separating the number of salmon required by the orcas from the number included as "natural mortality" in management models – essentially giving the Southern Resident orcas a dedicated allocation of Chinook salmon.

Abundant Chinook runs in the Pacific Northwest and in California are vital for Southern Resident orcas and for continued fishing opportunities. With the expected management challenges posed by climate change and the increasing variability of ocean conditions, managers must act now to give salmon, orcas, and fisheries their best chance of survival into the future. Thank you for the opportunity to provide comments in support of this important review.

Regards,



Colleen Weiler
Jessica Rekos Fellow
Whale and Dolphin Conservation
Newport, Oregon

[7] See National Marine Fisheries Science Center data and reports on Southern Resident tagging project (https://www.nwfsc.noaa.gov/research/divisions/cb/ecosystem/marinemammal/satellite_tagging/index.cfm) and winter distribution surveys (https://www.nwfsc.noaa.gov/news/blogs/index.cfm); Hanson, M. B. et al. 2013. Assessing the coastal occurrence of endangered killer whales using autonomous passive acoustic recorders. *The Journal of the Acoustical Society of America*, *134*(5), 3486-3495; see also Brad Hanson, "Distribution and Diet of Southern Resident Killer Whales" (Northwest Fisheries Science Center, 2015), https://swfsc.noaa.gov/uploadedFiles/Events/Meetings/MMT_2015/Presentations/3.1%20PPT%20ProgramReviewSRKWDistributionDiet071515MBHv2.pdf. See also: Hanson, M.B., E.J. Ward, C.K. Emmons, and M.M. Holt. 2018. Modeling the occurrence of endangered killer whales near a U.S. Navy Training Range in Washington State using satellite-tag locations to improve acoustic detection data. Prepared for: U.S. Navy, U.S. Pacific Fleet, Pearl Harbor, HI. Prepared by: National Oceanic and Atmospheric Administration, Northwest Fisheries Science Center under MIPR N00070-17-MP-4C419. 8 January 2018. 33 p; National Marine Fisheries Service. 2014. Southern Resident Killer Whales: 10 years of research and conservation. National Marine Fisheries Service, Northwest Region, Seattle.

Dan Fraser
Commercial salmon troller
06/09/2019 09:33 PM PDT

RE: Southern Resident Killer Whale Endangered Species Act Consultation Progress Report

While it maybe important to save species from becoming extinct, we need to ask what are all the contributors to the problem with this species. To place the blame solely on the backs of fishing, recreational or commercial, is a gross error of justice. The finger can be pointed to the declining returns of the salmon populations, yes, but why is that happening? I submit that it is many contributing factors and fishing is just one. Salmon habitat loss from dams, logging, farming, etc has greatly contributed to the declining runs, just as much as any fishing has, if not more. But we can't rule out the other predators that compete for salmon as well, such as the explosion of sea lions that now live up rivers below dams, at the fish ladders sniping off the retuning adults spawners. The sea lion population is un-checked, and they are foraging upstream further than I have ever seen in my 53 years of life. To me this is a large problem as they are traveling in smaller coastal rivers far enough up stream, to be reaching spawning beds in these smaller rivers. While transiting through areas where there are reef, such as the Rogue River reef, off the Oregon Coast at Gold Beach, you now can see a population that, if counted, could easily exceed 800 mammals. It is a colony that will if left unchecked,decimate the salmon runs in this area. What about the cormorants, that feed on the out bound salmonoids, in our rivers? On the Columbia River they have become a large population and to think that they aren't eating the young salmon migrating to sea, well then your head is buried in the sand. If you truly wish to help these mammals, I suggest that the fastest way to " fed them" is to forget this notion of hatchery verses wild fish, and get the hatchery production numbers back to the levels of the early 1970's where there was fish for all who wanted it, wheither it was mammals, fishermen, etc. . After doing that then look to removing the predators that are taking the resources, birds, mammals, human, etc.,and see what you can do there. I realize that you don't have much say about other areas, (logging, farming, dams), but at some point, if you those areas aren't addressed, as a contributing factor as well, it won't matter what you do, closing all fishing, recreational and commercial, the southern Residents will still die off. After 35 years of watching you govern the entire west coast salmon fishery for the Klamath River and we are still no better off today with that River than we was back then, because the state of California has diverted so much of that water down to the farmers in the " Central Valley" to grow water guzzling crops in arid land has come at great loss to other uses and resources. I seek a balance use for not only myself but for the generations to come. I'm a second generation fisherman and my son wants to continue to fish, so I want something for him and my grandkids, should they choose this profession. In parting, another thought, if you subscribe to Darwin's theory of survival of the fittest. If these mammals, will only eat adult chinook salmon, and they don't have any, they are dooomed to die off for failure to adapt so they can survive. I fail to believe that these creatures won't eat other fish. They have had a population as high as 100 and now maybe like the grey whale, which is washing up on our shores do to starvation,they have reached a balance of what is a sustainable population. So before you allow a group of well wishes to cause a knee jerk emotional reaction, and destroy lives of families and communities, please do the research and leave the emotional feelings at home. The decision you are here to make , needs to be based in facts, just like what we require in our court rooms across this nation. Thank you for the time and opportunity to submit a comment.

Dan Platt
Salmon Trollers Marketing Assotiason
06/08/2019 11:26 AM PDT

RE: Southern Resident Killer Whale Endangered Species Act Consultation Progress Report

Taking salmon away from the limited amount that is allowed for the commercial fishery will only hurt fisherman and will not in any way help the whale population. The PFMC has a working group working on a sensible solution to the issue. Give the experts time to figure this out and leave the commercial fleet alone. Dan Platt

Deborah Campbell
Individual
05/22/2019 11:36 AM PDT

RE: Allocation Review Procedures - Final Action

Please consider setting aside an allocation of 250,000 Chinook salmon from the Fraser River for the endangered Southern Resident Killer Whales (SRKW). These Whales have a rightful position to be at this table, to be given a meaningful amount of food as anyone else present. The Whales need a fixed number of salmon every season. The net result of this is in years of low return, the SRKW have to compete even harder with other user groups. This is something we can do NOW! It will take time to breach dams and restore addition salmon habitat. Even when these things are completed there is a 4 year wait as the salmon go out and do not return for up to 4 years. This is in your hands. My Family and I have chosen to take seafood off our plates until the SRKW populations stabilize. As well as many friends and I have many friends!! Thank you for your time.

Diane

05/25/2019 07:13 PM PDT

RE: Allocation Review Procedures - Final Action

Please provide a salmon allotment for the orcas ! We need to take care of the whales ??

Elizabeth Hewitt
individual
05/22/2019 04:17 PM PDT

RE: Allocation Review Procedures - Final Action

I am writing to ask that you consider setting aside an allocation of 250,000 Chinook salmon from the Fraser River for the endangered Southern Resident Killer Whales (SRKW). These whales have a rightful position to be at this table, since their survival depends on a robust, reliable food source. Because they are critically endangered, it is our responsibility to ensure that the Chinook salmon runs on which they depend do not disappear. The whales need a fixed number of salmon every season. In years of low return, the SRKW have to compete even harder with other user groups. Let's make sure that they do not dwindle down to a unsustainable population. Let's set aside a sufficient allocation for them. This is something we can do now. It will take time to breach dams and restore additional salmon habitat. Even when these things are completed it may be several years before the salmon return. This is in your hands. My family and I have chosen to take all seafood off our plates permanently. We believe that because our survival does not depend on these runs of salmon, we should leave everything possible for the endangered orcas. Thank you for your time.

ernie koepf
salmon troller permit #28016
06/09/2019 07:40 AM PDT

RE: Southern Resident Killer Whale Endangered Species Act Consultation Progress Report

In my opinion, the crisis with the Southern Orca population is consistent with other crisis related to climate change. The habitat of their food source has eroded due to drought and in-river issues. A look at the statistics on the return of coho and chinook in the coastal rivers between Pt Reyes and Puget Sound validates that position dramatically. Also, the food chain in the ocean areas that they forage in has shifted it's abundance to the northern latitudes, leaving the southern latitudes wanting. These facts are now widely accepted and not open for debate. Placing the burden on their re-population upon fishermen is ridiculous-it is a far bigger picture than that. Salmon trollers have been and are excluded from the waters in question as it is by virtue of the Boldt Decision, 1976, yet the population of Orcas and salmon declines ever since that time. A vigorous in-river effort to mitigate the lack of salmon for Orca food is THE ONLY thing to increase their chances of survival in the era of climate change.

Garin McCarthy

06/10/2019 04:26 PM PDT

RE: Southern Resident Killer Whale Endangered Species Act Consultation Progress Report

I have been commercial salmon trolling for the last 27 years in California and have never had any interaction or seen any Killer Whales while fishing off of California. In no way do I believe we trollers have any interaction with Killer Whales. Even if there was a conflict for salmon we have a minimum size limit of 26" which would offer abundant availability of prey for Killer Whales. We need to look at the science and not feelings or emotions on these issue's. Garin McCarthy FV Mary Beth

Greg Hertel
Port of Friday Harbor
05/23/2019 03:27 PM PDT

RE: Allocation Review Procedures - Final Action

The Port of Friday Harbor respectfully requests that the Pacific Fishery Management Council set aside an allocation of 250,000 chinook salmon from the Fraser River for the endangered Southern Resident Killer Whales (SRKW). Whale population is declining and behaviors are changing due to the shortage of available salmon. Based on estimates of food requirements, a healthy Orca needs 18 to 25 adult Chinook salmon daily to meet their energy requirements. If the 75 living SRKW feed for 100 days in local waters, that means that, based on 20 salmon per day, at least 150,000 chinook are needed just to maintain the status quo. If the Orca remain longer, as they have in many years, or if their numbers increase, more fish would be needed. Currently, the Council allocate salmon for spawning, tribal catch, commercial catch, and sport catch. The fish that the whales need are hidden in what's called "ocean loss". Because Ocean Loss is a percentage of the total run, it fluctuates with run size, however, the whales need a fixed number of salmon every season. The net result of this is in years of low return, the SRKW have to compete even harder with other user groups and spawning escapement may suffer. The health and presence of the SRKW is vitally important to the economy of the Port of FH and San Juan County. Dozens of whale watch boats employing hundreds of people contribute to the local economy and pump revenue into the state via licensing and sales tax. In 2017, 37,000 discreet sales were recorded from whale watch boats based in the Port. The local sales alone generated $315,000 sales tax and $3,400,000 in direct contributions from just the Port. This does not include whale and wildlife watch from kayaks, or other harbors on San Juan Island. Multiply this by the many other marine centers around the Salish Sea and this adjustment to allocation is easily justified by economics alone but beyond that, the legal requirements due to their endangered status, their iconic presence in the Pacific Northwest, and just because it's the right thing to do, the Orca should be given a seat at the table. The allocation for them should be prioritized right behind spawning escapement but ahead of all other user groups. Unlike other enhancement schemes, this would have an immediate effect and be without much direct cost because of infrastructure construction or infrastructure destruction. It also has the benefit of a quick return because we would be dealing with existing fish currently in the ocean instead of hypothetical returns from enhanced hatchery production or larger runs due to dam removal. On behalf of the residents of San Juan Island and on behalf of the Residents that swim in the waters surrounding San juan Island, thank you. Greg Hertel Commissioner, Port of Friday Harbor

Heidi Coleman
Individual
05/25/2019 03:10 PM PDT

RE: Allocation Review Procedures - Final Action

What is the salmon allotment for southern resident killer whales in the Fraser River this year?

Jeramie Peacock
Individual
05/22/2019 10:13 PM PDT

RE: Allocation Review Procedures - Final Action

Please set an allotment of 250,000 for southern resident killer whales. This is an action that can be taken immediately and the whales don't have multiple seasons before being beyond recovery. Thank you.

Jess Payton

05/23/2019 03:13 PM PDT

RE: Allocation Review Procedures - Final Action

We need to have an allocation for Orca whales. Their lives depend on wild chinook salmon, humans have plenty of other food sources. They don’t have years to wait, they need action now and this is something that can have an impact now.

Joe Parker
Individual
05/23/2019 04:07 AM PDT

RE: Allocation Review Procedures - Final Action

Salmon allotment for the southern resident killer wales of the Fraser river.

John Alto
Commercial Fisherman
06/09/2019 05:19 AM PDT

RE: Southern Resident Killer Whale Endangered Species Act Consultation Progress Report

Along with orcas commercial salmon fishermen are also an endangered species in Washington. Our once proud ocean troll fleet numbered almost 4000 licenses. Today there are only 150, and yet there are calls to severely curtail or shutdown our fishery altogether even as ALL the best available science says this would do absolutely nothing to help SRKW. Our industry has continually been beat down and the harvester made the scapegoat for poor salmon returns. Why? Because we are an easy target, there are few of us left. When the last of us are gone, lives destroyed, and access to healthy ocean caught salmon for the public gone and the salmon runs continue to struggle who will be blamed then? It's time for a serious gut check-we are at a tipping point and the council and citizens of the west coast need to decide whether to save the salmon or not. The political will is not there. This process will be painful and everyone is going to have to give, and yes this will cost John Q. Public some money. What I see now reading the other comments is more of the same, cut harvest, cut harvest, cut harvest. Haven't we already tried that for 30 years? I urge the PFMC to not cave in to public pressure and misguided efforts to curtail salmon fisheries and instead move forward with the best available science to save whales, salmon, and commercial salmon fishing families.

Kat Jones
Individual
06/10/2019 04:43 PM PDT

RE: Southern Resident Killer Whale Endangered Species Act Consultation Progress Report

Restricting Fishermen from harvesting Salmon will NOT address the real issues related to this small pod of Orcas. Fisherman have been the easy target. The fishing fleet slowly dwindles and the Orca issue remains the same... The over population of Sea Lions can not be ignored. As soon as they became a protected species, salmon became more vulnerable... Please do not use Fisherman as the scape goat on this issue.

Kerry l
Individual
05/25/2019 03:45 PM PDT

RE: Southern Resident Killer Whale Endangered Species Act Consultation Progress Report

Please allow for an allotment of salmon from the Fraser River for the Southern Resident Killer Whales. Thank you

Kevin Kondysar
FV Ocean Grown
06/08/2019 06:14 PM PDT

RE: Southern Resident Killer Whale Endangered Species Act Consultation Progress Report

So hopefully this is all leading to improving salmon rearing habitats, increasing hatchery productions and improving release methods that optimize survival rates of salmon smolts and reducing pollutions (plastics in particular) that are poisoning and killing whales around the world. The common public doesn't realize that commercial landing fees and both sport and commercial license and salmon stamps/cards make up a huge majority of the hatchery salmon systems budget. Closures and further restrictions will result in less funding to raise salmon that these 72 killer whales "need" to survive. I'm no scientist but telling me an Alpha predator of the ocean is going to starve to death because millions of salmon that do still exist aren't enough food for 72 SRKW sounds like a bunch of baloney to me. Along with an overpopulation of salmon slaying seals/sea lions out there, theres no way a Killer Whale isn't going to snack on a few seals instead of starving to death! Their decline is 100% pollution related, becoming sick and not being strong enough to chase prey. Hopefully this turns into a win for salmon the SRKW and fishermen, it could if done right.

Lynda Toward

05/25/2019 05:14 PM PDT

RE: Southern Resident Killer Whale Endangered Species Act Consultation Progress Report

I am requesting that the SRKWs receive a high priority allotment of salmon as quickly as possible.

Mallory Clarke
Dr.
05/22/2019 03:46 PM PDT

RE: Allocation Review Procedures - Final Action

I am requesting you set aside an allocation of 250,000 Chinook salmon for the endangered Southern Resident Killer Whales (SRKW). These Whales have a right to a seat at this table. As an iconic species, important in a ecological web we have yet to fully understand, they deserve to be given a meaningful amount of our region's food. With plans for dam removal, stream and watershed restoration, and beach enhancements for forage fish, this allocation may not be needed in the future. Currently, we stand to lose the SRKW. Such an allocation, even if temporary, would go quite a ways to removing that danger. Thank you for considering this proposal.

Miranda LeonJones

05/23/2019 03:22 PM PDT

RE: Allocation Review Procedures - Final Action

Please provide a salmon allotment for the orcas this year! It is incredibly crucial for the survival of our native killer whales.

Rachael Robbins

05/23/2019 03:34 PM PDT

RE: Allocation Review Procedures - Final Action

Please save the southern resident orcas. They are a treasure and we need to do everything we can to save them. Please call for a salmon allotment for our orcas

Sara Van Zandt
Self
05/22/2019 04:19 PM PDT

RE: Allocation Review Procedures - Final Action

Please give our salmon allotment for the Southern Resident Killer Whales from the Fraser River. STOP the privilege of salmon netting too!!!

Susan
Sack Commercial Fishing
06/08/2019 02:59 PM PDT

RE: Southern Resident Killer Whale Endangered Species Act Consultation Progress Report

Fishermen pay a lot of money every year for salmon restoration. We are the only industry to do so. Please do more with our fees to protect salmon in-river habitat to increase the dwindling salmon populations. Salmon management must be concentrated in streams and rivers as this is where most of the salmons troubles lie. Bring down dams and let our rivers run free. Stop water diversions to the highest bidder. It would be a win for the orcas, the salmon and for people who should have access to organic wild protein.

Thomas B Webb
1953
06/09/2019 01:16 PM PDT

RE: Southern Resident Killer Whale Endangered Species Act Consultation Progress Report

should be a no brainer,get the industry that is poisoning the fish off the sound (fish farms) and start being better at producing wild stock for the fisherman who raises funds to produce the fish and thus have more fish to feed the whales.

Jackelin Caraballo

05/25/2019 04:00 PM PDT

RE: Allocation Review Procedures - Final Action

Salmon allotment for orcas

Marc Schmidt

06/09/2019 09:37 PM PDT

RE: Commercial Directed Fishery Transition Process and Workshop Planning

Councilmembers, I would like to comment in support of the directed pacific halibut fishery going to a limited entry permit as soon as possible based on landings of at least two of the last 5 years and in the interim; allowing permitted boats to select and declare a specific day within a larger time block (say a mon-fri period or any tues thru thurs any time in a given month) to run their halibut trip for each month of june, july, and august. Maybe allow a 12 hour period instead of 10 hours as well. Trip limits should be fair and equitable for all sized vessels. These suggested short and long term management changes would allow a safer approach then the current derby fishery, would prevent markets from getting flooded with halibut all at once, and allow them to be caught while targeting multiple species and catching throughout multiple block periods for retention of other open access species. I would like to see changes as soon as possible to the current structure as it is a tremendous hardship for the small boats in the fleet as I am always out in terrible conditions trying to catch pacific halibut on the given days each year it seems. The sooner stakeholder meetings I feel the better so there can be some serious direction put forth at the sept pfmc meeting. Many of us don't have much spare time till the fall, as we are fishing every day we can, so input may not be complete by sept from the actual fishermen but I think those of us that participate will make time to get our thoughts included. I am very much opposed to seeing this directed fishery be rolled into other incidental fisheries. With the uncertainty of salmon trolling in CA I have chosen to put my efforts into this directed fishery for many years and hope for one good paycheck per year to cover my operating costs for the year. I have been considering getting a different boat for a couple years but am hesitant to until there is direction on the future of this fishery and possibly losing any landings and qualifications based on my past history participating in this fishery with my existing boat. I feel there should be some urgency to get away from the status quo directed halibut season structure considering it has been talked about for two years now and nothing has changed. Thanks for your consideration, Marc Schmidt Eureka, CA

Bill James
Port San Luis Commercial Fishermen's Association
05/23/2019 04:22 PM PDT

RE: Biennial Harvest Specifications and Management Measures Process for 2021-2022 Fisheries

Mr. Chairman, Mr. Vice-chair and Members of the Council: My name is Bill James. I am a California Nearshore Commercial fisherman and the Fishery Consultant for PSLCFA. Port San Luis commonly known as "Avila" is our home port. Presently the Avila fleet is mainly composed of Open Access and Nearshore Vessels. Since the "Groundfish Disaster Declaration in 2000. The Open Access grounfish vessels have been and still are the most severely impacted fleet for over 18 years. For this reason priority needs to be given to the "Open Access" fleet especially in the Avila and Morro Bay region. Here are the open access requests to be analysed for changes in management measures for the 2021-2022 period. 1). Move the commercial shoreside RCA line from 40 Fathoms out to 50 Fathoms (same as the recreational RCA line for the area from 37:07 N to 34:27 N (point ana nuevo to point conception). 2). Increase Commercial Cabezon Bi-monthly trip limits (per new cabezon stock assessment data. 3).Have equal bi-monthly trip limits for Vermillion Rockfish north of pt. conception and south of pt. conception. (Basically the area from 40:10 N. to the Mex. border) for open access. Closed March-April to lower b-catch of Copper and Brown Rockfish which is closed March-April) 4). Access to fish and land Shelf Rockfish Species in the RCA using "Emil -Platt Gear" 5). Open Access Bi-Monthly trip limits using "Emily-Platt gear in RCA ....5,000 pounds every 2 months with a sub bag limit of 1000 of Vermillion Rockfish from 40:10 N. to Mexican border. 6).Yellowtail, Widow, and Chillipepper Rockfish included in one grouping because in different marine regions and depths have different compositions of those shelf rockfish species. Thank you for giving me the opportunity to submit comment. Sincerely, Bill James

Heather Mann, Brent Paine, Dan Waldeck
Midwater Trawlers Cooperative, United Catcher Boats, Pacific Whiting Conservation Council
06/10/2019 04:46 PM PDT

RE: Final Action on Inseason Adjustments

Please find attached a joint comment from MTC, UCB and PWCC seeking an emergency increase in the Shortbelly rockfish ACL in order to prevent premature closure of groundfish and whiting fisheries.

June 10, 2019

Mr. Phil Anderson, Chairman
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 101
Portland, Oregon 97220-1348

Urgent Request to Increase the Shortbelly Rockfish Annual Catch Limit for 2019 and 2020

Dear Mr. Chairman and Council Members,

Please accept these comments on behalf of Midwater Trawlers Cooperative, United Catcher Boats Association and Pacific Whiting Conservation Cooperative. Together we collectively represent the at-sea and shoreside whiting sectors. We urgently request that you increase the shortbelly rockfish (*Sebastes jordani*) annual catch limit (ACL) for 2019 and 2020 in order to prevent risk of closure of all groundfish fisheries.

During the first three weeks of the 2019 season, the whiting sectors, particularly the mothership sector, have experienced unexpected high bycatch of shortbelly rockfish up and down the coast. As of the date of this letter, the public PacFIN whiting report[1] shows 41% of the mothership whiting allocation has been caught with 326.96mt of shortbelly bycatch. The catcher processors have harvested 43% of their whiting allocation and 30.17mt of shortbelly bycatch. The shoreside whiting boats have caught 12% of their whiting allocation and 8.8mt of shortbelly[2] (see Table 3). Combined, the whiting sectors have caught a total of 365.93mt of shortbelly rockfish. The majority of this bycatch accumulated in a few short days, and since we became aware of the problem the whiting cooperatives and fleets have taken immediate action to try to curb the bycatch. However, there is abundant and unprecedented shortbelly rockfish on the fishing grounds, in regions where it has not been prevalent in the past, and without

[1] PacFin whiting report: https://reports.psmfc.org/pacfin/f?p=501:202::INITIAL:NO:::
[2] The public PacFIN whiting report does not appear to be up-to-date for shoreside whiting bycatch, but State of Oregon staff was able to provide the 8.8mt shoreside whiting bycatch of shortbelly number. See Table 3.

emergency action the entire groundfish fisheries are at risk of closure under the current 500mt ACL. Complicating the issue is the requirement for the whiting sectors to avoid Chinook, as well as canary, darkblotched, Pacific ocean perch, widow, yellowtail, sablefish, and many other species, while attempting to harvest record-high whiting allocations.

The 2019 & 2020 shortbelly ACL of 500mt is set 10 times lower than the allowable biological catch (ABC) of 5,789mt (see Table 1). There is room to increase the ACL without biological risk and prevent the significant negative economic and community impacts that the unnecessary closure of our fisheries would cause.

Table 1. 2019-2020 Shortbelly Specifications[3]

	OFL (mt)	ABC (mt)	ACL (mt)	Fishery HG (mt)
2019	6,950	5,789	500	483
2020	6,950	5,789	500	483

There is not a commercial or recreational targeted fishery for shortbelly rockfish, and there has not been much bycatch in the past[4], so based on the best scientific information that was available for the 2019-2020 harvest specifications process (see Table 2 and Figure 1), the 500mt ACL was presumed to meet the coastwide groundfish fishery's needs. However, shortbelly has also been presumed to only be abundant in California. In fact, the *Stock Assessment Model for the Shortbelly Rockfish* report (Field et al 2007)[5] only covers the shortbelly rockfish population between Cape Mendocino, California and San Diego, California. As we can see through recent bycatch in the whiting fisheries, shortbelly now appears to be abundant coastwide.

Table 2. Most Recent Published Fishing Mortality Estimates of Shortbelly Rockfish by Sector (2016)[6]

Sector	**Shortbelly Rockfish Mortality**
Bottom Trawl	0.60
Fixed Gear	0.00
Midwater Rockfish	0.00
Shoreside Midwater Hake	22.88
At-Sea Midwater Catcher Processor	0.24
At-Sea Midwater Mothership Catcher Vessel	1.91
Open Access California Halibut	0.00
Pink Shrimp	2.21

[3] 50 CFR 660, Tables 1a and 2a: https://www.ecfr.gov/cgi-bin/text-idx?SID=d3fefd68cbe2a611cb38e644b8352186&mc=true&node=pt50.13.660&rgn=div5#ap50.13.660_179.1

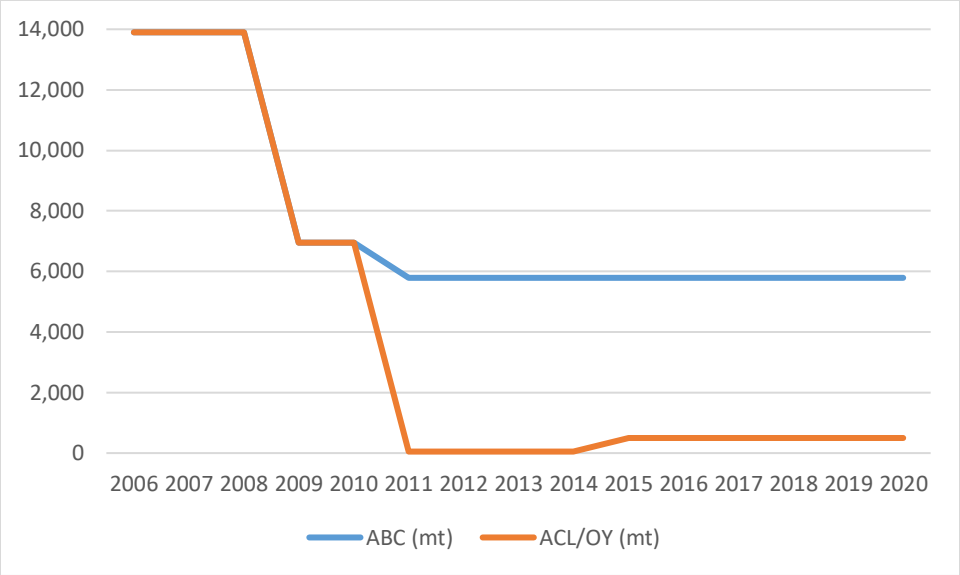
[4] PFMC. 2018. Status of the Pacific Coast Groundfish Fishery, Stock Assessment and Fishery Evaluation (SAFE). https://www.pcouncil.org/wp-content/uploads/2019/01/SAFE_Nov2018_Final.pdf

[5] NOAA Fisheries. 2007. NOAA Technical Memorandum. Stock Assessment Model for the Shortbelly Rockfish, *Sebastes Jordani*, in the California Current. By John C. Field, Edward J. Dick, Alec D. MacCall. https://www.pcouncil.org/wp-content/uploads/shortbellyTM2007.pdf

[6] NOAA Fisheries. 2017. Estimated Discard and Catch of Groundfish Species in the 2016 US West Coast Fisheries. By Kayleigh A Somers, Jason Jannot, Vanessa Tuttle, Neil B. Riley, Jon T. McVeigh. https://www.nwfsc.noaa.gov/research/divisions/fram/observation/pdf/Groundfish_Mortality_2016.pdf

Non-Nearshore Fixed Gear	0.00
Nearshore Fixed Gear	0.00
Incidental Fisheries	0.00
Washington Tribal Shoreside	0.00
Recreational Fishing Mortality: Washington	0.00
Recreational Fishing Mortality: Oregon	0.00
Recreational Fishing Mortality: California	0.00
Research	2.16
Estimated Total Fishing Mortality	**30.00**

Figure 1. Shortbelly Specifications 2006-2020[7]



While the ACL/optimum yield (OY) was set equal to the ABC in the past (see Figure 1), the Pacific Fishery Management Council received public comment in June 2010, during the 2011-2012 harvest specifications cycle, highlighting shortbelly's role as a forage species in the California Current ecosystem[8]. The commenter requested that the Council "freeze the catch" of shortbelly rockfish to "prevent a directed fishery and ensure the bycatch of this species does not increase…by setting the 2011-2012 ACLs less than or equal to the maximum catch of this species over the last 5 years, and maintaining this ACL unless and until a comprehensive analysis of the ecosystem services rendered by shortbelly rockfish that could inform the ACL is completed within the Ecosystem FMP process." The commenter went on to state that such an action would have "little to no economic impact on existing fisheries", which appeared to be true at that time given recent catch (see Figure 2). The Council set an

[7] https://www.pcouncil.org/groundfish/current-season-management/past-management-cycles/
[8] PFMC. June 2010 Briefing Book, Agenda Item B.3.c, Supplemental Public Comment 5. https://www.pcouncil.org/wp-content/uploads/B3c_SUP_PC5_JUNE2010BB.pdf

annual ACL of 50mt for the 2011-2012[9] and 2013-2014[10] harvest specification cycles. In June 2014, during the 2015-2016 harvest specifications deliberations, the Council received a request to increase the ACL from 50mt to 500mt in anticipation of the developing widow rockfish and yellowtail rockfish fishery[11]. Since 2015, the shortbelly ACL has been set at 500mt[12] (see Figure 1).

Figure 2. Shortbelly Landings & Revenue 1998-2009[13], used to determine 2011-2012 ACL

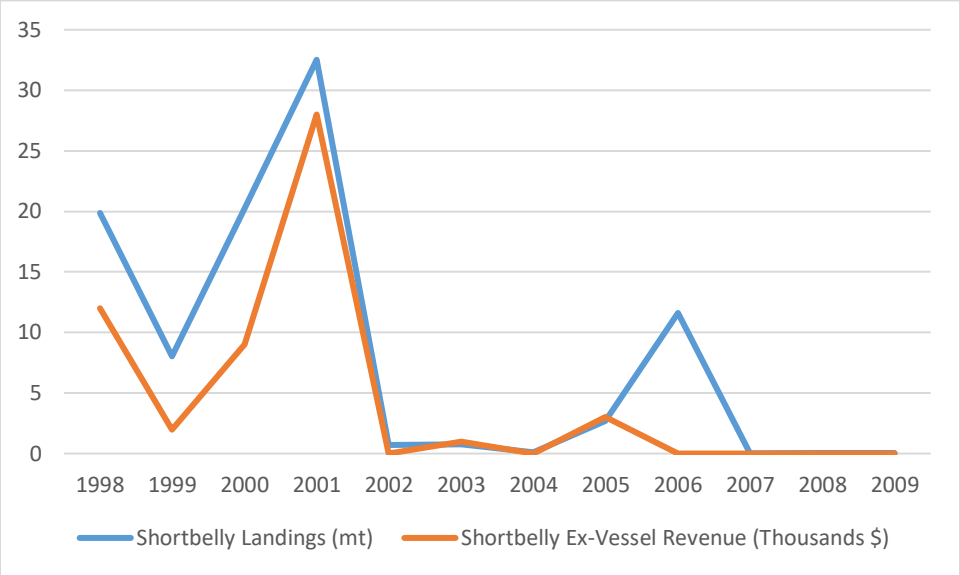
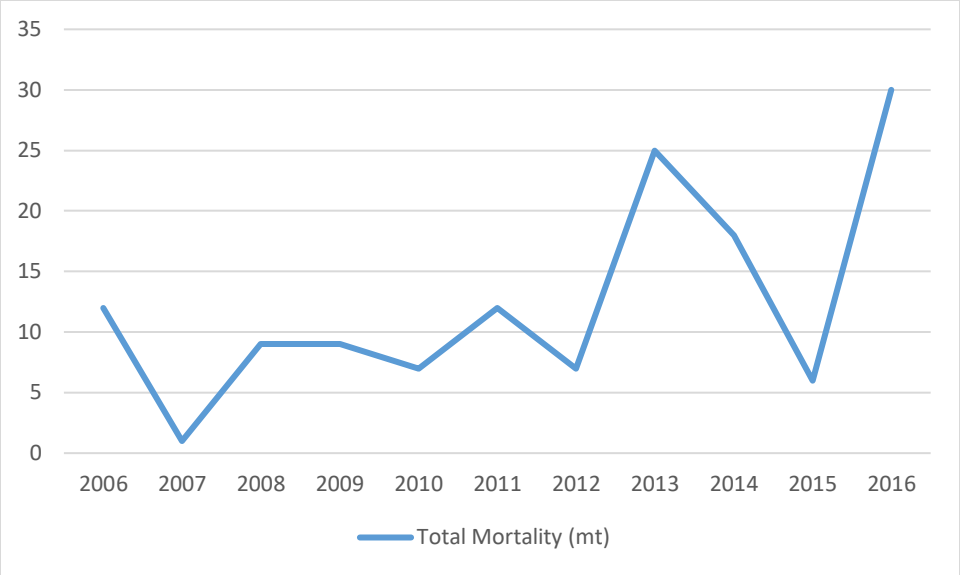


Figure 3. Shortbelly Mortality 2006-2016, from Published Mortality Reports[14]

[9] PFMC. June 2010 Minutes. http://www.pcouncil.org/wp-content/uploads/Final_June_2010_Minutes.pdf and Federal Register. May 11, 2011. https://www.govinfo.gov/content/pkg/FR-2011-05-11/pdf/2011-10799.pdf
[10] Federal Register. January 3, 2012. https://www.govinfo.gov/content/pkg/FR-2013-01-03/pdf/2012-31134.pdf
[11] PFMC. June 2014 Oral Public Comment. FTP @ 1:03:52: ftp://ftp.pcouncil.org/pub/R1406_June2014_Recordings/6-24-14pm1Copy.mp3c
[12] Federal Register. February 17, 2017. http://www.pcouncil.org/wp-content/uploads/2017/02/2017-02268.pdf
[13] PFMC. June 2010, Agenda Item B.3.a, Attachment 3. https://www.pcouncil.org/wp-content/uploads/B3a_ATT3_APDXF_HISTORICAL_JUNE2010BB.pdf
[14] NWFSC Management Reports page. 2019. https://www.nwfsc.noaa.gov/research/divisions/fram/observation/data_products/species_management.cfm



With total catch to-date in 2019 estimated to be 373.7mt across all groundfish sectors (see Table 3), 75% of the 500mt shortbelly ACL has been caught. The bycatch in the whiting sectors has occurred at low chronic rates in our fishing areas along the coast since May 15, with several lighting strikes in early June. While there has been increasing bycatch of shortbelly since 2017, there was some industry confusion about which category that catch was counted towards, particularly since the at-sea whiting sectors do not have a set-aside for shortbelly rockfish, and for the shoreside whiting sector shortbelly is not an IFQ species. On Friday, June 7th, 2019 we saw increased catch numbers and contacted National Marine Fisheries Service (NMFS) to report the high bycatch. NMFS subsequently published a public notice requesting voluntary avoidance of shortbelly by industry.[15]

Shortbelly move around a lot, so it is difficult to manage through closed areas, but we have set closed and advisory areas where high bycatch tows were seen and are communicating heavily within and between our whiting cooperatives. However, it will be impossible to access our remaining whiting this year without additional shortbelly bycatch occurring because the shortbelly we've seen so far has been spread out along the coast. If we assume the combined whiting and non-whiting shoreside IFQ sector will have similar shortbelly bycatch to 2018 (238.8mt, see Table 3) and add that to the amount the at-sea sectors have caught to date, the trawl fisheries alone will exceed the 2019 ACL without emergency action by the Council and NMFS. The pink shrimp sector had 21.5mt of shortbelly bycatch in 2017 (see Table 3), and if their bycatch is trending in the same direction as the trawl sectors it is likely that number will increase in 2019.

The amount of shortbelly bycatch we are seeing is an emergency that meets the criteria of a special circumstance "where substantial harm to or disruption of the resource, fishery, or community would be

[15] NMFS-SEA-19-14
https://www.westcoast.fisheries.noaa.gov/publications/fishery_management/groundfish/public_notices/nmfs-sea-19-14.pdf

caused in the time it would take to follow standard rulemaking procedures." Risk of closure to the entire groundfish fishery if the ACL is reached would cause extensive economic and social harm to our coastal communities. Additionally, if shortbelly remains the most pressing species for the whiting sectors to avoid, in order to prevent risk of closure to the groundfish sectors, we are concerned about the impact that will have on our ability to avoid other bycatch species with greater conservation concern – as we've already seen since we started moving to avoid shortbelly. We request that the Council increase the 2019 and 2020 ACLs, in order to provide adequate room for foreseeable bycatch in the next two years, while still keeping the ACL below the ABC to balance ecosystem considerations and acknowledge shortbelly's importance as a forage fish in the California Current.

The undersigned groups stand ready to work collectively with the Council, NMFS and all stakeholders who depend on groundfish to find a solution to this critical issue.

We urge you to increase the ACL to protect our groundfish fisheries from closure along the entire West Coast. Groundfish closure for a species where the ACL was set so far below the ABC, and for which there was no biological concern, would be unimaginable.

Sincerely,

Heather Mann
Executive Director
Midwater Trawlers Cooperative

Brent C. Paine
Brent Paine
Executive Director
United Catcher Boats Association

Dan Waldeck
Executive Director
Pacific Whiting Conservation Cooperative

Table 3. Shortbelly Catch by Sector 2002-present [16]

Sector	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
CP Whiting	0.5	0.5	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	140.8	85.9	30.2
MS Whiting	0.1	0.0	0.0	2.7	11.2	0.0	0.0	0.0	0.0	0.0	0.3	0.7	0.0	0.0	1.9	27.7	142.1	327.0
Shoreside Whiting	0.1	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.3	0.0	0.1	2.1	0.0	0.7	22.9	125.3	197.0	8.8
IFQ non-whiting trawl	56.1	0.2	5.3	0.8	0.8	0.2	7.0	7.4	2.5	10.6	5.5	18.2	8.0	4.5	0.6	4.2	41.8	7.7
Pink shrimp	0.0	0.0	6.5	1.9	0.0	0.1	0.0	0.0	0.2	0.2	0.4	3.5	8.9	0.9	2.2	21.5	TBD	TBD
Other (FG, Rec, Tribal, Other incidental OA fisheries)	0.1	0.0	0.0	8.2	1.1	0.4	1.2	1.1	1.8	1.4	1.2	0.5	0.7	3.1	2.2	0.6	TBD	TBD
Total	**56.8**	**0.8**	**11.8**	**13.7**	**13.8**	**0.7**	**8.2**	**8.6**	**4.8**	**12.2**	**7.4**	**25.1**	**17.7**	**9.3**	**30.0**	**320.2**	**466.8**	**373.7**

[16] Personal Communication with Patrick Mirick, ODFW/GMT, on June 10, 2019.

Susan Chambers
West Coast Seafood Processors Association
06/10/2019 04:32 PM PDT

RE: Final Action on Inseason Adjustments

Please see attached letter regarding shortbelly rockfish from WCSPA Executive Director Lori Steele. Thank you.

West Coast Seafood Processors Association
650 NE Holladay Street, Suite 1600
Portland, OR 97232
(503) 227-5076

June 10, 2019

Mr. Phil Anderson, Chairman
Pacific Fishery Management Council
7700 NE Ambassador Pl., Suite 101
Portland, OR 97220

RE: Agenda Item I.7, Inseason: Shortbelly rockfish in the trawl fisheries

Dear Chairman Anderson and Council members:

On behalf of the West Coast Seafood Processors Association (WCSPA), I am writing to request the Council consider carefully the issue regarding above-average harvest of shortbelly rockfish (*Sebastes jordani)* this year. The NMFS notice to avoid shortbelly rockfish in the trawl fisheries (https://www.westcoast.fisheries.noaa.gov/publications/fishery_management/groundfish/public_notices/nmfs-sea-19-14.pdf) came as a surprise to both the trawl and whiting industries.

The West Coast Seafood Processors Association represents shoreside processors in Washington, Oregon and California whose fishermen target groundfish and Pacific hake (whiting). Our members have established global markets for both groundfish and whiting.

From the shoreside industry perspective, shortbelly rockfish is too small to fillet efficiently, nor does a market exist for this species. Furthermore, the variability in finding these from one year to the next (or, in this case, avoiding them) remains problematic. Our members have not developed this fishery and have no plans to develop this fishery in the future.

We anticipate a robust discussion about this issue under the inseason agenda item, with the understanding the ACL for this species likely cannot be increased at this meeting but could be discussed in September. At that time, it may be appropriate to instead consider making this a monitored species under the ecosystem framework.

Thank you for your consideration,

Lori L. Steele

Lori Steele
Executive Director
West Coast Seafood Processors Association

Ben Enticknap
Oceana
06/10/2019 03:53 PM PDT

RE: National Marine Fisheries Service Report

see attached letter submitted under J.1 (NMFS HMS report) and J.4 (drift gillnet performance metrics)

OCEANA Protecting the World's Oceans

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June 10, 2019

Mr. Barry Thom, West Coast Regional Administrator
National Marine Fisheries Service
1201 NE Lloyd Boulevard, Suite 1100
Portland, OR 97232

Mr. Phil Anderson, Chair
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 101
Portland, OR 97220

RE: Agenda Items J.1 NMFS Report and J.4 Drift Gillnet Performance Metrics Review

Dear Mr. Thom, Chair Anderson and Council members:

Several years ago, in recognition of continued bycatch concerns raised by the public and state and federal elected officials, the Pacific Fishery Management Council (Council) expressed its intent to transition the California large-mesh drift gillnet swordfish fishery using tools available to it under the Magnuson-Stevens Fishery Conservation and Management Act (MSA). In September 2015, the Council acted to create a new management framework for this fishery designed to minimize and avoid bycatch, set clear standards and accountability, and incentives to change fishing behavior. This included hard caps for nine marine mammals and sea turtles that are endangered and/or had low potential biological removals, performance objectives for finfish and other marine mammals, the removal of the unobservable vessel exemption, and direction to achieve 100% fishery monitoring in 2018.[1] The National Marine Fisheries Service (NMFS), however, contravened the will of the Council by failing to implement hard caps and observer coverage recommendations.

Today the fishery continues to operate without full accountability. Observer coverage has consistently remained below the 30% target first identified by NMFS in 2011[2], and significantly below the 100% level recommended by the PFMC in 2015 (figure 1). The fishery has failed to achieve bycatch performance metrics each year since they were adopted without consequence. The fishery largely operates without Annual Catch Limits due to international exemptions. NMFS withdrew the proposed hard cap rule, which violated the Administrative Procedure Act and the MSA.[3]

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[1] PFMC 2015. Council meeting record, September 11-16, 2015. Available: http://www.pcouncil.org/wp-content/uploads/2015/12/September_2015_Final_CouncilMtgRecord.pdf
[2] NMFS 2011. U.S. National Bycatch Report, first edition, at 359. Available: https://repository.library.noaa.gov/view/noaa/4361
[3] *Oceana v. Ross.* (October 24, 2018) U.S. District Court of Central California District of California. Available: http://usa.oceana.org/sites/default/files/593/oceana_drift_gillnet_case_ruling.pdf

The failure to establish a new framework for the drift gillnet fishery that moves forward toward responsible management with minimal bycatch has spurred state and federal lawmakers to act. In 2018 California passed legislation (Senate Bill 1017) to implement a transition program whereby state drift gillnet permits will be phased out over a four year period, and drift gillnet fishermen will be financially compensated if they voluntarily to turn in their nets and permits. Federal legislation (Driftnet Modernization and Bycatch Reduction Act; S. 906 and H.R. 1979) has also been introduced to phase out the use of indiscriminate large mesh driftnets like the ones used target swordfish off the coast of California.

While the Council and NMFS discuss drift gillnet management, we offer the following observations and recommendations:

1. The priority of the Council and NMFS should be to authorize deep-set buoy gear for targeting swordfish; switching from unselective drift gillnets to clean gear will prevent deadly interactions with marine mammals and sea turtles that occur with drift gillnets.

2. NMFS must issue a final hard cap rule as proposed by the Council in September 2015. If NMFS desires to revise the proposed rule, however, then we support scheduling consultation for the September Council meeting. We urge the Council to reaffirm its September 2015 decision in any such consultation, and further describe how it is consistent with federal law, as per previous reports and statements by the States of California (attached) and Washington.[4] The time and resources put into developing the hard cap regime represented years of effort and stakeholder input. The decision made by the Council at that time must be respected in order to uphold the integrity of the Council process.

3. NMFS must implement the Council recommendations for 100% monitoring of the DGN fishery and remove the unobservable vessel exemption by requiring all vessels to carry an observer when requested as a condition of maintaining their federal permit. In June 2018, the Council reaffirmed its preferred alternative for 100% monitoring adopted in September 2015.[5]

4. In March 2018 NMFS stated that the Protected Resources Division was developing a new Biological Opinion on the drift gillnet fishery by Spring of 2018 which would include a new analysis on potential observer bias using vessel monitoring system data to analyze if unobserved trips fish in different areas than vessels with observers.[6] NMFS also reported it was conducting an electronic monitoring (EM) study of the drift gillnet fishery. The Council should request the findings of the NMFS EM study and an update on the timeline for a new Biological Opinion including an analysis of the observer effect.

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[4] WDFW 2019. Agenda Item J.C Supplemental WDFW Report 1. Available: https://www.pcouncil.org/wp-content/uploads/2019/02/J1c_Supp_WDFW_Rpt1_Hardcaps_MAR2019BB.pdf
[5] PFMC 2015. Available: https://www.pcouncil.org/2015/09/38641/california-large-mesh-drift-gillnet-fishery-management-final-preferred-alternatives/
[6] NMFS 2018. Available: https://www.pcouncil.org/wp-content/uploads/2018/03/I1a_Sup_NMFS_Rpt3_Draft_Increased_Monitoring_Analysis_031218_Mar2018BB.pdf

With respect to the review of performance metrics:

5. Whether to set performance metrics using ratio estimation or regression tree methodology is unnecessary with 100% monitoring.

6. To date bycatch performance metrics have been entirely ineffective; finfish and/ or marine mammal metrics have been exceeded each year since implemented. The only action taken by the Council in response to these exceedances has been to revise the methodology for setting performance metrics and estimating bycatch and, additionally the Council has attempted to remove California sea lions, northern elephant seals and smooth hammerhead sharks – a CITES listed species[7] – from the list of performance metric species. The removal of these species occurred without public notice that the Council was considering revising the list of species, after the bycatch performance metrics were exceeded, and without any legitimate rationale.

7. In the 2018-19 fishing year the fishery caught an estimated **15 smooth hammerhead sharks** and **15 megamouth sharks**, exceeding the annual performance metric of four hammerhead sharks and two prohibited shark species, respectively, using the ratio estimation method. Smooth hammerheads are the only species of hammerhead shark caught in the DGN fishery during the base period of 2004-2013, so the Council clearly intended them to be included in the list of performance metric species.

8. We request the Council maintain consistency with its current performance metric approach and intent:
    a. Use the same base period of 2004-2013 to establish new performance metrics;
    b. Maintain the original list of species as adopted by the Council in 2015, including smooth hammerheads, California sea lions, and northern elephant seals.
    c. Use the 10-year high annual regression tree estimates over this period as the performance standard (see table 1, attached);
    d. Evaluate the fishery performance every two years based on current annual regression tree estimates;
    e. Reaffirm the Council's original intent that a single year of exceeding the performance metrics is the trigger for considering implementation of additional management measures. If the Council chooses to use a multi-year average to assess performance standards, the performance standards must be set based on the 10-year average, not the 10-year maximum bycatch level for each species.
    f. Establish an automatic mechanism through which exceeding any single performance metric triggers the HMSMT to develop and provide to the Council for immediate consideration a range of alternative management measures to ensure bycatch does not exceed performance metrics.

One hundred percent monitoring of the drift gillnet fishery – as repeatedly recommended by the PFMC - will provide the most accurate picture of the impact of the fishery on non-target species and will eliminate the management uncertainty in bycatch rates, particularly for rare species.

[7] In 2013 five shark species—oceanic whitetip; porbeagle; and great, scalloped, and smooth hammerhead sharks—and two species of manta ray were added to Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

Even with implementation of the Pacific leatherback and loggerhead conservation areas and numerous gear requirements such as acoustic pingers, this fishery continues to have one of the highest bycatch rates in the country. The discard rate since implementation of the Pacific Leatherback Conservation Area in 2001 is 60%,[8] and the fishery continues to take rare and endangered species.[9] Ultimately, we request NMFS and the PFMC work to transition this fishery consistent with the approach and timeline established in California SB 1017. Until that occurs, actions to increase accountability in this fishery and further reduce bycatch must be taken including hard caps, 100% monitoring and effective and enforceable performance metrics.

Sincerely,

Ben Enticknap
Pacific Campaign Manager and Senior Scientist

Attached: CDFW (June 12, 2017). Statement in response to NMFS' decision to withdraw proposed regulations on drift gillnet hard caps in the swordfish fishery.

[8] NMFS Observer Program Data 2001-2019. http://www.westcoast.fisheries.noaa.gov/fisheries/wc_observer_programs/sw_observer_program_info/data_sum m_report_sw_observer_fish.html

[9] Carretta, J.V., J.E. Moore, and K.A. Forney. 2018. Estimates of marine mammals, sea turtles, and seabird bycatch from the California large-mesh drift gillnet fishery: 1990-2016. NOAA PSRG-2018-07 12 February 2018.

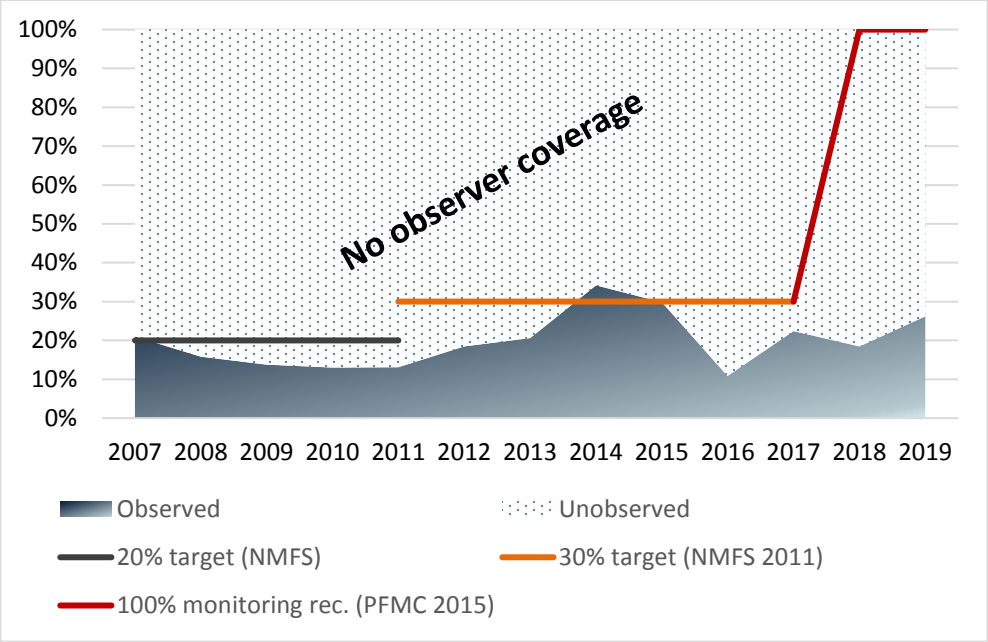

Figure 1. Percent observer coverage in the California large mesh drift gillnet fishery compared to target level observer coverage, 2007 to 2019. The 30% target level was recommended by NMFS in 2011 (see footnote 2) and then again by the PFMC in September 2015 when the Council recommended that NMFS maintain a minimum 30% observer target and 100% monitoring by 2018.

*Marine Mammal and Sea Turtle Performance Metrics for Use in Annual Determination**

Species	Recommended metric: Highest 2004-2013 serious injury/ mortality estimate	Notes
Minke whale	1.1	
Short-beaked common dolphin	57.7	
Long-beaked common dolphin	5.6	
Risso's dolphin	2.9	
California sea lion	57.2	*Pinnipeds not considered as part of the regression tree method in September 2018 PFMC motion, if not this, continue to use estimation method.*
Northern elephant seal	4.2	
Northern right whale dolphin	8.1	
Gray whale	2.1	
Pacific white-sided dolphin	9.2	
Sperm whale	2	*hard cap species*
Humpback whale	0.2	*hard cap species*
Fin whale	0.3	*Hard cap species*
Short-finned pilot whale	1.3	*hard cap species*
Bottlenose dolphin	4.2	*hard cap species*
Leatherback sea turtle	1.9	*hard cap species*
Loggerhead sea turtle	1.2	*hard cap species*
Olive Ridley sea turtle	0	*hard cap species*
Green sea turtle	0.3	*hard cap species*

Table 1. Recommended marine mammal and sea turtle performance metrics based on regression tree methodology and highest Serious Injury/Mortality estimates, 2003-2013 as in Carretta et al. 2018.[10] To date no regression tree analyses is available for finfish species with performance metrics: Billfish (non-swordfish, prohibited sharks (megamouth, basking, white), hammerhead sharks and manta ray. If a single year's estimated SI/M exceeds these values, the performance metric is considered exceeded, triggering immediate development, consideration, and adoption of management measures to prevent it from being exceeded in the future.

[10] Carretta, J.V., J.E. Moore, and K.A. Forney. 2018. Estimates of marine mammals, sea turtles, and seabird bycatch from the California large-mesh drift gillnet fishery: 1990-2016. NOAA PSRG-2018-07 12 February 2018.

June 12th 2017
Transcript of Marci Yaremko, California Department of Fish and Wildlife (CDFW)
June 2017 Pacific Fishery Management Council Meeting

Regarding the National Marine Fisheries Service (NMFS) report on the withdrawal of a proposed rule implementing hard caps for the California drift gillnet swordfish fishery.

Transcribed from Pacific Fishery Management Council audio file: 6-12-17pm1Copy.mp3, at 1:30. Audio file available at ftp://ftp.pcouncil.org/pub/R1706_June_2017_Recordings/

Thank you Mr. Vice Chair, and thank you for the time to address the Council on this important issue to California. It's our view that NMFS, and the Council, and the fishery lost an opportunity here. Thanks to all on the Council [Pacific Fishery Management Council], and all in the audience for your time on this issue and I appreciate the chance to express disappointment with the decision on behalf of the state.

This Council expressed its intent to change management of this fishery using tools available to us under Magnuson to create a new framework to move this fishery forward. Many are asking what comes next after this decision is made and we heard a lot in testimony. The answer that I thought I might give before doesn't appear to be viable. I wanted to see the fishery itself, have an opportunity to achieve the standards we imposed, perhaps to receive MSC [Marie Stewardship Council] or some other green label certification for performing within our standards and the chance to develop new markets as a result. And I wanted the Council to have a solid basis to look at next steps and other new and innovative approaches to redevelop the West Coast swordfish fishery with this gear. We had that pathway forward and now I just feel like the road fell out from under us and we're stuck in a sinkhole.

There were a number of reasons for the Council's recommendations on hard caps and as Michelle [Michele Culver, WDFW] artfully explained just a second ago, NMFS appears to have chosen to consider only one of them. What the additional protections would have afforded was benefit to the ESA [Endangered Species Act] listed marine mammals and turtles. The policy and social reasons for the rule apparently were not considered or were considered and dismissed. And yet, those reasons are strongly embedded in our MSA [Magnuson Stevens Fishery Conservation and Management Act] framework in our National Standards.

It is the Council's job to consider these elements when balancing competing interests to help us make difficult decisions and we did. The rule would have established a Bright Line Standard, one that when crossed would shut the fishery down just in the same way we manage our other fisheries domestically with applications of ACLs [annual catch limits] and accountability measures. Everyone - the public, the government, NGOs, and the fishermen themselves - are acutely aware of what the limits are and what happens when you exceed them. Yes, there is a TRT [take reduction team] process that gets in swing when PBR [potential biological removal] and ITS [incidental take statement] limits are exceeded and groups of scientists and representatives get together to talk but there's no immediate action that results. It's just a series of meetings, plans and negotiations that precede the development of new federal

rules designed to mitigate the consequences; actions, which often take years to fully develop and implement.

Equally important as the Bright Line Standard, some of you have mentioned this already, was the Council's goal in changing behavior with this rule. It was a way to ensure this fleet would take accountability for its actions and force operators to think before making a set to ensure that the risk of entanglements are low. NMFS has implemented hard caps in other fisheries under its jurisdiction, notably including the Hawaii longline fisheries for swordfish. It is pretty clear that those fisheries have maintained if not improved economic viability as landings from that fishery seem to be on a steep upward trajectory into California ports in recent years.

The administrative record will also show that the Council on its consideration of hard caps deliberately considered the potential economic impacts of the rule and if anyone looked at the record, the Council initially proposed hard caps that were only for one year in duration, rather than two. Our recommendation was refined following industries' unequivocal statement to us that a measure that invoked a one and done management response made the costs associated with gearing up to fish for a season too prohibitive. The Council considered that input and made adjustments such that the recommendation included cap levels that all had numbers greater than one animal and hence, we recommended the two year rolling cap alternative.

Meanwhile on the other side of the Sustainable Fisheries Division house- in the groundfish world, apparently a different standard is applied when viewing Council recommendations and prospective economic harm to individuals. As I think we all recall in the IFQ [individual fishing quota] program, if an individual exceeds their allowable individual quota level, they are immediately shut down and not allowed to re-enter the fishery until they can cover their overage, which can take years depending on the amount of overage and the cost. And during that time, they are not allowed to participate in any other federal groundfish fishery. The Council and NMFS stood firmly behind those rules and it has been clear that exceeding those limits has consequences. Nor have we deviated from that approach.

In the six years since the IFQ program's been in effect, three vessels have had lighting strikes and have had to leave the fishery. Despite requests for the Council to reconsider its position on the consequences of exceeding a quota limit and trying to find a way for those vessels to re-enter the fishery, the Council and NMFS stood firm. I hadn't forgotten the testimony we heard from Jeff Lackey when his vessel accidentally made a disaster tow with overfished rockfish, and the resulting consequences of that fish leaving the fishery, and last I checked they are still trying to pay down their debts on the overage. The negative economic consequences to these vessels is likely greater than what it would be seen on the entire drift net fishery where a hard cap effectively to close the DGN [drift gillnet] fishery.

So I have trouble understanding how NMFS can use two different sets of standards when it comes to economic harm. I also take issue with the statement that the participants in the DGN fishery do not have other viable alternatives. California fishermen rarely rely on one fishery for their sole source of income, but instead participate in multiple fisheries as part of their fishery portfolio in business plans. I haven't had the chance to review the 106 page final Environmental Assessment that was released after the

Council meeting started but I will do so. I will be paying close attention to the discussion of alternative fisheries available to the DGN fishermen upon a closure resulting from a hard cap attainment.

I don't recall CDFW being consulted on that analysis on that state managed fisheries opportunity, particularly fisheries that fall under the authority of the state's general gillnet permit. This permit is not specific to any fishery target, but it is required for the use of gillnet gear so all of the current DGN permittees have this state issued permit. These fisheries for California halibut, white seabass and angel shark are worth millions of dollars annually. The state requires DGN permittees to concurrently hold this permit so I am perplexed why NMFS doesn't consider this a viable alternative fishery to participate in should the DGN fishery close due to the attainment of a hard cap.

Moreover, I recall our DGN advisors from the Advisory Subpanel actually recommended a mitigation measure to the Council should hardcaps be attained. They suggested to us that in the event a cap was attained, the alternative of being able to fish using buoy gear might be an approach to mitigate the effects of the closure. While the council didn't take that up in its development of its FPA and its recommendations to NMFS, as far as I am aware, that recommendation is still a viable one that NMFS could have maybe considered putting back before the Council, before withdrawing the proposed action.

NMFS reported to us today on plans to implement the Council's recommendation for a 100% monitoring of the DGN fishery, which was the second part of the council's September 2015 motion. There is vagueness and uncertainty in the proposed rulemaking, which would include the rule to remove the unobservable exception that is currently applicable to DGN vessels. My discomfort is growing that this recommendation will be effective by regulation by next year. It's feeling more and more like NMFS is saying like it's only going to implement the HMS recommendations from the Council that it likes, such as the limited entry drift net permit.

The DGN fishery is a California fishery. We understood that the Council process was [the] venue for the state to provide management guidance on fishery activities originating out of and returning to California ports. CDFW has participated and contributed to discussions and developed management strategies and plans in the spirit of co-managing these fishery resources off our coast. The HMS FMP [Highly Migratory Species Fishery Management Plan] has been around for well over a decade now, yet we've only made a few amendments to the plan. Mostly administrative in nature and as required by NMFS for reasons such as compliance with the latest national standard and the omnibus amendment to include unmanaged forage fish protections and we'll take up the housekeeping amendment agenda item next.

Meanwhile the Council, its members, the stakeholders, NMFS staff and the public continue to invest millions in the Council process to support management under the HMS FMP. What I have to ask is what the point of all of that is and what is there to show for it other than a growing list of disapprovals and subliminal messages of, "no we can't"?

I thought the goal was to actively manage HMS under authority of the MSA but instead the letter from NMFS to the Council just encourages us to continue to participate in the TRT process if we wish to develop measure to reduce probability of marine mammal entanglement in the DGN fishery.

So after several years of investment in the HMS planning and Council process it just seems there's not much interest in doing much to regulate the fishery under MSA so I will just wrap this up with a few questions.

What is the value of the plan if we can't do anything under its authority? And how does NMFS justify applying different standards to West Coast fisheries under its jurisdiction regarding expected economic impacts of regulations?

And maybe just to end on a little brighter note: I would like to offer a comment on the management team report regarding the performance objectives and thank the management team for that analysis. The table shows the fishery largely attained our standards with just one exception and I'd like to thank the management team for reminding the Council what the goal is with our annual review of the standards, which is to evaluate if bycatch or protected species interaction levels are consistently at a level higher than one of the performance objectives the Council could consider whether additional management measures are necessary to minimize bycatch or reduce protected species interactions in the fishery. I guess I'd like to just note that in my view this simple and low workload analysis worked and apples to apples is good enough for me right now and in light of our goal of doing a general year by year review of performance against a clear standard I do support the discussion and adding this to our agenda for next year.

Thank you.

End transcript

Theresa Labriola
Wild Oceans
06/10/2019 03:47 PM PDT

RE: Recommend International Management Activities

Please accept the attached letter on your recommendations for international management of highly migratory species, specifically Western and Central Pacific Ocean striped marlin and Pacific bluefin tuna.

June 10, 2019

Mr. Phil Anderson, Chair
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 101
Portland, OR 97220

RE: Agenda Item J.2. Recommend International Management Activities

Dear Chair Anderson and Members of the Council,

Thank you for the opportunity to submit these comments to the Pacific Fishery Management Council (Council) on your recommendations for international management of highly migratory species. Wild Oceans was founded 45 years ago with a mission to conserve highly migratory species, nationally and internationally, to ensure their long-term availability for sport fishermen and sustainable commercial fishing. The world's largest open-ocean predators are among the Pacific Ocean's most-threatened fish. On a global scale, the numbers of predatory fish have been drastically reduced by industrial fishing. Some, like Pacific bluefin tuna (PBT), are the object of determined recovery efforts, to revitalize fisheries and restore their vital role as keystone predators that maintain balance and diversity in marine ecosystems from the top down. Others, like Western and Central North Pacific Ocean (NP) striped marlin still hover at historically low numbers with little attention paid towards rebuilding.

When considering international priorities for 2019 at the Western and Central Pacific Fisheries Commission (WCPFC) and Inter-American Tropical Tuna Commission (IATTC), we encourage you to seize this once-in-a-generation

ocean conservation opportunity to support a rebuilding plan for NP striped marlin at the WCPFC and maintain the conservation and management measures for Pacific bluefin tuna at the IATTC and WCPFC.

Adoption of a NP Striped Marlin Rebuilding Plan That Considers and Accounts for the Needs of Recreational and Commercial Fisheries

We urge you to support one of the top U.S. priorities at the WCPFC: to adopt a rebuilding plan for NP striped marlin. According to the Stock Assessment Update for Striped Marlin in the Western and Central North Pacific Ocean Through 2013, "[t]he stock has been in an overfished condition since 1977, with the exception of 1982 and 1983, and fishing appears to be impeding rebuilding especially if recent (2007-2011) low recruitment levels persist."[1] The boundary of the NP striped marlin and Eastern North Pacific striped marlin stock is drawn as the waters of the Pacific Ocean west of 140°W and north of the equator.[2] However, Southern California's striped marlin transcend these boundaries. Studies indicate that striped marlin caught in Southern California are genetically linked to the NP striped marlin stock representative in Japan, Taiwan and Hawaii.[3] Despite the genetic exclusion of Southern Californian striped marlin from the rest of the eastern Pacific, tagging data indicate that striped marlin caught in Southern California move south into Baja California, Mexico, corresponding to cooling water temperatures off California.[4] Therefore, supporting a rebuilding plan for NP striped marlin may improve the availability of striped marlin to Southern California recreational fishermen.

We ask you to support a rebuilding plan that will recover the stock to a minimum of 20% SSB within 10 years, but encourage the U.S. to consider a greater, *optimum population size* that can support robust recreational fishing economies and cultures as well as a commercial fishery throughout the Pacific.

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[1] Stock Assessment Update for Striped Marlin in the Western and Central North Pacific Ocean Through 2013, Report of the Billfish Working Group, ISC, July 2015, p. 6.

[2] Id. at 4.

[3] Id. at 14.

[4] Id.

Specifically, we support a rebuilding target higher than 20% SSB that has been recommended and used as a reasonable proxy for B_{MSY} for tropical tuna stocks and North Pacific and South Pacific albacore. When we manage to B_{MSY}, recreational anglers often see a resource in trouble. Strong recreational fishing economies are built upon fishing opportunities that come with higher population levels. The concomitant economic, social and ecological benefits support a higher rebuilding target.

Without a more concerted effort to reduce the harvest effort, as we have seen with Pacific bluefin tuna, the NP striped marlin stock is likely to continue its fateful decline. When evaluating rebuilding strategies and conservation strategies for NP striped marlin, we offer the following additional considerations. First, years of research demonstrates that we can modify longline fishing operations to reduce striped marlin catches without unduly affecting catches of other target species. Alternatives might include changes to hook depth or configuration as well as time and area closures to protect juveniles or spawning striped marlin. Second, we support requiring post-capture handling and release methods to reduce the mortality of discarded fish including juveniles. Recent research shows high post-release survivability for billfish released from longline gear, implying catch-and release as a viable management option that protects parental biomass and the fishery. [5] By identifying and supporting these conservation measures, the US can help turn WCPFC management goals into management successes.

Maintain the Current Pacific Bluefin Tuna Management Measures

Recognizing that Pacific bluefin tuna hovers at historically low levels of spawning stock biomass (3.3% SSB based on the 2018 assessment) and that the stock remains in a rebuilding phase, we urge you to continue your support for the current conservation and management measures for Pacific bluefin tuna at the IATTC and WCPFC. We caution against increasing the annual catch limits until we reach the initial, agreed upon rebuilding target just shy of 7% SSB or

[5] Michael K. Musyl, Christopher D. Moyes, Richard W. Brill, Bruno L. Mourato, Andrew West, Lianne M. McNaughton, Wei-Chuan Chiang, Chi-Lu Sun. 2015. Postrealease mortality in istiophorid billfish. Canadian Journal of Fisheries and Aquatic Sciences. 72(4): 538-556.

41,000mt. Increasing the catch at this time is a risky endeavor. Any perceived increase in recruitment will not translate into increased spawning stock biomass for four to five years. We urge the United States to wait until we see an initial recovery of the spawning stock in a stock assessment before supporting an increase in catch.

We also support the development of a catch documentation scheme (CDS) for Pacific bluefin tuna. CDS are global traceability systems that certify a unit of legal catch, providing a catch certificate and then tracing the catch through trade into the end market. CDS were originally implemented to provide market surety of the legitimacy of the catch of high value species such as Patagonian toothfish and Atlantic bluefin tuna. However, CDS can be used to support the implementation of conservation and management measures, such as those to promote rebuilding and prevent overfishing. Accordingly, we support a CDS for PBT that accounts for the amount commercial bluefin *caught* and *landed* as well as *discarded* in order to ensure compliance with strict international catch limits meant to rebuild the stock in a timely manner.

As recreational fishermen who want to promote a broad, ecosystems approach to fisheries management that reflects our expanding circle of concern for all marine life and the future of fishing, we hope the US will support these precautionary management measures that will help rebuild these important recreational species to a level that can support strong recreational fisheries and economies and maintain their role in the open-ocean ecosystem.

Sincerely,

Theresa Labriola
Pacific Program Director

Ben Enticknap
Oceana
06/10/2019 03:55 PM PDT

RE: Drift Gillnet Performance Metrics Review

see attached letter submitted under J.1 (NMFS HMS report) and J.4 drift gillnet performance metrics

OCEANA Protecting the World's Oceans

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June 10, 2019

Mr. Barry Thom, West Coast Regional Administrator
National Marine Fisheries Service
1201 NE Lloyd Boulevard, Suite 1100
Portland, OR 97232

Mr. Phil Anderson, Chair
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 101
Portland, OR 97220

RE: Agenda Items J.1 NMFS Report and J.4 Drift Gillnet Performance Metrics Review

Dear Mr. Thom, Chair Anderson and Council members:

Several years ago, in recognition of continued bycatch concerns raised by the public and state and federal elected officials, the Pacific Fishery Management Council (Council) expressed its intent to transition the California large-mesh drift gillnet swordfish fishery using tools available to it under the Magnuson-Stevens Fishery Conservation and Management Act (MSA). In September 2015, the Council acted to create a new management framework for this fishery designed to minimize and avoid bycatch, set clear standards and accountability, and incentives to change fishing behavior. This included hard caps for nine marine mammals and sea turtles that are endangered and/or had low potential biological removals, performance objectives for finfish and other marine mammals, the removal of the unobservable vessel exemption, and direction to achieve 100% fishery monitoring in 2018.[1] The National Marine Fisheries Service (NMFS), however, contravened the will of the Council by failing to implement hard caps and observer coverage recommendations.

Today the fishery continues to operate without full accountability. Observer coverage has consistently remained below the 30% target first identified by NMFS in 2011[2], and significantly below the 100% level recommended by the PFMC in 2015 (figure 1). The fishery has failed to achieve bycatch performance metrics each year since they were adopted without consequence. The fishery largely operates without Annual Catch Limits due to international exemptions. NMFS withdrew the proposed hard cap rule, which violated the Administrative Procedure Act and the MSA.[3]

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[1] PFMC 2015. Council meeting record, September 11-16, 2015. Available: http://www.pcouncil.org/wp-content/uploads/2015/12/September_2015_Final_CouncilMtgRecord.pdf
[2] NMFS 2011. U.S. National Bycatch Report, first edition, at 359. Available: https://repository.library.noaa.gov/view/noaa/4361
[3] *Oceana v. Ross.* (October 24, 2018) U.S. District Court of Central California District of California. Available: http://usa.oceana.org/sites/default/files/593/oceana_drift_gillnet_case_ruling.pdf

The failure to establish a new framework for the drift gillnet fishery that moves forward toward responsible management with minimal bycatch has spurred state and federal lawmakers to act. In 2018 California passed legislation (Senate Bill 1017) to implement a transition program whereby state drift gillnet permits will be phased out over a four year period, and drift gillnet fishermen will be financially compensated if they voluntarily to turn in their nets and permits. Federal legislation (Driftnet Modernization and Bycatch Reduction Act; S. 906 and H.R. 1979) has also been introduced to phase out the use of indiscriminate large mesh driftnets like the ones used target swordfish off the coast of California.

While the Council and NMFS discuss drift gillnet management, we offer the following observations and recommendations:

1. The priority of the Council and NMFS should be to authorize deep-set buoy gear for targeting swordfish; switching from unselective drift gillnets to clean gear will prevent deadly interactions with marine mammals and sea turtles that occur with drift gillnets.

2. NMFS must issue a final hard cap rule as proposed by the Council in September 2015. If NMFS desires to revise the proposed rule, however, then we support scheduling consultation for the September Council meeting. We urge the Council to reaffirm its September 2015 decision in any such consultation, and further describe how it is consistent with federal law, as per previous reports and statements by the States of California (attached) and Washington.[4] The time and resources put into developing the hard cap regime represented years of effort and stakeholder input. The decision made by the Council at that time must be respected in order to uphold the integrity of the Council process.

3. NMFS must implement the Council recommendations for 100% monitoring of the DGN fishery and remove the unobservable vessel exemption by requiring all vessels to carry an observer when requested as a condition of maintaining their federal permit. In June 2018, the Council reaffirmed its preferred alternative for 100% monitoring adopted in September 2015.[5]

4. In March 2018 NMFS stated that the Protected Resources Division was developing a new Biological Opinion on the drift gillnet fishery by Spring of 2018 which would include a new analysis on potential observer bias using vessel monitoring system data to analyze if unobserved trips fish in different areas than vessels with observers.[6] NMFS also reported it was conducting an electronic monitoring (EM) study of the drift gillnet fishery. The Council should request the findings of the NMFS EM study and an update on the timeline for a new Biological Opinion including an analysis of the observer effect.

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[4] WDFW 2019. Agenda Item J.C Supplemental WDFW Report 1. Available: https://www.pcouncil.org/wp-content/uploads/2019/02/J1c_Supp_WDFW_Rpt1_Hardcaps_MAR2019BB.pdf
[5] PFMC 2015. Available: https://www.pcouncil.org/2015/09/38641/california-large-mesh-drift-gillnet-fishery-management-final-preferred-alternatives/
[6] NMFS 2018. Available: https://www.pcouncil.org/wp-content/uploads/2018/03/I1a_Sup_NMFS_Rpt3_Draft_Increased_Monitoring_Analysis_031218_Mar2018BB.pdf

With respect to the review of performance metrics:

5. Whether to set performance metrics using ratio estimation or regression tree methodology is unnecessary with 100% monitoring.

6. To date bycatch performance metrics have been entirely ineffective; finfish and/ or marine mammal metrics have been exceeded each year since implemented. The only action taken by the Council in response to these exceedances has been to revise the methodology for setting performance metrics and estimating bycatch and, additionally the Council has attempted to remove California sea lions, northern elephant seals and smooth hammerhead sharks – a CITES listed species[7] – from the list of performance metric species. The removal of these species occurred without public notice that the Council was considering revising the list of species, after the bycatch performance metrics were exceeded, and without any legitimate rationale.

7. In the 2018-19 fishing year the fishery caught an estimated **15 smooth hammerhead sharks** and **15 megamouth sharks**, exceeding the annual performance metric of four hammerhead sharks and two prohibited shark species, respectively, using the ratio estimation method. Smooth hammerheads are the only species of hammerhead shark caught in the DGN fishery during the base period of 2004-2013, so the Council clearly intended them to be included in the list of performance metric species.

8. We request the Council maintain consistency with its current performance metric approach and intent:
    a. Use the same base period of 2004-2013 to establish new performance metrics;
    b. Maintain the original list of species as adopted by the Council in 2015, including smooth hammerheads, California sea lions, and northern elephant seals.
    c. Use the 10-year high annual regression tree estimates over this period as the performance standard (see table 1, attached);
    d. Evaluate the fishery performance every two years based on current annual regression tree estimates;
    e. Reaffirm the Council's original intent that a single year of exceeding the performance metrics is the trigger for considering implementation of additional management measures. If the Council chooses to use a multi-year average to assess performance standards, the performance standards must be set based on the 10-year average, not the 10-year maximum bycatch level for each species.
    f. Establish an automatic mechanism through which exceeding any single performance metric triggers the HMSMT to develop and provide to the Council for immediate consideration a range of alternative management measures to ensure bycatch does not exceed performance metrics.

One hundred percent monitoring of the drift gillnet fishery – as repeatedly recommended by the PFMC - will provide the most accurate picture of the impact of the fishery on non-target species and will eliminate the management uncertainty in bycatch rates, particularly for rare species.

[7] In 2013 five shark species—oceanic whitetip; porbeagle; and great, scalloped, and smooth hammerhead sharks—and two species of manta ray were added to Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

Even with implementation of the Pacific leatherback and loggerhead conservation areas and numerous gear requirements such as acoustic pingers, this fishery continues to have one of the highest bycatch rates in the country. The discard rate since implementation of the Pacific Leatherback Conservation Area in 2001 is 60%,[8] and the fishery continues to take rare and endangered species.[9] Ultimately, we request NMFS and the PFMC work to transition this fishery consistent with the approach and timeline established in California SB 1017. Until that occurs, actions to increase accountability in this fishery and further reduce bycatch must be taken including hard caps, 100% monitoring and effective and enforceable performance metrics.

Sincerely,

Ben Enticknap
Pacific Campaign Manager and Senior Scientist

Attached: CDFW (June 12, 2017). Statement in response to NMFS' decision to withdraw proposed regulations on drift gillnet hard caps in the swordfish fishery.

[8] NMFS Observer Program Data 2001-2019. http://www.westcoast.fisheries.noaa.gov/fisheries/wc_observer_programs/sw_observer_program_info/data_sum m_report_sw_observer_fish.html

[9] Carretta, J.V., J.E. Moore, and K.A. Forney. 2018. Estimates of marine mammals, sea turtles, and seabird bycatch from the California large-mesh drift gillnet fishery: 1990-2016. NOAA PSRG-2018-07 12 February 2018.

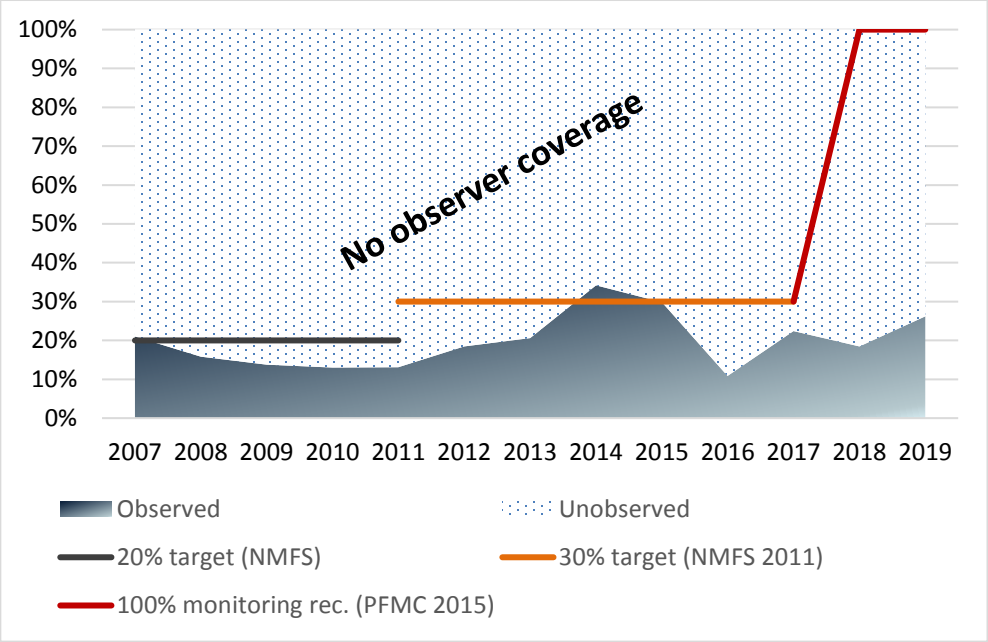

Figure 1. Percent observer coverage in the California large mesh drift gillnet fishery compared to target level observer coverage, 2007 to 2019. The 30% target level was recommended by NMFS in 2011 (see footnote 2) and then again by the PFMC in September 2015 when the Council recommended that NMFS maintain a minimum 30% observer target and 100% monitoring by 2018.

*Marine Mammal and Sea Turtle Performance Metrics for Use in Annual Determination**

Species	Recommended metric: Highest 2004-2013 serious injury/ mortality estimate	Notes
Minke whale	1.1	
Short-beaked common dolphin	57.7	
Long-beaked common dolphin	5.6	
Risso's dolphin	2.9	
California sea lion	57.2	*Pinnipeds not considered as part of the regression tree method in September 2018 PFMC motion, if not this, continue to use estimation method.*
Northern elephant seal	4.2	
Northern right whale dolphin	8.1	
Gray whale	2.1	
Pacific white-sided dolphin	9.2	
Sperm whale	2	*hard cap species*
Humpback whale	0.2	*hard cap species*
Fin whale	0.3	*Hard cap species*
Short-finned pilot whale	1.3	*hard cap species*
Bottlenose dolphin	4.2	*hard cap species*
Leatherback sea turtle	1.9	*hard cap species*
Loggerhead sea turtle	1.2	*hard cap species*
Olive Ridley sea turtle	0	*hard cap species*
Green sea turtle	0.3	*hard cap species*

Table 1. Recommended marine mammal and sea turtle performance metrics based on regression tree methodology and highest Serious Injury/Mortality estimates, 2003-2013 as in Carretta et al. 2018.[10] To date no regression tree analyses is available for finfish species with performance metrics: Billfish (non-swordfish, prohibited sharks (megamouth, basking, white), hammerhead sharks and manta ray. If a single year's estimated SI/M exceeds these values, the performance metric is considered exceeded, triggering immediate development, consideration, and adoption of management measures to prevent it from being exceeded in the future.

[10] Carretta, J.V., J.E. Moore, and K.A. Forney. 2018. Estimates of marine mammals, sea turtles, and seabird bycatch from the California large-mesh drift gillnet fishery: 1990-2016. NOAA PSRG-2018-07 12 February 2018.

June 12th 2017
Transcript of Marci Yaremko, California Department of Fish and Wildlife (CDFW)
June 2017 Pacific Fishery Management Council Meeting

Regarding the National Marine Fisheries Service (NMFS) report on the withdrawal of a proposed rule implementing hard caps for the California drift gillnet swordfish fishery.

Transcribed from Pacific Fishery Management Council audio file: 6-12-17pm1Copy.mp3, at 1:30. Audio file available at ftp://ftp.pcouncil.org/pub/R1706_June_2017_Recordings/

Thank you Mr. Vice Chair, and thank you for the time to address the Council on this important issue to California. It's our view that NMFS, and the Council, and the fishery lost an opportunity here. Thanks to all on the Council [Pacific Fishery Management Council], and all in the audience for your time on this issue and I appreciate the chance to express disappointment with the decision on behalf of the state.

This Council expressed its intent to change management of this fishery using tools available to us under Magnuson to create a new framework to move this fishery forward. Many are asking what comes next after this decision is made and we heard a lot in testimony. The answer that I thought I might give before doesn't appear to be viable. I wanted to see the fishery itself, have an opportunity to achieve the standards we imposed, perhaps to receive MSC [Marie Stewardship Council] or some other green label certification for performing within our standards and the chance to develop new markets as a result. And I wanted the Council to have a solid basis to look at next steps and other new and innovative approaches to redevelop the West Coast swordfish fishery with this gear. We had that pathway forward and now I just feel like the road fell out from under us and we're stuck in a sinkhole.

There were a number of reasons for the Council's recommendations on hard caps and as Michelle [Michele Culver, WDFW] artfully explained just a second ago, NMFS appears to have chosen to consider only one of them. What the additional protections would have afforded was benefit to the ESA [Endangered Species Act] listed marine mammals and turtles. The policy and social reasons for the rule apparently were not considered or were considered and dismissed. And yet, those reasons are strongly embedded in our MSA [Magnuson Stevens Fishery Conservation and Management Act] framework in our National Standards.

It is the Council's job to consider these elements when balancing competing interests to help us make difficult decisions and we did. The rule would have established a Bright Line Standard, one that when crossed would shut the fishery down just in the same way we manage our other fisheries domestically with applications of ACLs [annual catch limits] and accountability measures. Everyone - the public, the government, NGOs, and the fishermen themselves - are acutely aware of what the limits are and what happens when you exceed them. Yes, there is a TRT [take reduction team] process that gets in swing when PBR [potential biological removal] and ITS [incidental take statement] limits are exceeded and groups of scientists and representatives get together to talk but there's no immediate action that results. It's just a series of meetings, plans and negotiations that precede the development of new federal

rules designed to mitigate the consequences; actions, which often take years to fully develop and implement.

Equally important as the Bright Line Standard, some of you have mentioned this already, was the Council's goal in changing behavior with this rule. It was a way to ensure this fleet would take accountability for its actions and force operators to think before making a set to ensure that the risk of entanglements are low. NMFS has implemented hard caps in other fisheries under its jurisdiction, notably including the Hawaii longline fisheries for swordfish. It is pretty clear that those fisheries have maintained if not improved economic viability as landings from that fishery seem to be on a steep upward trajectory into California ports in recent years.

The administrative record will also show that the Council on its consideration of hard caps deliberately considered the potential economic impacts of the rule and if anyone looked at the record, the Council initially proposed hard caps that were only for one year in duration, rather than two. Our recommendation was refined following industries' unequivocal statement to us that a measure that invoked a one and done management response made the costs associated with gearing up to fish for a season too prohibitive. The Council considered that input and made adjustments such that the recommendation included cap levels that all had numbers greater than one animal and hence, we recommended the two year rolling cap alternative.

Meanwhile on the other side of the Sustainable Fisheries Division house- in the groundfish world, apparently a different standard is applied when viewing Council recommendations and prospective economic harm to individuals. As I think we all recall in the IFQ [individual fishing quota] program, if an individual exceeds their allowable individual quota level, they are immediately shut down and not allowed to re-enter the fishery until they can cover their overage, which can take years depending on the amount of overage and the cost. And during that time, they are not allowed to participate in any other federal groundfish fishery. The Council and NMFS stood firmly behind those rules and it has been clear that exceeding those limits has consequences. Nor have we deviated from that approach.

In the six years since the IFQ program's been in effect, three vessels have had lighting strikes and have had to leave the fishery. Despite requests for the Council to reconsider its position on the consequences of exceeding a quota limit and trying to find a way for those vessels to re-enter the fishery, the Council and NMFS stood firm. I hadn't forgotten the testimony we heard from Jeff Lackey when his vessel accidentally made a disaster tow with overfished rockfish, and the resulting consequences of that fish leaving the fishery, and last I checked they are still trying to pay down their debts on the overage. The negative economic consequences to these vessels is likely greater than what it would be seen on the entire drift net fishery where a hard cap effectively to close the DGN [drift gillnet] fishery.

So I have trouble understanding how NMFS can use two different sets of standards when it comes to economic harm. I also take issue with the statement that the participants in the DGN fishery do not have other viable alternatives. California fishermen rarely rely on one fishery for their sole source of income, but instead participate in multiple fisheries as part of their fishery portfolio in business plans. I haven't had the chance to review the 106 page final Environmental Assessment that was released after the

Council meeting started but I will do so. I will be paying close attention to the discussion of alternative fisheries available to the DGN fishermen upon a closure resulting from a hard cap attainment.

I don't recall CDFW being consulted on that analysis on that state managed fisheries opportunity, particularly fisheries that fall under the authority of the state's general gillnet permit. This permit is not specific to any fishery target, but it is required for the use of gillnet gear so all of the current DGN permittees have this state issued permit. These fisheries for California halibut, white seabass and angel shark are worth millions of dollars annually. The state requires DGN permittees to concurrently hold this permit so I am perplexed why NMFS doesn't consider this a viable alternative fishery to participate in should the DGN fishery close due to the attainment of a hard cap.

Moreover, I recall our DGN advisors from the Advisory Subpanel actually recommended a mitigation measure to the Council should hardcaps be attained. They suggested to us that in the event a cap was attained, the alternative of being able to fish using buoy gear might be an approach to mitigate the effects of the closure. While the council didn't take that up in its development of its FPA and its recommendations to NMFS, as far as I am aware, that recommendation is still a viable one that NMFS could have maybe considered putting back before the Council, before withdrawing the proposed action.

NMFS reported to us today on plans to implement the Council's recommendation for a 100% monitoring of the DGN fishery, which was the second part of the council's September 2015 motion. There is vagueness and uncertainty in the proposed rulemaking, which would include the rule to remove the unobservable exception that is currently applicable to DGN vessels. My discomfort is growing that this recommendation will be effective by regulation by next year. It's feeling more and more like NMFS is saying like it's only going to implement the HMS recommendations from the Council that it likes, such as the limited entry drift net permit.

The DGN fishery is a California fishery. We understood that the Council process was [the] venue for the state to provide management guidance on fishery activities originating out of and returning to California ports. CDFW has participated and contributed to discussions and developed management strategies and plans in the spirit of co-managing these fishery resources off our coast. The HMS FMP [Highly Migratory Species Fishery Management Plan] has been around for well over a decade now, yet we've only made a few amendments to the plan. Mostly administrative in nature and as required by NMFS for reasons such as compliance with the latest national standard and the omnibus amendment to include unmanaged forage fish protections and we'll take up the housekeeping amendment agenda item next.

Meanwhile the Council, its members, the stakeholders, NMFS staff and the public continue to invest millions in the Council process to support management under the HMS FMP. What I have to ask is what the point of all of that is and what is there to show for it other than a growing list of disapprovals and subliminal messages of, "no we can't"?

I thought the goal was to actively manage HMS under authority of the MSA but instead the letter from NMFS to the Council just encourages us to continue to participate in the TRT process if we wish to develop measure to reduce probability of marine mammal entanglement in the DGN fishery.

So after several years of investment in the HMS planning and Council process it just seems there's not much interest in doing much to regulate the fishery under MSA so I will just wrap this up with a few questions.

What is the value of the plan if we can't do anything under its authority? And how does NMFS justify applying different standards to West Coast fisheries under its jurisdiction regarding expected economic impacts of regulations?

And maybe just to end on a little brighter note: I would like to offer a comment on the management team report regarding the performance objectives and thank the management team for that analysis. The table shows the fishery largely attained our standards with just one exception and I'd like to thank the management team for reminding the Council what the goal is with our annual review of the standards, which is to evaluate if bycatch or protected species interaction levels are consistently at a level higher than one of the performance objectives the Council could consider whether additional management measures are necessary to minimize bycatch or reduce protected species interactions in the fishery. I guess I'd like to just note that in my view this simple and low workload analysis worked and apples to apples is good enough for me right now and in light of our goal of doing a general year by year review of performance against a clear standard I do support the discussion and adding this to our agenda for next year.

Thank you.

End transcript

Bud Harder
Ocean Friends Against Driftnets
05/23/2019 04:30 PM PDT

RE: Drift Gillnet Performance Metrics Review

This driftnet fishery is a disgrace to our country. California is environmentally friendly except for this! Any other way to catch a swordfish is better than this. It shows a bad example to the rest of the world and the rest of our country! CLOSE IT DOWN, PLEASE!!!!!

John Harder
Pacific Albacore Trollers Accociation Intl.
05/23/2019 04:14 PM PDT

RE: Drift Gillnet Performance Metrics Review

Shut this disgraceful fishery down!!! Driftnets have killed our "high seas" albacore fishery, and the reason of our coastal fishery's decline. Please join the rest of the world in eliminating the "walls of death" from our Oceans! Noaa & NMFS, cant make chicken soup out of chicken poop just for a handful of greedy fisherman. Shut it down!!!

Theresa
Labriola
06/10/2019 03:49 PM PDT

RE: Drift Gillnet Performance Metrics Review

Please accept Wild Oceans attached comments on the drift gillnet fishery annual bycatch performance metrics.

June 10, 2019

Mr. Phil Anderson, Chair
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 101
Portland, OR 97220

RE: Agenda Item J.4. Drift Gillnet Fishery Performance Metrics

Dear Chair Anderson and Members of the Council,

Thank you for the opportunity to provide comments on drift gillnet fishery (DGN) performance metrics. Wild Oceans was founded by recreational fishermen more than 45 years ago, and we have dedicated much of our work to advancing best fishing practices in commercial fisheries, such as:

- low bycatch of non target species, and
- live release of incidentally-caught or undersized fish.

We continue to support taking an annual look at the bycatch in the drift gillnet fishery and thank the Council for scheduling this item. We consider this annual review of the performance metrics a report card. The Council has set a passing grade as the highest level of interaction over a 10-year timeframe, and if the fishery fails to meet this passing grade, that triggers a discussion of remedial action.

The Highly Migratory Species Management Team Should Provide A Timely Annual Assessment Of DNG Fishery Bycatch

Unfortunately, **the Highly Migratory Species Management Team (HMSMT) has not yet proved a report of bycatch for the 2018/2019 fishing season using either the regression-tree methodology or the ratio-estimator. They have also not provided a report on the retention rate performance metric.** It is unclear whether they will provide any bycatch data to the Council in June for the 2018/2019 fishing season. Whether the Council chooses to review the DGN fishery bycatch vis-a-vis the regression-tree performance metrics[1] and regression-tree bycatch estimates or the ratio-estimated performance metrics (as it adopted in 2015) and ratio-estimated bycatch estimates, should depend, in part, on whether the data can be presented in a timely fashion for the Council to review.

Looking at the summary of observer records available for 2018/19 (Attachment 1), we continue to see a disturbing trend. During the 2018/2019 fishing season, National Marine Fisheries Service (NMFS) observed 26 percent of the DGN fishery sets and reported the catch of *four megamouth sharks*, a prohibited species under the Highly Migratory Fishery Management Plan. Even without extrapolation, the fishery exceeded the annual performance metric of *two megamouth sharks*. More megamouth sharks were observed caught in the DGN fishery in 2018/2019 than in other year for which observer data is available.[2]

This is part of a broad drift gillnet fishery pattern. Each year, for the past three years, the fishery has exceeded a performance metric (the highest rate of interaction over a ten-year period) for at least one species. This reinforces that once the net is set in the water, anything larger than the mesh is caught.

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[1] In September 2018, the Council tasked the HMSMT with developing metrics using the regression tree method. The HMSMT has not yet provided proposed metrics using the regression tree methodology. Potential regression tree performance metrics have not been reviewed by the Scientific and statistical Committee.

[2] NMFS West Coast Region Observer Program Data Summary & Reports, California/Oregon Drift Gillnet Fishery Catch Summaries, *available at https://www.westcoast.fisheries.noaa.gov/fisheries/wc_observer_programs/sw_observer_program_info/data_summ_report_sw_observer_fish.html*

The Council Should Continue To Minimize DGN Fishery Bycatch

In September 2018 and again in March 2019, the Council tasked the HMSMT with developing a proposed process, including potential bycatch reduction measures, that the Council would consider if the fishery is not performing within such metrics. **However, the HMSMT has not yet provided any recommendations for specific management approaches for the Council to take should the fishery reach a performance metric.** This can be used as an opportunity to examine the cause of a spike in bycatch, whether oceanographic, behavioral or other, and to identify whether and what management action can minimize bycatch.

We should continue to try to minimize DGN fishery bycatch. Potential management measures can be consistent with an evaluation of the causes of bycatch and a decision on whether to take management action. For example, in March 2019, the HMSMT suggested that "any effort to develop bycatch reduction measures should begin with an assessment of the reasons for the increase in bycatch. For any species in question, a number of factors may affect BPUE, including but not limited to (1) changes in the timing or location of fishing effort; (2) variation in environmental factors that influence the presence or absence of the bycatch species; (3) changes in the overall abundance of the bycatch species; (4) changes in the fishing gear; (5) changes in how the gear is fished."[3] We suggest the HMSMT consider the following proposed management measures which coincide with these potential factors: time area closures, bycatch limits, gear modifications, gear deployment modification, or requiring use of EcoCast or similar technologies.

In March 2019, the HMSMT noted "that DGN bycatch mortality as a share of total human-caused mortality for any of the included species should be considered before deciding whether to undertake bycatch reduction measures. Attempting to reduce or eliminate bycatch for species where DGN bycatch has minimal population mortality impacts may be unnecessary." This suggestion is antithetical to our mission of striving for the most sustainable fisheries possible.

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[3] Supplemental Highly Migratory Species Management Team Report 1, Agenda Item J.3.a, March 2019, *available at https://www.pcouncil.org/wp-content/uploads/2019/03/J3a_Supp_HMSMT_Rpt1_MAR2019BB.pdf*

This requires considerations beyond the Council's knowledge or control and ignores the Council's mandate to minimize bycatch.

The Council Should Continue To Evaluate The Annual DGN Fishery Bycatch

In September 2018, the Council tasked the HMSMT with comparing a single estimate within a year with a multi-year trend to measure performance in the DGN fishery. **The HMSMT has not yet provided this comparison for Council public comment or review.** Likewise, the SSC has not yet had the opportunity to evaluate the efficacy of a yearly vs multi-year performance indicators. While pooling of years can help smooth inter-annual variability in rare event observations, the purpose here is different. Single year estimates will help to identify an oceanographic or fishery change that caused a flux and allow the Council to take necessary steps to modify the fishery. Long-term trends can be added as an additional metric.

The Council Should Consider Adding Regulatory Discards To The Annual DGN Fishery Bycatch Report

Wild Oceans goal is to monitor and reduce DGN fishery bycatch and bycatch mortality and the negative impact on the open ocean ecosystem in order to preserve fishing opportunities for the future. Given this, we ask the Council to task the HMSMT with reporting annually on regulatory discards, specifically Pacific blueing tuna (PBT). The current regulations provide a 2mt DGN fishery trip limit for PBT. The observer data shows a marked increased in PBT, but does not report any discarded tuna. The information on annual catch and discard is available from NMFS. Understanding whether and how much PBT is caught and discarded in the DGN fishery will help the Council and the public to better evaluate the impact of the DGN fishery trip limit on the recovering PBT population and to make recommendations for future trip limit modifications and future domestic management of PBT catch limits.

In summary, the HMSMT has not provided the Council with much of the information requested and required to evaluate the DGN fishery bycatch performance. The lack of timely information hinders the Council's ability to manage the DGN fishery, efficiently conduct Council business, and meet the Council standard of "emphasizing public participation and involvement in fisheries management." For these reasons, we ask you to consider reassigning the HMSMT with the following tasks for September 2018 and for each June thereafter, to ensure the Council receives a timely assessment of the DGN fishery bycatch:

- Provide annual DGN fishery bycatch and performance metrics for the most recently completed fishing season for 22 species of non-ESA-listed marine mammals and finish as outlined in the Council's September 2015 motion using the *ratio-estimator*.

- Provide annual DGN fishery bycatch and performance metrics for the most recently completed fishing season for 22 species of non-ESA-listed marine mammals and finish as outlined in the Council's September 2015 motion using the *regression-tree analysis*. If the regression-tree analysis is not available for the most recently completed fishing season, provide information for the prior fishing season.

- Provide DGN fishery catch and bycatch of Pacific bluefin tuna.

Sincerely,

Theresa Labriola
Pacific Program Director

NMFS West Coast Region Observer Program
Observed Catch - 2018/2019 Drift Gillnet Fishing Season
May 1, 2018 through January 31, 2019

This table summarizes the total catch and final disposition, by species, of all fish, marine mammals, sea turtles, and seabirds observed caught in the California drift gillnet fishery during the 2018/2019 fishing season. Data were collected at sea by contract observers, and represent a total of 124 sets. Estimated total fishing effort for the season is 473 sets.

	Total	Number	Number Returned			Number	Catch per
Species	Caught	Kept	Alive	Dead	Unknown	Damaged	100 Sets
Swordfish	536	536	0	0	0	22	432.26
Common Thresher Shark	64	62	0	2	0	0	51.61
Striped Marlin	2	0	0	2	0	0	1.61
Shortfin Mako Shark	95	85	1	9	0	0	76.61
Blue Shark	30	0	2	23	5	0	24.19
Bigeye Thresher Shark	9	4	0	5	0	0	7.26
Megamouth Shark	4	0	4	0	0	0	3.23
Smooth Hammerhead Shark	4	0	0	4	0	0	3.23
Salmon Shark	2	0	0	2	0	0	1.61
Unidentified Shark	1	0	1	0	0	0	0.81
Pelagic Stingray	24	0	22	0	2	0	19.35
Bat Ray	16	0	15	1	0	0	12.90
Mobula	4	0	3	1	0	0	3.23
Unidentified Ray	1	0	0	1	0	1	0.81
Skipjack Tuna	239	211	0	28	0	14	192.74
Bluefin Tuna	203	203	0	0	0	12	163.71
Yellowfin Tuna	11	11	0	0	0	1	8.87
Pacific Mackerel	56	4	3	48	1	0	45.16
Pacific Bonito	21	7	1	13	0	0	16.94
Bullett Mackerel	20	19	0	1	0	1	16.13
Common Mola	284	1	277	4	2	0	229.03
Opah	127	127	0	0	0	6	102.42
Slender Mola	97	0	97	0	0	0	78.23
Pacific Pomfret	1	1	0	0	0	0	0.81
Yellowtail	1	1	0	0	0	0	0.81
Louvar	1	1	0	0	0	1	0.81
Pacific Hake	1	0	0	1	0	0	0.81
Unidentified Fish	6	0	0	6	0	6	4.84
Other Identified Fish	2	1	1	0	0	0	1.61
Unidentified Crustacean	1	0	1	0	0	0	0.81
Short Beak Common Dolphin	5	0	0	5	0	0	4.03
Unidetified Dolphin	1	0	0	1	0	0	0.81
California Sea Lion	2	0	0	2	0	0	1.61

Alexis Jackson, Ph.D.
The Nature Conservancy
06/07/2019 01:29 PM PDT

RE: Deep-Set Buoy Gear Authorization

Please see the attached comments from The Nature Conservancy on Agenda Item J6.

The Nature Conservancy
Protecting nature. Preserving life.™

CA Oceans Program
99 Pacific Street, Suite 200G
Monterey, CA 93940

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nature.org
nature.org/california

June 10, 2019

Mr. Philip Anderson, Chair
Pacific Fishery Management Council
1100 NE Ambassador Place, #101
Portland, OR 97220

RE: Agenda Item J.6.a, DSBG Authorization/Biological Impact Analysis

Dear Chairman Anderson and Council Members,

The Nature Conservancy (TNC) supports the use of on-the-water experimentation to explore long-term sustainable harvest options in the U.S. west coast swordfish fishery. As the Pacific Fishery Management Council (the Council) and the National Marine Fisheries Service (NMFS) move closer to authorization of this promising new gear (i.e., deep-set buoy gear [DSBG]), there is a tremendous opportunity to advance marine conservation and fishery management efforts on the west coast, while informing global efforts to mitigate incidental capture of vulnerable species in swordfish fisheries around the world.

Given promising initial results confirming the continued low bycatch nature of the gear, the Council should move forward with selection of its final preferred alternative, as scheduled for the September 2019 meeting. The Council plans to review the range of alternatives and updated analyses on DSBG and to provide guidance to further inform gear authorization. We would like to highlight several aspects of the NMFS report (provided under Agenda Item J.6.a), as well as results from a preliminary analysis conducted by TNC in collaboration with the Southwest Fisheries Science Center (SWFSC), to inform Council progress.

As the Council reviews the NMFS report we would like to note two important conclusions and two areas for improvement. First, based on the analysis of SBG data, NMFS concluded that the majority of the catch consists of swordfish and bigeye thresher sharks. Trials to date suggest this trend holds for both configurations of DSBG (standard buoy gear [SBG] and linked buoy gear [LBG]), with more than 90% of the catch representing marketable species. Second, that the statistical power of analyses will continue to improve as more data are incorporated**.** As trials continue under Exempted Fishing Permits (EFPs), more data on the performance of both SBG and LBG will become available. Similarly, the research data sets from the Pfleger Institute of

Environmental Research (PIER) can also continue to be incorporated over the course of the NMFS regulatory process.

We do, however, have some concerns about NMFS' treatment of species with current low levels of interactions, as well as some of the assumptions of the analyses. To date, DSBG has had negligible interactions with protected species and no associated bycatch mortality. To use the loggerhead interaction as an example, a single interaction occurred as a result of improper gear configuration. It is important that NMFS is not extrapolating this data point in their analysis or for any other species, particularly if clear specifications in the regulations or terms and references of the permit use could significantly reduce any bycatch concern. Although it is more challenging to estimate the magnitude of rare-event catches of other finfish and protected species for the SBG and LBG data sets, the Council should also consider the role that key features of DSBG gear design and active tending requirements will continue to play in mitigating risk associated with unwanted bycatch interactions. Additionally, some of the assumptions of the analyses should be revisited. For instance, one of the assumptions was that the average effort per active vessel was 20.67 days per year. However, it is unclear what the variance is around this mean or how "active" vessels are defined.

TNC has also been collaborating with SWFSC staff to conduct a preliminary non-parametric analysis of the 2016-2019 PIER research sets, as well as the 2018-2019 PIER EFP data, for consideration by the Council. We continue to see tremendous value in analyzing both the research and EFP data sets in the draft environmental impact statement (DEIS), particularly to track the alignment of catch composition between the gear as scientifically intended to be fished and as practically fished by fishermen. Based on preliminary analysis of this combined data set, we found – 1) No significant differences in catch species composition between SBG and LBG for either the PIER research or EFP-user data, 2) No difference in expected catch and bycatch rates between SBG and LBG, and 3) No major differences between the data set provided by PIER researchers versus that provided by the EFP-users. Results align with findings from the NMFS report indicating "…there are no species caught using LBG that do not appear in the SBG data." Across these two data sets, the species assemblage is almost exactly the same for both gear configurations, and species composition shows minor differences, with higher swordfish catch rates in the EFP-user data set. Future analyses of catch composition will be more comprehensive and conducted using the full suite of available data.

As the Council and NMFS work to improve and finalize their analyses to assess biological impacts of DSBG, we urge the Council to consider the aforementioned results and provide the following recommendations:

- **Consider and evaluate all available data sources when analyzing biological impacts of deep-set buoy gear.** The current NMFS report only analyzes logbook data generated by EFP vessels. In addition to the EFP-user data, NMFS should also evaluate data generated by PIER researchers. Preliminary analyses suggest these data sets could be compiled. Furthermore, this data has already been provided to the NMFS' West Coast region for use and staff have now organized and stored all buoy gear datasets (PIER, EFP, and observer) into a single and accessible repodsitory. Given that PIER has led on

the design and testing of DSBG[1], as well as their contributions as an EFP manager and source of training, results from their trials can provide critical insights on gear performance. Incorporation of this additional data stream would increase the statistical power of any analyses conducted and reliability of any future estimates. The inclusion and analysis of multiple data streams is also consistent with past authorization processes conducted by NMFS (i.e. green-stick gear in the 2006 Consolidated Highly Migratory Species (HMS) Fishery Management Plan). Thus, considering all available data will better inform Council decision making.

- **Request that NMFS complete the biological impact analysis for LBG in the DEIS.** Although the current Council action is to authorize DSBG, which accounts for both gear configurations (SBG and LBG), there is no analysis provided for LBG in the NMFS report. Although NMFS has stated that "data for linked buoy gear (LBG) is not available for biological analysis at this time", the Council should encourage analysis of the PIER research sets (which are currently available), and inclusion of new logbook and observer data from the EFP sets from the 2018-2019 season, as they are made available. Analysis of these data streams provide an additional 266 sets of SBG and 123 sets of LBG and can significantly increase the statistical power and robustness of analyses conducted by NMFS.

As fishery managers, members of the Council will continue to be challenged with making informed management decisions using best available science and assessing desired levels risk in line with levels of uncertainty. Given the availability of multiple years of data, over 1,000 EFP and research sets available for analysis, alignment in catch composition between gear configurations, and the demonstrated low bycatch nature of the gear (especially relative to both those authorized within the current west coast swordfish fishery and among other west coast Federal fisheries), the Council should remain steadfast on their trajectory to vote to authorize this innovative fishing gear at the September 2019 meeting. We look forward to more thoughtful discussions of results of the preliminary DEIS, particularly the biological analysis of LBG and economic analysis. Thank you for the opportunity to provide public comment.

Sincerely,

Alexis M. Jackson, PhD
Fisheries Project Director
The Nature Conservancy
California Oceans Program

[1] Sepulveda, C.A., Heberer, C. and Aalbers, S.A., 2014. Development and trial of deep-set buoy gear for swordfish, *Xiphias gladius*, in the Southern California Bight. *Marine Fisheries Review*, *76*(4), pp.28-37.

Theresa Labriola
Wild Oceans
06/10/2019 05:00 PM PDT

RE: Deep-Set Buoy Gear Authorization

June 10, 2019

Phil Anderson, Chair
Pacific Fishery Management Council
70 NE Ambassador Place, Suite 101 Portland, OR 97220

Re: Agenda Item J.6 - Deep-Set Buoy Gear Authorization

Dear Chair Anderson and Council Members:

Wild Oceans has long advocated for universal best fishing practices, such as low bycatch of non-target species, live release of incidentally-caught or undersize fish, and cost-effective monitoring and enforcement. We continue to support authorization of deep-set buoy gear (DSBG) because it achieves these goals and brings local seafood to local markets. As you know, DSBG was developed after tagging research revealed that swordfish off California spend the majority of the day below the thermocline and away from many bycatch species. Initial Exempted Fishing Permit (EFP) effort showed a fishery with 98% marketable catch. Expanded EFP activity in 2018 resulted in similar high target species catch and low bycatch. Given this, we urger the Council to move forward with selection of a preliminary preferred alternative for authorization in September 2019, as scheduled.

The National Marine Fisheries Service provided the Council with a Report on Deep-Set Buoy Gear Authorization (NMFS Report) that provides a preliminary biological analysis. We are encouraged by the prediction of a fishery that

continues to catch a high percentage of marketable species. When reviewing the NMFS Report, we ask the Council to consider the following:

The NMFS Report uses data from EFP activity from 2015-2019 to report total catch for Standard Buoy Gear (SBG). NMFS uses these data to estimate catch rates, and used the rates to predict catch under the proposed alternatives. We urge NMFS to add linked buoy gear (LBG) EFP data to this summary. Preliminary data indicates that there are no species caught using LBG which do not appear in the SBG data. Furthermore, the Council is progressing with authorization of one gear, DSBG, with two configurations. Aggregating the data would give provide a clearer picture of the future of the fishery.

We also suggest NMFS include the SBG and LBG research data collected by the Pfleger Institute of Environmental Research (PIER). The PIER data similarly matches species composition of the EFPs. Using all available data will strengthen the analysis and help the Council to better understand the potential future of a DSBG fishery.

Regarding the estimates of catch rates, we urge the Council to support NMFS's use of the statistical approach based on Bayesian inference. This method was supported by the Scientific and Statistical Committee. While not predictive, it provides us with a statistically robust picture of the future of the DSBG fishery. This snapshot coincides with the Council's current experiences with the DSBG fishery operating with relatively low bycatch and high target catch.

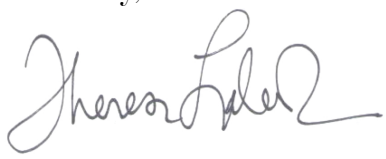
We thank NMFS for explaining that the projections for rare-event interactions, such as the loggerhead sea turtle, do not consider the impact of gear modifications made subsequent to the loggerhead interaction. In 2018, a loggerhead sea turtle was entangled in surface lines. In response, NMFS modified the DSBG EFP configuration to include shorter and stiffer surface lines. When evaluating the potential impact of DSBG on loggerhead sea turtles, the Council should consider the mitigation measures taken to modify the gear and the underlying gear design that keeps bait and hooks below the thermocline and away from sea turtles.

The biological analysis should clarify the use of the term "day fished". The term "day fished" has been defined elsewhere as a minimum of 8 hours of fishing effort or a minimum of 10 DSBG sets. The lack of clarity makes it difficult to compare the expectations and impacts of different alternatives.

While the draft biological analysis discusses uncertainty due to limited data and effort assumptions, this supports the Council's adoption of a preliminary preferred alternatively that incrementally builds participation in the DSBG fishery over a decade. This option provides the Council with an opportunity to authorize a DSBG fishery, yet pause the effort should the DSBG fishery encounter any unexpected biological or social conflict. Additionally, by starting the fishery with a smaller number of accomplished permit holders, we may be able to increase fisher cooperation and minimize social conflicts that arise when resources and fishermen aggregate in high traffic areas.

Authorizing deep-set buoy gear will allow an economically and ecologically successful swordfish fishery to thrive alongside the recreational fishery. We continue to support the Council's schedule for authorizing a limited entry fishery south of Pt. Conception composed of master anglers, re-evaluated biannually, that allows the Council to build an economically viable fishery while addressing unforeseen and unavoidable social and cultural conflicts.

Sincerely,



Theresa Labriola
Pacific Program Director