



OCEANA

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Agenda Item E.5.d

Supplemental Public Comment

November 2013

Protecting the
World's Oceans

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oceana.org

October 21, 2013

Ms. Dorothy Lowman, Chair
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 101
Portland, OR 97220-1384

RE: 2014 Pacific Sardine Management

Dear Ms. Lowman and Council Members:

Oceana continues to have grave concerns about the conservation and management of Pacific sardine. Pacific sardine are a highly valuable forage species in the California Current Ecosystem. It is clear that the sardine population is in a significant state of decline, if not a complete collapse. We look forward to seeing the updated assessment at this meeting, but what we have heard so far is disconcerting. Reports from scientists, managers, and industry at the September Pacific Fishery Management Council (PFMC or “Council”) Coastal Pelagic Species (CPS) advisory body meeting indicate there are no signs of significant recruitment,¹ the fishing industry did not find sardine off British Columbia, and catch in the fishery this year off California was dismal due to a lack of sardine. Given the continued decline of the Pacific sardine population, we request that:

1. The sardine fishery be closed via emergency regulation for the remainder 2013 (our June 2013 letter makes the same request)²; and
2. The fishery be closed for the first half of 2014 until a full management strategy evaluation can be completed, reviewed, and adopted by the Council; and any opening is contingent on a major increase in estimated biomass and recruitment.

The Council and National Marine Fisheries Service (NMFS) should focus on reviewing and updating the Pacific sardine harvest control rule and completing an updated stock assessment. In addition to the serious decline, the Council has not applied the appropriate temperature index (CalCOFI) in determining the harvest rate (FRACTION) for sardine management. Last June, information, which continues to be valid, was presented to the Council showing that the Scripps Pier-based FRACTION led to overfishing. It is also clear that the “sigma” value used to assess scientific uncertainty does not account for projection uncertainty, which is particularly important given that the Council is now making decisions using projections from the 2012 Assessment. This too must be revised. Before resuming the sardine fishery, we request that NMFS and the PFMC:

¹ PFMC. November 2012. Agenda Item G.3 B. Sardine Assessment Report. The 2012 sardine assessment found that the 2010 and 2011 year classes were the weakest in recent history.

² Oceana, June 2013. [Agenda Item I.4.d Public Comment](#)

1. Ensure the FRACTION parameter is based on the new CalCOFI temperature index (not Scripps Pier);
2. Direct the SSC to reevaluate the sigma value used to assess scientific uncertainty associated with the overfishing level and in setting the allowable biological catch, specifically with regard to uncertainty in F_{MSY} and projection uncertainty; and
3. Consider, evaluate, and adopt Oceana's proposed Pacific sardine harvest control rule, included in our June 2013 letter to the PFMC and NMFS, as a part of a full management strategy evaluation that considers changes to all parameters in the sardine harvest control rule (i.e. CUTOFF, DISTRIBUTION, FRACTION and MAXCAT).³

The 2012 stock assessment found that the Pacific sardine population declined 52% over the past six years.⁴ Recruitment is the lowest it has been in decades, coastwide exploitation rates have increased substantially in recent years, and the stock biomass is far below the "critical biomass" threshold ($SSB < 740,000$ mt) identified by NMFS sardine stock assessment scientists. NMFS scientists Zwolinski and Demer published a study last year in the Proceedings of the National Academy of Sciences forecasting this collapse and documenting the repeated failure of managers to respond.⁵ The authors concluded that:

[a]larming is the repetition of the fishery's response to a declining sardine stock - progressively higher exploitation rates targeting the oldest, largest, and most fecund fish.

The dearth of sardines is now having ramifications in the ecosystem as indicated by an unprecedented number of yearling California sea lions starving on the beach earlier this year.⁶ While some minor aspects of the 2012 Zwolinski and Demer publication were the subject of a rebuttal, the predictions in this study appear strikingly accurate, and the fundamental conclusions of the fishery's effect on the stock remain unchallenged. This year, catch in the fishery off California was seriously depressed, there were no sardine off Canada, and in the places it can find sardines in the Pacific Northwest, the fishery continues to focus on the oldest, largest, and most fecund fish. In their article, Zwolinski and Demer wrote that the prior collapse of the sardine population (1930s to 1950s) was characterized by:

1. Negative phase of the PDO;
2. Focus of the fishery on the oldest, largest, most fecund fish;
3. Decline of the sardine biomass below a critical level (critical biomass);
4. Shift in the dominant species and their schooling behavior; and

³ Id.

⁴ Hill et al. 2012. Assessment of the Pacific sardine resource in 2012 for U.S. Management in 2013. PFMC November 2012. Agenda Item G.3.b Supplemental Assessment Report 2.

⁵ 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.

⁶NOAA. California Sea Lion Unusual Mortality Event in California. <http://www.nmfs.noaa.gov/pr/health/mmume/californiasealions2013.htm>

5. Halt in the seasonal sardine migration.⁷

Many of the same observations are justified now, and we are experiencing similar oceanographic conditions.

Importantly, fishing pressure on this declining sardine population can have major and lasting impacts. Fishing pressure can accelerate the collapse of the sardine population and extend the time it takes to recover the population. During periods of significant decline, sardines are most vulnerable to fishing pressure. There is low recruitment and almost no “surplus” production; therefore, right now, any fishing is overfishing.

Our concerns cannot be resolved simply by adopting a more precautionary “P*” value when setting catch levels. It would be inappropriate to use P* to address known errors in the harvest control rule or the failure of sigma to account for known uncertainties. If the Council is aware of such errors, those errors should be fixed immediately before setting catch levels. Fundamental problems with the sardine harvest control rule including the temperature index used to set FRACTION, a flawed DISTRIBUTION parameter, and the extremely low CUTOFF must be addressed. Unless the updated stock assessment finds the sardine population has substantially rebounded, we request the fishery be closed the first half of 2014 and that the Council and NMFS focus efforts on developing an ecosystem-based CUTOFF value, a revised FRACTION, an accurate DISTRIBUTION parameter, and a revised sigma value.

Thank you for your time and consideration.

Sincerely,



Ben Enticknap
Pacific Campaign Manager and Senior Scientist

Attachments:

1. Leschin-Hoar, C. (2013, October 15). Lost at Sea: Fishers Can't Find Sardines and Climate Change May Be To Blame. Takepart.com. Accessed at: <http://www.takepart.com/article/2013/10/15/canadas-sardine-collapse-bad-news>
2. Pynn, L. (2013, October 15) BC sardine fishery collapse affects both economy and ecology. Vancouver Sun. Accessed at: <http://www.vancouversun.com/travel/Sardine+fishery+collapse+affects+economy+ecology/9036436/story.html>

⁷ Zwolinski and Demer. 2012. *Supra note 5*.

Lost At Sea: Fishers Can't Find Sardines and Climate Change May Be To Blame

Changing water temperatures, poor reproduction, and other factors weighed.

October 15, 2013

Clare Leschin-Hoar

The sardines off the western coast of Canada have completely disappeared.

No one knows exactly what has happened to the \$32 million commercial fishery, but what we do know is stunning: The region's sardine fishermen returned to port empty-handed after failing to catch a single fish according to a report Tuesday. Poof! Vanished. Gone.

Although you may not eat sardines on a regular basis, (though we think you should), the health of this tiny forage fish has had scientists worried for some time.

Sardines, along with anchovy and menhaden, form the base of the food chain for species that range from bluefin tuna to humpback whales to sea birds and dolphins. Forage fish are critically important to the aquaculture industry as well, where they're ground up, turned into fishmeal, and fed to popular species like farmed salmon.

Geoff Shester, a scientist with conservation group Oceana says they've been concerned about the Pacific sardine fishery for some time and warns that effects from a collapse could last for decades.

"This is about the entire Pacific coast including the U.S. and Mexico, not just British Columbia," says Shester. "If fishermen have stopped fishing because they've hit their quota, that's one thing. But they're stopping because they can't find any fish. That means fishery management is failing."

Indeed, Oceana isn't the only group worried. The collapse was predicted by prominent scientists who said ocean conditions—including a change in temperature—and poor reproduction rates are contributing to the sardines' decline.

At least one study has found that climate change is causing the geography of where fish are found to shift, which may be what we're seeing in Canada, too.

Fishing pressures on the ecosystem also play an important role. When sardines are in a productive cycle, they can be fished aggressively and their stock can withstand it, while leaving enough for ocean predators, Shester said.

"But if you don't respond to a natural decline fast enough by limiting fishing, you're suddenly in big trouble," says Shester. "It makes the crash even worse because you'll have fewer sardines remaining. When conditions get productive again, they can't bounce back because there aren't enough of them to begin with."

Canada isn't alone in declining sardine stocks. Paul Shively, forage fish campaign manager for Pew Charitable Trusts, says we're seeing a similar trend in the U.S. The numbers are striking. In 2007, the U.S. brought in 127,500 metric tons of Pacific sardines. In 2010, the number shrunk to 66,817 metric tons, and by 2011 that number declined to 44,000 metric tons.

“We can’t do a lot about the changing temperatures of the ocean and the natural cycles it goes through, but what we can do is to keep from fishing the bottom out of that. We don’t want to fish those last remaining fish,” he said.

Shively is worried about more than just sardines. While sardines are protected under fishery management plans, he points out that there are no such protections for other important species like smelt, Pacific saury and lantern fish.

“If someone wants to fish them, there are no limits on what they can take,” says Shively.

As for the sardine fishery, Shester says we should be paying close attention to the news coming from Canada.

“We’re in an emergency situation right now. Any fishing is overfishing when the stock is in this condition.”

Sardine fishery collapse affects economy, ecology

Loss of \$32-million industry felt along entire food chain

BY LARRY PYNN, VANCOUVER SUN - OCTOBER 15, 2013

A \$32-million commercial fishery has inexplicably and completely collapsed this year on the B.C. coast.

The sardine seine fleet has gone home after failing to catch a single fish. And the commercial disappearance of the small schooling fish is having repercussions all the way up the food chain to threatened humpback whales.

Jim Darling, a Tofino-based whale biologist with the Pacific Wildlife Foundation, said in an interview Monday that humpbacks typically number in the hundreds near the west coast of Vancouver Island in summer. They were observed only sporadically this year, including by the commercial whale watching industry.

"Humpbacks are telling us that something has changed," he said. "Ocean systems are so complex, it's really hard to know what it means. For one year, I don't think there's any reason to be alarmed, but there is certainly reason to be curious."

Humpbacks instead were observed farther offshore, possibly feeding on alternative food sources such as herring, sandlance, anchovies, or krill, but not in the numbers observed near shore in recent years.

The sardine, also known as pilchard, has a uniquely fascinating history.

2014 Pacific Sardine Management
October 21, 2013

Sardines supported a major fishery on the B.C. coast in the mid-1920s to mid-1940s that averaged 40,000 tonnes a year.

Then the fish mysteriously disappeared - for decades - until the first one was observed again in 1992 during a federal science based fishery at Barkley Sound on the west coast of Vancouver Island.

With the re-emergence of the sardines came the humpbacks, around 1995, becoming so numerous in coastal waters off Vancouver Island that they supplanted grey whales as the star attraction of the whale-watching industry.

Peter Schultze, a senior guide and driver with Ocean Outfitters, said humpbacks are normally found seven to 10 kilometers or closer to shore, but this year were about 18 to 32 kilometers out. That meant for more travel time and fuel burned and less time with the humpbacks, if they were observed at all. "There were a lot of days where people got skunked."

Overfishing had long been blamed for the disappearance of sardines from B.C. waters. But scientists today attribute the overriding cause to changes in ocean conditions that proved unfavorable to sardines.

B.C. started commercial fishing for sardines in 2002, and in 2013 had an allowable catch of about 25,000 tonnes, which compares with a total estimated population of 659,000 tonnes.

"This year was unexpected," said Lisa Mijacika, a resource manager with Fisheries and

Oceans Canada in Vancouver, noting fishing did take place in California and Oregon. "They are a migratory fish heavily influenced by ocean conditions." Scientists from Canada, the U.S., and Mexico will meet in December to try to find answers to the sardine's movements.

There are now 50 B.C. commercial sardine licenses, half held by First Nations. The fishery normally operates from July to November, but not this year.

"They've given up looking, pulled the plug," confirmed Lorne Clayton, executive-director of the Canadian Pacific Sardine Association. "It certainly was disappointing. It's cost them time, fuel, and crew to go out and look, with no compensation."

While seiners fishing close to the surface got skunked, he noted that commercial hake fishermen with trawl nets at depths of 200 to 350 meters reported catching hake "filled with sardines," Clayton said. "I think they didn't come to the surface this year. Right now, it's all speculation."

Darling said that doesn't explain the sudden change in humpback behavior off the island. "If sardines were there in any number, you'd think the whales would have figured that out," he said. "I don't think anyone really has a bead on what's going on."

Clayton said the B.C. sardine fishery has a wholesale value of about \$32 million, with the fish going into the canned market, as well as for reduction and oil. The loss of the fishery this year could have repercussions for next.

"Not only does it affect their livelihood but it puts a hole in the marketplace," he said. Even if sardines come back next season, "you may have to claw your way back into the marketplace."

Clayton said that ocean temperatures tides, plankton and light are all factors that could be influencing the sardines.

"In a given year, fishermen have to search them out to go fishing. They don't just arrive at your boat."

He noted that the sardine fishery also collapsed this year in South Africa. "They disappeared entirely with no evidence at all."

Darling said society should question whether the greater value of sardines is as prey for natural predators in the ocean, including the humpbacks upon which the whale-watching industry depends so heavily.

"Would it not make sense to leave the fish that are driving the whole system and supporting virtually everything? There are some important questions to be asked about the sardine fishery."