

# ENDANGERED HABITATS LEAGUE

DEDICATED TO ECOSYSTEM PROTECTION AND SUSTAINABLE LAND USE



June 4, 2016

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

**RE: Agenda Item: D.5 Deep Set Buoy Gear and Federal HMS Permit Update**

Dear Chair Lowman and Council members:

On behalf of the Endangered Habitats League and our members across Southern California, thank you for your work to prioritize an authorization process for deep-set buoy gear to catch swordfish off the West Coast. There is still much more work to be done, and I encourage the Council to keep authorization of this innovative fishing method on track in June by offering clear guidance on permitting options.

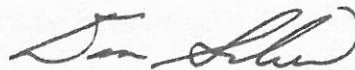
After extensive research on the West Coast, deep-set buoy gear is ready to provide U.S. seafood customers with high quality domestically caught swordfish. Additionally, this gear provides the Council an opportunity to substantially reduce bycatch – the unwanted catch of marine animals such as whales, dolphins, sharks, and sea turtles.

The authorization process for buoy gear will give decision-makers, fishermen and the public a chance to weigh options for making this gear a success for fishermen and a win for reducing the waste of marine life. Several details need to be addressed including how many fishing permits will be issued and who will qualify to receive those permits. However, these important questions should not be grounds for further delay in authorizing deep-set buoy gear.

For several years, the Pacific Council has stated concerns about bycatch from drift gillnets in the swordfish fishery. Deep-set buoy gear provides a real opportunity to address bycatch while ensuring an alternative that supports sustainable fisheries and local economies on the West Coast. Please ensure that deep-set buoy gear authorization stays on track at your June meeting.

Thank you for your consideration.

Yours truly,



Dan Silver  
Executive Director



Dorothy Lowman, Chair

Pacific Fishery Management Council  
7700 NE Ambassador Place, Suite 101  
Portland, Oregon 97220-1384

June 4, 2016

**RE: Agenda Item: D.5 Deep Set Buoy Gear and Federal HMS Permit Update**

Dear Chair Lowman and Council members:

I would like to applaud the Council for the progress it has made over the last couple of years, in regards to the drift gillnet fishery. I am writing as the President of the Ocean Conservation Society (OCS), a California nonprofit organization organized to conduct marine mammal research to promote the conservation and protection of ocean ecosystems. Since our inception in 1998, we have sought to form collaborative relationships with other researchers and organizations, to obtain a more comprehensive and multi-disciplinary picture of the marine environment. It is this big picture approach that enables us to see the far-reaching consequences that fisheries management has on the marine environment.

On behalf of OCS and our members throughout California, thank you for your work to prioritize an authorization process for deep-set buoy gear to catch swordfish off the West Coast. I am writing to encourage you to keep authorization of this innovative fishing method on track in June, by offering clear guidance on permitting options.

After more than five years of extensive research on the West Coast, deep-set buoy gear is ready to provide U.S. seafood customers with high quality

domestically caught swordfish. The authorization process for buoy gear will also give decision-makers, fishermen and the public a chance to weigh options for making this gear a success for fishermen and a win for reducing the waste of marine life. While several details still need to be addressed, including how many fishing permits will be issued and who will qualify to receive those permits, they should not be grounds for further delay in authorizing deep-set buoy gear.

For several years, the Pacific council has stated concerns about by-catch from drift gillnets in the swordfish fishery. Deep-set buoy gear provides a real opportunity to address by-catch while ensuring an alternative that supports sustainable fisheries and local economies on the West Coast.

Please continue working so that deep-set buoy gear authorization stays on track at your June meeting.

Thank you for your time,

Sincerely,

A handwritten signature in black ink that reads "Maddalena Bearzi". The script is cursive and fluid, with the first name and last name clearly distinguishable.

Maddalena Bearzi, Ph.D.  
Ocean Conservation Society, President and Co-founder  
P.O. Box 12860  
Marina del Rey, CA 90295  
310-822-5205  
info@maddalenabearzi.org  
[www.oceanconservation.org](http://www.oceanconservation.org)



June 10, 2016

Dorothy Lowman, Chair

Pacific Fishery Management Council  
7700 NE Ambassador Place, Suite 101  
Portland, Oregon 97220-1384

**RE: Agenda Item: D.5 Deep Set Buoy Gear and Federal HMS Permit Update**

Dear Chair Lowman and Council members:

On behalf of Azul and our members throughout California, I want to thank you for your work to prioritize an authorization process for deep-set buoy gear to catch swordfish off the West Coast. Azul is an environmentally driven program focused on creating outlets for Latino leadership on marine and coastal conservation issues. Our community recognizes that the ocean supports many different types of species that must be collectively preserved to maintain a healthy marine ecosystem. That is why I am writing today to encourage you to keep authorization of deep-set buoy gear on track in June by offering clear guidance on permitting options.

After extensive research on the West Coast, deep-set buoy gear is ready to provide U.S. seafood customers with high quality domestically caught swordfish. Additionally, this gear provides the Council an opportunity to substantially reduce bycatch – the unwanted catch of marine animals such as whales, dolphins, sharks, and sea turtles.

The authorization process for buoy gear will give decision-makers, fishermen and the public a chance to weigh options for making this gear a success for fishermen and a win for reducing the waste of marine life. Several details need to be addressed including how many fishing permits will be issued and who will qualify to receive those permits. However, these important questions should not be grounds for further delay in authorizing deep-set buoy gear.

For several years, the Pacific council has stated concerns about bycatch from drift gillnets in the swordfish fishery. Deep-set buoy gear provides a real opportunity to address bycatch while ensuring an alternative that supports sustainable fisheries and local economies on the West Coast. Please ensure that deep-set buoy gear authorization stays on track at your June meeting.

Respectfully yours,

A handwritten signature in black ink, appearing to read 'Marce' followed by a stylized surname.

Marce Gutiérrez-Graudiņš  
Founder & Director,  
Azul  
115 Sansome Street, Ste 580  
San Francisco, CA  
[www.blueazul.org](http://www.blueazul.org)



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Carla Robinson  
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Carol Boot Storie  
Chuck Swift  
Tom Weisel  
Mike Wynd

Pacific Fishery Management Council  
7700 NE Ambassador Place, Suite 101  
Portland, Oregon 97220-1384

**RE: Agenda Item: D.5 Deep Set Buoy Gear and Federal HMS Permit Update**

Dear Chair Lowman and Council members:

Ocean Defenders Alliance (ODA) is a marine conservation organization based in Orange County, California. Prior to the launch of ODA, I spent much of my time diving all over the world. Dive after dive, I found abandoned commercial fishing gear on the ocean floor or attached to boat wrecks- where it indiscriminately kills marine flora and fauna long after its service to the fishing industry is over. It became abundantly clear to me that overfishing and man-made pollution was threatening the survival of marine wildlife and the overall health of the life-giving seas of the earth- that's when I decided to do something about it and launched ODA. The mission of ODA is to clean and protect marine ecosystems through documentation, education, and meaningful action. Our members care deeply about the health of the Pacific Ocean and take pride in our coast.

On behalf of ODA and our countless members and volunteers throughout Southern California, thank you for your work to prioritize an authorization process for deep-set buoy gear to catch swordfish off the West Coast. I am writing to urge you to keep authorization of this innovative fishing method on track in June by offering clear guidance on permitting options.

After extensive research on the West Coast, deep-set buoy gear is ready to provide U.S. seafood customers with high quality domestically caught swordfish. Additionally, this gear provides the Council an opportunity to substantially reduce bycatch – the unwanted catch of marine animals such as whales, dolphins, sharks, and sea turtles.

The authorization process for buoy gear will give decision-makers, fishermen and



the public a chance to weigh options for making this gear a success for fishermen and a win for reducing the waste of marine life. Several details need to be addressed including how many fishing permits will be issued and who will qualify to receive those permits. However, these important questions should not be grounds for further delay in authorizing deep-set buoy gear.

For several years, the Pacific council has stated concerns about bycatch from drift gillnets in the swordfish fishery. Deep-set buoy gear provides an alternative that supports sustainable fisheries and local economies on the West Coast. Please ensure that deep-set buoy gear authorization stays on track at your June meeting.

Best regards,

Kurt Lieber  
Executive Director / Founder  
Ocean Defenders Alliance (ODA)  
[kurt@oceandefenders.org](mailto:kurt@oceandefenders.org)  
Cell: 714-875- 5881  
[www.oceandefenders.org](http://www.oceandefenders.org)  
<http://www.facebook.com/OceanDefenders>



Kit Dahl - NOAA Affiliate &lt;kit.dahl@noaa.gov&gt;

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**Fwd: Please act decisively on swordfish drift gillnets**

1 message

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**PFMC Comments - NOAA Service Account** <pfmc.comments@noaa.gov>

Mon, Jun 13, 2016 at 11:23 AM

To: Kit Dahl - NOAA Affiliate &lt;kit.dahl@noaa.gov&gt;

Cc: Mike Burner - NOAA Affiliate &lt;mike.burner@noaa.gov&gt;

----- Forwarded message -----

From: [williammejiar@gmail.com](mailto:williammejiar@gmail.com) <[williammejiar@gmail.com](mailto:williammejiar@gmail.com)>

Date: Mon, Jun 13, 2016 at 11:21 AM

Subject: Please act decisively on swordfish drift gillnets

To: [pfmc.comments@noaa.gov](mailto:pfmc.comments@noaa.gov)

Dear Chair Lowman and Council Members:

Thank you for acting in March to develop a comprehensive plan to shift the fishery for Pacific swordfish away from drift gillnets. Please act decisively at the June 20-25 council meeting to ensure this fishery adopts a more environmentally sustainable alternative.

Drift gillnets indiscriminately capture and kill many species of marine life, including non-target fish, whales, seals, sharks, and dolphins along our coast. During your meeting in June, the Council should establish clear criteria for granting experimental fishing permits to fishermen willing to try alternative gear that is actively tended and that minimizes interaction with non-targeted species.

Further, until the fleet fully shifts to more selective alternatives for swordfish, the existing drift gillnet fishery should be carefully monitored and regulated. The Council should encourage the National Marine Fisheries Service to require observers on all fishing trips when drift gillnets are used, impose firm limits on the number of interactions with living marine resources such as whales and sea turtles, and close the fishery for the season if those limits are reached.

Despite various measures adopted in recent years to minimize harm caused by drift gillnets, the fundamental nature of this gear means that it will continue to cause unacceptable levels of bycatch. Every year spent attempting to make incremental improvements will delay the necessary transition to a cleaner and more sustainable alternative.

We are fortunate to have a robust and healthy population of swordfish along the West Coast. The public should be able to enjoy this prized seafood with the knowledge that our fishermen are catching swordfish while protecting other ocean wildlife.

Sincerely,

William Mejia  
Boulder  
Colorado

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Pacific Fishery Management Council  
7700 NE Ambassador Place, Suite 101  
Portland, OR 97220  
Phone: [503-820-2280](tel:503-820-2280)  
Toll Free: [1-866-806-7204](tel:1-866-806-7204)  
Fax: [503-820-2299](tel:503-820-2299)  
Twitter: <http://Twitter.com/PacificCouncil>



# Living Sea Images

190 Orchard Road · Felton, CA 95018 · 831-335-4849 · books@LivingSeaimages.com

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

## **RE: Agenda Item: D.5 Deep Set Buoy Gear and Federal HMS Permit Update**

Dear Chair Lowman and Council Members,

Thank you for your time and continued effort to preserve our deep-sea habitats. I appreciate your stewardship of our marine resources and the work you do to maintain healthy oceans and sustainable fisheries. I know we share an abiding concern for the health of California's coastal ocean, and the world's oceans. I write to you as a marine life photographer and a devout, concerned, lover of the ocean. My photography expeditions have taken me all over the world, and I have witnessed underwater marvels that I would not trade for anything. I believe that my job is not only to capture the beauty of marine life and bring it to the surface, but also to move people to protect the flora and fauna whose images brighten their walls. It was my task and honor to participate in mapping out the Central Coast's marine protected areas under the California Marine Life Protection Act initiative. As a direct result of my work to protect nearshore marine ecosystems, I know firsthand how difficult it can be to balance competing interests and reconcile opposing views. I also know how important it is to protect habitat when stewardship of ecosystems is considered.

Thank you for your continued work and efforts to address and solve the problems with the drift gillnet fishery. Drift gillnets pose a threat to migrating whales, meandering sea turtles and frolicking dolphins, several of which are endangered and all of which deserve adequate safety and protection. Therefore, I ask that you keep authorization of deep-set buoy gear on track in June by offering clear guidance on permitting options.

Deep-set buoy gear provides the Council an opportunity to substantially reduce the unwanted, unsustainable mortality of marine animals such as whales, dolphins, sharks, and sea turtles. The authorization process for buoy gear gives decision-makers, fishermen and the public a chance to weigh options for making this gear a success for fishermen and a win for reducing the waste of marine life.

For several years, the Pacific council has stated concerns about bycatch from drift gillnets in the swordfish fishery. Deep-set buoy gear provides a real opportunity to address bycatch while ensuring an alternative that supports sustainable fisheries and local

economies on the West Coast. Please ensure that deep-set buoy gear authorization stays on track at your June meeting.

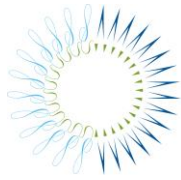
Thank you for your consideration,

Respectfully Yours,

A handwritten signature in blue ink that reads "Marc Shargel". The signature is fluid and cursive, with the first name "Marc" and last name "Shargel" clearly legible.

Marc Shargel

Sea Life Photographer and Author of  
***Wonders of the Sea: North Central California's Living Marine Riches*** and  
***Wonders of the Sea Volume Two: Marine Jewels of Southern California's Coast and Islands*** and ***Wonders of the Sea Volume Three: Hidden Treasures of California's Far North Coast*** and ***Yesterday's Ocean: A History of Marine Life on California's Central Coast***



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oceans**  
For the future of fishing

June 14, 2016

Dorothy Lowman, Chair  
Pacific Fishery Management Council  
1100 NE Ambassador Place, #101  
Portland, Oregon 97220

**RE: Agenda Item D.5 – Deep-Set Buoy Gear and Federal Permit Update**

Dear Chair Lowman and Council members:

We write in support of the Pacific Fishery Management Council's action in March 2016 to move forward with a Highly Migratory Species Fishery Management Plan (HMS FMP) amendment to authorize deep-set buoy gear (DSBG) to target swordfish and other highly migratory species.

After several years of research, development, and experimental fishing, DSBG has proven to be a selective method of targeting swordfish. The results from the first year of the Pflieger Institute of Environmental Research (PIER) Exempted Fishing Permit (EFP) showed that "[s]wordfish made up the bulk (~65%) of the catch with other marketable species totaling 97% of total landings."<sup>1</sup> We are encouraged to see that the gear behaves as expected when taken out of the research phase and put to use in a commercial setting. As reported by PIER,

*Incidental catch rates were low (~3%) with only one interaction with any species of concern, Northern elephant seal, *Mirounga angustirostris*. Based on the onboard observer record, the elephant seal interaction consisted of a strike that was detected similar to standard fishing procedure. Following detection, the buoy was quickly tended and the elephant seal was observed to be alive and alert prior to release (hook was shed from the animal).<sup>2</sup>*

For this reason, we highly recommend that the Council require active tending of all gear. Without this requirement, the very nature of the gear changes and conservation concerns are heightened. As noted in the staff report,

*An important feature of DSBG is that it is actively tended: The fisherman keeps all the deployed gear in sight and the strike indicator allows quick retrieval of a piece of gear with a fish on it. This quick retrieval helps to reduce bycatch mortality, because an unwanted species can be quickly released from the gear. Lost gear that could potentially "ghost fish" or entangle larger air*

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<sup>1</sup> [PIER Report to Council](#), June 2016, p. 2

<sup>2</sup> *Id.*

*breathing animals such as marine mammals and turtles is another important concern. If gear are not actively monitored the possibility of losing a piece of gear increases<sup>3</sup>.*

We have requested feedback from fishermen on what a reasonable requirement for active tending should look like and the terms and conditions in the current EFP appear to provide a reasonable approach. Those provisions state that “[t]he operator of the fishing vessel must actively tend all gear at all times, and must maintain the gear within sight (typically within 2 nm of the gear) of the fishing vessel.” Because this requirement is already in effect in the EFP and is used by law enforcement to enforce those restrictions, it follows that this would be an appropriate way to define active tending in a fully authorized and permitted fishery. The EFP conditions also include a requirement that “[d]eep-set buoy gear must be deployed as quickly as practicable, and upon detection of a strike, must be retrieved as quickly as practicable.” This element of active tending is also necessary to maintain the low mortality rate of non-target species. Therefore, we recommend that these provisions be included in the authorization of DSBG under the HMS FMP.

The authorization of DSBG as an actively tended gear advances the Council’s stated purpose and need described in the Swordfish Fishery Management and Monitoring Plan “to minimize bycatch and bycatch mortality of finfish and protected species (including sea turtles, marine mammals, and seabirds) to the extent practicable while ensuring that the West Coast swordfish fishery remains economically viable.” According to PIER,

*Collective swordfish catch by the four cooperative fishers is believed to have exceeded annual landings from the CA harpoon fishery, which has further bolstered industry support.*

The PIER EFP demonstrated that DSBG can provide increased swordfish landings with decreased bycatch and bycatch mortality.

As to the proposed range of alternatives, we recommend that the Council use a “program component” approach to their analysis in order to allow for the selection of several alternatives in creating a full management framework. This approach allows the Council to include a wider range of alternatives and analyze how different elements of the fishery program could work together including tying the authorization of the DSBG fishery to the drift gill net fishery through permit prioritization or voluntary permit trade-ins.

Over the past several weeks, we have reached out to members of the commercial HMS fleet and offshore recreational fleet and are finding areas of common ground on DSBG authorization. We believe that we can easily come to agreement on alternatives for permitting, authorized areas, and monitoring and we look forward to updating the Council as our conversations progress. We hope that our discussions have inspired critical thinking about alternatives that will contribute to the successful

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<sup>3</sup> [Staff Report](#), Considerations for Developing Alternatives for a Deep-Set Buoy Gear Fishery and Federal Permitting of the West Coast Swordfish Fishery, p. 3

implementation of DSBG as a gear that can bring high value domestic swordfish to US markets with minimal bycatch.

Sincerely,



Tara Brock  
Senior Associate, U.S. Oceans, Pacific  
The Pew Charitable Trusts  
tbrock@pewtrusts.org



Theresa Labriola  
West Coast Fisheries Director  
Wild Oceans  
tlabriola@wildoceans.org



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

**RE: Agenda Item: D.5 Deep Set Buoy Gear and Federal HMS Permit Update**

Dear Chair Lowman and Council members:

First and foremost, thank you for all of your hard work to advance new alternatives for fishing swordfish, we are encouraged to see the steady progress that has been made in laying the groundwork to authorize an innovative technology like deep-set buoy gear. I am writing to encourage you to keep this authorization on track in June by offering clear guidance on permitting options.

At Border Grill restaurants, we strive to continuously offer and support a host of environmentally-friendly policies. As the co-owner and chef, I would like to lend my voice to others in calling for a full transition of the swordfish fishery to more sustainable options. For several years, the Pacific council has stated concerns about bycatch from drift gillnets in the swordfish fishery. Deep-set buoy gear provides a real opportunity to address bycatch and provide an alternative source to companies like ours.

The authorization process for buoy gear gives decision-makers, fishermen and the public a chance to weigh options for making this gear a success for fishermen and a win for reducing the waste of marine life. We know that a healthy ocean means better food for our customers, and that maintaining a productive and balanced marine ecosystem is a responsibility that we must all share.

Please keep deep-set buoy gear authorization a top priority at your June meeting. I look forward to these positive actions by the Council and I thank you for the opportunity to offer my thoughts on this issue.

Thank you for your consideration,

Mary Sue Milliken,

Co-Owner/Chef  
Border Grill Restaurants & Truck

*445 S. Figueroa St, Suite B1-15 Los Angeles, CA 90071*

June 14, 2016

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

E-mail: [pfmc.comments@noaa.gov](mailto:pfmc.comments@noaa.gov)

**Re:** An Economist's Perspective on the Deep Set Buoy Gear (DSBG) in the U.S. West Coast  
(A Public Comment for PFMC Agenda Item D.5, June 2016)

Dear Madam Chair:

I am an economist specializing in natural resource/environmental economics since 1999. I have extensive research and work experience with U.S. marine fisheries in the Pacific Islands and U.S. West Coast. My economic analyses in fisheries have largely focused on commercial highly migratory species like swordfish, tunas, sharks, etc., along with coastal pelagic species, salmon, recreational and international treaty fisheries. I have carried out numerous economic analyses of various regulatory issues in fisheries management over the last five years including several research studies on endangered marine animals like sea turtles that are subject to rare-event interactions with some U.S. fisheries. My work in fisheries has been published and widely cited in various premier journals for fisheries research. I have also worked for various government agencies, universities and international research institutions at various capacities over the course of the last three decades; working in the areas of water, agriculture, development, business economics and finance. In this letter, I am offering my objective professional opinion on the Deep Set Buoy Gear (DSBG) that is under experimental development as a means to target swordfish off the U.S. West Coast. My comments will mainly focus on the economic aspects of the proposed DSBG fishery.

I have been familiar with DSBG since 2013 and have taken an interest in its potential economic performance. However, the necessary economic data to evaluate the gear's potential are currently either too limited or unavailable to provide statistically valid evidence on the economic feasibility of this method for targeting swordfish off the West Coast. I have unsuccessfully attempted to obtain data which could demonstrate whether an authorized DSBG fishery could sustain economic viability. The experiments so far conducted with this gear have been too limited to yield any meaningful economic data which could provide a solid analytical basis for fishermen to invest their future livelihoods in this enterprise; for example, no experimental DSBG effort has been conducted off the coasts of Oregon or Washington. Many uncertainties remain regarding the potential to operate this gear as part of a successful

business enterprise. Consequently, it is much too early to endorse or assume this gear as a replacement for the California drift gillnet fishery (DGN) which already efficiently supplies fresh swordfish to the West Coast in compliance with marine conservation laws including the Endangered Species Act (ESA), the Marine Mammal Protection Act (MMPA), and the Magnuson Stevens Act (MSA).

The DSBG is a miniature version of the modified vertical longline. Deep set fisheries have been used to selectively target pelagic species for nearly 40 years.<sup>1</sup> Swordfish buoy gear (SBG) was developed in Florida to take advantage of the concentration of large swordfish close to shore. Because of the gear construction and fishing style, SBG also shares many attributes of pelagic longline gear.<sup>2</sup> There are about 50 licensed SBG of which 35-40 were active as of 2011. Contrary to the diurnal operation of the DSBG in the west coast, the east coast SBG operates by night, taking about one trip per week. The east coast SBG also uses chemical light sticks and J-hooks in contrast to the circle hooks used in west coast DSBG operations.<sup>3</sup> The west coast DSBG is artisanal in nature and limited to using about 10 unconnected buoys and 20-30 hooks per vessel; and the experiment plans to deploy hooks from 30 to 50.<sup>4</sup>

The Pflieger Institute of Environmental Research (PIER), which has conducted the DSBG experiments off California indicate issues with the gear like the cost, coordination of effort and staff, potential gear conflicts with harpoon harvesters, and fewer sets and cooperative fishers, suggesting operational uncertainties remain with this gear.<sup>5</sup> However, PIER also anticipates potential profitability of this gear given its proposed operation in the low season during June to August 15 when other swordfish fisheries are operating at a limited level. Because swordfish availability on the West Coast occurs dominantly during the fall and winter months, PIER

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<sup>1</sup> C. Sepulveda, S. Albers, and C. Heberer. 2014. Testing modified deep-set gear to minimize bycatch and increase swordfish selectivity. NMFS, Office of Sustainable Fisheries, Bycatch Reduction Engineering Program (BRE), Silver Spring, MD. BREP (1) 2014, pp 27-32. [http://www.nmfs.noaa.gov/by\\_catch/docs/brep\\_2014\\_sepulveda.pdf](http://www.nmfs.noaa.gov/by_catch/docs/brep_2014_sepulveda.pdf)

<sup>2</sup> S.M. Bayse and D.W. Kerstetter. Characterization of Swordfish Buoy Gear in the Florida Straits. <http://www.lsu.edu/seagrantfish/pdfs/2010-Bayse&KerstetterPoster.pdf>

<sup>3</sup> E.V. Romanov, D. Kerstetter, T. Moore, and P. Bach. 2013. Buoy gear- a potential for bycatch reduction in the small-scale swordfish fisheries: a Florida experience and Indian Ocean perspective. [http://nsuworks.nova.edu/cgi/viewcontent.cgi?article=1221&context=occ\\_facpresentations](http://nsuworks.nova.edu/cgi/viewcontent.cgi?article=1221&context=occ_facpresentations)

<sup>4</sup> C. Sepulveda, S. Albers, and C. Heberer. 2015. Swordfish movements, recent gear trials and future experiments on west coast fishery development. Pflieger Institute of Environmental Research. Power Point presentation at the Swordfish Workshop organized by NOAA Fisheries West Coast Region, La Jolla, CA. [http://www.westcoast.fisheries.noaa.gov/publications/fishery\\_management/hms\\_program/swordfish2015/presentations/chuguey\\_\\_swo\\_movements\\_gear\\_trials.pdf](http://www.westcoast.fisheries.noaa.gov/publications/fishery_management/hms_program/swordfish2015/presentations/chuguey__swo_movements_gear_trials.pdf)

<sup>5</sup> Ibid.



expects DSBG to operate during the off-season so that it potentially fetches higher prices.<sup>6</sup> Yet, the high price expectation during the low production season does not reflect or represent the price which might be realized if it were operated year round. It also doesn't consider the effect of price from other competing fisheries that produce the same commodity at other times of year, nor does it consider imports or the price effect from close substitute products (fishes or other meats). The price of a perishable commodity largely depends on the competing supply situation and consumer preferences rather than price expectations of DSBG fishers.

The price expectations of some advocacy groups for this gear are also highly questionable. Moreover, the cost estimates don't consider capital costs or variable costs like fuel, gear, vessel maintenance, ice, bait, insurance, slip rental fees, etc. in comparison to the revenue-generating capacity of DSBG. These estimates also fail to account for the opportunity cost of the labor (captain and crew). Accounting for all these cost items could yield a marginal positive profit at best but most likely negative financial gains for many harvesters who face difficulties for generating a sufficient and reliable revenue stream to cover their variable and fixed costs of fishing plus the opportunity cost of alternative employment possibilities. DSBG could also pose prohibitively high monitoring costs to the federal budget relative to DGN if high observer coverage is required of the fleet relative to the volume of swordfish production, given its artisanal nature and the large number of vessels necessary to reach par with DGN or longline volumes of catch production. PIER also hasn't been able to gauge the potential risk of lost gear in rough seas and gear conflicts within and outside the DSBG fishery.

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<sup>6</sup> PFMC Agenda Item H.3.a, Attachment 2, March 2015.

PIER estimated the profitability of DSBG with trip expenses and revenue expectation in 2014. The estimates involves two person operations (captain and one crew member) with an average trip expense of \$500/day, an average size of swordfish catch (200 lbs. dressed weight), and expected price of \$8.75 per pound for dressed fish. It expects a net gain of \$1,250 per day from the 2-person DSBG operation. It also expects price at par of the harpoon caught swordfish. In 2014, harpoon fleet fetched an average \$5.63 per pound rather \$8.75 for its swordfish landing (i.e., swordfish price of \$5.63 per pound is based on the landing and revenue by the west coast harpoon fleet in 2014. The fleet with 10 vessels landed 5 mt swordfish that generated \$62,000 in revenue (Reference: <http://www.pcouncil.org/wp-content/uploads/2016/01/2015-HMS-SAFE-Report-archive-copy.pdf> HMS SAFE 2016 page 36). Since data on the size and weight distribution of swordfish caught with DSBG are unavailable, the catch weight and prices are hypothetical expectations.

On the cost side, trip expenses in the PIER estimate fail to account for many fixed and variable costs. Further, captain and crew expenses do not reflect their opportunity cost of other potential employment. In 2014, the opportunity cost of labor for captain and crew instead was at least \$500 and \$250 per day, respectively, in other California fisheries; e.g. crew costs for the California halibut light touch trawl fishery were estimated at \$250 per day. (Reference: T. Wick, T. Tanaka, N. Pradhan, and L. Enriquez. 2014. *An assessment of the Use of light-touch California halibut trawl gear within historic Monterey Bay trawl grounds: Seafloor interactions, catch composition, and economic feasibility*. NOAA Fisheries and California Department of Fish and Game, May 2014). Thus, DSBG profit estimates are questionable, given inflated catch weight and price estimates coupled with underestimated wages plus missing fixed and variable costs.

Based on the available catch and operational information from DSBG testing off California, the gear appears to be relatively inefficient at this time, both in terms of catch volumes and on the cost of operations, relative to longline or DGN. Although DSBG offers the potential conservation of selectively targeting catches at depths while avoiding upper water layers where some protected species forage or roam, data on rare event protected species interactions to date are inconclusive due to the limited amount of DSBG fishing effort and the large amount of data needed to provide conclusive evidence on rare event protected species impacts. It is also unclear how the carbon footprint of swordfish caught using DSBG compares to that for DGN- or longline-caught swordfish. Experimental data from testing DSBG by PIER off California during the 2012-14 period resulted in 115 swordfish caught on 130 sets of 8 hours duration by deploying over 40,000 hook-hours.<sup>7</sup> Field testing carried out during July 2013 to January 2014 yielded 11 swordfish over 12 fishing days deploying 2,590 hook-hours. Therefore, DSBG gear appears to have a catch rate of less than one swordfish per set or fishing day regardless of its size or weight. Since the catch rates are the outcome of different gear configurations, the authors suggest that it is not indicative of fishery potential or commercial catch rates.<sup>8</sup>

From the field trials in 2014, the catch rates appear to have ranged from 0.6 to 1.75 swordfish per day.<sup>9</sup> Further, the west coast catch composition is not clear regarding the percent of swordfish that are juveniles in contrast to east coast SBG where 27 percent of catches have been juveniles (i.e., from 56 observed trips during 2007-09, of the 143 swordfish 39 were juveniles).<sup>10</sup> Juvenile discards will have an impact on catch volume, and hence on revenue. Large numbers of juvenile discards could negatively impact the swordfish stock. For a small scale artisanal gear like DSBG, an unreliable target catch rate could result in erratic fishing by anglers, subjecting them to the risk of economic loss over periods of poor catch success. Given a low and unreliable volume of catch production, it may be challenging for harvesters to make a living using this method. Fishers with limited working capital may not be able to sustainably prosecute this method. Instead they may simply choose to pursue another livelihood besides fishing or join another fishery, placing additional strain on other resource stocks. The risks and uncertainties surrounding the use of DSBG may result in a failure of west coast harvesters to adopt the method, creating further deterioration of the dwindling swordfish supply to the West

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<sup>7</sup> C. Sepulveda, S. Albers, and C. Heberer. 2015. Swordfish movements, recent gear trials and future experiments on west coast fishery development. Pflieger Institute of Environmental Research. Power Point presentation at the Swordfish Workshop organized by NOAA Fisheries West Coast Region, La Jolla, CA.

<sup>8</sup> C. Sepulveda, S. Albers, and C. Heberer. 2014. Testing modified deep-set gear to minimize bycatch and increase swordfish selectivity. NMFS, Office of Sustainable Fisheries, Bycatch Reduction Engineering Program (BREP), Silver Spring, MD. BREP (1) 2014, pp 27-32. [http://www.nmfs.noaa.gov/by\\_catch/docs/brep\\_2014\\_sepulveda.pdf](http://www.nmfs.noaa.gov/by_catch/docs/brep_2014_sepulveda.pdf)

<sup>9</sup> Exempt Fishery Proposal Application for Deep-Set Buoy Gear. PFMC Agenda Item H.3.a, Attachment 2, Mar 2015.

<sup>10</sup> S.M. Bayse and D.W. Kerstetter. Characterization of Swordfish Buoy Gear in the Florida Straits. <http://www.lsu.edu/seagrantfish/pdfs/2010-Bayse&KerstetterPoster.pdf>

Coast from domestic fishing grounds. With the risks and uncertainties surrounding this gear, it seems questionable at this time whether an expansion of this gear for providing a reliable source of swordfish is likely.

Another factor that has not been considered is the frequency a DSBG vessel will fish in a year in order to determine potential swordfish volume.<sup>11</sup> Swordfish landings by DGN over the recent decade (2005-2015) have annually ranged from 62 mt to 490 mt with an annual average of 218 mt for the period. In prior years, with more vessels in operation, the fleet was able to land up to 1,413 mt swordfish.<sup>12</sup> The size of the DSBG fleet needed to replace the lost volume of production by DGN will largely depend on the frequency of trips it can profitably undertake, whether on a weekly or annual basis, the commercial volume of DSBG vessel production compared to DGN, and how soon the fleet can expand to its full potential size. Given relatively lower volume of DSBG production at the vessel level compared to DGN or shallow set longline questions the gear's economic viability. It is thus uncertain to what extent DSBG will be able to provide a commercial volume of swordfish landings.

While DSBG is under experimental development and hasn't yet been adequately evaluated by cooperating fishermen, it is very concerning that the gear is being fast tracked for authorization by some advocacy groups with a publicly stated objective to replace the DGN fleet. It is very unfortunate to witness some advocacy groups' efforts to reshape U.S. public policy on fisheries with reports that are rife with fictitious data or information (***please see attached my recent letter to the Honorable California Senator Ricardo Lara on May 10, 2016 with regard to the SB 1114 (Allen)***). Such unethical practices need to be discouraged through increased scrutiny and exposure, in support of public policy and management based on sound scientific analyses with established biological, economic, and statistical standards. Needless to say the DGN fleet has already adapted to numerous stringent regulatory measures to bring it into compliance with various federal and state conservation laws. Any effort to phase out this fishery without a gear type providing comparable swordfish volume could result in the transfer of swordfish effort to other Pacific Rim nations. The transfer of effort is estimated to have caused a transfer effect or conservation leakage of an additional bycatch of 1,457 endangered leatherback sea turtles compared to 45 turtles annually (i.e. 32 times more turtle bycatch) had the West Coast fishing grounds remained open to DGN fishing effort for the three months of the Pacific Leatherback Conservation Area closure every year since 2001.<sup>13</sup> This suggests

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<sup>11</sup> So far PIER doesn't have data from year round operation of a DSBG in the context of an ongoing non-experimental fishery. Based on longline and DGN experience, a decision to take a fishing trip depends on sea conditions and expectation about swordfish availability. Therefore, the number of fishing trips a DSBG will also largely depend on this consideration.

<sup>12</sup> [www.pcouncil.org](http://www.pcouncil.org) HMS SAFE Report Table 12.

<sup>13</sup> The estimate is based on a work in progress research on transfer effects.

significant environmental damage at a global scale to accompany a swordfish supply crunch in the domestic arena.

While reasons have been offered for promoting DSBG as an alternate or a viable option for transitioning away from the DGN fishery, such an attempt may not be prudent at this time given that the operational characteristics, conservation impacts and economic feasibility of DSBG are yet to be established. Given that the Western and Central North Pacific Ocean swordfish stock is not subject to overfishing or overfished<sup>14</sup> and thereby offers good fishing opportunities, it is my opinion that DSBG has yet to demonstrate that it can be an equivalent substitute for the quantity of swordfish produced by the DGN fleet. Consequently, the Council may want to continue looking for alternatives such as the use of high seas shallow-set longlines as a potential gear alternative for harvesting comparable DGN volumes. Pelagic longline is a proven gear for targeting swordfish in the post-2004 Hawaii fishery and producing high catch volumes while minimizing endangered sea turtle bycatch impacts. Moreover, since reopening in 2004, the Hawaii longline fleet has also landed their harvest in the West Coast ports with increasing frequency. It seems illogical and irrational to continue prohibiting West Coast-based fishermen from utilizing swallow-set longline to target and land swordfish.

So, while you consider authorizing the DSBG as another gear option for west coast fishermen, please consider that in my opinion, it will not replace the volume of swordfish currently harvested by DGN meaning that the west coast will continue to depend on imports to satisfy consumer demand. Therefore, I respectfully recommend that the Council not authorize DSBG until sufficient facts are established with regarding the viability of this method.

Thank you for the opportunity to comment.

Sincerely,



Naresh C. Pradhan, PhD  
Long Beach, California

**Attachment (1):** Economist's letter to the California Senator Ricardo Lara (SB 1114 (Allen))

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<sup>14</sup> NMFS July 14, 2015 letter from Will Steele to Dorothy Lowman.

May 10, 2016

The Honorable Ricardo Lara  
State Capitol, Room 5050  
Sacramento, CA 95814

**RE:** An Economist's Argument for the California Driftnet Fishery and Opposition to SB 1114 (Allen)

Dear Senator Lara,

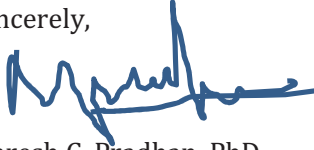
I am a natural resource/environmental economist with extensive research and work experience involving U.S. marine fisheries in Hawaii and U.S West Coast regions since 1999. I have a PhD (economics) and an MBA from the University of Hawaii at Manoa, a MS (agricultural economics) from the University of Philippines at Los Banos, and an MPA and a BSc (agriculture) degree from Tribhuvan University. Besides working for various government agencies, universities and international research institutions over the course of the last three decades, I have also carried out several research studies on endangered marine animals like sea turtles that are subject to rare-event interactions with some U.S. fisheries. My work on fisheries has also been published in some of premier journals for fisheries research such as *Fisheries Research*, *Ecological Economics*, *North American Journal of Fisheries Management*, *Marine Policy*, *Marine Resource Economics* and *Applied Economics*. I have also served as a reviewer for several journals that publish fishery economics research.

As an economist, I recognize the importance to the economy and to society for a rich diversity of marine species to coexist. The existence value of any species is important not only to this generation but for future generations as well. I firmly believe that fishing activities should minimize any associated negative environmental impacts to the extent possible. However, the Turtle Island Restoration Network (TIRN) report entitled "*California Driftnet Fishery: The True Costs of 20<sup>th</sup> Century Fishery in 21<sup>st</sup> Century*" makes a futile attempt to produce a sound economic argument against the California driftnet fishery. I reviewed the report out of personal curiosity and interest generated by over a decade of studying and working on the marine species involved. I find the TIRN report to be deliberately misleading and while the report claims to make "the economic argument against California driftnets", it utterly lacks any merit or standards from the view point of the economics profession. For these reasons, I was compelled to write this opposition letter for fairness to the directly affected entities like harvesters and consumers of fish. Most concerning about the report is that it uses fictitious data in many instances and erroneously mentions a non-existent institution to make its case against California driftnets.

In the Annex to this letter, I provide objective arguments against some of the information presented in the report. In the left column of the Annex, I present some of the assertions and numbers presented in the TIRN report along with my counter arguments in the right column. The TIRN report seeks to remedy an environmental issue associated with the California driftnets whose impact has already been regulated to the point of insignificant impacts. Unnecessary additional regulation of the fishery will significantly impact not only on the livelihoods of many California

harvesters but also the availability of affordable fish products to many California consumers. ,  
Therefore, I respectfully request that you vote "No" on SB 1114.  
Thank you for the opportunity to comment.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Naresh C. Pradhan', with a stylized flourish at the end.

Naresh C. Pradhan, PhD  
Long Beach, California

Attachments (2)

## Annex 1. Argument Against and For California Driftnets (DGN)

| Page | In the TIRN Report<br>(Argument against<br>California Driftnets)  | Argument for California Driftnets   |
|------|---|---|
| 1    | <p>"...This enterprise is operating squarely in the red when its management costs are valued. This is not only an unprofitable venture, but worse, it is costing taxpayers money on an annual basis. The California driftnet fishery is a destructive enterprise to our oceans and marine life that it is deficit spending annually, and costing taxpayers potentially millions of dollars. If this fishery was a public corporation, it would have been bankrupt a long time ago..."</p> | <p>The bulk of the management costs referenced in the report are attributed to the cost of running the drift gillnet fishery observer program. The report cites unsubstantiated evidence claiming millions of dollars in costs to tax payers on an annual basis due to managing this fishery. The NOAA Fisheries West Coast Region (WCR) Fisheries Observer Program was established by the federal government to observe a number of different fisheries in order to administer the requirements of the Marine Mammal Protection Act; the costs are not directly attributable as part of the operating costs of the drift gillnet fishery.</p>  |
| 2    | <p>"...The cost of regulation would substantially decrease if California swordfish fishery used more sustainable fishing gear instead of driftnets.</p>   | <p>The push by some groups of environmentalist stakeholders for an extremely high level of observer coverage reflects an interest to demonstrate the fishery is too costly to manage. It is arguably these individuals who drive up the operating cost of managing the fishery to impractical levels, as fishermen enjoy no advantage and bear a cost of carrying observers on their vessels.</p> <p>The Region receives the majority of its observer program funds through the National Observer Program. The Region's budget line is lowest in the nation among similar programs, as the Region only receives about 1 % of the nationally allocated funding for the Observer Program. Funds are spent not only on the direct observation of fisheries operation, but also support observer training, education, and research. In FY 2012, the WCR Observer Program received \$775,552 in federal funding and observed a total of 339 sea days with six observers spread across many different fisheries—the California large mesh drift gillnet (DGN), the Southern California set gillnet, the Southern California small-mesh drift gillnet, and the California deep-set pelagic longline fisheries. The observer program also recently began observing a small test fishery using deep-set buoy gear to target swordfish during the daytime. Target observer coverage rates ranged from 10 to 100%, depending on the fishery. Trips in these fisheries typically last from 1 to 30 days<sup>1</sup>. The direct observer cost in monitoring DGN fishery operation has never been in the range of \$1.2 to \$2.7 million since NOAA Fisheries Southwest Region received only about \$775,552 in 2012, \$1.132 million in 2011, and \$ 1.131 million in 2010 for <i>all</i> observer monitoring operations.</p> <p>The observer program was established to collect information on the nature and degree of bycatch in the fishery. For purposes of statistically characterizing the bycatch impacts of the fishery, it is necessary to collect information once or twice; however the information is being collected routinely and recurrently. Once sufficient information is available to characterize the fishery, the recurrent cost for the program may be redundant. The example from the Hawaii's shallow-set longline fishery consistently shows that with 100 percent observer coverage, the degree of sea turtle interactions have been much lower than projected estimates with 5 or 20 percent observer coverage in earlier years. When the observer data has revealed minimal impacts on critical species or habitats, continuous monitoring of the fishery at a high level of observer coverage is not necessary. Further, continuous monitoring of a fishery through observer program may reflect neither the choice of consumers nor of NOAA Fisheries. Producers or fishers have willingly volunteered to participate in the observer program given it has no direct financial burden to them. It reveals their confidence about their minimal bycatch of critical species. Observer program costs are also likely to decline in the coming years as NOAA Fisheries transitions to increased use of electronic monitoring.</p> |
| 2    | <p>"... the California driftnet fishery landed 135,000 pounds of swordfish in 2013, valued at \$585,000."</p>   | <p>I don't know the source for the landing volume and revenues cited in the report, but those numbers are incorrect for the indicated year. In fact, about 296,000 pounds of swordfish was harvested from California waters using all fishing gears in 2013.<sup>2</sup> In 2013, California DGN alone landed 95 mt or 209,380 pounds of swordfish beside other marketable catches.<sup>3</sup> The reduction in landings in recent years has more to do with the changing sea environment, aging of fishers or vessels, etc. than with the DGN fishery itself. Dwindling participation reflects increasing regulatory pressure rather than the economic viability of the DGN fishery. Income from DGN fishery is an important component of earnings from the portfolio of fisheries in which DGN fishers participate. Any reduction in their income due to closure of the DGN fishery could adversely affect their ability to</p>  |

<sup>1</sup> [http://www.st.nmfs.noaa.gov/Assets/Observer-Program/pdf/FY\\_2012\\_NOP\\_Annual\\_Report\\_FINAL.pdf](http://www.st.nmfs.noaa.gov/Assets/Observer-Program/pdf/FY_2012_NOP_Annual_Report_FINAL.pdf)

<sup>2</sup> <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=88092&inline>

<sup>3</sup> <http://www.pcouncil.org/wp-content/uploads/HMS-SAFE-Table-12.htm>



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|   |  | participate in other fisheries as well. As a result, it will substantially impact fishing income and employment in the affected fishing communities.  |
| 3 | "The declining catch from the driftnet fishery includes not only swordfish, but also thresher shark..."  | Note that, "...in the early 1980s, drift gill net vessels switched to swordfish as their primary target species. Thresher sharks, along with other sharks were secondarily targeted and landings of threshers began to decline. In 1990, a California voter referendum banned gill nets in state waters (within 3 nautical miles) of shore south of Point Arguello (Santa Barbara County)] in southern California. In 2001, a federal gill net closure was enacted to protect leatherback sea turtles from Point Conception to central Oregon from August 15 through October 31. In addition, during El Niño conditions, the area south of Point Conception is closed to drift gill net fishing August 15 through August 31 and in January to protect loggerhead turtles. These closures have further reduced thresher shark landings, with landings totaling less than 200 short tons (181 metric tons) each year since 2004..." <sup>4</sup>  |
| 4 | "...the annual cost of managing the California driftnet fishery during the last five years that ranges from \$1,265,500 to \$2,720,750, while the value of landings has ranged from only \$553,000 (2014) to \$1,030,000 (2011). This analysis indicates the cost of managing the fishery is more than double the value of the fish, leading to a net loss to the economy between \$268,000 up to \$2,058,500..."  | <p>First of all, the analysis fails to provide any reference for the revenue and management costs. The real value (inflation adjusted) of DGN landings were actually \$1,021,000 million in 2011 and \$896,000 in 2014.<sup>5</sup> Further, the landings and revenue generated by the fishery generates positive economic impacts in the form of induced income and job creation.</p> <p>A data source to document the alleged drift gillnet fishery management costs ranging from \$1.2 mil to \$2.7 mil is not provided. But, the link (<a href="http://www.pcouncil.org/wp-content/uploads/HMS_AppH.pdf">http://www.pcouncil.org/wp-content/uploads/HMS_AppH.pdf</a>) on page 10 suggest :</p> <p><i>" A recent rough estimate of observer costs to cover pelagic longline, tuna purse seine, albacore troll, and drift gillnet fisheries is \$1,000,000 per year, understanding that the percentage of coverage necessary and priorities may change. Observer costs can vary from fishery to fishery. Costs can also vary widely depending on whether services are being contracted for or the observers are NMFS employees. A large part of observer costs is insurance. The Southwest Region's current observer costs are \$650.00/day, which is a contracted cost, but there is training by NMFS that increases the cost. When NMFS employees are used as observers, the cost may be as low as \$300.00/day. ..."</i></p> <p>The observer program cost is discussed earlier in this Annex. In 2012, there were 339 sea days of observations across a number of different fisheries in the Southwest Region. Even if all these days were for DGN, it would only amount to \$220,350 on direct cost of observing the DGN fishing operation using outside contractor and \$110,175 using NMFS staff time. Moreover, the budget for observer program has been on decline in recent years.</p> |
| 4 | " ... With the closure of the driftnet fishery, fishermen targeting swordfish could transition to a low-impact, more selective gear type. One clear alternative is the historic harpoon fishery, which has existed off the California coast since the 1930s. A second alternative is the deep-set buoy gear used off the East Coast, where driftnets are banned. Both alternatives have the potential to increase fishermen's income due to higher prices of swordfish | <p>Information from fishermen who participate in the West Coast swordfish fishery substantiates that drift gillnets offer a much larger contribution to fishers' incomes than harpoon fishing. If harpoon or buoy gear offered the suggested potential to increase fishermen's incomes, they would be far more widely utilized; in fact, they provide a very limited share of U.S. and global swordfish production. Assumptions about increasing the supply of the high- priced fish caught by these gears are unrealistic given that 80 percent of swordfish consumption is met by cheap imports. Will they be able to survive from market competition? Will they meet domestic demand? Note that there are only about 10 to 13 harpoon vessels in operation since 2012 with recent average annual landings of only 5 mt of swordfish for the current harpoon fleet. The harpoon fishery is open access, so it could have expanded to substitute for dwindling west coast drift gillnet landings after Pacific Leatherback Conservation Area closure in 2001 and the decrease in longline landings when the California-based fishery closed after 2004, but there was no discernible increase in harpoon fishing at that time.</p> <p>The higher prices for swordfish caught using a harpoon reflects a higher cost per</p>  |

<sup>4</sup> file:///C:/Users/Naresh/Downloads/status2008thresher.pdf

<sup>5</sup> <http://www.pcouncil.org/wp-content/uploads/HMS-SAFE-Table-13.htm>



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|   | caught using these more sustainable methods.”  | swordfish caught due to much lower catch rates. There is also a limited range of conditions under which harpoon can be prosecuted which constrains how much more harpoon fishing could potentially occur.  |
| 4 | “.....For comparison, the driftnet fishery has not matched the historical performance of the harpoon fishery since the 1990s, with average of 234 MT of swordfish landings from 2002-2014.”  | It is unclear where the TIRN authors got those numbers, but they are incorrect. Harpoon landings since 2010 averaged only 5 mt and during 1990-2014 it averaged only 66 mt. <sup>6</sup> DGN landings of swordfish over the period were much higher than harpoon landings, averaging 529 mt per annum during 1990-2014. <sup>7</sup>   |
| 5 | “ Even with a lower catch than from the driftnet fishery, a transition to a harpoon fishery would potentially increase fishermen’s average income, although the catch is highly volatile. Because harpoon or deep set buoy gear caught fish is fresh, and not hanging dead on a net for many hours, the fish is higher quality and commands a higher price. On average, the landings of the harpoon fishery have had an ex-vessel value of \$8.93 per pound, compared to the average of \$4.34 from the driftnet fishery.”                               | <p>Given the higher cost per swordfish caught with harpoon, harpoon fishermen need to charge a higher price to cover their fishing costs. Hence harpoon-caught swordfish serves a small niche market of wealthy consumers who can afford to pay the harpoon product luxury premium. By contrast, since it is caught at a lower average cost per pound, drift gillnet-caught swordfish sells in larger quantities at a lower average price which makes it affordable to a relatively larger number of middle-class consumers.</p> <p>Although harpoon caught fish may fetch a premium price, a Southwest Fisheries Science Center cost-and-earning survey indicates the fishery at times operates with negative profitability. Many harpoon vessel owners also own other vessels or businesses but participate in the harpoon fishery primarily as a form of recreation rather than as a commercial enterprise.</p>   |
| 6 | “Switching the existing driftnet boats to harpooning would generate a fleet of 27-31 boats, comparable to the harpoon fishery during the period of 1996-2010. During that period, the harpoon fishery averaged 28 boats each year landing an average of 69.6 MT of swordfish per year. Given the higher prices available for harpoon-caught fish, this smaller catch fetched comparable or higher swordfish revenues (an average of \$750,000 in 2015 dollars 1996-2010) than the driftnet fishery (an average of \$681,000 in 2015 dollars, 2010-2014)” | The report assumes it is very easy and costless to convert a vessel from one gear type to another. In reality, retrofitting a vessel could be expensive. There is no economic basis for systematically replacing DGN gear with harpoon. If harpoon was an economically attractive fishing method, it would already have flourished, given no regulatory limits on its use. The TIRN report projects that 28 converted harpoon boats could land about 15 mt or about 0.5 mt per boat. Even if they landed 69 mt, that would come to only 2.5 mt per boat, representing an insignificant contribution to fisher livelihoods, especially if costs are considered. Could any harpoon fisher be able to making a living with such meager landings? Would those 28 boats meet local swordfish demand if DGN fishers were limited to using harpoon? If the harpoon fishery were soon to be profitable, would there be investors lining up to purchase new harpoon vessels in order to expand the size of harpoon fleet? I do not see any economic or financial justification for the assumptions made in the report about the profitability of harpoon fishing. |
| 6 | “...In fact, an independent analysis by the Bren School of Fisheries Management reached a similar conclusion that a harpoon-only fishery could well be more profitable with lower landings. Although the volatility of harpoon landings remains an issue, a wide range of policy   | <p>The report references the nonexistent Bren School of Fisheries Management. The Bren School of Environmental Science and Management at the University of California Santa Barbara produced a report on the West Coast Swordfish fishery which actually states the following:<sup>8</sup></p> <p>“Discussion &amp; Recommendations</p> <ul style="list-style-type: none"> <li>▪ A fishery with multiple gears would achieve the highest profit and swordfish catch and provide a steady supply of domestically-caught swordfish throughout the year.</li> </ul>   |

<sup>6</sup> <http://www.pcouncil.org/wp-content/uploads/HMS-SAFE-Table-16.htm>

<sup>7</sup> <http://www.pcouncil.org/wp-content/uploads/HMS-SAFE-Table-12.htm>

<sup>8</sup> California Swordfish: Evaluating management scenarios to revitalize the California commercial swordfish fishery. Bren School of Environmental Science and Management. Spring 2015.

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|   | options exist for reducing the economic impacts of revenue volatility...”  | <ul style="list-style-type: none"> <li>▪ Harpoon is not a viable gear type to increase swordfish catch on a commercial scale.”</li> </ul>  |
| 7 | “Deep-Set Buoy Gear: The economics of the fishery are radically changed by the development of deep-set buoy gear off the California coast. Deep-set buoy gear is commonly used on the East Coast, where driftnets are banned, for swordfish fishing....”   | The DSBG fishery has not yet developed, and as noted, there is no guarantee yet that it will be viable from either an economic or a conservation standpoint. When the gear is permitted, it might operate like a part time fishery, similar to hand line gear for California halibut, to supplement personal income of fishermen.  |
| 8 | “...In the 2015-2016 season, the four boat experimental deep set buoy gear fleet landed an average of 4,250 pounds of swordfish per boat, while the twenty boat driftnet fleet landed an average of 5,250 pounds per boat....”   | Again, the numbers in the TIRN report are simply fictitious. The actual average DGN landing per boat during 1990-2014 has remained at about 15,939 pounds per annum. In 2014, swordfish landing per boat was 12,990 per annum in the DGN fleet. Moreover, it catches a significant volume of other marketable fish species.  |
| 8 | “Among the several approaches to ensure that the driftnet fishermen benefit from alternate fishing methods is to offer a buy-out of their driftnet permits or to offer priority for harpoon or deep-set buoy gear permits in a limited entry fishery”  | Harpoon is open access. Limited entry is unnecessary due to a lack of fisher interest to participate in a marginally profitable or unprofitable fishery.   |
| 9 | <p>“Swordfish: Taxpayers Paying to Provide this Luxury Item to High-end Consumers</p> <p>With the cost of managing the driftnet fishery being more than double the value of the fish, U.S. and California taxpayers pay significant sums to produce swordfish. The cost of catching swordfish is distributed to taxpayers generally, but swordfish is considered an expensive, luxury food. In other words, average taxpayers who cannot afford luxury items foot the bill to subsidize swordfish consumed by the wealthy....”</p> | <p>The argument for average tax payers subsidizing the wealthy is based on a wrong assumption. Compared to DGN, DSBG- and HPN-caught swordfish are luxury consumption items due to the higher cost of catching swordfish with these methods. Instead, the DGN fishery makes swordfish affordable to wide range of consumers.</p> <p>The observer program cost that the report references is actually from federal spending program, not from the state’s budget. The rationale for the observer program is as discussed earlier.</p> |
| 9 | The California driftnet fishery has such a high ecological impact relative to its benefit that it cannot be considered a sustainable approach to meeting demand for seafood. For example, between 2004 and 2014, one whale, dolphin, or porpoise was killed for every \$27,906 of landings by the driftnet fishery. The economic “return” for every individual of a IUCN listed vulnerable species caught by this species is a mere  | <p>RE: “The economic “return” for every individual of a IUCN listed vulnerable species caught by this species is a mere \$133’</p> <p>The meaning of this sentence is unclear, including the interpretation of the \$133 figure. The source or clear interpretation of the information is not provided.</p>  |

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|    | \$133  |   |
| 10 | <p>“...To demonstrate that this represents a truly unacceptable rate of ecological impact, if all California fisheries were as destructive as the California driftnet fishery, California fisheries would kill approximately 7,931 whales, dolphins, and porpoises a year, over 6,000 seals and sea lions, and 1.7 million vulnerable or threatened sharks and finfish every year.<sup>21</sup> Conversely, if the California driftnet fishery were as clean as the average fishery, the driftnet fishery would kill a whale or dolphin once every three centuries, instead of the dozens it kills each year...”</p>   | <p>The reference for data or method used to get these mortality estimates is not provided. It appears the comparison excludes other CA fisheries with known bycatch concerns.</p> <p>“...kill a whale or dolphin once every three centuries, instead of the dozens it kills each year.”</p> <p>It makes no sense in a population analysis to combine dolphins, which in many cases have no population concerns and have frequent interaction due to great abundance, with whales, which generally have very rare DGN interactions.</p> <p>The dollar value of landings in the TIRN report is fictitious. California actually landed \$254 million worth of fish,<sup>9</sup> not \$55 million in 2014 (as noted in footnote 21 in the TRIN report).</p> |
| 10 | <p>“....Proponents of indiscriminate industrial gear argue that because other countries have less regulated and dirtier fisheries, California should maintain dirty fisheries of its own because otherwise foreign fishermen will increase their catch and their bycatch along with it. While superficially appealing, there is scant evidence that the transfer effect actually happens.”</p>   | <p>The DGN fishery operates in compliance with federal conservation laws, including the MMPA, ESA and Magnuson-Stevens Act.</p> <p>Various scientific studies by researchers at University of California Berkeley, NOAA's Pacific Island Fisheries Science Center, the Southwest Fisheries Science Center, etc. indicate greater environmental damages in other parts of the ocean may result from unilateral conservation actions in U.S. fisheries. The seasonal closure of the DGN fishery along the U.S. West Coast to protect leatherback turtles for three months each year since 2001 has alone resulted in an estimated 1800 sea turtles casualties in other fisheries against 45 had the DGN fishery remained open.</p>                        |
| 11 | <p>“....To date, no studies have shown that “transfer effect hypothesis” reflects a real effect that actually increases global impacts on marine life. The two main studies to investigate the potential magnitude of any transfer effect have simply compared regulated U.S. fishery bycatch levels to either unregulated U.S. fisheries or foreign fisheries with limited bycatch data and extrapolated that increased imports must involve increased effort and therefore increased bycatch.<sup>23</sup>,<sup>24</sup> However, this analysis make a series of unjustified assumptions to make the leap from changes in imports to hypothetical increases in foreign bycatch. In reality, these unfounded assumptions about the global economy do not hold</p> |   |

<sup>9</sup> <http://www.st.nmfs.noaa.gov/commercial-fisheries/commercial-landings/landings-by-gear/>

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|    | up under scrutiny.”   |  |
| 11 | <p>“U.S. Fishermen Can Lead Global Innovation The transfer effect hypothesis rests on an erroneous assumption that U.S. fisheries will not innovate new and cleaner approaches or switch to alternate gear, such as harpoons or buoy gear and replace dirty gears with cleaner ones such that overall supply is not diminished. This does not seem to be the reality in California, as some fishermen have already switched from driftnets to harpoons or deep-set buoy gear. Historically harpoon gear matched current levels of catch, especially with innovative technologies to identify key swordfish areas, resulting in no net increase in imports. Given the incentives provided by a ban on driftnet gear, the swordfish fleet has the capacity to develop other, cleaner gear...”</p> | <p>The authors likely are unaware of what it costs to operate harpoon or buoy gears. Whether people can earn a livelihood fishing full time with those gears is highly questionable given current price levels for various inputs like labor, fuel, insurance, and other capital investments. Would the premium price consumers are willing to pay for very little catch be able to cover huge associated costs with these gears? Moreover, a large number of harpoon or buoy gears could leave a very large carbon footprint as well if they were to harvest an equivalent volume of swordfish in the U.S. West Coast to that produced by the DGN fishery.</p>  |
| 12 | <p>Imports are Likely to Reflect Mere Diversions of Foreign Supply Even if demand is shifted to foreign suppliers because of a failure of U.S. producers to innovate, increased foreign supply most likely reflects a diversion of supply from domestic markets, rather than an increase in fishing effort. In effect, if increased U.S. imports are satisfied by foreign fishers selling their catch in the U.S. rather than in their own domestic markets, then the global amount of fishing would be unchanged (and global bycatch would be unchanged).</p>  | <p>The report goes to lengths arguing against transfer effects. Although there may be a very slim possibility of market diversion in some regions, transfer effects are largely due to increased production in less regulated regimes. The TIRN authors might not be aware of scientific publications by Rausser et al (2009), Chan and Pan (2012), Bartram (2010), Sarmiento (2006), Squires et al (2016) studies on conservation leakages or transfer effects associated with unilateral conservation actions. These studies provide peer-reviewed and published estimates of the conservation, production, and consumption leakages associated with the conservation action to close the Hawaii shallow-set longline fishery to protect endangered sea turtles.</p> |
| 12 | <p>Furthermore, the transfer effect hypothesis would require a decrease in U.S. production to stimulate an increase in foreign effort. That would require a decrease in U.S. supply to be large enough to affect the global market price. It is difficult to maintain that the landings from 20 California boats have such an impact on global markets.</p>   | <p>The seasonal closure from Aug 15-Nov 15 since 2001 alone generated an estimated conservation leakage of about 32 times the reduction in West Coast sea turtle impacts. I.e., an estimated reduction of 45 leatherback turtles due to the closure resulted in 1800 plus leatherback sea turtles interacted/killed elsewhere.</p>   |
| 13 | <p>Continuing the California “Driftnet Fishery Enables Dirty Fishing Practices Globally</p>   | <p>The DGN fishery is portrayed as having the same environmental impacts as swordfish fisheries operated elsewhere in less regulated regions. This is inaccurate, since the DGN fishery operates in compliance with multiple state and federal conservation laws, and it sets an example of conservation achievement for global fisheries instead.</p>   |

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|  | <p>Conversely, maintaining one of the highest-bycatch fisheries in the world enables foreign fisheries to continue their own dirty fishing practices. Such “regulatory enabling” erodes the ability of the United States to act as a leader in sustainable fisheries management and induce improvements in foreign fisheries. As long as California maintains an indiscriminate fishing method among the worst 20 percent globally, U.S. diplomatic efforts to push for cleaner fisheries abroad will be blunted, particularly if other countries such as Morocco and Russia have banned driftnets”</p> |  |
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## **Annex II. References**

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