



Agenda Item B.1

Open Comment 1

November 2013

Chuck Tracy - NOAA Affiliate &lt;chuck.tracy@noaa.gov&gt;

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**Fwd: Agenda Item B.1 - Open Comment Period October 30-November 6, 2013**1 message

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

Mon, Oct 7, 2013 at 7:58 AM

To: Chuck Tracy - NOAA Affiliate &lt;chuck.tracy@noaa.gov&gt;

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

From: **Teri Shore, SeaTurtles.org** <tshore@tim.net>

Date: Fri, Oct 4, 2013 at 4:34 PM

Subject: Agenda Item B.1 - Open Comment Period October 30-November 6, 2013

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

Dear Pacific Fishery Management Council,

For your review and consideration at the October 30-November 6, 2013 meeting of the Pacific Fishery Management Council, I am submitting a copy of the new report, ***California's Deadliest Catch***. The report makes a strong case for ending the use of drift gillnet gear in the California swordfish and thresher shark fishery. The report may also be downloaded with supplemental documents at [www.seaturtles.org/deadliest\\_catch](http://www.seaturtles.org/deadliest_catch).

While I realize that the California drift gillnet fishery is not on the agenda at this meeting; and that the Highly Migratory Species Management Team is not meeting at this time, I wanted to provide the Council members with ample time to review this report before the fishery is reviewed again as expected in Spring 2014.

The report compiles data from PFMC SAFE reports, NMFS bycatch reports and other government and independent data on bycatch in the fishery.

It also seemed timely to update the Council on recent developments in the fishery that support arguments for the phase out of drift gillnet gear in the swordfish fishery along the U.S. West Coast:

1. Emergency regulations were imposed on the fishery in September due to excess take of endangered sperm whales.
2. The fishery was re-categorized as a Category 1 fishery under the MMPA due to its take of endangered sperm whales and other marine mammals. It is now ranks with the much larger Hawaii longline fishery as the two most deadly fisheries to protected marine mammals in the U.S. Pacific commercial fishing fleet.
3. The emergency regulations are only temporary and new regulations must be adopted before the 2014/2015 season to comply with MMPA and ESA mandates.

With these developments in mind, I also urge PFMC to end its explorations into expanding the drift gillnet fishery for swordfish into the Pacific Leatherback Conservation Area. While this time-and-area closure has successfully protected endangered leatherbacks, it has also served to significantly reduce bycatch of marine mammals and non-target fish species. Allowing more fishing effort in the PLCA would increased threats to protected marine species including whales.

Lastly, I urge the PFMC to direct the HMS Team to prepare an analysis and alternative for phasing out the drift gillnet gear for the next Council meeting where the swordfish fishery is reviewed or discussed; and before the 2014/2015 season commences.

Thank you for your consideration.

Teri Shore  
Program Director  
Turtle Island Restoration Network

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Thank you for your comments to the Pacific Fishery Management Council. Your comments have been received and will be forwarded to the appropriate staff member for processing.

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# ***CALIFORNIA'S DEADLIEST CATCH***

## ***The Drift Gillnet Fishery for Swordfish and Shark***

### ***An Exposé and Call for Action***



*We must stop whales, dolphins, sea turtles, sharks and thousands of fish from needlessly drowning in drift gillnets along the California coast — once and for all.*

*By Teri Shore, Program Director, Turtle Island Restoration Network, [SeaTurtles.org](http://SeaTurtles.org)*





## ABOUT TURTLE ISLAND RESTORATION NETWORK

Turtle Island Restoration Network is a nonprofit marine conservation organization based in California with offices in the Gulf of Mexico and Costa Rica. Turtle Island Restoration Network (TIRN) carries out three initiatives: the Sea Turtle Restoration Project, the Salmon Protection and Watershed Network and the Got Mercury Campaign.

TIRN and its marine restoration programs work to protect endangered marine species, save critical ecosystems, improve consumer choices, encourage government action and inspire corporate responsibility, all to protect marine wildlife and the wild oceans we all rely upon.

Our staff is just one piece of the puzzle. Our work is buoyed by thousands of supporters, volunteers and pro bono professionals, who help extend our network around the globe.

### **Turtle Island Restoration Network's Mission:**

To mobilize people in local communities around the world to protect marine wildlife and the oceans and inland watersheds that sustain them.

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*A Pacific leatherback swims under the sea. Photo ©Doug Perrine, seapics.com.*

*Cover - A rare megamouth shark struggles for life in a California drift gillnet.*

*Photo - NOAA Fisheries Southwest Region*

*Layout and design assistance - Theresa Reilly; Copy editing Madeline Rose and Christina Morrisett*

# INTRODUCTION TO CALIFORNIA'S DEADLIEST CATCH

Few Californians realize that a high bycatch drift gillnet fishery that targets swordfish and thresher shark operates off the California coast with deadly consequences for ocean wildlife.

Most people are shocked to learn that mile-long invisible “curtains of death” are allowed to drift all night through the rich congregation of marine life that thrives off California’s shores. The CA drift gillnet fishery entangles, injures and kills the full spectrum of endangered and protected marine wildlife that relies on the California Current: whales, dolphins, sea turtles, sharks, blue-fin tuna, ocean sunfish, and dozens of other fish species, and sea birds.

While called gillnets, the fishing gear actually entangles sea creatures that swim into its path.

## **The drift gillnet fishery for swordfish and shark is California’s deadliest catch.**

Over the past decade, more than 1,300 whales, dolphins, and turtles drowned after getting tangled in these large-mesh drift gillnets.<sup>1</sup> Over a hundred thousand giant ocean sunfish and ten thousand blue sharks were also caught and discarded during the last 10 years.<sup>2</sup>

For millennia, ancient leatherback sea turtles have made a long-distance migration across the Pacific Ocean to feed on jellyfish along the California coast. Pacific loggerheads make a similar trans-oceanic journey, passing through California’s coastal waters on the way to warmer feeding grounds in Baja, Mexico. Both sea turtle species are now highly endangered and face a gauntlet of fishing gear that has taken a terrible toll on their populations.

Even with a large area of U.S. West Coast waters off limits to California’s gillnets for three months of the year to protect critically endangered leatherbacks,<sup>3</sup> two of these vulnerable sea turtles were seen in the gillnet gear by CA gillnet fishing fleet observers in 2012 and 2009.<sup>4</sup>

Ocean giants such as endangered sperm whales, humpback whales and gray whales are also among the casualties of the CA drift gillnet fishery. An estimated 16 sperm whales were killed and as many as 12 minke whales were entangled in recent fishing seasons.<sup>5</sup>

Drift gillnets are so deadly to marine life that the gear is banned in Oregon and Washington and on the High Seas.

More than 90 percent of the ocean life indiscriminately caught by these nets is neither swordfish nor shark, but dozens of other fish species. Ultimately, only about one-third of all the finfish that is caught is kept for sale as seafood, while the rest is discarded overboard injured, dead or dying.<sup>6</sup>

## **Gillnet and Longline Swordfish Is Not Sustainable**

Much of what is sold and labeled in California’s restaurants and seafood counters as fresh, local swordfish is unsustainable because it is caught by gillnets or with treacherous hooks set by longliners on the High Seas that snare unfortunate sea animals in their mouths, flippers or bodies.

Longlining is currently prohibited along the U.S. West Coast to protect sea turtles and marine mammals. Yet swordfish longline vessels based in Hawaii are allowed to sail into California ports to offload their deadly catch.

These vessels drop millions of hooks into the open ocean hundred of miles from shore where they snag endangered sea turtles, false killer whales and seabirds at rates that continue to threaten their long-term survival.

Imported swordfish sold in California comes from foreign fleets with fishing practices that are even worse for marine life and our oceans. The U.S. government can level the playing field for domestic fishers and prohibit the import of swordfish until it meets our fishing and conservation stan-

dards. So far it has failed to do so, instead putting seafood profits before ocean life.

In contrast, for decades, the state of California has restricted the use of drift gillnets off the coast and long ago banned the use of longlines.

## **Holding the Line on Harmful Fisheries in California**

In defiance of longstanding California marine conservation and fishery policies, federal fishery managers and seafood lobbyists continue to push to expand the unsustainable gillnet fishery for swordfish and shark into protected sea turtle habitat and open our coastal waters to longlining.

After more than a decade of successfully halting destructive fishing initiatives over and over again, Turtle Island Restoration Network (TIRN) is now mobilizing a grassroots campaign to phase out the deadly California drift gillnet fishery once and for all.

This exposé and call for action investigates the problems and history of the wasteful, high bycatch California swordfish and shark fishery and why the state of California needs to take pre-emptive action to end gillnetting along our coast. We also explain why we must ban wasteful longline gear forever from California ports.

After reviewing the facts, I hope you will join our campaign to end California’s Deadliest Catch. Stay in the loop about actions, events and the latest news at SeaTurtles.org and on Facebook.

And until we win a phase out of gillnet gear along the California coast, I urge you to swear off swordfish and shark until it is caught in ways where the fish doesn’t come with a side helping of endangered whales, sea turtles or other marine wildlife.



**Teri Shore, Program Director,  
Turtle Island Restoration Network**

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*A pilot whale and a manta ray caught in California drift gillnets. NOAA photos.*



**The problem with drift gillnets is that they are set to “soak” in the ocean overnight, and catch and drown any marine animal or fish that swims into the underwater barrier. The nets are lowered in the evening and retrieved in the morning.**

### California’s Deadliest Catch

The CA drift gillnet fishery for swordfish and shark operates in the same ocean waters where whales, dolphins and sea turtles swim and feed in the nutrient-rich California Current that flows along the U.S. West Coast. When a gillnet vessel drops its mile-long nylon net into the sea to soak overnight, the fishing gear turns into a curtain of death that traps any sea life that swims into its path.

California’s gillnet fleet entangles and harms more marine mammals than any other fishery along the U.S. West Coast as far as Alaska.<sup>7</sup> It ranks alongside the Hawaii longline fishery for tuna as the two fishing fleets that are most harmful to marine mammals among all U.S. Pacific commercial fisheries.<sup>8</sup>

A total of 25 species of marine mammals, four species of sea turtles and three types of seabirds have been observed entangled in the CA gillnet fishery since its inception in the 1970s.

An estimated 6,400 individual marine mammals and 159 critically endangered sea turtles have died in the fishery over the past two decades (1990 – 2010).<sup>9</sup> More animals were released injured and “alive” although their ultimate fate is unknown.

Recently, an estimated 16 endangered sperm whales were fatally injured in the drift gillnet fishery, unable to escape.<sup>10</sup>

The smaller and more vulnerable marine animals killed by the fishery in greatest numbers includes these spectacular dolphin and pinniped species:

- Short Beaked Common Dolphins
- California Sea Lions
- Pacific Whitesided Dolphins
- Northern Right Whale Dolphins
- Long Beaked Common Dolphins
- Risso’s Dolphins
- Northern Elephant Seals

Between 1990 and 1995, an average of 450 marine mammals per year were entangled in CA’s drift gillnets.<sup>11</sup> Since then, even with a significantly smaller fishing fleet and increased environmental protections, the fishery still averages an estimated 138 marine mammal captures per year, most of which die in the nets.<sup>12</sup>

After four decades of federal and state restrictions and regulations, the CA drift gillnet fishery remains deadly to marine life:

- More than 1,000 whales, common dolphins, and other marine mammals were accidentally captured and drowned over the past decade.<sup>13</sup>
- More than 100,000 giant ocean sunfish and 10,000 blue sharks were caught and discarded over the past 10 years.
- As much as 80 percent of the sea life caught by the drift gillnets is neither swordfish nor shark but other finfish and marine species.
- Ultimately, 35 percent of the total finfish catch is kept for sale as seafood and 65 percent discarded.<sup>14</sup>

### The Deadly Nature of Drift Gillnet Gear

Drift gillnets are a notoriously non-selective gear type consisting of mile-long curtains of nylon mesh netting dropped into the surface of the ocean to catch fish—and any other marine animal—that are too large to pass through the net.

Although termed “gillnets,” the nets used in the CA drift gillnet fishery actually entangle fish and other animals rather than trap them by the gills.

The problem with drift gillnets is that they are set to “soak” in the ocean overnight, and catch and drown any marine animal or fish that swims into the underwater barrier. The nets are lowered in the evening and retrieved in the morning.

Most ocean wildlife drowns once it is caught in drift gillnet gear. Very few animals are released alive.

Endangered sea turtles get caught in the nets and drown because they can’t get to the surface to breathe. Even if they survive the nets, they often die after being forcibly submerged.<sup>15</sup>

Air-breathing marine mammals that encounter the nets often drown after thrashing around to free themselves. Whales are so big that they can sometimes surface even when entangled and fight to escape the nets. They are known to die from the injuries they suffer while trying to get free.

Fish can die either while entangled underwater or after being crushed or damaged when the net is hauled in and tons of marine life is dumped onto the deck of the fishing boat. If not retained on board for sale on shore, fish is then swept back overboard damaged or dying.



**Drift gillnets were once the dominant fishing method used by inter-national fishing fleets targeting the ocean's top predator fish—such as swordfish and tuna—in the 1980s.**

In 1993, the United Nations enacted a global moratorium on commercial drift gillnets in international waters due to overwhelming worldwide opposition to these fisheries' large-scale bycatch of marine mammals, sea turtles, seabirds, sharks, and other fish species.<sup>16</sup> A similar North Atlantic swordfish drift gillnet fishery closed in 1999.<sup>17</sup>

More recently, Morocco banned use of drift gillnets in its swordfish fishery in January 2012. The U.S. responded with a formal agreement to research and test lower bycatch buoy gear in the swordfish fleet.<sup>18</sup> The U.S. Atlantic swordfish fishery now uses buoy gear.

Oregon and Washington ban use of drift gillnet gear or landings from that gear in their ports.

Unfortunately, drift gillnets are still legal and used in the territorial waters of individual nations including the U.S. In fact, scientists estimate that over 300,000 marine mammals—whales, dolphins, seals—die every year in global fisheries, most of them in gillnets.<sup>19</sup>

A new study reveals that 400,000 seabirds are killed each year in gillnet fisheries.<sup>20</sup> The study is the first global estimate of seabird bycatch in gillnet fisheries of all types. The researchers pointed out that the huge death toll is a minimum estimate because of the gaps in data and other factors like 'ghost fishing', where lost fishing gear continues to capture birds.<sup>21</sup> The California gillnet fishery entangles primarily one species of seabird, the Northern fulmars, a gull-like seabird.

### California's Drift Gillnet Fleet

The CA drift gillnet fishery for swordfish and thresher shark has been declining for years. The dying fishery is mostly "out of sight, out of mind" for most Californians.

Today, the CA drift gillnet fishing fleet consists of fewer than 25 active vessels.<sup>22</sup> In 2012, only 16 vessels fished for swordfish and shark with drift gillnets.<sup>23</sup>

The fleet fishes mostly offshore from 75 to 200 miles off the California coast between San Diego and Cape Mendocino, mostly concentrated in offshore waters of the Southern California Bight. The fleet lands its catch primarily in San Diego and Los Angeles as well as in Santa Barbara, Morro Bay and Monterey. Most of the fishing takes place between August and January.

The California gillnet vessels are permitted to use nets up to 6,000 feet (1.1 mile) in length and up to 200 feet in depth.<sup>24</sup>

**A single net could cover over 1 million square feet, which is the equivalent size of twenty-one football fields, and span the length of the Golden Gate Bridge.**

### Fish Doomed To Be Caught and Sold

U.S. National Marine Fisheries Service (NMFS) defines bycatch as "discarded catch of any living marine resource plus retained incidental catch and unobserved mortality due to a direct encounter with fishing gear."<sup>25</sup> This definition does not distinguish between live or dead discards but all unwanted fish and marine life that is caught and thrown back to sea.



Most of the fish caught by drift gillnets is neither swordfish nor shark, but bycatch. A large portion of non-targeted fish accidentally entangled in the drift gillnets is kept and sold without limits or quotas, including shortfin mako shark and increasingly scarce bluefin tuna, fish species known to be overfished or declining.

Other fish commonly entangled and kept after the nets are hauled on board include valuable albacore tuna, yellowfin and skipjack tuna, opah (moonfish), and louvar. Yet the life cycles and populations of these fish species are not well understood, so the impacts from excess bycatch in the gillnet fishery are unknown.

In an attempt to make the CA drift gillnet fishery appear more sustainable, NMFS categorizes the finfish bycatch in the drift gillnet fishery as retained "marketable" catch and discarded or "un-marketable" catch. The federal agency also attempts to characterize much of the discarded catch as released alive.

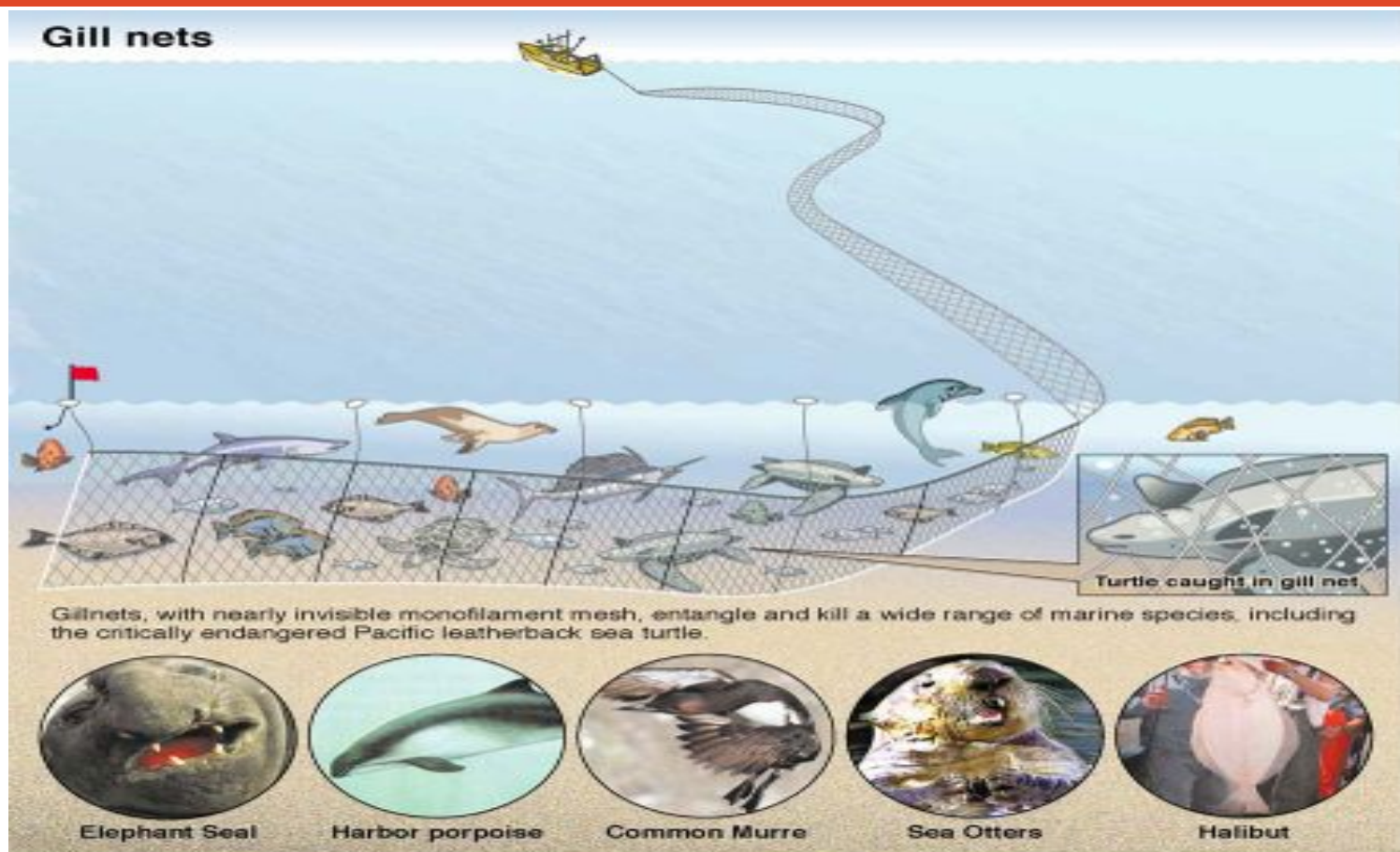
Fisheries scientists don't know if or how many of the discarded fish survive the gillnet gauntlet. No matter what they call it, bycatch in this fishery is a disaster for ocean life.

### California's Turtle-Safe Coast

Today, as a result of decades of conservation advocacy by TIRN, allied ocean groups and support from a broad spectrum of people, California is one of the few safe havens for endangered sea turtles in the waters of the continental U. S.

To stop the capture and drowning of highly endangered leatherback

## OVERVIEW



Source: Pacific Coast Federation of Fishermen's Assoc., U.S. Geological Survey; photo of porpoise from "The Sierra Club Handbook of Whales and Dolphins", The San Francisco Chronicle

sea turtles in the drift gillnet fishery, the Pacific Leatherback Conservation Area (PLCA) now prohibits drift gillnet fishing between August 15 and November 15 along the California and Oregon coasts out to 200 miles from Point Sur to Port Lincoln, Oregon.<sup>26</sup>

Since the PLCA was designated in 2001 under the U.S. Endangered Species Act (ESA), two leatherbacks have been observed entangled in the fishery.<sup>27</sup> An estimated 112 leatherbacks were killed in the fishery in the previous decade.<sup>28</sup>

However, every single leatherback we lose is a major casualty. Pacific leatherbacks are the most imperiled of any sea turtle population in the world. This year, researchers predicted extinction within 20 years for Western Pacific leatherback populations that forage along the California coast.<sup>29</sup>

Populations of the Pacific leatherbacks have declined by approximately 90-95 percent in the last 25 years.<sup>30</sup> Scientists believe that populations are currently so low that the death of more than one percent of adult female Pacific leatherbacks could lead to their extinction.<sup>31</sup>

In addition to the PLCA, the capture and death of sea turtles and marine mammals on the hooks of swordfish longlines along the U.S. West Coast has been eliminated to zero by bans on use of this gear by the state<sup>32</sup> of California and by federal fishery managers. Since

2004, longlining has been prohibited from the coast to beyond the 200-mile Exclusive Economic Zone.<sup>33</sup>

In 2012, more than 42,000 square miles of ocean along the U.S. West Coast including 16,000 square miles in Central California were designated as critical habitat for leatherbacks under the ESA.<sup>34</sup>

Critical habitat extends year-round environmental protections to the waters where leatherbacks feed on jellyfish, their favorite food, along the California coast. However, NMFS excluded fishing operations as a threat to leatherback feeding grounds or migratory pathways to them. TIRN has objected to this determination since fishing gear can directly or indirectly prevent a sea turtle from reaching coastal waters.

Recognizing the importance of state waters to the Pacific leatherback, in 2012 the endangered sea turtle was designated the official marine reptile of California by the enactment of Assembly Bill 1776 (Fong) that was sponsored by Turtle Island Restoration Network. The bill established October 15 every year as Pacific Leatherback Conservation Day.

Any expansion into the PLCA by the drift gillnet fleet would jeopardize the survival and recovery of Pacific leatherbacks.

The seasonal closure has also significantly reduced the number

of whales, dolphins and seals entangled and drowned in the drift gillnets from more than 5,000 in the decade before the closure to about 1,000 since it was closed.<sup>35</sup> Other measures imposed on the fishery to protect marine mammals such as pingers have helped reduce the carnage of marine life.

### Flawed Actions to Expand Drift Gillnet and Longline Fisheries into Protected Habitat

Despite strong state and federal protections for sea turtles and other marine species from unsustainable, high bycatch fisheries along the California and U.S. West Coasts, federal fishery managers with the Pacific Fishery Management Council (the Council) and the NMFS Southwest Region as well as allied seafood interests continue to forward controversial and unpopular proposals to expand the CA drift gillnet fishery into the Pacific Leatherback Conservation Area (PLCA).

The Council is the regional governmental body that manages federal fisheries along the U.S. West Coast. It is comprised of state and federal fishery officials and public appointees.

The Council and NMFS want to reduce the size or period of the three-month gillnet closure without any solid science or economics to support the effort. Their long-term goal is to significantly increase swordfish landings by the drift gillnet fleet and to introduce longlining along the coast despite the risks to endangered sea turtles, marine animals and fish. So far these government agencies and associated seafood interests have been unsuccessful, but they keep forcing the issue onto the agenda of the Council.

In March 2013, California representatives on the Council dismissed federal proposals to allow fishing in the PLCA and delayed any further action on the gillnet fishery until 2014, seeking more science on sea turtles and fishery effort.<sup>36</sup> We now have an opportunity to turn the tide and phase out the drift gillnet gear permanently.

### Denied and Denied Again

The Council tried to open the leatherback conservation area to drift gillnets once before in 2006, but the attempt was soundly defeated by TIRN and a broad coalition of state agencies, legislators, marine scientists, conservation groups, anglers, and the public.<sup>37</sup>

Since then the Council was again defeated in several attempts to reintroduce longlining into state and federal waters along the West Coast. The destructive gear has been banned in state waters since 1989 due to high bycatch. In 2004, longlining was banned in federal waters along the U.S. West coast to 200 miles to prevent capture of endangered loggerhead sea turtles.<sup>38</sup>

If ever allowed, new and enlarged swordfish fisheries using high bycatch drift gillnet or longline gear will threaten the survival of the highly endangered Pacific leatherback and loggerhead sea turtles and doom thousands more protected whales, dolphins, shark, blue-

fin tuna and other non-target fish to capture and death as bycatch.

### Killing Sea Turtles to Save Sea Turtles

The latest federal rationale for expanding the swordfish fishery and allowing more endangered sea turtles and marine mammals to be captured or killed in the CA drift gillnet fishery and other U.S. Pacific fisheries is the unproven argument that increasing domestic swordfish supplies will somehow offset swordfish imports from foreign fleets that have weaker sea turtle and marine mammal protections.

However, there is little evidence that foreign fleets would reduce their fishing effort if the U.S. produced more swordfish. International swordfish fleets can and do sell to other nations such as Europe and Asia where consumption of swordfish is increasing. And in most cases, swordfish is caught as bycatch in large tuna fleets not as a target species.<sup>39</sup>

**If ever allowed, new and enlarged swordfish fisheries using high bycatch drift gillnet or longline gear will threaten the survival of the highly endangered Pacific leatherback and loggerhead sea turtles and doom thousands more protected whales, dolphins, shark, bluefin tuna and other non-target fish to capture and death as bycatch.**

A better way to even the playing field for domestic swordfish fishers competing with under-regulated foreign fleets would be to require that those fleets meet U.S. fishing standards as mandated in conservation and fishery law including the Magnuson Stevens Act, Marine Mammal Protection Act and Endangered Species Act. Even now, the U.S. has failed to do so.

### U.S. Swordfish Consumption Declining

Swordfish consumption has steadily declined in California and the U.S. since the 1990s due to concerns about sustainability, mercury and high prices.

With decreasing demand, wasteful fishing practices and continued decline, expanding this fishery at the expense of endangered species makes no sense. Undertaking another long and intensive regulatory process to prop up a dying and wasteful fishery is an irresponsible use of scarce state and federal resources that would be better spent on truly sustainable fisheries and gear.





### Time to End the Swordfish Gear Game Once and For All

Instead of investing millions of dollars in contentious regulatory processes, federal fishery managers should partner with the state of California to channel scarce resources into phasing out the deadly CA drift gillnet fishery and closing the door to longlining along the California coast once and for all.

In the past, phasing out wasteful and overfished fisheries has been successful in California, dating back to the 1990 ban on gillnets in state waters to the more recent groundfish fishery buy-out program. Instead of expanding the fleet, the state could allow the permits to expire as fishers leave the fleet. Fishery stakeholders can avoid a confrontation by finding the best solution for ending the drift gillnet fleet.

Doing so will prevent the significant time and costs associated with controversial proposals to expand the gillnet fishery. If the California swordfish and shark fishery is to continue, it must utilize alternative, sustainable, low-bycatch gear such as harpooning or perhaps buoy gear now being tested.

Until it is phased out, the swordfish fishery and gear must be managed strictly for minimizing bycatch of protected species, non-target fish and marine life. U.S. fishery policy calls for sustainable fisheries. Phasing out destructive gillnet gear should be a cornerstone for reform in the Pacific and around the world.

**Gillnets and longlines must be permanently ruled out.**

*A leatherback entangled in a drift gillnet in the Atlantic illustrates the wasteful nature of the gear. Photo-Projecto Tamar Brazil.*

*A seafood counter at a popular San Diego restaurant promotes local thresher shark to seafood customers who may not realize the toll that the fishery takes on whales, dolphins and marine life.*

### Profile of California Drift Gillnet Fishery

The California drift gillnet fishery for shark and swordfish is managed primarily by federal entities, with the majority of fishing occurring in federal offshore waters between 75 and 200 nautical miles off the coast of California.<sup>40</sup>

The state of California retains authority over fishing permits in the fleet and continues to enforce regulations governing where and when the drift gillnet vessels can operate. The state has imposed many restrictions on the drift gillnet fishery dating back to the 1970s due to the fishery's negative impacts to targeted and non-target fish species as well as the high levels of bycatch of sea turtles, whales, fish and other marine life.

Drift gillnet fishing for swordfish typically takes place between August and January primarily in the Southern California Bight since state and federal regulators have concluded that the only way to reduce severe impacts to California's sensitive marine wildlife and fish is to ban the activity over large swaths of ocean.

Drift gillnetting is currently prohibited from February 1 to April 30 and barred within 75 nautical miles of the coastline between May 1 and August 14.

To protect endangered sea turtles, fishing is outlawed in the Pacific Leatherback Conservation Area (PLCA) from August 15 to November 15. The seasonal closure covers the Exclusive Economic Zone (EEZ) from Big Sur to the central Oregon coast.

The California Department of Fish and Wildlife retains authority to close the fishery if swordfish or thresher shark stocks are threatened and controls the number of permits and the transfer of permits. The state established a limited entry fishery system in 1980 that capped the total number of permits at 150.<sup>41</sup> Each permit is linked to an individual fisherman, not a vessel. No new permits are issued and conditions of transfer are restrictive.

Each drift gillnet fisherman is required to hold a federal Highly Migratory Species gear-endorsed permit; valid gill and trammel net permit; a limited entry drift gillnet permit (renewed annually and transferable only under limited conditions). They also must submit logbooks and hold current resident or non-resident commercial fishing license, and vessel registration. At least 20 percent of the fleet is supposed to carry independent fishery observers. See section on Observer Coverage.

The vessels in the drift gillnet fleet range from 30 to 85 feet long. And 60 percent are less than 50 feet. Although termed "gillnets," the nets used in the fishery actually entangle fish and other animals rather than trap them by the gills.

Fishermen are permitted to use nets up to 6,000 feet (1.1 mile) in length and up to 250 feet in depth.<sup>42</sup>

### A Shrinking Fishery

The CA drift gillnet fleet has been steadily declining since the 1980s. Although the fishery originally targeted thresher sharks, it switched to swordfish and shortfin mako sharks after thresher shark populations crashed. Other species commonly caught and kept by this fishery include opah, louvar, and various species of tuna.

Historically, the fishery expanded rapidly through the late 1970s and early 1980s as a thresher shark fishery, peaking in 1985 with about 228 vessels that landed more than 2.2 million pounds of shark.<sup>43</sup> The boats fished a total of about 11,000 days. Thresher shark stocks then crashed and so did the landings. Swordfish quickly became the primary target.

Swordfish landings reached a historical high of 4.8 million pounds also in 1985 and have declined since then.<sup>44</sup> The total number of active drift gillnet vessels declined from more than 200 in the 1980s to fewer than 50 active vessels since 2004.<sup>45</sup>

Over time, increased awareness of the harmful effects of this fishery resulted in more stringent regulations and extensive time-area closures, effectively shrinking the fleet to its current size to of fewer than 25 active vessels fishing a total of less than 1,000 fishing days per year. In 2011, that dropped to 568 days.<sup>46</sup> In 2012 only 16 active vessels participated in the fishery.<sup>47</sup>

Ex-vessel revenues for swordfish in the drift gillnet fishery have decreased from over \$7 million in 1994 to approximately \$1.5 million in 2004.<sup>48</sup> Revenues for swordfish in 2009 totaled \$1.07 million. In 2010, swordfish revenues dropped to about \$400,000. It recovered slightly in 2011 to \$731,000 in revenues. In comparison, the California albacore tuna fishery generated \$2 million in ex-vessel revenue in 2011.

A recent survey of drift gillnet fishers by the California Department of Fish and Wildlife found that few if any drift gillnet permit holders fished full-time in the swordfish fishery.<sup>49</sup> Most of the respondents had not participated in the fishery in one to three years or more (19 of 27 or 82 percent). Instead they fished in the larger and more sustainable albacore, salmon and crab fisheries.

Nearly 90 percent of drift gillnet permit holders who responded said that they would accept a buy-out of their permit, boat and gear if offered. Many planned to leave the gillnet fishery to retire, change fisheries or find another line of work. (See Appendix 6 on Fishery Survey for more details.)

Continuing on this trajectory, NMFS projects that the fishery will essentially disappear by 2020.<sup>50</sup>

### Swordfish in Danger

Swordfish are magnificent billfish that swim all of the world's oceans. This marine predator uses its long, sharp sword to kill its prey. It

feeds mainly on fishes but also on crustaceans and squids.<sup>51</sup> Swordfish are relatively long-lived with the maximum-recorded age of 15 years old and the largest ever captured weighed 1,400 pounds.<sup>52</sup>

Swordfish has suffered at the hands of industrial longline and gillnet fishing fleets around the world. Swordfish is targeted by the U.S. drift gillnet fishery and Hawaii longline fleet. But for most large foreign fleets swordfish is caught opportunistically as bycatch in longline tuna fleets.<sup>53</sup>

Globally, swordfish populations have decreased by 28 percent over the past 20 years<sup>54</sup>. Research published in 2003 concluded that 90 percent of the “big” fish - tuna, swordfish, and marlin - are already gone.<sup>55</sup> U.S. Atlantic swordfish populations crashed in the 1990s due to overfishing and were the focus of the “Give Swordfish a Break” swordfish boycott. This successful grassroots campaign resulted in major changes to the fishery including closing of swordfish nursery areas and international quotas that have allowed the Northwest Atlantic population to slowly recover.<sup>56</sup>

**Most shark species including the common thresher shark have been depleted due to accidental capture in tuna and swordfish longline fisheries and shark finning.**

The population that travels the U.S. West coast is considered to be part of the northeastern Pacific population, separated from the southeastern Pacific population by a loose boundary from Baja California that stretches southwest toward the equator.<sup>57</sup> These two stocks of swordfish do sometimes swim together in the California Current.<sup>58</sup>

In the Pacific, government fishery scientists have determined that the swordfish targeted by the CA drift gillnet fishery is not overfished and that overfishing is not occurring.<sup>59</sup> However, NMFS also states that *assessment results for this stock are often conflicting, so the status of this stock is unclear*<sup>60</sup>.

Due to uncertainties about swordfish populations, declining catch levels and increased fishing, swordfish remains vulnerable to depletion in the future.

### Swordfish – The Taste for Profit

The lust for swordfish profits is the driving force behind the desire to line the U.S. Pacific with miles of deadly gillnets and millions of additional deadly longline hooks. The taste for this luxury fish—whose cost puts it out of reach of the average person at close to \$20 per pound or more—is helping to drive sea turtles and other species closer to extinction and is taking a large toll on the health of our oceans.

It also comes at a cost to public health. Swordfish is rated by the U.S. Food and Drug Administration (FDA) as one of the four fish and shellfish species with the highest levels of methyl mercury, a neurotoxin.<sup>61</sup> As a result the FDA has issued a warning that pregnant women, nursing mothers, women who might become pregnant, and children should not eat swordfish.<sup>62</sup> Ever. Read more about mercury in fish at [GotMercury.org](http://GotMercury.org) and in Appendix 4.

### U.S. Swordfish Consumption is Down

Since the 1990s, consumption of domestic and imported swordfish in the U.S. and California has steadily declined. The decline began with the “Give Swordfish a Break” campaign in the 1990s when Atlantic swordfish stocks were crashing. However, it has continued long after the campaign ended and swordfish returned to restaurant menus. Concerns about mercury in swordfish and the high cost of the fish are certainly factors. The rise of seafood guides that highlight the problems with unsustainable fishing practices and encourage seafood consumers to avoid eating fish from those fisheries is also a likely factor.

### Thresher Shark

Common thresher shark is the secondary target fish in the CA drift gillnet fishery. While thresher sharks are considered the most important commercial shark species among U.S. West Coast highly migratory species fisheries, very little is known about their life cycles or population trends. Like other sharks, they are vulnerable to overfishing because they live a long time, take many years to mature, and only have a few young at a time.<sup>63</sup> Most shark species including the common thresher shark have been depleted due to accidental capture in tuna and swordfish longline fisheries and shark finning.

Fishery scientists believe that the common thresher shark caught in the CA drift gillnet fishery is part of a Pacific population that migrates through the West Coast waters of the U.S. and Mexico's Baja Peninsula.<sup>64</sup> These sharks are also called thintail shark for their long, scythe-like tail, which they use to stun fish before preying on them.<sup>65</sup> They eat small fish including anchovy, sardine, hake, and mackerel, as well as squid.<sup>66</sup>

Common thresher sharks are brown, gray, blue-gray, or blackish on the back and underside of their snout. They're lighter on the sides, and fully white below. Their pectoral, pelvic, and dorsal fins are blackish, and some have white dots on the tips of the pectoral, pelvic, and tail fins.<sup>67</sup>

Common thresher shark populations along the California coast were drastically depleted by the drift gillnet fishery in the 1970s and 1980s. Catch of common thresher shark peaked in the 1980s and then sharply declined by as much as 70 percent.<sup>68</sup> West Coast commercial landings dropped from about 4 million pounds in the early 1980s to below 440,000 pounds in 2008 and 2009.<sup>69</sup> In 2011, the decline continued to 140,000 pounds. Nearly twice as many thresh-



er shark as swordfish were caught in 2011, though the price of the shark is less than half as much. Thresher shark sells off the vessel for 63 to 75 cents per pound where drift gillnets swordfish sold for \$2.46 to \$2.70 per pound in 2011 and 2010, respectively.<sup>70</sup>

Because a robust stock assessment has never been completed for the Pacific coast population of common thresher shark, no one knows if the population is recovering from the heavy fishing pressure or the impacts to it from the drift gillnet fishery.

Recently, the Monterey Bay Aquarium Seafood Watch changed its consumer seafood guide recommendation on thresher shark from “avoid” to “good alternative.” The rationale was based on the recent increases in the catch per unit of effort rates. TIRN disagrees with Seafood Watch’s conclusion that thresher shark stocks are considered of “moderate” conservation concern.<sup>71</sup>

In addition, thresher shark is high in mercury and should not be eaten by women or children at any time. Read more about mercury in fish at [GotMercury.org](http://GotMercury.org) and in Appendix 4.

### Ban seafood imports that don’t meet U. S. standards

The import of swordfish and other seafood into the U. S. from countries that have weaker standards for sustainability and conservation in their fisheries is a major marine conservation concern. As one of the world’s leading consumers of seafood, the U.S. has the market power to spur significant improvements in the fishing practices of exporting nations.

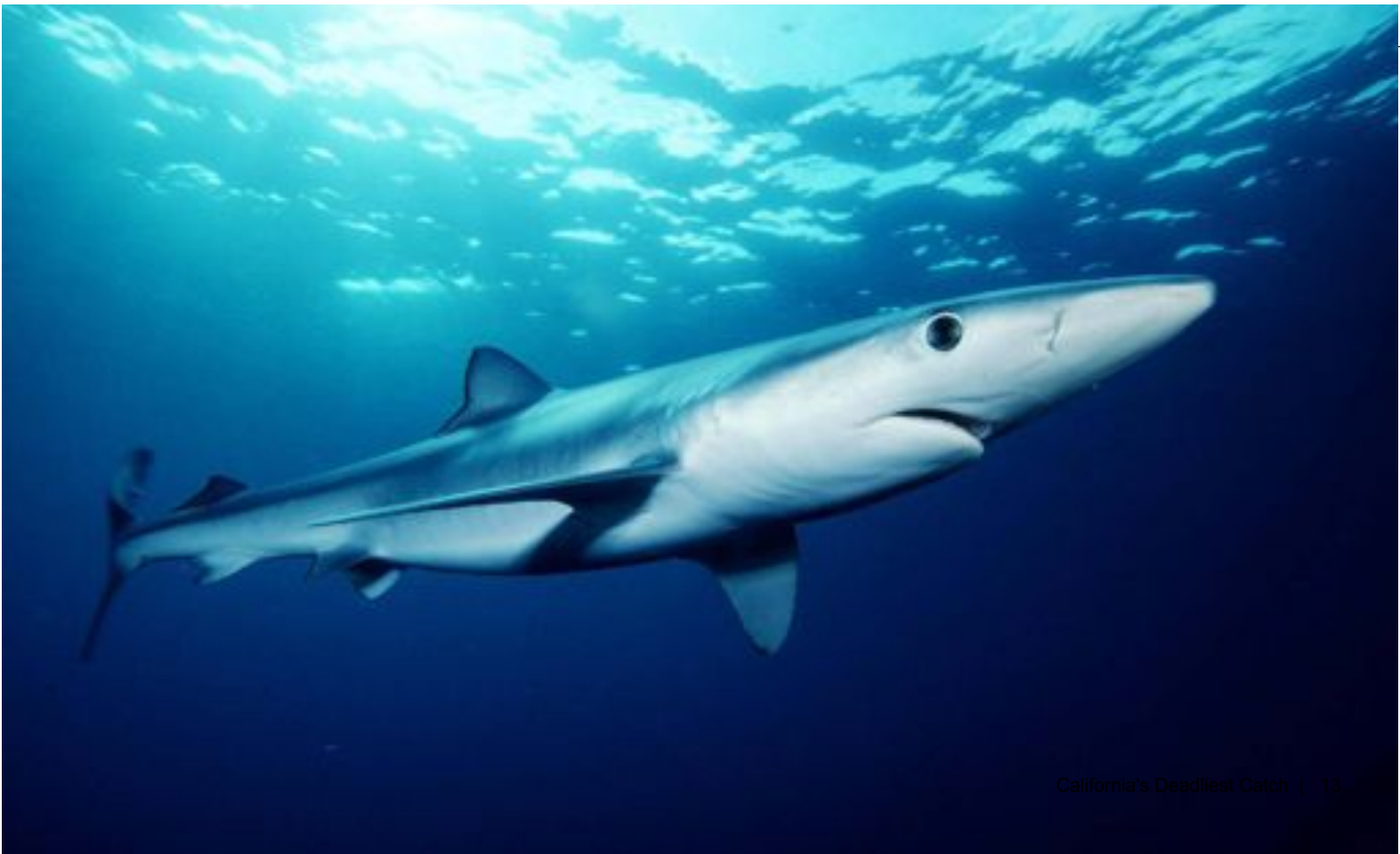
The U.S. has the authority and legal responsibility under the Magnuson Stevens Fishery Act (MSA) and the Marine Mammal Protection Act (MMPA) to monitor and control seafood imports from countries whose vessels are fishing in a manner that threatens the conservation of protected species. The most effective way for the federal government to address the impacts that foreign fleets are having on protected and endangered species would be to limit and restrict the import of swordfish caught in an unsustainable manner.

The U.S. has already taken action with dolphin-safe tuna regulations and requiring Turtle Excluder Devices in shrimp trawls from nation’s whose fleets export to the U.S.

To press the government to act on swordfish and other foreign fisheries utilizing high bycatch gear, Turtle Island Restoration Network and the Center for Biological Diversity filed a petition with the Secretary of Commerce seeking an immediate ban on imports of swordfish from all countries until the fisheries are proven to comply with U.S. standards.<sup>72</sup> In response, NMFS initiated an advanced notice of rulemaking to require that foreign fleets meet our standards, but has taken no further action.<sup>73</sup>

Instead the agency continues to pursue a counterproductive approach by pushing to expand the U.S. swordfish fishery with unsustainable, high bycatch longline and drift gillnet gear.

*Blue fin sharks die by the tens of thousands in California's drift nets. Longline vessels on the High Seas also take a huge toll.*



### Observer Coverage in the CA Drift Gillnet Fishery

The state of California first required observers on the drift gillnet fleet in 1980.<sup>74</sup> Since 1990, drift gillnet vessels have been required to carry federal observers about 20 percent of the time.<sup>75</sup> However, observer coverage in the drift gillnet fishery often barely reaches 20 percent and consistently drops well below that level.

In the first decade of federal observers, observer coverage averaged 15 percent.<sup>76</sup> Since then it has dropped as low as 13 percent in 2009<sup>77</sup>.

For about a third of the vessel fleet, observer coverage is zero. As recently as 2010, eight vessels that were deemed “unobservable” due to limited space on board comprised as much as half of the total effort in the fishery (40 to 45 percent of total effort).<sup>78</sup> In 2009, unobservable vessels made 59 percent of the sets. (See out-take from a 2012 NMFS Observer Report for more detail.)

A minimum of 20 to 50 percent coverage is generally accepted as a minimum level to adequately observe a fishery of this size.<sup>79</sup> The U.S. National Bycatch Report recommended that observer coverage in the California drift gillnet fishery specifically should be increased to 30 percent to better document bycatch of rare and endangered species.<sup>80</sup>

The same report also notes that observer coverage in the fishery is “low and opportunistic, not annual.”<sup>81</sup> Observer coverage is active August to January only, and year-round coverage is recommended.

When observer coverage dropped to 13 percent in 2009 and 12 percent in 2010, one endangered leatherback was observed entangled and two endangered sperm whales were observed killed. The two observed sperm whale takes equate to an estimated 16 sperm whales killed in the fishery, according to government bycatch experts.<sup>82</sup>

Then in 2012 when observer coverage was bumped up to 20 percent, another rare leatherback was observed in gillnet gear and was alive when last seen. The fate of the sea turtle is unknown.

According to the NMFS 2004 Biological Opinion on the drift gillnet fishery, one observed interaction with a leatherback in a fishing season equates to nine entanglements and six mortalities over three years.<sup>83</sup>

The NMFS 2013 Biological Opinion raises the allowable number of observed leatherback interactions that would trigger exceedence of Incidental Take levels from one to two; and extends it over a five-year period.<sup>84</sup> This increases the total number of leatherback sea turtles that may be captured or killed in the fishery before NMFS is required to take action. NMFS is allowing up to three leatherbacks per year; or

*Humpback whales, sperm whales, minke whales and gray whales are entangled in CA's drift gillnets. NOAA photo.*



up to 10 over five years, to be entangled in the fishery.<sup>85</sup> The agency is allowing up to seven critically endangered leatherbacks to die in the fishery over any five-year period.<sup>86</sup> NMFS concluded that harming or killing two or more leatherbacks per season will not contribute to jeopardizing the risk of extinction of the species. TIRN disagrees and is taking legal and other actions to reduce to zero the number of these sea turtles that can be harmed in the CA gillnet fishery.

When it comes to endangered Pacific loggerheads, over the past decade, one loggerhead was observed injured in 2006/07 and another one in 2001/2002. The NMFS 2004 Biological Opinion equates one loggerhead observation to 5 entanglements and two mortalities. A Loggerhead Sea Turtle Conservation Area is also triggered in the Southern California Bight in El Niño years.<sup>87</sup> However, the loggerhead entanglements occurred in years that were not designated as El Niño years by NMFS so those protections were never implemented.

The 2013 Biological Opinion for the CA gillnet fishery allows for up to three loggerhead interactions every year and up to seven in five years. Of those, total of four loggerhead deaths are allowed. Based on 20 percent average observer coverage, these Incidental Take levels would likely be exceeded if more than two loggerheads were seen by fishery observers during a five-year period.<sup>88</sup>

As with leatherbacks, TIRN disagrees that the fishery can harm that many loggerheads without contributing to the extinction of the species and is taking legal and other actions to reduce those levels to zero.

The designation of critical habitat for North Pacific loggerheads is also pending, and is another reason to hold off on any fishery actions that would increase take of these animals.

As a result of the low and biased observer coverage, the reported bycatch levels in the CA drift gillnet fleet is very likely biased and not representative of catch and bycatch. The fleet is almost certainly taking a much larger toll on marine life than is documented in government bycatch reports. Relying on low and biased observer coverage to ensure the protection of highly endangered species is not acceptable and may even be illegal under the ESA.

## Observer Coverage Costs are High

Given the small size and short fishing season of the CA drift gillnet fishery, the taxpayer cost for funding observers on the fleet is relatively high per fishing day compared to others in the Southwest Region and Pacific.

Between August and January 2011, six observers spent 73 days at sea on drift gillnet vessels for a total cost of \$244,160 dollars or \$3,344 per sea day. That compares to \$1,100 per sea day for 100 percent observer coverage on the one pelagic longline vessel that fishes for swordfish from a California port.

The Southern California set gillnet fishery program cost \$1,166 per sea day and the small mesh set gillnet fishery at \$2,972. Given

that revenues for the CA drift gillnet fishery for swordfish totaled \$731,279, the observer coverage alone equates to about one-third of revenues.

## 100 Percent Observer Coverage Needed

Each time the re-opening of the PLCA to the drift gillnet fishery has been discussed, fishery managers have proposed 100 percent observer coverage. While 100 percent observer coverage is warranted in a fishery with such high bycatch and poor history of achieving minimum coverage, it seems infeasible. Not only are an unknown number of vessels “unobservable,” the cost of requiring 100 percent of vessels to be observed is likely to outweigh the revenues of the fishery.

**When observer coverage dropped to 13 percent in 2009 and 12 percent in 2010, one endangered leatherback was observed entangled and two endangered sperm whales were observed killed.**

Gillnet fishers have publicly stated that they don't need or want any observer coverage at all. Given the poor observer coverage in the fishery to date and the questionable feasibility of requiring 100 percent observer coverage, it makes little sense to expand the fishery. But if in fact the fishery is expanded against all odds, then the fishery must accept and pay for 100 percent coverage and unobservable boats must be denied a permit to fish.

## From 2012 Drift Gillnet Bycatch Report

*The fraction of swordfish and thresher shark drift gillnet effort in 2010 that involved ‘unobservable’ or ‘unobserved’ vessels was approximately 40-45% of the total estimated effort, which raises concerns about the randomness of the observer sample. An underlying assumption of ratio estimation is that unobserved and observed fishing effort is ‘equivalent’. This assumption requires that unobserved vessels are compliant with pinger, extender length, closure area, and other gear regulations, and that bycatch rates are no different from observed vessels. If bycatch rates on unobserved vessels are significantly different, this would bias the resulting bycatch estimates. Vessels in this fishery are periodically boarded and inspected for gear compliance, and recorded violations have been rare (NMFS Enforcement, personal communication). A video experiment was utilized in the drift gillnet fishery recently to see if video monitoring of bycatch would be feasible on unobservable vessels. Some shortcomings of that methodology were identified, such as the inability to identify bycatch to species, high cost, and battery power drain issues for the fishing vessels.<sup>89</sup>*



## CALIFORNIA'S DEADLIEST CATCH - The Horrors of Bycatch

Fishery managers argue over numbers of animals that can be injured or killed without truly describing what happens when a living, breathing, intelligent creature such as a whale, dolphin, or sea turtle is entangled and drowned. If they did, it would be far more difficult to accept the routine capture of sea animals in commercial fisheries.

As defined in the Endangered Species Act, the term 'take' means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct."<sup>173</sup>

Fisheries observers described the condition of marine animals that were seriously injured but not yet dead when the gillnets were pulled up from the sea as follows<sup>174</sup>:

**Sperm Whale:** "The whale rammed the vessel several times hard enough to create deep bleeding wounds on its head. This whale was released with trailing gear and drifted away from the vessel unable to swim or feed due to the gear entanglement."

**Short-beaked Common Dolphin:** The "dolphin remained motionless and was right-side up at the surface."

**Long-beaked Common Dolphin:** The "animal was making noises and small movements. This dolphin was released from the net and immediately became entangled again. After a second release, the animal was not seen to surface. Two other long-beaked common dolphins died in this same set."

**California Sea Lion:** "Observations of the seriously injured sea lion stated that the animal displayed some indication of life."

**Loggerhead Sea Turtle:** One seriously injured sea turtle was released but observers noted that the "turtle barely moved, even after biopsy was taken. Following release, the turtle moved a little, then sank quickly."

In 2004, a humpback whale was entangled and reported as released alive without gear trailing, though the observers noted that a 50-fathom section of float line was lost due to release of the whale and that pingers were in use.<sup>175</sup>

And in 2005, a gray whale faced a similar uncertain fate after it was released from entanglement: "The observer's description of the gray whale interaction noted the flukes were entangled in the float line which was cut away, after which the whale swam off. The observer noted that 'the only damage the whale incurred was cuts on tail'. Whether these cuts were due to the net perforating the animal or a result of the release process is unknown."<sup>176</sup>

When two sperm whales were observed entangled in the drift gillnet fishery in 2010, both were found in the same net. One died before it could be released. The second was so seriously injured that government fisheries observers determined it was going to die and described it as follows<sup>177</sup>:

*"Observer notes indicated that a dead sperm whale approximately 20 ft. in length was cut loose from the net and that no photos of this animal were taken. Photographs of the released whale show an animal on its side with its head underwater. Based on the attitude of this animal, the fact that it was released with netting, and the fact that the associated animal had died, we have determined that the injuries incurred by the released animal were likely to result in death. Thus, the released animal is considered 'seriously injured'."*<sup>178</sup>

So far NMFS has taken no actions to prevent more endangered sperm whales or other marine mammals, for that matter, from injury or death in this fishery. Instead the federal agency is pushing to allow the drift gillnet fishery to start setting its curtains of death in the protected Pacific Leatherback Conservation Area and capture and kill or injure more sea turtles and other marine animals that get in the way.



*An estimated 16 sperm whales were killed in the CA drift gillnet fishery in 2010. Only 1,000 animals remain in the U.S. West Coast population. This level of harm exceeds allowable levels, yet the fishery continues to operate without any new protections and with expired take permits.*

## Obstacles to Fishery Reform

### Alternative Fishing Gear

If the California swordfish fishery is to continue, alternative low bycatch gears must be implemented and the use of drift gillnets phased out. Neither drift gillnetting nor longlining are sustainable or suitable for fishing in the California Current. Both are indiscriminate gears that even with conservation measures take significant numbers of endangered sea turtles, marine mammals and non-target finfish.

Drift gillnets and longlines consistently capture higher levels of non-target finfish than any other commercial gear used in domestic fisheries except for shrimp trawling. The National Bycatch Report ranked fisheries using these gears as “fisheries of concern.”<sup>90</sup> That’s because the bycatch ratios were above the U.S. average bycatch ratio of .17 or close to two pounds of bycatch for every pound of fish landed. The bycatch ratio is defined as the ratio of bycatch to total catch, where total catch equals landings plus bycatch. The bycatch ratios in the National Bycatch Report excluded protected species bycatch.

The mean bycatch ratios for trawl, gillnet and longline fisheries were .24, .23, and .23 respectively, which were twice as high as any other fishery or gear type.<sup>91</sup>

However, the NMFS Southwest Region did not report its bycatch by weight (but by numbers of fish), so an official bycatch ratio for the CA drift gillnet fishery is currently unpublished. Based on overall discard rates of numbers of fish in the fishery of 65 percent, it is possible that the bycatch ratio could be as high as 3 to one.

### Harpooning

While NMFS and seafood interests claim that the harpoon fleet is not economically viable for commercial production of swordfish, the history of the fishery proves otherwise. The fleet is likely to have grown much bigger if it had not been displaced by the drift gillnet fishery in the 1980s. At the time, the landings and revenues of the harpoon fishery exceeded those of the drift gillnet fishery.

Today the harpoon fishery is similar in size to the CA drift gillnet fishery in numbers of vessels and swordfish revenues. In 2009, 28 harpoon vessels generated just under \$500,000 in ex-vessel swordfish revenues and in 2010, 25 vessels produced \$352,000 in ex-vessel revenues. In comparison, in 2009, 35 gillnet vessels generated \$1,076,537. But in 2010, the 27 drift gillnet vessels that fished for swordfish generated only \$400,000.<sup>92</sup>

In addition, the average ex-vessel price per pound of swordfish for the harpooned fish was \$6.99 compared to \$4.25 for drift gillnet caught fish in 2010.<sup>93</sup> The harpooned fish is typically fresher and of better overall quality. So in 2010, with revenue per vessel about

equal, the harpoon fishery was just as economically viable, if not more so, than the drift gillnet fleet.

The trend continued in 2011 with average ex-vessel price-per-pound of landed weight for harpooned fish at \$4.71 compared to \$2.97 for drift gillnet caught fish in 2011.<sup>94</sup>

California’s harpoon fishery for swordfish developed in the early 1900s.<sup>95</sup> Prior to 1980, harpoon and hook-and-line were the only legal gears for commercially harvesting swordfish. At that time, harpoon gear accounted for the majority of swordfish landings in California ports. In the early 1980s, a limited entry drift gillnet fishery was authorized by the State Legislature and soon afterward drift gillnets replaced harpoons as the primary method for catching swordfish. As a result, the number of harpoon permits decreased from a high of 1,223 in 1979 to a low of 25 in 2001.<sup>96</sup>

Harpooning may have continued to thrive if the drift gillnet gear was not introduced. Harpooning remains an economically viable and far more sustainable low-catch alternative to the drift gillnet fishery that should not be dismissed by fishery managers.

### Buoy Gear

Deep-set longline buoy gear is being tested during daytime hours along the California coast as a possible low bycatch alternative to drift gillnet and longline gear.<sup>97</sup> Buoy gear is defined as fishing gear consisting of one or more floating devices supporting a single mainline to which no more than two hooks or ganglions are attached.<sup>98</sup> In the West Coast research, the gear is set during the day. In Florida, commercial longline buoy gear targeting swordfish is set at night.

The longline buoy gear undergoing testing is similar to “mousetrap” gear that is prohibited in California. The main difference is that the gear is continuously attended and pulled up immediately after a fish strike. The main problem with mousetrap gear was that it was not attended, and lost gear was a huge problem. In the current research, the gear is marked so that if it is lost, it can be tracked back to a specific vessel. So far, no gear has been lost in the research, according to the investigators.

The longline buoy gear being tested in California consists of a buoy and one line dropped into the water column with two hooks and soaked for four hours using squid and mackerel bait. Over the past two years, two research vessels made 32 sets and caught 15 swordfish as well as: 2 opah, 7 bigeye thresher shark, 1 common thresher, 1 mola mola, 4 blue shark. No protected species interactions were reported.

In 2012, three cruises were conducted north of Pt. Conception in the PLCA between October and December. Six swordfish were tagged using harpoon gear. Six blue sharks were caught with the buoy gear. No protected species interactions were reported.

The longline buoy gear is inexpensive and probably low bycatch compared to the drift gillnet fishery, but the limited data from two years of research is too preliminary to derive any conclusions about its performance or economic viability. However, it deserves further research and consideration.

## Why Longlining is Not a Viable Gear Alternative

Despite California's longstanding policies banning longlining and the prohibition of this gear along the U.S. West Coast out to and beyond 200 miles, the NMFS Southwest Fisheries Science Center is now setting longlines in the PLCA to study swordfish and opah.<sup>99</sup>

The daytime deep-set longline research seems counterproductive to fishery management along the U.S. West Coast. Extensive research in the Pacific and Atlantic longline fisheries has already found that deep-set longlines for tuna routinely interact with leatherbacks. However, in this case, the agency's premise is that setting the longline hooks "deep" during the day may avoid turtle interactions while targeting swordfish. The results so far are inconclusive.

NMFS granted itself the research permit to fish for swordfish onboard a privately owned longline vessel specifically in the protected leatherback area.<sup>100</sup> The agency conducted its own internal environmental review without public oversight or notification. The environmental document was released on request of Turtle Island Restoration Network. The agency recognized the risk of taking endangered leatherback sea turtles and other protected species, and required proper handling and reporting of any take of endangered species. So far no sea turtles or marine mammals have been entangled, according to NMFS.

TIRN is very concerned, however, that the research is being conducted on board a vessel called the Ventura II owned by the only longliner now operating in the state of California, Peter Dupuy. Dupuy has been the lone fisher behind defeated proposals to allow longlining along the U.S. West Coast with an Exempted Fishing Permit. Clearly a conflict of interest exists between this fisher and the NMFS research program. It seems that the project was designed specifically to meet the request of one fisher at huge public expense. The research is being funded by NMFS and the state of California's Ocean Protection Council, which opposed use of longlines along our coast as recently as 2008.<sup>101</sup>

The catch and bycatch to date from two years of setting longline hooks in the PLCA only reinforces the fact that bycatch from long-lines is high. Total catch and bycatch from the longline "experiment" include the following: four swordfish, 267 blue shark, 47 Opah, 13 Pomfret, 4 Albacore, 2 bluefin tuna, 1 mako shark, 1 dolphin fish, 9 skip-jack.<sup>102</sup>

TIRN urges that funding for this research be suspended and that the State of California in particular cease supporting it as the project conflicts directly with longstanding policy prohibiting longline fishing of any type along the California coast. Read more about the problems with longlining in the section on the Hawaii Longline Fisheries. (Appendix 2)

## Fishing Gear Fixes Alone Won't Solve Bycatch Issues

Current and past efforts to reduce bycatch of sea turtles, marine mammals, and seabirds have primarily focused on technological fishing gear fixes. While better gear has significantly reduced bycatch in some fisheries, these single-species solutions seek to allow industrial fishing to continue at current levels of effort.<sup>103</sup>

Each year hundreds of thousands and even millions of sea turtles globally are still captured and killed as bycatch in global commercial fisheries primarily in trawl, gillnet and longline fisheries for shrimp, swordfish and tuna – even with use of Turtle Excluder Devices (TEDs), circle hooks and deterrent devices such as pingers.<sup>104</sup>

This techno-gear approach often shifts pressure off one protected species onto another, while ignoring negative impacts on habitat and other species, often including prey of the species we seek to protect and restore. For example, a specialized longline hook that prevents a turtle capture is an additional hook available to snag an endangered seabird or hammerhead shark, while TED-equipped trawls may still harm seagrass beds, important foraging habitat for green turtles, and reduces availability of prey for the crab-eating Kemp's ridley turtles.<sup>105</sup> Pingers may deter one species but attract another.<sup>106</sup>

Solutions to bycatch reduction must seek to secure healthy marine ecosystems. In addition to using all the best available bycatch reduction devices, the solutions must include: (1) significant reduction of overall fishing effort; (2) no-fishing marine preserves; (3) time-area closures; (4) banning the use of the most destructive fishing technology; and (5) adequate enforcement.<sup>107</sup>





## Dynamic Marine Conservation and Fishery Research

Recognizing that gear fixes and technology transfer have not solved the fishery bycatch problem, researchers are searching for new approaches. Fishery managers are now forwarding the concept of “dynamic marine conservation” as a way to allow more fishing at certain times and places while avoiding interactions with protected species. By better understanding the behaviors of migratory species such as sea turtles, whales and seabirds, researchers hope to be able to pinpoint when and where ocean wildlife is present in a given fishing ground. Modeling based on satellite tracking and tagging of marine species and oceanographic conditions would then be integrated with fishing effort to see where overlap could be avoided.

In fact, the Stanford-based Center for Ocean Solutions recently announced that it would be conducting such a modeling exercise for the CA drift gillnet fishery.<sup>108</sup> TIRN supports the “outside the box” thinking from marine experts at the Center for Ocean Solutions.

Yet we caution that such a modeling effort may be limited in its immediate application to fishery management. Even with new satellite tracking and scientific advancement, we still lack full understanding about the basic life cycles of many of the marine species that are captured in the drift gillnet fishery, specifically highly endangered sea turtles. TIRN opposes any increased risk to endangered sea turtles in this fishery given their steady decline and slide toward extinction.

Given the success of the PLCA in protecting sea turtles and the decline of the fishery, we urge that researchers consider modeling and testing dynamic marine conservation in other more active, less harmful fisheries.

## Hawaii's Turtle Watch

One attempt at dynamic fishery management to prevent harm to endangered sea turtles is the experimental and voluntary Turtle Watch program in Hawaii. It was launched in 2006 after the Hawaii shallow-set longline swordfish fleet exceeded its allowable accidental capture of endangered loggerhead sea turtles. This occurred shortly after the fishery was re-opened with mandatory use of circle hooks. The fishery was closed again in late 2012 after reaching its limit of allowable leatherback takes.

Turtle Watch was designed to warn longline fishers to avoid certain “turtle zones” based on the temperature of the ocean, and thereby reduce interactions. To avoid hooking loggerheads, fishers were urged to avoid fishing where sea surface temperatures (SST) were 63.5°F-65.5°F (~17.5°C-18.5°C). This temperature range corresponded to areas where roughly 50 percent of observed loggerhead turtle interactions had occurred during the time period when most interactions with loggerheads were recorded.<sup>109</sup>

So far the results are mixed. Preliminary analysis of 2011 longline fishing records indicates that roughly 53 percent of the shallow-set

fishing occurred in the 17.5-18.5°C range where 75 percent of the loggerhead interactions occurred. Loggerheads were caught in a wider band of temperatures ranging from 17.1 to 18.7°C.

Only 53 percent of leatherbacks were taken in the predicted Turtle Watch red zone, while interactions occurred in a wider temperature range of 17.5 to 21.6°C.

These results indicate that a much wider band of ocean temperatures is acceptable to sea turtles, meaning fishers would need to keep clear of larger areas to avoid sea turtles based on temperatures alone.

## Turtle Watch in California?

The application of a temperature-based dynamic fishery management program like Turtle Watch does not easily transfer to the U.S. West Coast. According to the Council's HMS Team: *Key to the development of any product like “Turtle Watch” is accurate information on habitat use in time and space. Because leatherback distributions are not as strongly linked to SST (the basis for “Turtle Watch”), a more complex model will be required. It may also be of value to include vertical habitat, given the shift in depth as leatherbacks move farther offshore.*<sup>110</sup>

## Turtle Caps

Another dynamic management concept being forwarded by federal fishery managers to allow expansion of the CA drift gillnet fishery is the use of “hard caps” on the number of sea turtles that may be accidentally captured and killed in the fishery before it closes for the season. Here again, they point to the Hawaii longline fishery as a model.

A limit on the number of turtles could be accidentally captured or killed in the Hawaii longline fishery was coupled with 100 percent observer coverage, limits on fishing effort, seasonal closures and other measures. Even so, the fishery has twice reached its limit of “turtle takes.” In response, NMFS closed the fishery. But then instead of taking further actions to protect sea turtles, the agency instead raised the limit of allowable turtle takes to accommodate the fishery, a move that is likely illegal under the ESA.<sup>111</sup>

Given that the level of sea turtle take in the CA drift gillnet fishery is based on 20 percent coverage in the fishery since the PLCA was instituted is close to zero per year over the past 10 years, any allowable take number above zero per year per turtle species would increase the risk of harm to Pacific sea turtle populations. In addition, any level of turtle take limits would require 100 percent observer coverage, which the fishery can't or won't accommodate. (See section on Observer Coverage).

For these reasons alone, the CA drift gillnet fishery should not be managed with turtle take caps. Instead the successful PLCA should

remain in place and even expanded until the drift gillnet fishery is phased out.

## Predicting Leatherback Behavior

Several researchers from the NMFS Southwest Region Fisheries Science Center are utilizing satellite-tracking data in an attempt to predict behaviors of leatherback turtles in the California Current Ecosystem.<sup>112</sup>

Government scientists are examining various oceanographic conditions and satellite telemetry positions and how they correlate with leatherback activity, specifically foraging behavior. A model they developed seems promising in being able to predict leatherback behavior within a given time window and correlate it with various oceanic conditions. Additional research is needed to further develop the model.

Ultimately they want to look at whether they can predict when leatherbacks are present in the California Current and where. The research is not currently extensive enough to be used in fishery management according to NMFS researchers who presented preliminary data at the January 2013 Council HMS meeting in La Jolla, CA.

## Potential Biological Removal Levels for Sea Turtles?

NMFS researches are also exploring whether a Potential Biological Removal (PBR) Level can be established for sea turtle populations as has been done for marine mammals under the MMPA. A paper on this subject was published in early 2013.<sup>113</sup>

Potential Biological Removal Level (PBR) is defined by the MMPA as the maximum number of animals, not including natural mortalities that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population.

Allowable take of sea turtles is currently evaluated and set fishery by fishery. The cumulative numbers of sea turtles taken in multiple fisheries and are removed from the same sea turtle population are given little consideration. And in most cases, the science supporting incidental take of sea turtles is weak because biological information about the life cycles and size of each population is not fully known.

With adequate information about sea turtle populations, the PBR model could be a way to better assess the impacts of fisheries to sea turtles across ocean basins and international fisheries.

However, if/when a PBR for sea turtles is viable, the PBR would need to be allocated across all impacts, not just fisheries, and ocean basins, making it a difficult though perhaps promising tool. Right now it is not available for use in fishery management.



*Endangered Pacific loggerheads get hooked in their mouth or flipper in the Hawaii longline fishery for swordfish. The CA drift gillnet fishery has also taken a toll. Photo ©Doug Perrine, seapics.com*

## Ending California's Deadliest Catch

### Flawed Economics in CA Drift Gillnet Expansion

The latest initiative to re-open part or all of the PLCA to gillnet fishing in order to increase swordfish landings was developed by the Highly Migratory Species Management Team (HMS team) of the Pacific Fishery Management Council and the Southwest Region Sustainable Fisheries Division of NMFS. The HMS team is comprised of federal and state fishery agency staffers along with political appointees representing commercial and recreational fishing groups and the public at large (but lacking a designated conservation member).

The HMS team held public and closed-door meetings over a year to figure out ways to expand drift gillnet fishing into the PLCA.

A series of possible alternatives for reducing the size and time period of the PLCA to accommodate more gillnet fishing were developed primarily by NMFS fishery economists intent on increasing swordfish landings in California. The economists openly blamed endangered species protections and the PLCA in particular for the decline of the CA drift gillnet fishery. However, the fishery history shows that the decline began at least a decade before the PLCA was established in 2001. The decline resulted from overfishing, high bycatch and resulting state restrictions on the fishery to protect marine resources.

More importantly, the HMS Team found that fishing in the PLCA was never significant. Their report to the Council in March 2013 revealed that 90 percent of the gillnet fishery's swordfish landings came from outside the PLCA long before the time-and-area closure was ever established.<sup>114</sup>

Before the PLCA was implemented to protect endangered sea turtles from gillnets, only 9 percent of swordfish landed in California was caught within the PLCA.<sup>115</sup> After implementation this dropped to about 2 percent.<sup>116</sup> As a result, the proposed opening of the PLCA is based on, at best, 2 percent of recent effort and revenues of \$500,000 in the "high" revenue alternative.

Ultimately, the most expansive of four alternatives finally proposed would have reduced the period of the PLCA to September and October to allow 80 gillnet sets estimated to result in the capture of 255 swordfish worth about \$197,500 in ex-vessel revenues at the risk of entangling one additional endangered leatherback.<sup>117</sup>

The revenues would hardly even cover the 100 percent observer coverage proposed if the fishers were allowed into the area, much less the costs to fish.

Beyond the weak economics, the HMS team did not discuss how allowing fishers into the PLCA might impact endangered marine mammals or finfish including bluefin, blue sharks, common mola or commercial tuna species.

In short, the plan that the HMS team presented to the Council in March 2013 lacked enough substance to make the case and was dismissed by the Council, led by the California delegation.

Instead, the California Department of Fish and Wildlife delegate to the Council garnered support for a motion to seek additional science on marine biology and the fishery for consideration sometime in 2014. In the meantime, a window of opportunity opened to consider phasing out the fishery completely.

### Recommendations to Pacific Fishery Management Council

TIRN staff participated in the PLCA review process, providing extensive written and oral testimony to the HMS team and the full Council, highlighting conservation concerns. TIRN's comments can be downloaded at [SeaTurtles.org](http://SeaTurtles.org).

TIRN also mobilized strong, broad opposition to the expanded gillnet fishing plans from California conservation groups, state conservation agencies, recreational fishing groups, fishery scientists, school children and the public. See [SeaTurtles.org](http://SeaTurtles.org).

**Given the opposition to the gillnet fishery and the weak arguments made by fishery managers to open the PLCA to more fishing, before the Council reviews the issue again, it must direct the HMS Team and NMFS to:**

1. **Ensure the fishery complies completely and continuously with the ESA and MMPA.**
2. **Evaluate and consider the need to enlarge the PLCA to protect endangered sea turtles.**
3. **Quantify the protective benefits of the PLCA to the full range of bycatch species before making any decisions about changing the PLCA.**
4. **Provide *estimated* bycatch numbers for all protected species and finfish, not just observed take (which underestimates the true level of bycatch).**
5. **Provide an analysis of the status of and impacts to all protected species and finfish taken in the fishery.**
6. **Provide an analysis of additional measures to reduce and mini-mize bycatch in the fishery.**
7. **Consider ways for the fishery to transition to more sustainable gears and for the fishers to transition to other sustainable fisheries, preferably fish that are healthy alternatives to mercury-laden swordfish and shark.**
8. **Evaluate ways to phase out the drift gillnet fishery.**



## Phasing Out The California Drift Gillnet Fishery

**Endangered marine animals and at-risk fish continue to die by the hundreds in the CA drift gillnet fishery. The needless damage to California's precious marine resources continues even with strong environmental protections required in the fishery to prevent capture of sea turtles and whales in the gillnets.**

Today fewer than 16 vessels each year depart California ports and go out to sea to drop deadly drift gillnets into the nutrient-rich waters off our coast in pursuit of vulnerable swordfish and thresher shark. Swordfish revenues in the gillnet fishery have dropped to all-time lows, yet the costs to operate and manage the fishery continue to rise. If we do nothing, the fishery is on track to entirely disappear on its own by 2020.<sup>118</sup>

Instead, Turtle Island Restoration Network proposes a dynamic phase-out of the fishery to benefit marine conservation and the fishery. Taking preemptive action now will help prevent future loss of fishing jobs and economic harm to coastal communities. Expanding the gillnet fishery is not a viable conservation or economic option.

TIRN recommends the following approaches or combination of approaches to transition the gillnet fishery to more sustainable gears and fisheries. And to end the curtains of death along our shores once and for all.

### California Drift Gillnet Permits — Retire All Inactive and Active Permits

**All inactive or latent permits that have not be utilized in the past three years should be phased out as soon as possible but no later than five years.**

**Fishers who have been continuously active in the fishery for the past five years or more should be offered several options:**

- continue to fish until the permit expires at current active permit holder's retirement
- continue to fish until all current active permits are eliminated within five years
- transfer active gillnet permits to another more sustainable fishery
- transfer active gillnet permit to a more sustainable gear type such as buoy gear or harpooning (not longlining)
- suspend all gillnet permits until a more sustainable gear type is approved, giving current active drift gillnet permit holders the first right of refusal to switch to new gear such as buoy gear or harpooning (not longlining)
- explore privately-funded buyouts of gillnet fishing permits from active permit holders

## Alternative Gear and Research

Suspend all drift gillnet gear permits immediately and employ the active fleet through government or non-governmental program to participate in fishery research using experimental buoy gear (not longlining) or for other fishery research or monitoring that may be beneficial to fisheries and marine conservation.

## Alternative Opportunities

For active fishers who wish to leave the fishery and explore other opportunities, provide options for transferring into charter boat fishing, whale watching, scientific research or other vessel uses.

## Next Steps

**In order to accomplish a fair and expedient phase out of the CA drift gillnet fishery, TIRN recommends that the California State Legislature take the lead in engaging stakeholders to develop the best regulatory and legislative solutions for marine conservation and sustainable fisheries in order to phase out the drift gillnet fishery within five years.**

The Pacific Fishery Management Council should work with the California Department of Fish and Wildlife develop a plan to phase out the drift gillnet fishery within five years.

Plans to phase out the drift gillnet fishery should be conducted in public forums and include formal consultation with marine conservation groups, gillnet fishers, independent fishery scientists, marine mammal biologists, sea turtle experts, and the public.

The plans for phasing out the drift gillnet fishery should be completed by 2014 before the Pacific Fishery Management Council considers any changes to the PLCA.

Lastly, TIRN recommends that no further federal actions be taken to expand the gillnet fishery into the Pacific Leatherback Conservation Area.

## TAKE ACTION

Until a plan to phase out the California drift gillnet fishery is completed, TIRN urges its allies and the public at large to oppose any expansion of the California drift gillnet fishery.

For ongoing developments and to take action, please go to the TIRN Action Center [www.SeaTurtles.org](http://www.SeaTurtles.org)

## History of CA/OR Drift Gillnet Fishery

- 1977** – California drift gillnet fishery begins as a state managed fishery targeting thresher shark.
- 1981** – Swordfish becomes the primary gillnet target due to over-fishing of shark.
- 1982** – CA adopts time-and-area closures to protect pinnipeds (Channel Islands) and harpoon and sports fisheries (mainland southern CA).
- 1983** – OR and WA authorize experimental drift gillnet fishery.
- 1985** – Landings of swordfish and thresher shark peak, then decline rapidly.
- 1989** – Drift gillnets banned in Washington and Oregon over marine mammal and sea turtle bycatch.  
California bans longlining along its coast.<sup>119</sup>
- 1995** – Oregon lifts ban. Allows 10 permits.
- 1984** – Additional drift gillnet closures imposed along CA coast (out to 12 miles) and wider around San Francisco.
- 1986** – New time/area closures to protect gray whales.
- 1990** – Additional time/area closures enacted over juvenile shark catch in Southern CA.
- 1990** – Proposition 132 limits gillnet fishing effort and includes a buy-out program.
- 1991** – UN Bans Drift Nets on the High Seas.
- 1997** – Marine mammal regulations require net extenders to lower than 36 feet, and pingers.
- 2000** – TIRN files law suit against fishery under ESA and MMPA, prompting NMFS proposal for Pacific Leatherback Conservation Zone, north of Pt. Conception, but NMFS delays.
- 2001** – NMFS implements Pacific Leatherback Conservation Area to protect endangered sea turtles from drift gillnets for three months of every year - Aug. 15 to Nov. 15, but reduces the proposed size by moving southern boundary to Pt. Sur.  
  
An additional time/area closure added for loggerheads in El Niño years only.
- 2004** – Fishery management falls to PFMC. Longlining banned along U.S. West Coast out to 200 miles to protect loggerhead sea turtles.
- 2006** – TIRN launches lawsuit against fishery that stops PFMC plan to end PLCA closure.
- 2008** – PFMC recommends new longline experimental fishing permit for swordfish - denied by NMFS due to harm to sea turtles.
- 2009** – Oregon eliminates drift gillnet permits.
- 2009** – One endangered leatherback observed entangled and released alive in gillnet fishery just outside the southern PLCA boundary.
- 2010** – Two endangered sperms whales observer entangled, equal to 16 entanglements. Incidental Take Statement for marine mammals expires in violation of MMPA.
- 2011** – Northern Pacific loggerheads uplisted from threatened to endangered under U.S. ESA.  
  
Drift gillnet fisherman found fishing illegally in PLCA.
- 2012** – PFMC decides to try re-opening of PLCA again.  
  
Critical habitat established for endangered leatherback sea turtles in California, Washington, Oregon under U.S. ESA.  
  
Leatherback sea turtle observed alive in gillnet gear just south of PLCA boundary.  
  
TIRN launches new lawsuit against fishery under ESA and MMPA.
- 2013** – PFMC HMS team recommends changes to PLCA. California Council epresentatives dismiss proposals and postpone further action until 2014.  
  
First leatherback of 2013 cited near Anacapa Island, Channel Islands, CA, February 2013.  
  
New science predicts extinction of Western Pacific leatherbacks within 20 years without urgent new protections, specifically from fisheries.

## Protected Marine Species Killed in the CA Drift Gillnet Fishery

<i>Compares estimated mortality before and after Pacific Leatherback Conservation Area</i>	Estimated Deaths Before PLCA 1990 - 2000 (15% Avg. Observer Coverage)	Estimated Deaths After PLCA 2001 - 2010 (20% Avg. Observer Coverage)
SPECIES		
Leatherback Turtle	112	6
Loggerhead Turtle	25	3
Turtle Unidentified	15	*
Green Turtle	7	
California Sea Lion	756	340
Northern Elephant Seal	815	26
Stellar Sea Lion	13	
Harbor Seal	23	
Unidentified Sea Lion	46	
Short Beaked Common Dolphin	2100	418
Northern Right Whale Dolphin	352	65
Risso's Dolphin	204	27
Pacific White Sided Dolphin	226	73
Dall's Porpoise	178	
Cuviers Beaked Whale	132	
Common Dolphin Unknown Stock	236	
Long Beaked Common dolphin	95	52
Shortfinned Pilot Whale	97	5
Sperm Whale	29	16
Hubbs Beaked Whale	33	
Unidentified Beaked Whale	21	
Bottlenose Dolphin	22	8
Minke Whale	18	
Mesoplodont Beaked Whale	30	
Unidentified Cetacean	17	
Gray Whale	11	
Humpback Whale	0	
Pygmy Sperm Whale	7	
Baird's Beaked Whale	6	
Stejneger's Beaked Whale	6	
Striped Dolphin	6	
Unidentified Dolphin	7	
Fin Whale	5	
Killer Whale	6	
Unidentified Whale	7	
Total	5663	1039

Blank cells indicate no bykill recorded.



From top: Short-beaked Common Dolphin, Pacific White-sided Dolphin, Northern Right Whale Dolphins, Risso's Dolphin, Gray Whale. Photos from NOAA image library and NMFS Southwest Region.



## Finfish Catch and Bycatch - CA Drift Gillnet Fishery

	Before PLCA 1990 – 2000 15% average observer coverage		After PLCA 2001 – 2010 20% average observer coverage	
Target Species	Estimated Number Caught*	Percent of Catch	Estimated Number Caught	Percent of Catch
Swordfish	91,357	11.36%	22,995	10.34%
Thresher Shark	29,629	3.68%	10,295	4.63%
All Other Finfish	683,397	84.96%	189,200	85.04%
Marketable Fish (less s/s)	198,405	24.67%	46,460	20.88%
Non Marketable Fish	484,992	60.29%	142,715	64.14%
Total All Fish	804,383	100%	222,490	100%
Note: NMFS estimates 35% of all finfish catch is retained; 65% discarded**				
Detail By Species	Estimated Number Caught*	Percent of Catch	Estimated Number Caught	Percent of Catch
<b>Marketable Bycatch</b>				
Albacore Tuna	102,350	12.72%	11,820	5.31%
Shortfin Mako Shark	34,342	4.27%	13,065	5.87%
Opah	22,571	2.81%	9,760	4.39%
Bluefin Tuna	22,435	2.79%	3,485	1.57%
Louvar	4,028	0.50%	1,085	0.49%
Pacific Pomfret	3,028	0.38%	790	0.36%
Bigeye Thresher Shark	2,913	0.36%	1,160	0.52%
Pacific Bonito	2,506	0.31%	3,750	1.69%
Yellowfin Tuna	1,956	0.24%	1,220	0.55%
Jack Mackerel	964	0.12%	120	0.05%
Pelagic Thresher Shark	550	0.07%	5	0.00%
Yellowtail	328	0.04%	185	0.08%
Barracuda	207	0.03%	0	0.00%
Bigeye Tuna	142	0.02%	0	0.00%
White Seabass	50	0.01%	10	0.00%
Soupfin Shark	35	0.00%	5	0.00%
Longfin Mako Shark	0	0.00%	25	0.01%
<b>Non-Marketable Bycatch</b>	0	0.00%	0	0.00%
Common Mola (Sunfish)	226,708	28.18%	105,565	47.45%
Blue Shark	137,950	17.15%	13,495	6.07%
Skipjack Tuna	51,364	6.39%	11,970	5.38%
Pacific Mackerel	34,074	4.24%	8,290	3.73%
Bullett mackerel	21,004	2.61%	935	0.42%
Fish, Unidentified	3,021	0.38%	105	0.05%
Striped Marlin	2,200	0.27%	520	0.23%
Scombrid, Unidentified		0.00%	480	0.22%
Pacific Hake	1,806	0.22%	20	0.01%

## Finfish Catch and Bycatch - CA Drift Gillnet Fishery (cont'd)

Detail By Species Non-Marketabl Bycatch con't	Estimated Num- ber Caught*	Percent of Catch	Estimated Num- ber Caught	Percent of Catch
Fish Other Unident	1,249	0.16%	55	0.02%
Remora	700	0.09%	105	0.05%
Mackerel, Unidentified	664	0.08%	5	0.00%
Salmon Shark	600	0.07%	150	0.07%
Smooth Hammerhead shark	300	0.04%	30	0.01%
Pacific Sardine	285	0.04%	60	0.03%
Blue Marlin	278	0.03%	50	0.02%
Pacific Electric Ray	228	0.03%	65	0.03%
Oilfish	0	0.00%	45	0.02%
Manta Ray	100	0.01%	5	0.00%
Ray Unidentified	77	0.01%	0	0.00%
Bat Ray	63	0.01%	55	0.02%
Oarfish	56	0.01%	0	0.00%
Northern Anchovy	49	0.01%	0	0.00%
Round Stingray	49	0.01%	5	0.00%
Black Marlin	35	0.00%	0	0.00%
Mobula Ray	28	0.00%	15	0.01%
Pacific Angel Shark	28	0.00%	0	0.00%
Prickly Shark	28	0.00%	10	0.00%
Shark, Unidentified	28	0.00%	0	0.00%
Rockfish Unidentified	14	0.00%	20	0.01%
Billfish Unident	0	0.00%	25	0.01%
Other nonmarketable fish	278	0.03%	90	0.04%

\*NMFS reports catch in this fishery by number of individual fish

\*\*NMFS. Letter December 12, 2011. Rod McInnis. Response to October 21, 2011 letter from TIRN and allies about bycatch in CA drift gillnet fishery.

*A hundred thousand gentle ocean sunfish get tangled in CA's drift gillnets and dumped overboard every year. Photo by Daniel Botelho.*



### Sea Turtles

California has consistently acted to protect endangered sea turtles, marine biodiversity and sustainable fisheries in state waters and beyond. As one of the few safe havens in the world for endangered Pacific leatherback and loggerhead sea turtles, protections along the U.S. West Coast and California must remain in place to ensure the long-term survival and recovery of these endangered ocean dwellers.

Because they are deep ocean or pelagic species, leatherbacks and loggerheads are most at risk of capture in the CA drift gillnet fishery. However, endangered green sea turtles and olive ridleys are also sometimes killed in the fishery.

#### Pacific Leatherback Sea Turtles

Leatherback sea turtles are an ancient species that have existed for over 100 million years, surviving the extinction of the dinosaurs. They are the largest turtle and largest living reptile in the world, with adult males and females reaching as much as nine feet in length-head to tail-and weighing up to 2,000 pounds.<sup>120</sup> Leatherbacks are the most wide-ranging of all sea turtles due to adaptations that allow them to survive in colder water temperatures, and have been sighted from Alaska to Chile. They are the deepest diving turtle and have been recorded diving in excess of 3,900 feet.<sup>121</sup>

All populations of leatherback sea turtles are listed as endangered under the U.S. Endangered Species Act and are classified as critically endangered by the World Conservation Union,<sup>122</sup> “facing an extremely high risk of extinction in the wild in the immediate future.”<sup>123</sup>

There are two distinct populations of leatherbacks in the Pacific Ocean, the Eastern population, which nests in Costa Rica and Mexico, and the Western population which nests in the Solomon Islands, Vanuatu, and Papua, Indonesia.

Pacific leatherbacks that utilize the California Current are part of the Western Pacific population. They migrate across the entire Pacific Ocean from their nesting beaches in Papua, Indonesia, where they then return every few years to nest.<sup>124</sup> In 2008, a Pacific leatherback set a new record for the longest recorded migration journey through the ocean after being tracked for 12,774 miles.

Western Pacific leatherback turtles forage along the U.S. West Coast in the greatest numbers from August to December every year. An estimated average of 178 leatherbacks feed along the California coast every year with as many as 379 estimated turtles counted in 1995.<sup>125</sup> This represents about 16 percent of the Indonesian pop-

ulation, but the estimates are likely low due to uncertainties about leatherback life cycles.<sup>126</sup>

#### Living on the Edge of Extinction

Western Pacific leatherback sea turtles that feed on jellyfish along the U.S. West Coast are part of a population that continues to slide toward extinction. New science published in February 2013 chronicles a massive 78 percent decline in the number of leatherback nests between 1984 and 2011 at a key nesting beach in Indonesia.<sup>127</sup> About 75 percent of Western Pacific leatherbacks nest on the Bird's Head Peninsula in Papua, Indonesia.

Researchers from the University of Alabama working with Indonesian researchers predicted that the leatherbacks could go extinct in 20 years if new conservation measures are not immediately implemented.<sup>128</sup>

Pacific leatherbacks are the most imperiled of any sea turtle population in the world. Populations of the Pacific Leatherback have declined by approximately 90-95 percent in the last 25 years.<sup>129</sup> Scientists believe that populations are currently so low that the death of more than 1 percent of the adult female Pacific leatherback

population could lead to their extinction.<sup>130</sup>

It is estimated that about 115,000 adult female leatherbacks existed in the world in the early 1980s, yet by the mid-1990s only about 34,500 remained.<sup>131</sup> A recent population study has estimated that only 2,700 to 4,500 breeding females are left in the Western

Pacific population of leatherbacks that are found off Hawaii and the California coast.<sup>132</sup>

Pacific leatherback sea turtles need full protection of nesting beaches as well as protection from longline, drift gillnet and other commercial fisheries that snag and kill them in the Pacific Ocean.

Allowing even one additional leatherback sea turtle to be captured and killed in the CA drift gillnet fishery to accommodate a small increase in swordfish catch could contribute to the extinction of the species. Even if it did not, it would violate the Endangered Species Act and conflict with long-standing California fishery and marine conservation policies.

**Green sea turtles** The green sea turtles that ply Southern California's coast come from the endangered Eastern Pacific population that nest in Baja California and mainland Mexico.<sup>133</sup> They are often found in the South Bay of San Diego and near Los Angeles swimming and feeding in the sea grass and eelgrass growing in the warm water that exits power generation plants. These are likely the same sea turtles that get caught in the drift gillnet fisheries.





**Olive ridley sea turtles** Endangered olive ridleys from the Pacific coast in Mexico are also in danger from the drift gillnet fishery. Once numbering as many as 10 million, these turtles are only now starting to recover from decades of exploitation. TIRN helped shut down a sea turtle slaughterhouse in Mexico more than 20 years ago, where now as many as 250,000 olive ridleys nest in mass arribadas for which the species is known.

### Northern Pacific Loggerhead Sea Turtles

Northern Pacific loggerheads migrate over 7,500 miles (12,000 km),<sup>134</sup> which is nearly one-third of the planet's circumference,<sup>135</sup> between nesting beaches in Japan, through Southern California's coastal waters to feeding grounds off the coast of Baja California Sur in Mexico. Once they have reached reproductive maturity, at around 35 years of age,<sup>136</sup> loggerheads make this trans-Pacific trek every 3-4 years to return to nest on the beach where they were born.<sup>137</sup>

Loggerheads were named for their relatively large heads, which support powerful jaws and enable them to feed on hard-shelled prey.<sup>138</sup> A unique characteristic of loggerheads is callus-like traction scales beneath their flippers that allow them to "walk" on the ocean floor.<sup>139</sup>

### More Endangered Than Ever

Populations of Pacific Loggerheads have declined by at least 80 percent since the 1980s.<sup>140</sup> Current estimates show there are only about 1,500 adult female North Pacific loggerheads left.<sup>141</sup> Scientists have concluded that current population trends indicate a high probability that North Pacific loggerheads will become "quasi-extinct" (defined as 50 adult females) within approximately 50 years.<sup>142</sup>

As a result of a petition filed by Turtle Island Restoration Network, the U.S. government finally changed the status of the North Pacific loggerhead sea turtle from threatened to endangered in 2011.<sup>143</sup> Loggerhead sea turtles are also classified as endangered by the World Conservation Union<sup>144</sup> "facing a very high risk of extinction in the wild in the near future."<sup>145</sup>

### Critical Habitat for a Long Migration

In response to our petition and the dramatic decline of these sea turtles, the U.S. government must now designate critical habitat in important North Pacific loggerhead foraging areas around Hawaii and along the U.S. West Coast under the federal Endangered Species Act<sup>146</sup>. This will provide increased protections to ensure that the species can continue its life cycle without harm or obstructions to its natural life cycles. Recently, Turtle Island Restoration Network and its partners won a legal commitment from NMFS to establish in-water habitat for Pacific Loggerheads by July 2014.

### Increasing Sea Turtle Risk of Capture

Over the past decade, NMFS has slowly increased the allowable number of sea turtles that can be accidentally entangled or killed in the drift gillnet fishery. This is known as the Incidental Take Statement (ITS), which is provided in the Biological Opinions that the agency is required to prepare and publish under the ESA.

In the May 2013 Biological Opinion for the CA drift gillnet fishery, NMFS is allowing the fishery increased takes of endangered sea turtles. Each year the fishery is permitted to incidentally entangle up to 3 leatherbacks and 3 loggerheads. Instead of the typical one-to-

*A Pacific leatherback searches for jellyfish to eat.  
Photo ©Doug Perrine, seapics.com*



three year period, now the period covered by the ITS is being extended over five years. So NMFS estimates that over five years, 10 leatherbacks and 7 loggerheads will get entangled.

The estimated take will be derived from observed interactions over five years based on 20 percent coverage.

The potential trigger for exceeding the allowed number of sea turtle entanglements that NMFS provides is two observed interactions of each species over five years. This is at least twice as high as the previous trigger of one observed sea turtle interaction over three years in the 2004 Biological Opinion.

Previous to that in 2000, one observed leatherback was estimated at three interactions and nine deaths in one year.

Given the highly endangered status of these two species and the fact that the ITS has no expiration date, TIRN is concerned that these levels of sea turtle take could contribute to their continued decline toward extinction. In addition to leatherbacks and loggerheads, NMFS is allowing two green sea turtles and two olive ridleys to be caught in the fishery over the next five years.

### Marine Mammals

Even after four decades of restrictions and regulations, the CA gillnet fishery re-mains the deadliest fishery along the U.S. West Coast for capture and drowning of whales, dolphins, and other marine mammals.

#### An estimated 6,600 marine mammals died in the fishery over the past two decades (1990 – 2010).

Today, even with a much smaller fishing fleet and increased environmental protections including pingers, the fishery still averages 135 marine mammal captures per year, most of which die in the nets.<sup>147</sup>

In 2010, two endangered sperm whales were observed entangled in the fishery, one dead and one with serious injuries that were likely to result in death. The estimated take of 16 sperm whales exceeded the Potential Biological Removal Level for the population, of which fewer than 1,000 animals remain.<sup>148</sup>

**Potential Biological Removal Level (PBR) is defined by the MMPA as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to**

**reach or maintain its optimum sustainable population.<sup>149</sup>**

In 2011, a minke whale was observed entangled in the fishery, which could mean as many as 12 were netted during that season - a number that exceeds what the West Coast population can withstand without harm (PBR).

As a result of the sperm whale deaths, the CA drift fishery is now being classified at the highest level of harm for marine mammal bycatch under the MMPA as a Category 1 fishery, making it most deadly of any commercial fishery along the U.S. West Coast. It is second in harm only to the other Category 1 fishery in the U.S. Pacific: the Hawaii longline fishery for swordfish. (Read more about the fishery in the section on Why Longlining is Not an Alternative and in Appendix 2.)

Between 1990 and 1995, an average of 400 to 650 cetaceans and 100 to 200 pinnipeds were killed in CA's drift gillnets each year.<sup>150</sup> During the early to mid-1990s, the fishery was responsible for killing several marine mammal species at levels where estimated mortality exceeded PBR limits set under the MMPA.<sup>151</sup> After a Take Reduction Team was convened in 1996, pingers were required in 1997 as a means to reduce marine mammal entanglements.

Below is a list of protected marine animals known to have been entangled in the CA drift gillnet fishery since observer coverage began in 1990. Since 1995, no beaked whales have been observed entangled, but researchers don't know if this is due to use of pingers, population decline or other factors.

#### Whales (estimated deaths 1990-2010)

Gray Whale (11), Humpback Whale (2 alive), Short-finned Pilot Whale (103), Fin Whale (5), Minke Whale (18 + 1 observed 2011), Sperm Whale (45), Killer Whale (6), Cuvier's Beaked Whale (132), Baird's Beaked Whale (6), Hubb's Beaked Whale (33), Stejneger's Beaked Whale (6), Pygmy Sperm Whale (7), Mesoplodont Beaked Whale (30)

#### Dolphins & Porpoises (estimated deaths 1990-2010)

Short-beaked Common Dolphin (2,518), Northern Right-whale Dolphin (417), Risso's Dolphin (231), Pacific White-sided Dolphin (299), Long-beaked Common Dolphin (147), Dall's Porpoise (178), Striped Dolphin (6), Bottlenose Dolphin (30)

#### Seals & Sea Lions (estimated deaths 1990-2010)

California Sea Lion (1,096), Harbor Seal (23) Northern Elephant Seal (841), Stellar Sea Lion (13)



## CALIFORNIA'S TURTLE – SAFE COAST

Today, as a result of decades of conservation advocacy, California is one of the few safe havens for sea turtles in the Pacific.

- In 2012, more than 42,000 square miles of U.S. West Coast ocean waters were designated as critical habitat for endangered Pacific leatherback sea turtles, including 16,000 square miles of ocean along California's Central Coast.
  - The Pacific leatherback was named the official state marine reptile of California in 2012 with unanimous bi-partisan votes by the state legislature and the governor's signature enacting AB 1776, authored by Assemblyman Paul Fong and sponsored by Turtle Island Restoration Network.
  - Since 2001, the Pacific Leatherback Conservation Area (PLCA) has been closed to the California drift gillnet fishery between August 15 and November 15 and out to 200 miles north of Point Conception to prevent entanglement of leatherbacks. The PLCA has successfully minimized entanglements to two leatherbacks over the past decade. In the previous decade from 1990 to 2000, an estimated 112 leatherbacks were killed in the fishery.
  - The annual three-month closure has also significantly reduced the number of whales, dolphins and sea lions entangled and
- drowned in the drift gillnets from more than 5,000 in the decade before the closure to about 1,000 today.
  - The Pacific loggerhead sea turtle that migrates through California's southern waters receives fishery protections in the form of seasonal time and area closures when they are here in higher numbers during El Nino years.
  - Protections for the Northern Pacific loggerhead sea turtle were strengthened when the status of the species was revised from threatened to endangered under the U.S. Endangered Species Act in 2011.
  - Under the ESA, critical habitat for Northern Pacific loggerheads needs to be designated, are is likely to include California coastal waters.
  - In addition to the protections above, the capture and death of sea turtles and marine mammals on the hooks of swordfish longlines along the U.S. West Coast has been eliminated to zero by bans on use of this gear by the state and federal government along the U.S. West Coast to beyond the 200-mile Exclusive Economic Zone.



**CALIFORNIA REPUBLIC**



*Since 2001, the Pacific Leatherback Conservation Area has prevented endangered sea turtles from drowning in CA's drift gillnets. In 2012, the Pacific leatherback was named California's official marine reptile. Mark Cotter photo of leatherback.*



## Meet the Marine Mammals

Here we introduce you to a few of the marine mammals that get entangled in the CA drift gillnet fishery

**Sperm Whale:** Endangered sperm whales dive deeper than any marine mammal on earth, feeding on deepwater squid, and are a rare and beautiful sight offshore. The sperm whale is the largest of the toothed whales. It is distinguished by its extremely large head, which takes up to 25 to 35 percent of its total body length. It is the only living cetacean that has a single blowhole asymmetrically situated on the left side of the head near the tip.<sup>152</sup>

Only 971 sperm whales remain in the population that swims the California coast and north into Oregon and Washington.<sup>153</sup> It is not certain that use of pingers deters these whales from entanglement in drift gillnets.<sup>154</sup>

**Minke Whale:** Known for making unique sounds such as “boings,” “clicks,” “grunts,” and “thumps,” minke whales are members of the baleen whale family and are the smallest of the “great whales” or rorquals.<sup>155</sup> They have a relatively small, dark, sleek body that can reach lengths of up to about 35 ft (10.7 m) and weigh up to 20,000 lbs.<sup>156</sup>

The California/Oregon/Washington population of minke whales tends to be residents and totals 500-1,000 animals.<sup>157</sup> It is unknown whether their numbers are increasing or decreasing, mostly due to uncertainty about whether entanglement in California’s gillnets and ship strikes could have reduced this relatively small population. In the 1990s, at least 18 minke whales were captured and killed in the gillnet fishery.<sup>158</sup> In 2011, one was observed entangled in the gillnet fishery and released alive.<sup>159</sup>

**Short-finned Pilot Whale:** Short-finned pilot whales are larger members of the dolphin group.<sup>160</sup> They have a bulbous melon head with no discernible beak. Their dorsal fin is located far forward on the body and has a relatively long base. Body color is black or dark brown with a large gray saddle behind the dorsal fin.

Short-finned pilot whales were once common off Southern California. However, after a strong El Niño event in 1982-83, they virtually disappeared from this region, and sightings and entanglements remain rare.<sup>161</sup> Recent sightings indicate they may be returning to West Coast coast waters probably in response to changing oceanographic conditions. A minimum of about 500 animals is thought to exist in this population, but abundance trends are unknown.<sup>162</sup>

**Short Beaked Common Dolphin:** Short-beaked common dolphins are small dolphins under 9 ft. (2.7 m) long and weigh about 440 lbs. (200 kg).<sup>163</sup> Their bold coloration features a crisscrossing hourglass pattern. A dark gray cape extends along the back from the beak and creates a “V” just below the dorsal fin on either side of the body. There is a yellow/tan panel along the flank, between the dark cape and white ventral patch, forward of the dorsal fin.

A narrow dark stripe extends from the lower jaw to the flipper. There is also a complex color pattern on the facial area and beak that includes a dark eye patch.

Often seen congregating in large groups as many as 10,000 strong, they are often seen displaying behaviors such as breaching, porpoising, pitch-poling, bow riding and somersaulting. Short-beaked common dolphins are the most abundant cetacean off California,<sup>164</sup> and are widely distributed from the coast to at least 300 nautical miles from shore. A minimum of 350,000 individuals are estimated in the California/Oregon/Washington population.<sup>165</sup> Abundance trends are not known, but it appears that the species may be shifting its habitat northward as climate change warms ocean waters.

**Risso’s Dolphin:** Risso’s dolphins, sometimes called “gray dolphins,” have a robust body with a narrow tailstock.<sup>166</sup> These medium sized cetaceans can reach lengths of approximately 8.5-13 feet (2.6-4 m) and weigh 660-1,100 pounds (300-500 kg).<sup>167</sup> A minimum of 5,000 individuals is in the CA/OR/WA population and abundance trends are unknown.<sup>168</sup>

**Pacific White Sided Dolphin:** Pacific white-sided dolphins have a robust body and a very short beak. They have an unusually large, curved dorsal fin and are sometimes referred to as the “hookfin porpoise,” even though they are not porpoises.<sup>169</sup> Their back, fluke (tail), and lips are black, while their sides, dorsal fin, and flippers are gray. Their belly is white. Pacific white-sided dolphins are extremely playful and highly social animals. Schools of thousands of Pacific white-sided dolphins are occasionally observed, but group size generally ranges from 10-100 animals. They are often observed “bow riding” and doing acrobatic somersaults. This species commonly associates with other cetaceans, such as Northern right whale dolphins and Risso’s dolphins. A minimum of 6,000 animals comprises the CA/OR/WA population.<sup>170</sup>

**Northern Right Whale Dolphin:** Northern right whale dolphins are about 6.5-10 ft. (2-3 m) in length and weigh 130-250 lbs. (60-115 kg).<sup>171</sup> They are the only species of dolphin without a “dorsal” fin found in the North Pacific Ocean. Northern right whale dolphins are fast swimmers and make low-angled graceful leaps out of the water. They have been reported to reach sustained speeds of 16 miles per hour and bursts of 22 mph. Northern right whale dolphins are capable of diving and holding their breath for up to 6.5 minutes to feed on small fish. The CA/WA/OR population consists of an estimated minimum of 6,000 or more individuals.<sup>172</sup>

### A Waste of Wonderful Fish

The tens of thousands of unwanted finfish indiscriminately captured by California's drift gillnets consist of some of the rarest, most amazing and vulnerable fish in the sea: declining shortfin mako shark, disappearing Pacific bluefin tuna, and highly exploited albacore, skipjack and yellowfin tuna.

More than 80 percent of fish and sea life entangled by California's large mesh drift gillnet fleet is neither targeted swordfish nor thresher shark. Even when unintended fish is retained and sold as seafood, 65 percent of the total catch is tossed overboard. By any definition, bycatch at that high level is not sustainable.

Pacific swordfish, the primary target fish, comprised an average of only 12 percent of the total finfish catch over the past 10 years. An estimated 25,000 swordfish were caught and sold over the past decade based on minimal observer coverage averaging less than 20 percent.

The secondary target fish, thresher shark, comprised only 5 percent of the total catch, and ranks seventh in numbers of total fish caught in the drift gillnet fishery – far less than the total tuna, shark and other finfish incidentally entangled in the fatal barrier of the net.

Sunfish or mola and blue sharks are the two most common unwanted fish species or bycatch caught by the fishery. More than 100,000 giant ocean sunfish and 10,000 blue sharks were caught in the drift gillnets and discarded overboard during the past 10 years.

The remarkable giant ocean sunfish, also called common mola, is carelessly captured and discarded by the tens of thousands in this fishery. Gillnets usually don't kill the placid sunfish immediately, but cut into their skin, scrape off their protective mucus and flood their gills with air.<sup>179</sup> The fate of these peaceful sea creatures after fish handlers dump their silvery bodies back into the ocean is completely unknown.

Rare megamouth shark and vulnerable great white sharks are sometimes taken in the fishery as well as bluefin tuna and bigeye tuna. The vast majority of these animals are dumped back into the ocean, dead or injured. Fishery observers say most of this fish is alive when it is thrown back into the sea, though long-term survival is unknown.

Threatened and overfished blue shark is caught and discarded by the thousands.

### Damage to the Gentle Sunfish

The peaceful ocean sunfish or mola mola comprise the largest numbers of unwanted fish caught by the drift gillnets along the California coast. These innocent bystanders typically account for nearly half (48 percent) of the total numbers of fish caught in the nets. Five times more sunfish than swordfish are disabled and injured in the fishery. The deadly gillnets are dropped into the surface waters of

the ocean to soak overnight just as the sunfish come to the surface to rest after spending all day diving deep in search of their favorite food, jellyfish.

Sunfish are large, flat fish that have small mouths and large eyes, and they can weigh up to 5,000 pounds, which makes them the world's heaviest bony fish.<sup>180</sup> They can grow to 14 feet when measured from the tips of their dorsal fin and if they are measured from their anal fins they can be as long as 10 feet. Often the appearance of their dorsal fin can be startling since it looks like a shark.

Sunfish research specialists are concerned that bycatch in the CA drift gillnet fishery may be contributing to the reduced population size of the species as evidenced by reduced genetic diversity.<sup>181</sup>

In 2012, sunfish made headlines in Southern California when extraordinarily high numbers of sightings were made off San Diego, Orange and Los Angeles counties, perhaps due to an abundance of jellyfish. Dave Anderson of Captain Dave's Dolphin & Whale Safari in Dana Point was quoted in an online blog saying: "We are seeing both young and full-grown molas on nearly every trip, and sometimes seeing 20 or 30 animals in a single trip, though often these are young ones."<sup>182</sup> A picture of a diver swimming with a mola went viral on Facebook.

### At Risk Shark Species

**Blue Shark:** With the exception of ocean sunfish, blue sharks are caught in greater numbers than any other finfish bycatch species taken in the fishery. Over the past 10 years, more than 14,000 blue shark were entangled and dumped dead and dying back into the ocean by the CA drift gillnet fleet.<sup>183</sup>

New studies show that bycatch in commercial fisheries for swordfish and tuna in the Pacific is devastating blue shark populations by as much as 5 percent per year.<sup>184</sup> This is a sharp decline for a shark known for its wide range, abundance and ability to reproduce more quickly than other slow-maturing shark species. Nearly all blue shark entangled by the drift gillnet fishery are discarded at sea dead or dying. A NMFS 2008 analysis of observer coverage in the drift gillnet fishery between 1990 to 2006 found that 63 percent of blue sharks caught were discarded dead.<sup>185</sup>

Keeping blue shark meat and selling it as seafood is difficult since it ammoniates quickly so most blue sharks that are not released are finned. On the high seas, their fins are often sliced off for sale and use in shark-fin soup, though this practice is banned in the U.S.

The blue shark's name comes from its distinct dark blue dorsal surface and bright blue sides. Its underside is a well-defined, crisp white color. This contrast in colors is known as counter-shading and provides camouflage for the shark in the open ocean.

The Southern California Bight is a major birthing area and is generally considered a nursery for blue shark, which also range into Mexico

and as far north as Alaska and east to Hawaii and beyond to Japan. The population of blue sharks along the California coast is unknown. However, the sharks may have been plentiful when the gillnet fishery began, as the annual estimated bycatch in the late 1970s and early 1980s was between 15,000 and 20,000 blue sharks.<sup>186</sup>

A recent assessment of blue shark populations in the Pacific indicate that it is likely being overfished and overfishing is occurring in the North Pacific.<sup>187</sup> The International Union for the Conservation of Nature lists blue sharks on the Red List as “near threatened.”<sup>188</sup>

The continued take of blue shark by the drift gillnet fleet is cause for alarm and is no doubt taking a toll on the long-term survival and recovery of this little known shark species. Expanding this fishery will only increase the bycatch of these declining ocean predators.

### Great White Sharks in Danger

The great white shark is in such danger of disappearing that the State of California will soon make a decision on whether it should be listed as an endangered species.<sup>189</sup>

New research estimates that as few as 339 white sharks remain in Northeastern Pacific population that relies on the California Current ecosystem along the western shores of North America.<sup>190</sup> An estimated 96 individual white sharks were reported entangled in the CA drift gillnet fishery over this fishery’s history.<sup>191</sup>

Most of them were young fish taken in the Southern California Bight, a probable nursery for great whites. However, reported landings of white shark bycatch under-represent actual numbers of great white captured and killed as there is no direct market for white sharks and no incentive to report their bycatch. In fact, there is no limit on the incidental take of great whites in commercial fisheries, though it is illegal to land them for sale for their meat or fins.

The reckless removal of vulnerable great white sharks in the drift fishery combined with other commercial fisheries represents a major threat to the long-term survival of this grand ocean predator. Another way that bycatch in this fishery significantly impacts great whites is the capture and drowning of major prey species as bycatch including sea lions, harbor seals, and elephant seals that comprise a major portion of the shark’s diet. The take of great whites in this fishery must be prohibited and when it occurs, reported.

### At Risk Sharks You’ve Never Heard Of

In addition to the stealthy great white shark and the secretive blue shark, the drift gillnet fishery also takes a toll on other little known or understood sharks including the rare megamouth shark, smooth hammerhead shark, salmon shark, prickly shark, and Pacific angel shark.

The megamouth shark is an extremely rare species of deepwater shark, first discovered in 1976. Four specimens of this rare species have been observed taken in the CA drift gillnet fishery in recent

years (1984, 1990, 1999, 2001)<sup>192</sup>. Only 55 other records of this species have been ever been recorded.<sup>193</sup> Therefore, the four observed caught in the CA drift gillnet fishery represents close to 10 percent of worldwide observations of this unique shark.<sup>194</sup>

### Commercial Finfish Collateral Damage

Here we introduce you to some of the important fish species that are sacrificed in gillnets in pursuit of the mighty swordfish. About a third of fish caught is retained and sold as seafood, while most is discarded overboard dead and dying.

**Shortfin Mako Shark:** An estimated 13,500 shortfin mako shark were taken as bycatch in the CA drift gillnet fishery over the past decade<sup>195</sup>. This level of constant carnage in the drift gillnet fishery may be taking a major toll on this important but declining shark species.

The shortfin mako shark is a powerful and wide-ranging pelagic shark found globally in temperate and tropical waters. A “cousin” to the great white shark, the short finned mako swims at high speeds with bursts to 50 miles per hour and like the great white can moderate its body temperature, allowing it to thrive in most ocean environments.

Makos are the largest, fastest, and most sophisticated species of pelagic shark on our planet.<sup>196</sup> Makos have striking coloring with deep purple to indigo dorsal (upper) surfaces, silvery sides, and white ventral (under) surfaces.<sup>197</sup> Also known as fierce and dangerous to divers or fishers when caught on a fishing line, it is the mako shark that was depicted fighting for its life in the classic Hemingway novel, *The Old Man and the Sea*.<sup>198</sup>

Targeted commercial fishing for its meat and fins for soup as well as incidental capture as bycatch in swordfish and tuna fisheries have devastated populations of short-fin and the less common long-finned mako shark globally.

The IUCN Red List of Threatened Species now lists mako sharks as vulnerable.<sup>199</sup> While the NMFS has restricted catch of shortfin mako shark by 50 percent in U.S. Atlantic and Gulf waters, it has not done so in the Pacific.<sup>200</sup>

The Southern California Bight is a known nursery area for shortfin mako. However, very little is known about the mako shark’s distribution, abundance, and size in areas to the south and west of the West Coast Exclusive Economic Zone (EEZ) or other basic biological information such as the stock structure and boundaries of the species and relationships to other populations; or age and growth rates (current growth estimates differ widely). As a result, the drift gillnet fishery may be detrimental to spawning fish and overall populations.

**Pacific Bluefin Tuna:** Just three days after a single Pacific bluefin fetched a record \$1.76 million at a fish auction in Tokyo, Japan, in early 2012, Japanese scientists released a report stating that the Pacific bluefin population has dropped 96.4 percent from unfished levels due to decades of overfishing.<sup>201</sup>



The sleek, torpedo-shaped Pacific Bluefin that visits the California coast is a slow growing and long-lived fish that spawns in the ocean between Japan and the Philippines.

It undertakes epic migrations across the Pacific where it is randomly taken in the CA drift gillnet fishery and other West Coast fisheries. Author Richard Ellis, who wrote *Tuna: A Love Story*, called bluefin “one of the fastest, largest, smartest, most highly evolved fish on Earth.”<sup>202</sup>

In 2010 an international trade ban, which the United States supported, failed to draw the necessary votes to list bluefin tuna (both Pacific and Atlantic) under the protection of CITES Appendix I.

The CA drift gillnet fishery may be contributing to the demise of the iconic and once abundant bluefin by entangling an estimated 4,500 Pacific bluefin tuna, mostly juvenile fish, over the past decade.<sup>203</sup>

Most of these magnificent and overly exploited fish caught as bycatch were legally sold for sushi, even though the Pacific bluefin population is considered overfished and its population about half of what it once was.

It’s a tragedy that may not be overcome even after fishery managers for the first time imposed catch limits on the industrial bluefin fleet that fishes off the west coast of the Americas (Eastern Pacific).

Given the precarious status of the beloved bluefin, the drift gillnet fishery should not be allowed to take the species in its nets without limits or regulation. Expansion of this destructive fishery will only exacerbate the demise of the bluefin in the Pacific.

**Pacific Albacore Tuna:** For every 10 swordfish caught in the gillnet fishery, 5 albacore tuna are captured and kept for sale. Over the past decade about 12,000 Pacific albacore tuna were killed in the swordfish fishery.<sup>204</sup> This 50 percent bycatch rate for tuna is a concern. These are juvenile fish from the Northern Pacific albacore population that is heavily targeted by domestic and Canadian fishers as well as international fleets on the High Seas.

Also known as long-finned tuna and often marketed as “white tuna,” Pacific albacore migrate across the ocean as young fish to the West Coast from spawning grounds in Japan. In 2011, U.S. government fishery scientists decided that the Northern Pacific albacore population was not overfished, but uncertainties remain about the long-term impacts of removing juvenile fish from the population.<sup>205</sup> Bycatch in the gillnet fishery could be harming the populations and impacting the health of the more valuable, lower bycatch pole-and-line targeted albacore tuna fishery.

Since California’s last tuna cannery closed in 2001, the tuna fleet has declined significantly. However, in 2010, the West Coast pole-and-line albacore fishery generated nearly \$30 million compared to \$2.2 million for swordfish from all gear types.<sup>206</sup> The potential harm to albacore populations and the commercial tuna fishery from

excess bycatch of albacore tuna in the drift gillnet fishery is another good reason not to expand the gillnet fleet.

**Moonfish or Opah:** Very little is known about California’s mysterious and beautifully red-rimmed moonfish, also known as opah. Until they started getting caught as bycatch in high numbers in the drift gillnet fishery, and in longline tuna fisheries, the fish was rarely consumed as commercial seafood. The fact that more than 11,000 of these silvery fish were killed and sold by the drift gillnet fishery over the past decade raises questions about long-term health of the moonfish populations.<sup>207</sup>

The large disc-shaped fish can reach six feet in length and 600 pounds. Its compressed oval body is an iridescent, silvery-blue with round to oval white spots. The snout, lips and fins are lined with brilliant red.<sup>208</sup>

Scientists don’t understand even the basic biology and ecology of the opah. What little researchers do know about the opah suggests they are a highly migratory species that can quickly travel long distances. Research also shows that opah dive hundreds of meters deep during the day, then come closer to the surface at night.

No one knows how many of these fish swim the California Current, but researchers believe that they comprise a population that is distinct from the moonfish caught and sold by Hawaii longliners, another wasteful fishery.

Clearly the death toll of the moonfish should be minimized at least until its life cycle is better understood. The precautionary principle should be invoked instead of the unfounded conclusion from fishery managers that: there is no evidence that opah populations are in decline or that fishing rates are too high.<sup>209</sup>

**Louvar:** As with the opah, little is known about the louvar’s life cycles or population. Yet fishery managers allow the drift gillnet fishery to take hundreds of these large streamlined fish and sell them to the highest bidder.

A warm water fish found mostly in Southern California waters, its Latin name means silver emperor. The louvar has a strong compressed body and a blunt head with a small toothless mouth and a horizontal groove above each eye.<sup>210</sup> It is prized by recreational anglers for its impressive size, as large as 300 pounds.

The size of the louvar population worldwide or off California is not known. Louvar are solitary fish and few are taken at any one time. It is generally an uncommon fish found worldwide in tropical and temperate seas. It is not known whether local subpopulations exist or how far individual louvars travel. The louvar is not presently a commercially targeted species and the fishery is not actively managed. Its unrestricted take in the drift gillnet fishery could spell bad news for the future of this fish in California waters and beyond, particularly if the fishery expands.

## CONCLUSION - TOP 10 REASONS TO END CALIFORNIA DRIFT GILLNET FISHERY

The capture and killing of whales, dolphins, sea turtles and sharks, as well as hundreds of other marine mammals and thousands of unwanted fish continues in the California drift gillnet fishery. Given the California gillnet fishery's wasteful gear, history of violating conservation laws, the decline of the fishing fleet and the decrease in swordfish consumption, it's clearly time to say goodbye to drift gillnets and California's deadliest catch.

### Top 10 Reasons to Say Goodbye to California's Deadliest Catch

#### 1. California's drift gillnets kill and injure too many whales, dolphins and sea turtles.

- More than 1,300 protected whales, dolphins, and sea turtles were accidentally captured and drowned in the California drift gillnet fishery over the past decade (2001 - 2010).
- An average of 140 protected marine mammals die each year in California's gillnets.
- Endangered sperm whales, minke whales and humpback whales, as well as California gray whales suffer gillnet entanglements and injury leading to death.
- These marine animals suffer the highest gillnet death toll: short beaked common dolphins, California sea lions, Pacific whitesided dolphins, Northern right whale dolphins, long beaked common dolphins, Risso's dolphin, Northern elephant seals
- The California drift gillnet fishery is ranked at the highest level for harm to marine mammals due to bycatch as a Category 1 fishery under the Marine Mammal Protection Act. It is one of only two commercial fisheries in the entire U.S. Pacific ranked as Category 1—the other is the unsustainable Hawaii longline swordfish fishery.

#### 2. Sea turtles caught in California's drift gillnets are going extinct.

- Critically endangered Pacific leatherback and loggerhead that feed and migrate along the California coast are the sea turtle species most at risk of capture and drowning in California's drift gillnets.
- These sea turtles have declined by 80 to 90 percent in recent decades and are at high risk of extinction.
- Sea turtle biologists now predict extinction of leatherbacks that swim California's shores within 20 years without urgent measures to prevent capture in fisheries.
- Since the Pacific Leatherback Conservation Area (PLCA) was designated in 2001 under the U.S. Endangered Species Act (ESA), two leatherbacks and two loggerheads have been observed entangled in the fishery. An estimated 112 leatherbacks and 25 loggerheads were killed in the fishery in the previous decade before the PLCA.
- Currently California's coast is a safe haven for sea turtles, but allowing drift gillnets to fish in

protected sea turtle habitat will increase the risk of capture, drowning and extinction.

#### 3. Drift gillnets are curtains of death that are banned on the High Seas.

- Drift gillnets are a notoriously non-selective gear type consisting of mile-long curtains of nylon mesh netting dropped into the surface of the ocean to catch fish—and any marine animals—that are too large to pass through the net.
- Although termed "gillnets," the nets used in the California drift gillnet fishery actually entangle fish and other animals rather than trap them by the gills.
- Drift gillnets are banned on the High Seas and by the states of Oregon and Washington.

#### 4. The California gillnet fishery kills too many sharks, bluefin tuna, sunfish and wastes tons of fish.

- As much as 80 percent of the sea life caught by the drift gillnets is neither targeted swordfish nor shark but other finfish and marine species.
- Ultimately, only 35 percent of the total fish catch is kept for sale as seafood and 65 percent discarded.
- More than 100,000 giant ocean sunfish and 10,000 blue sharks were caught and discarded over the past 10 years (2001 - 2010).
- Gillnets usually don't kill the placid sunfish immediately, but cut into their skin, scrape off their protective mucus and flood their gills with air.
- The majority of declining blue sharks die in the nets (63 percent of all caught), and the fate of those released injured and traumatized is unknown.
- Every gillnet fishing season, hundreds of endangered Pacific bluefin tuna as well as declining short-finned mako sharks and other vulnerable shark and tuna species are incidentally caught, killed and often dumped overboard.

#### 5. Swordfish and Shark are in Danger of Decline

- Swordfish have suffered at the hands of industrial longline and gillnet fishing fleets around the world.
- Globally, swordfish populations have decreased by 28 percent over the past 20 years
- Research published in 2003 concluded that 90 percent of the "big" fish - tuna, swordfish, and marlin - are already gone.
- The status of Pacific swordfish populations is uncertain, but government scientists say they are not being overfished at this time.
- Due to uncertainties about swordfish populations, declining catch levels and increased fishing, swordfish remains vulnerable to depletion in the future.
- Common thresher shark populations along the California coast were drastically depleted by the drift gillnet fishery in the 1970s and 1980s
- Like other sharks, thresher sharks are vulnerable to overfishing because they live a long time, take many years to mature, and only have a few young at a time.

## CONCLUSION - TOP 10 REASONS TO END CALIFORNIA DRIFT GILLNET FISHERY

- Because a robust stock assessment has never been completed for the Pacific coast population of common thresher shark, no one knows if the population is recovering from the heavy fishing pressure or the impacts to it from the drift gillnet fishery.

### 6. The California drift gillnet fishery is steadily declining as fisherman leave the fishery.

- The CA drift gillnet fleet has been steadily declining since the 1980s as fish stocks declined, fishing areas reduced to protect fish and protected marine species, and fisherman left the fishery.
- At the peak of the fishery in 1985, 228 vessels landed 4.8 million pounds of swordfish and 2.2 million pounds of shark.
- By 2011, only 17 vessels landed 5,500 pounds of swordfish sold for \$731,279. And by 2012, only 16 gillnet vessels landed fish.
- In 2012, as few as 13 gillnet vessels landed 22 metric tons of fish worth \$184,358. This compares to 13 drift gillnet vessels landing 22 metric tons of swordfish in 2012 worth \$184,358.
- In comparison, the California albacore tuna fishery landed 1.3 million pounds of fish generating \$2 million in ex-vessel revenue in 2011.
- NMFS forecasts that the fleet will decline to about 300 to 450 fishing days by 2020.
- Few, if any, drift gillnet permit holders fished full-time in the swordfish fishery. Most had not fished with gillnets in one to three years. Instead they fished in the larger and more sustainable albacore, salmon and crab fisheries.
- Nearly 90 percent of drift gillnet permit holders who responded said that they would accept a buy-out of their permit, boat and gear if offered. Many planned to leave the gillnet fishery to retire, change fisheries or find another line of work.

### 7. U.S. Swordfish Consumption Declining Due to High Mercury and Unsustainability

- Swordfish consumption has steadily declined in California and the U.S. since the 1990s due to concerns about sustainability, mercury and high prices.
- The mid-1990s "Give Swordfish a Break" campaign prompted restaurants, retailers and seafood lovers to give up swordfish in order to stop the crash of Atlantic swordfish populations and force fishery managers to act.
- The U.S. FDA and EPA jointly issued mercury-in-fish advisories in 2004 advising women of childbearing age and children never to eat swordfish or shark.
- The highest level of U.S. swordfish consumption was reached in 1998 with more than 50 million pounds, and then steadily declined beginning in 2000 and ultimately dropping by more than 50 percent to 24 million pounds by 2009.
- Swordfish is not among the Top 10 fish eaten in the U.S., so the need for more supplies is questionable, particularly given the risk to public health and to marine life.

### 8. The California drift gillnet fishery violates marine conservation laws.

- The drift gillnet fishery has violated the Endangered Species Act and Marine Mammal Protection Act by capturing too many endangered marine animals; and not taking immediate action to resolve the problem.
- The fishery has faced legal action numerous times to bring it into compliance with marine conservation laws.
- Recently, the fishery operated for at least two years (2010-2012) with an expired marine mammal take permit.
- Fishery managers ignored recommendations of biologists for measures to protect sea turtles and whales from the nets.
- Fishery managers never convened the Take Reduction Team after two endangered sperm whales were killed in 2010, in excess of allowable levels.

### 9. Observer Coverage in the CA Drift Gillnet Fishery is Too Low and Biased

- Fishery observer coverage is too low, barely reaching the minimum 20 percent required by National Marine Fisheries Service.
- For half the fleet, the observer coverage is zero because vessels are deemed "unobservable."
- As a result of non-random observer coverage, the bycatch data is biased and unreliable.
- The U.S. National Bycatch Report recommended that observer coverage in the California drift gillnet fishery specifically should be increased to 30 percent to better document bycatch of rare and endangered species.
- 100 percent observer coverage is needed in order to know the true levels of the fishery bycatch.
- Observer coverage is costly in this fishery, as high as \$3,300 per day at sea, compared to \$1,000 or less in other Pacific fisheries.

### 10. Drift Gillnets are Obsolete and Unsustainable

- Drift gillnets are wasteful and even with pingers and large mesh net they continue to capture and kill vulnerable non-target fish and marine life.
- Drift gillnetters need to switch to more sustainable gears or move to more sustainable fisheries.
- Fishing gear fixes alone won't solve bycatch problems. Solutions must include: (1) significant reduction of overall fishing effort; (2) no-fishing marine preserves; (3) time-area closures; (4) banning the use of the most destructive fishing technology; and (5) adequate enforcement.



- APPENDIX 1 – MARKET TRANSFER EFFECTS: KILLING SEA TURTLES TO SAVE SEA TURTLES**
- APPENDIX 2 – HAWAII LONGLINE FISHERY – A DUBIOUS MODEL**
- APPENDIX 3 – SUSTAINABLE FISHERIES – CAN ECO LABELS BE TRUSTED?**
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## APPENDIX 1 – MARKET TRANSFER EFFECTS: KILLING SEA TURTLES TO SAVE SEA TURTLES

A key rationale offered by National Marine Fisheries Service (NMFS) for expanding the gillnet fishery into the protected sea turtle area along the U.S. West Coast is speculation that increasing domestic swordfish supplies will somehow offset swordfish imports from foreign fleets that operate with fewer sea turtle protections. This unfounded argument has never been peer reviewed and is flawed because it is not based on any actual bycatch or observer or swordfish landings data from any foreign fisheries.<sup>211</sup>

Given that much of the swordfish caught in the Pacific is retained bycatch from tuna fisheries,<sup>212</sup> neither fishing effort nor production is likely to be reduced by increasing domestic effort or production of targeted swordfish. There is no evidence that if the U.S. swordfish supply along the U.S. West Coast or elsewhere did in fact saturate the seafood market, that foreign fleets wouldn't simply sell to other markets such as Europe and Asia where there is a demand for swordfish, casting considerable doubt on the market transfer effect. One could just as easily argue that producing more domestic swordfish is more likely to increase the total number of sea turtles and other marine life killed or injured on longlines and in drift gillnets targeting swordfish in the U.S. and overseas combined. Even if the market transfer effect was a proven economic theory, so far NMFS has failed to make any specific case for how it would benefit sea turtles or fishers in the CA drift gillnet fishery, given the fishery's high bycatch, declining fleet size and revenues.

The agency's fishery economists originally came up with the "market transfer effect" to support the increased capture and killing of endangered sea turtles in the controversial Hawaii longline swordfish fleet. This fishery was closed three times over the past decade due to excess take of sea turtles in violation of the Endangered Species Act.

In analyzing the market transfer premise as applied to the Hawaii longline fishery, analysts at Earthjustice in Honolulu found that the argument is flawed in multiple ways. The following language was modified from a longer comment letter that Earthjustice prepared for Turtle Island Restoration Network to challenge the increased endangered sea turtle captures in the Hawaii longline fishery.<sup>213</sup>

First, NMFS assumes that effort within the Hawaii surface longline fishery for swordfish will increase dramatically from 1,875 sets to 5,500 sets per year, but provides no basis for that assumption. In fact, this fishery has not exceeded 1,875 sets per year since it reopened in 2004 after a four-year court-ordered closure. NMFS's unrealistic estimate of future effort appears to be another attempt to inflate the number of endangered loggerhead and leatherback sea turtles this fishery may injure and kill regardless of whether effort in the fishery increases at all.

This leads to the second flaw in NMFS's logic: Even if one were to accept NMFS's "spillover effects" theory, such effects would only occur if effort increased quite significantly. If effort stays relatively stable, as it has for nearly a decade, there will be no spillover effect, and no reduction in foreign swordfish production or bycatch.

Third, NMFS does not present clear evidence that increases in U.S. swordfish production – assuming they actually occur – lead to reductions in overall global swordfish effort. The agency asserts that increased U.S. catch replaces foreign catch on a one-to-one ratio, but none of the studies on which NMFS relies ever establishes that there is, in fact, any connection between domestic fishing effort and the level of fishing that foreign fleets undertake.

Given that the Hawaii shallow-set fishery has not hit its set limit even once since 2004 (and hit the cap on turtle take in only two years) and annual effort has varied wildly (from a low of 88 sets in 2004 to a high of 1,879 sets in 2010), foreign fishers have had no way of knowing what level of domestic fishing would take place in any given year since the fishery reopened.

Both prior to the closure of the Hawaii shallow-set fishery in 2001 and following its reopening in 2004, a substantial percentage of domestic demand for fresh swordfish has been met by imports. Given that no cap on shallow-set fishing effort existed prior to 2001 and the cap on effort has never been hit in the years since 2004, if the spillover effect were actually occurring in this fishery, one would have expected to see increased domestic fishing effort to offset more imports. The facts simply do not support the theory.

Overall, NMFS's discussion of the "spillover effect" consists of entirely un-substantiated assumptions. In addition, "[d]ue to limited reporting of sea turtle bycatch in foreign fisheries within the area," NMFS has no way to determine either what species of turtles foreign fishers providing swordfish for the U.S. market are likely to take or at what rate.

NMFS is applying the same flawed logic to the CA drift gillnet fishery, which has far less effort and even if the fleet were allowed to fish more and take more sea turtles, the increase in swordfish would be relatively small compared to total domestic or imported supplies.

Finally, if NMFS is serious about reducing U.S. swordfish imports and the bycatch associated with them, the agency has legal tools available to address the issue directly under the ESA and MMPA, rather than relying on an unproven "spillover effect."

### U.S. Authority Over Imported Seafood

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) provides a process by which NMFS must identify nations whose fishing practices result in the bycatch of protected living marine resources, including sea turtles, and certify whether each nation or, in the alternative, imported shipment, meets U.S. requirements for bycatch reduction.

For example, all wild caught shrimp sold in the U.S. must come from fleets that use Turtle Excluder Devices. Dolphin-safe tuna laws require foreign fleets that sell tuna to the U.S. to use fishing methods that avoid encirclement of, and harm to, dolphins.

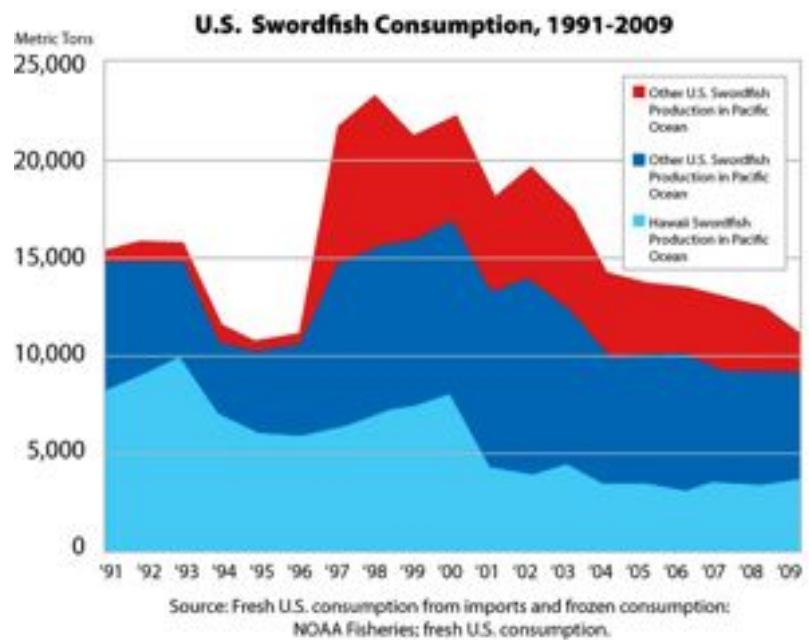
## KILLING SEA TURTLES TO SAVE SEA TURTLES



In the case of swordfish, NMFS may certify that a nation or import shipment comply with U.S. requirements only if the nation has a regulatory program in place, or the shipment was harvested, using practices that include mandatory use of circle hooks and observer coverage. The Act authorizes NMFS to prohibit the import of fish and fish products that do not meet these standards. However, it has never required swordfish fleets to meet U.S. standards.

NMFS has similar authority to ban swordfish imports under the Marine Mammal Protection Act if nations seeking to export swordfish to the U.S. fail to demonstrate that the fish was caught with practices that do not result in greater harm to marine mammals than those used in the United States. Turtle Island Restoration Network petitioned NMFS in 2008 to ban swordfish imports from several dozen nations under this provision. NMFS has yet to take any decisive action on the petition, abandoning a rulemaking process that it initiated in 2010 in response to the petition.

Given that NMFS has not used the legal tools that not only authorize, but also require, it to address foreign bycatch of sea turtles and other marine wildlife through direct means, its purported interest in spillover affects rings hollow. All in all, NMFS's attempt to use theoretical market-based effects to justify allowing the Hawaii fishery or any other fishery to kill more turtles is both irrational and unlawful.



*U.S. swordfish consumption has steadily declined since the mid-1990s due to concerns about overfishing, mercury and high prices.*



Seafood interests and fishery managers often refer to the Hawaii longline fishery for swordfish as a positive model of bycatch reduction and sustainable fishing. While reform of the fishery's practices has reduced excessive and illegal levels of bycatch of endangered sea turtles, false killer whales, and monk seals, the fishery remains a threat to the survival and recovery of protected marine species and seabirds.

First quarter 2013 observer reports revealed that between January and March the Hawaii deepset longline tuna fishery hooked the highest number of protected marine animals compared to any of the last first-quarter periods in 10 years including:

- 20 critically endangered leatherback, loggerhead and olive ridley sea turtles
- 15 false killer whales (a dolphin species) - one more could trigger a closure.
- 5 short-finned pilot whales
- 5 rare pygmy killer whales (a dolphin species) - at limit of acceptable harm under MMPA (5.2 Potential Biological Removal Level).
- 165 Black-footed and Laysan albatross - accounting for 99 percent of seabird hookings

If these high levels of incidental capture continue, the longline fishery could exceed allowable incidental take levels under the Marine Mammal Protection Act and Endangered Species Act. This could mean mandatory fishery closures and additional federal protections or actions.

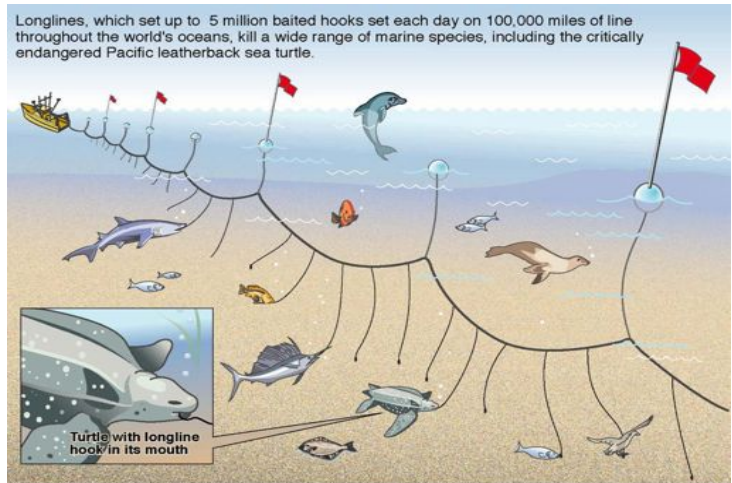
The hooking and serious injury or death of even a single additional false killer whale from the endangered Hawaiian "insular" population would trigger a closure of fishing areas south of the Hawaiian Islands.

### The Nature of Longline Gear

Longline vessels fishing for swordfish and tuna trail up to 60 miles of fishing line suspended in the water with floats, with as many as

a thousand baited hooks deployed at regular intervals. Sea turtles become hooked while trying to take bait or entangled while swimming through the nearly invisible lines. These encounters can drown the turtle or leave it with serious wounds. Sea birds including endangered black-footed and Laysan albatross dive for the bait and become hooked. Marine mammals, including endangered false killer whales and humpback whales, become hooked when they swim through the floating lines.

In 2012, the Hawaii longline fishery set more than 1.4 million hooks in the Pacific Ocean. While longlining is banned along the U.S. West Coast, 85 percent of swordfish landed in California comes from these same Hawaii longline vessels that fish on the High Seas.



Throughout its history, the Hawaii longline fishery for swordfish has violated the Endangered Species Act (ESA), Marine Mammal Protection Act (MMPA), Magnusson Stevens Fishery Act (MSA) and the National Environmental Policy Act (NEPA).

As a result of legal action by TIRN to correct illegal operation of the fishery, in 1999 federal fishery managers were directed by court order to remedy the fishery's failure to protect endangered marine animals. In response, NMFS closed the Hawaii surface set longline fishery for swordfish in 2000. When it reopened in 2004, it was required to utilize gear that reduces capture and drowning of sea turtles, limit its hookings of sea turtles and implement 100 percent observer coverage.

Even with the modified gear and limits on turtle interactions, the fishery was halted early in March 2006 for the rest of the year when it reached its allowable capture of 17 endangered loggerhead sea turtles. Then in November 2011, the fishery was suspended again, this time for snagging 16 leatherback sea turtles during the fishing season.

Next, instead of requiring stronger conservation measures to prevent excess take of sea turtles, in 2012 NMFS upped the allowable takes of leatherbacks from 16 to 26 and loggerheads from 17 to 42 – in direct conflict with existing and new science from its own sea turtle biologists documenting the perilous decline of these Pacific sea turtle populations. At the same time, NMFS failed to require any meaningful conservation measures for endangered seabirds in the Hawaii swordfish fishery, setting a limit on entanglements based primarily on an average number of ongoing interactions in the fishery. TIRN has been forced to file a new lawsuit to address these irresponsible actions.

Typically, NMFS has dragged its feet on implementing conservation regulations in the Hawaii longline fisheries on every protected species. It resisted new protections from the longline swordfish and tuna fleets for Hawaii's disappearing false killer whales for nearly a decade before finally acting. It is now delaying urgent actions to protect Hawaiian monk seals from imminent extinction by failing to expand critical habitat areas or implement new conservation plans.



### Profile of the Hawaii-based Longline Fishery

The Hawaii-based longline fishery is the largest U.S. producer of swordfish. Hawaii-based longliners account for close to half of U.S. swordfish production and about 15 percent of all Pacific swordfish landings.<sup>214</sup> All of Hawaii's swordfish are landed, marketed fresh, and sold at the Honolulu fish auction, where most wholesalers acquire their fish for local, domestic, and export sales. Most of the catch is flown to markets on the East Coast. Little of it is consumed or sold in Hawaii.

Hawaii fishermen harvested 3.15 million pounds of swordfish in 2010.<sup>215</sup> Close to 24,500 pounds were landed in American Samoa. About 30 vessels fish in the Hawaii surface longline fishery. Total shallow (swordfish)- and deep-set (tuna) techniques are limited to 164 vessels.<sup>216</sup>

In comparison, U.S. West Coast fishermen catch about 5.5 percent of the North Pacific-wide swordfish catch.<sup>217</sup> U.S. commercial fishermen harvested around 809,000 pounds of swordfish off the West Coast in 2010. Most of the swordfish landed in California supports the domestic seafood restaurant businesses.

Even though longlining is prohibited along the U.S. West Coast up to and beyond the 200 mile Exclusive Economic Zone, the Hawaii longline fleet is allowed to fish on the High Seas and land in California and other West Coast ports. In fact, 85 percent of swordfish landed in California comes from Hawaii longline vessels.<sup>218</sup>

In 2012, seven Hawaii longline vessels landed 370,00 pounds of swordfish worth \$768,084 in California. This compares to 13 drift gillnet vessels landing 48,500 pounds of swordfish in 2012 worth \$184,358.<sup>219</sup>

Between 2008 and 2011, Hawaii longline vessels operating out of or landing in California set 1,092,507 hooks<sup>220</sup> in the deep ocean, often in migratory pathways for leatherback and loggerheads than span the Pacific.

During that period (2008 to 2011), the Hawaii longline vessels that landed in California captured 12 leatherbacks, six loggerheads and one green (black) turtle. Observer reports indicated that all were released alive, though the post-hooking rate of death is typically estimated at 60 to 80 percent.<sup>221</sup>

The Hawaii fleet that landed in California also captured one humpback whale and 13 dolphins, all reported as released alive except one Risso's dolphin that died.<sup>222</sup>

Also, 25 seabirds were taken by these longline vessel and most of the birds (18) died; 9 each of black-footed and Laysan albatross.<sup>223</sup>

In addition, a single longline swordfish fisherman operates out of a Southern California port and fishes on the High Seas in international waters hundreds of miles from shore. He is required to carry an observer on every trip, but the landings and bycatch are not publicly reported due to confidentiality standards.<sup>224</sup>

### Hawaii Longline Fleet Versus the California Drift Gillnet Fleet

When it comes to comparing the Hawaii longline fishery with the CA drift gillnet fishery, it is difficult if not impossible to make "apples to apples" comparisons given the difference in the gear types, size of the fishery, location and history. Yet federal fishery managers are now arguing that they can apply selected fishery management schemes from the Hawaii longline fishery in the CA drift gillnet fishery.

They argue that applying turtle take limits and 100 observer coverage to the CA drift gillnet fishery will allow it to prevent harm to sea turtles if allowed to fish in the Pacific Leatherback Conservation Area.

Because the PLCA is in itself a fishery conservation measure, a comparison of the effectiveness of the time-and-area closure to relying on turtle takes and 100 percent observer coverage must be made. Given the significant levels of protected species bycatch in the Hawaii longline fishery and from the portion of the fleet that lands in California, it would seem on face value that the PLCA is far more effective, with two observed leatherback interactions and three loggerhead entanglements over 10 years.

Extending and exceeding the conservation requirements in the Hawaii longline fishery to all U.S. and foreign longline fisheries that sell to the U.S. would certainly help reduce on-going high levels of bycatch of endangered marine species. But gear fixes and observer coverage have not solved the problems with excess take of protected species in the Hawaii longline fishery. And its path to reform should not be held up as a model of responsible fishing, nor of sustainability.

### False Killer Whales

In 2012, after nearly a decade of inaction, NMFS finally implemented new measures to reduce the hooking and drowning of endangered

Hawaiian False Killer whales in the Hawaii longline fisheries for swordfish and tuna. False killer whales (which are actually large dolphins) have suffered unsustainable levels of death and serious injury in the Hawai'i-based longline fisheries for decades, contributing to a 9 percent decline in the population each year since 1989. Only 906 of these animals remain.

NMFS'S own data have shown for over a decade that Hawai'i-based longline fishing fleets kill an average of more than 13 false killer whales from the "Hawai'i Pelagic Stock" (animals found more than 22 nautical miles from the main Hawaiian Islands), nearly 50 percent more than what the agency has said that population can sustain.

The new conservation plan developed by the MMPA-required Take Reduction Team recommended longliners to use circle hooks that are strong enough to hold the fishery's target fish of swordfish (surface longline) and big-eye tuna (deep set longline) and weak enough to bend and straighten under the greater pull strain of a false killer whale, allowing the animal to free itself and avoid death. In the final plan, NMFS allowed the use of stronger hooks than the take reduction team – which included longline fishers – had proposed, increasing the permitted thickness from 4.0mm to 4.5mm. The change means that it will be more difficult for false killer whales to free themselves from longline gear, increasing the risk of death.

In addition to requiring the use of circle hooks, key elements of the take reduction plan include an expansion of the area around the main Hawaiian Islands where longline fishing is prohibited, which will particularly benefit false killer whales in the endangered Insular Stock, and provisions for closure of an additional area to the south of the main Hawaiian Islands in years of excessive false killer whale by-catch.

### Hawaiian Monk Seals

The Hawaiian monk seal population today consists of 1,100 animals and is dropping in numbers at a rate of 4 percent per year. They face a number of threats including capture and drowning in commercial fisheries, entanglement in loose fishing gear, loss of prey stocks, shark predation and other human and natural factors. To prevent entanglements of these highly endangered seals in Hawaii's longline fleet, about 20 years ago the U.S. government instituted a longline closure area in important monk seal breeding and feeding habitat surrounding 50 nautical miles of the Northwestern Hawaiian Islands.

Since then, captures of monk seals in the fishery have been minimized. However, hookings by longline and other fishing gear still occur. Over the past decade, NMFS has responded to 84 hooking related incidents, 14 of which occurred in 2012.<sup>225</sup> One of them was a monk seal nicknamed Honey Girl that was rescued after being found emaciated, covered with algae and nearly dead. The Honolulu Aquarium rehabilitation team plans to release her once she has fully recovered.

After years of delay, NMFS finally proposed critical habitat for monk seals in the Hawaiian Islands as required under the ESA. The agency

also published a draft conservation and recovery plan for the dwindling population.

While conservationists supported these long overdue actions, a strident and vocal opposition arose, fueled by inaccurate information that protecting monk seal habitat would prevent people from going to the beach or ban all fishing. A rogue element responded with illegal, intentional killing of at least five reported monk seals on several Hawaiian Islands. One of them was a three-year old male that researchers nicknamed Noho that was found dead on a northeastern beach in Kauai. Locals suspected additional seals were being killed offshore, never to be discovered. Hawaiian environmental and animal rights groups offered \$50,000 rewards for the identification and conviction of the criminals.

Instead of taking immediate action to move the conservation initiatives forward, federal wildlife managers have delayed the crucial new protections for the Hawaiian monk seal.

### 2012 Take Levels In The Hawaii Longline Fisheries<sup>226</sup>

#### 2012 HI LL Shallow Set Swordfish Sets

100% observer coverage

1,307 sets, 1.4 million hooks

**7 Leatherbacks injured**

**5 Loggerheads injured**

**1 False Killer Whale injured**

**3 Other Cetaceans injured**

**37 Black Footed Albatross injured or dead**

**61 Laysan Albatross injured**

#### 2012 HI LL Tuna (Deep) Sets

20.4 % observer coverage

Observed X 5 = Rough Estimate Total Take

**1 Leatherbacks dead = 5 leatherbacks dead**

**6 Olive Ridleys dead = 30 olive ridleys dead**

**3 False Killer Whales injured = 15 false Killer whale injured**

**2 other Cetaceans injured = 10 other cetaceans injured**

**35 Black Footed Albatross injured or dead = 175 Black Footed Albatross injured or dead**

**30 Laysan Albatross dead or injured = 150 Laysan Albatross dead or injured**

**1 sooty shearwater dead = 5 sooty shearwaters dead**



### Regulatory Timeline in the Hawaii Longline Fishery

- 1991** – Monk Seal Closure Area for longlines established within 50 nautical miles of the Northwestern Hawaiian Islands to stop capture and killing of these highly endangered marine mammals.
- 1999** – NMFS failed to assess Hawaii longline fishery under NEPA, shallow set swordfish fishing suspended pending NEPA compliance.
- 2002** – NMFS determines that the fishery jeopardizes the survival of leatherbacks and loggerheads. All Hawaii based shallow set longline fishing prohibited.
- 2003** – TIRN and allies sue NMFS to address bycatch of false killer whales in the Hawaii swordfish and tuna fisheries by listing the fishery as a Category I fishery under the Marine Mammal Protection Act.
- 2004** – NMFS designates the Hawaii longline fisheries as a MMPA Category I fishery but fails to convene a Take Reduction Team to develop measures to reduce false killer whale take until 2012.
- 2004** – NMFS reopens Hawaii swordfish fishery with new conservation requirements: limit of 2,120 sets per year, circle hooks instead of j hooks, mackerel bait; limit on turtle takes to 16 leatherbacks or 17 loggerheads per year would trigger closure of fishery for the year. 100 percent observer coverage.
- 2006** – Swordfish fishery closed until the next year after reaching limit of 17 loggerheads within a few months.
- 2009** – NMFS amends the fishery management plan for the swordfish fishery removing all set limits and tripling the number of loggerheads to 46 that could be capture each year beginning in 2010.
- 2010** – TIRN files a lawsuit to reverse the increased turtle take, successfully dropping it back to previous levels until a new biological opinion on the fishery was published.
- NMFS finally convenes a False Kill Whale Take Reduction Team, which prepares a conservation plan for the fishery, but NMFS fails to implement it.
- 2010** – TIRN and conservation groups petition NMFS to propose Hawaii false killer whales as endangered.
- 2011** – Hawaii swordfish fishery closed in November until following year after reaching limit of 16 leatherback captures.
- NMFS revises status of Pacific loggerhead sea turtle from threatened to endangered under ESA due to continued declines.
- 2012** – NMFS publishes a new biological opinion and doubles the allowable take of leatherback from 16 to 26; and for loggerheads from 17 to 34.
- US Fish and Wildlife Service and NMFS authorize take of seabirds for the first time as required by Migratory Bird Treaty Act but without implementing conservation measures to prevent entanglements.
- TIRN files a lawsuit against NMFS for violating environmental laws by increasing the level of sea turtle and allowing sea bird takes without conservation measures.
- 2012** – TIRN and allies file lawsuit to force NMFS to implement the False Killer Whale Take Reduction Team plan, which the agency finally does at the end of the year.
- Hawaii False Killer Whales Listed as Endangered.
- 2013** – New science predicts extinction of Western Pacific leatherback within 20 years due to losses of nesting population in Indonesia resulting from threats at nesting beaches and loss in fisheries.
- Endangered False Killer Whale from Insular Population Hooked and Killed in Deepset Longline Fishery.
- New Weak Hooks Required in HI Tuna Fishery.

## APPENDIX 3 – SUSTAINABLE FISHERIES – CAN ECO LABELS BE TRUSTED?



As many as 50 different seafood cards and certification schemes around the world now attempt to provide advice to fish eaters about choosing the most “sustainable” fish. While well intentioned, they are undermining conservation efforts to reduce bycatch of sea turtles in commercial fisheries by rewarding unsustainable fishing practices.

In particular, certification programs and seafood guides continue to recommend fish caught with trawl, gillnet and longline gear such as wild prawns and shrimp, swordfish, tuna and shark even though these fisheries continue to take a devastating toll on marine turtle populations.

A new paper by fisheries scientists and conservation critics published in the journal *Biological Conservation* reveals that the international seafood labeling entity Marine Stewardship Council (MSC) certifies fisheries that are not sustainable.<sup>227</sup>

The researchers reviewed 19 formal objections to MSC certifications and found that only one was upheld. Turtle Island Restoration Network’s formal objection to the certification of the Atlantic pelagic longline fishery was one of the objections listed as denied. The fishery captures and injures or kills an estimated 147 endangered leatherbacks and loggerheads each year.

The swordfish longline fishery harms turtles from the same populations as the Northwest Atlantic Canadian fishery, without any consideration of cumulative impacts.

The Canadian longline fishery captures and kills or injures 1,200 endangered sea turtles every year and operates without measures that protect sea turtles. Conservation groups also objected to the certification of this fishery without success.

Both the U.S. and Canadian longline swordfish fisheries were certified separately.

**Worse, the “bluewashing” continues with the extension of the MSC label to the entire U.S. Atlantic swordfish fleet under the same certification.**



Many seafood consumer guides advocate for fish species caught in fisheries with significant levels of sea turtle bycatch.

For example, while one of the best seafood guides, Monterey Bay Aquarium’s Seafood Watch lists swordfish from the CA drift gillnet fishery and the Hawaii longline fleet “good alternatives” despite high levels of marine mammal bycatch<sup>228</sup>.

Seafood Watch also gives “green cover” to the Gulf of Mexico Shrimp fishery as a “good alternative,” though the fishery drowns tens of thousands of sea turtles every year so we can eat shrimp. Both these fisheries should be “red” for “avoid.”

In California, the Ocean Protection Council is forwarding the Sustainable Seafood Initiative to help achieve MSC certification for state-managed fisheries.

TIRN helped ensure that the California certification would fill the gaps in the MSC criteria and ensure that no fishery that harms protected species such as sea turtles or whales would be given an eco-label.

Because giant retailers are getting the message that the public wants “sustainable seafood,” they are driving eco-labeling and certification programs to allow unsustainable fisheries to grow. As a result, most eco-labels can’t be trusted.

TIRN’s recommendation is to: eat less fish, avoid swordfish and shrimp caught with longlines or gillnets, and if you eat seafood, choose local, fresh fish from seafood sellers that know where it came from and how it was caught.

**Read more at [SeaTurtles.org](http://SeaTurtles.org).**

## APPENDIX 4 – MERCURY IN SWORDFISH – WOMEN AND CHILDREN AT RISK

The U.S. FDA warns women of childbearing age and children to NEVER eat swordfish. That means roughly half of Americans should never eat swordfish or other high-mercury fish including shark.<sup>229</sup>

Because mercury can harm a young child or an unborn baby's developing nervous system, the FDA has issued advice for women of child-bearing age and children to avoid consumption of certain fish that are contaminated with elevated levels of mercury—specifically swordfish, shark, tilefish, king mackerel; and to limit tuna consumption.

NMFS and the seafood industry consistently ignore and downplay this fact in their quest to expand swordfish fisheries in the name of seafood profits. It is also worth noting that the people working the hardest to expand high mercury fisheries are neither women nor children, but men who are at the least risk of mercury toxicity.

However, many men have suffered from eating too much mercury-laden fish, particularly when consuming lots of sushi or canned tuna. In fact, the Executive Director of IMAX films funded a new institute at Stony Brook University in Long Island, New York, dedicated to research and education about mercury and fish after he suffered numerous health ailments that physicians determined were caused by eating too much high mercury sushi.<sup>230</sup>

The truth is that the primary way people in the United States are exposed to methylmercury is by eating fish and shellfish. Once in the human body, mercury acts as a neurotoxin, interfering with the brain and nervous system.

In adults, mercury poisoning can adversely affect fertility and blood pressure regulation and can cause memory loss, tremors, vision loss and numbness of the fingers and toes. A growing body of evidence suggests that exposure to mercury may also lead to heart disease.

### How Bad is Mercury For You?

### Got Mercury?



Exposure to mercury can be particularly hazardous for pregnant women and small children. During the first several years of life, a child's brain is still developing and rapidly absorbing nutrients. Even in low doses, mercury may affect a child's development, delaying walking and talking, shortening attention span and causing learning disabilities. Less frequent, high dose prenatal and infant exposures to mercury can cause mental retardation, cerebral palsy, deafness and blindness.

About 6 percent of U.S. women, or about 3.8 million people, have levels of mercury in their bodies that exceed the amount that the EPA says is safe for fetuses. A study conducted by the EPA also predicts that approximately 630,000 American babies are born each year with levels of mercury high enough that it may affect their health.

The population less sensitive to mercury toxicity (men over 17 and women over 45) should eat fish like tuna no more than twice per week and avoid combinations of high mercury fish- including several types of sushi.

Mercury dose and exposure relative to health advisories can be estimated for common types of fish using the Got Mercury calculator at [www.GotMercury.org](http://www.GotMercury.org).

# WARNING!

Nearly all fish and shellfish contain some amount of mercury and related compounds, chemicals known to the State of California to cause cancer, and birth defects or other reproductive harm. Certain fish contain higher levels than others.

**Pregnant and nursing women, women who may become pregnant, and young children should not eat the following fish:**

**SWORDFISH • SHARK • KING MACKEREL • TILEFISH**

**They should also limit their consumption of other fish, including tuna.**

**Fish and shellfish** are an important part of a healthy diet and a source of essential nutrients. However, the federal Food and Drug Administration ("FDA") and U.S. Environmental Protection Agency ("EPA") advise pregnant and nursing women, women who may become pregnant, and children to limit their weekly consumption of fish and to eat fish that are lower in mercury.

The California Department of Health Services recommends that these individuals:

- Eat a variety of different types of fish;
- Eat smaller fish rather than older, larger fish;
- Begin following these guidelines one year before becoming pregnant.

According to the FDA and EPA, fish or shellfish that tend to be lower in mercury include pollock, shrimp, and scallops. Mercury levels in tuna vary. Tuna steaks and canned albacore tuna have higher levels of mercury than canned light tuna.

For more information about the risks of mercury in fish and about the levels in various types of fish consult the following websites:  
U.S. Food and Drug Administration ("FDA") [www.cfsan.fda.gov](http://www.cfsan.fda.gov)  
U.S. Environmental Protection Agency [www.epa.gov/ost/fish](http://www.epa.gov/ost/fish)

or call the FDA toll-free at **1-888-SAFEFOOD (1-888-723-3366)**.





## A MERCURY IN SWORDFISH – WOMEN AND CHILDREN AT RISK

### Mercury in Fish — The Science

Overall, 67 percent of the fish and shellfish Americans eat have low or very low mercury levels. But some fish—including popular varieties such as canned albacore tuna, swordfish, tuna steaks, tuna sushi, sea bass, and halibut—contain moderately high to very high mercury levels. People who eat these fish often (more than once or twice a week, depending on the fish variety) can easily be exposed to excessive methylmercury doses.<sup>231</sup>

A new study from the Biodiversity Research Institute in Maine found that 84 percent of fish have unsafe levels of mercury. That poses a health risk for humans, exceeding the guidelines for eating certain kinds of fish more than once a month. Another recent study indicates that high mercury in fish overrides health benefits by omega 3s.<sup>232</sup>

Another study found that childhood exposure to methylmercury through the consumption of seafood costs the U.S. \$5.1 billion in health care.<sup>233</sup>

### The Seafood Industry Pseudo-Science

Despite increasing science and concern about mercury in fish, the seafood industry and NMFS continue to promote high mercury fish such as swordfish as healthy.

NMFS promotes swordfish with recipes on its Fish Watch website with only passing mention of FDA and EPA warnings:

*Swordfish is an excellent source of selenium, niacin, and vitamin B12 and is a good source of zinc. Swordfish may contain amounts*

*of methylmercury in excess of the FDA's recommended limit for nursing moms, moms-to-be, and young children.*<sup>234</sup>

Recently, researchers working for seafood companies have begun producing studies that make various erroneous claims such as that the Omega 3s in fish, or that the presence of selenium, outweighs the harm from high mercury fish. The seafood industry also constantly attacks the so-called action levels for mercury in fish set by the FDA and EPA as too protective. This approach seems reminiscent of other industry campaigns to mask the harmful nature of its products, such as tobacco, lead or even use of seat belts.

The seafood industry has started claiming that selenium in fish counters any mercury toxicity. However, the interaction between mercury and selenium and whether mercury inhibits the positive effects of selenium or selenium counters the adverse effects of mercury has not been resolved, according to Stony Brook University in New York<sup>235</sup>. Data on this topic remains preliminary, and thus the argument that selenium eliminates or even reduces mercury toxicity is not yet supported.

**A complete analysis on the seafood industry's attempts to undermine women and children's health by promoting toxic fish is beyond the scope of this report.**

**To learn more go to: [www.GotMercury.org](http://www.GotMercury.org) or [www.MercuryFactsand-Fish.org](http://www.MercuryFactsand-Fish.org) and read Dr. Jane Hightower's book, *Diagnosis Mercury*.**



## APPENDIX 5 GHOST NETS – LOST FISHING GEAR



**In recent years, heartbreaking incidents of whales found entangled in fishing gear have been making news headlines along the U.S. West Coast.**

Drift gillnets, longlines, crab pots, bottom gillnets and other types of fishing gear lost at sea turn into ghost nets that entangle whales as well as sea lions and other marine mammals, seabirds and sea turtles. Derelict fishing gear also sinks to the bottom of the ocean where it damages sensitive habitat.

Between 2001 and 2010, a total of 78 whale entanglements have been reported off California.<sup>236</sup> Thirty-one involved humpback whales and 19 involved gray whales. The others were fin whales (four), a minke whale and unidentified species (22). In 2006 alone, seven humpback whales were reported entangled in fishing gear.<sup>237</sup>

In Spring 2012, lost fishing gear killed one gray whale and entangled another along the California coast.<sup>238</sup> The two gray whales were entangled by loose and drifting fishing gear as they migrated north, trailing the “marine ecosystem” behind them according to rescue teams.

One of the two whales was spotted off Laguna Beach with up to 100 feet of fishing line wrapped around one of its pectoral fins and tangled up inside the whale’s mouth.<sup>239</sup> A team was able to remove part of the fishing line, but lost the whale before they could finish. The same young whale resurfaced a week later, several hundred miles up the coast, off the coast of Big Sur near Lucia. Before another team could head out and cut away the rest of the fishing gear, the whale disappeared again.

Finally in May, crab fishermen working outside of Bodega Bay sighted the whale, now famous and nicknamed June, and removed the tangled line from the distressed whale. Once the creature was free from the ropes, nets and buoys, it took a lap around the vessel.



“The whale circled the boat, surfaced and took off,” fisherman Tony Anello told the Huffington Post. “It was like it was saying thank you.”<sup>240</sup>

In 2009, two fin whales were observed entangled in fishing gear along the California Coast.<sup>241</sup> One was sighted near Long Beach with fishing gear wrapped around its body between the blowhole and dorsal fin. The other near San Diego was seen with 300 feet of line attached to a buoy wrapped around the base of its tail.

Sadly, the fate of whales that have been entangled, even if freed, is grim.

A recent study asked how whales fare after getting tangled in fishing gear and found that even when disentanglement was successful, the whale suffered from the effects being entangled. In some cases, the whale died shortly after disentanglement.<sup>242</sup> The study’s results documented the “significant alteration to swimming patterns, and the magnitude of energy depletion in a chronically entangled whale.”<sup>243</sup>

### Marine Sanctuaries Denigrated by Lost Fishing Gear

National Marine Sanctuary managers along the California coast are so concerned about the environmental harm from lost fishing gear to natural resources that they have initiated surveys to assess the damage.

During biological surveys in Cordell Bank Sanctuary along the Marin County coast, a significant amount of derelict fishing gear, mostly long line gear, was snagged on the bank, some of which flags into the water column.<sup>244</sup> In 2002 alone, in surveys conducted on cobble, rock, boulder and high-relief rocky habitat on Cordell Bank, gear was observed on 90 percent of the transects, with an average density of one piece of gear observed every 670 linear meters. Observations from submersibles have documented the presence of lost fishing gear entangled in rocky areas of the bank.<sup>245</sup>

Monterey Bank Sanctuary researchers are also surveying the canyons and undersea structures and discovering large volumes of abandoned fishing gear. Both unfished marine protected areas and fishing grounds were surveyed. In one ten-day operation in September 2010, the sanctuary team removed 450 feet of rockfish gillnet, two crab pots, a spot prawn trap and hundreds of pounds of lead weight. Video surveys of the bottom discovered an intact bottom trawl net weighing more than a ton.<sup>246</sup>

Given evidence that lost fishing gear is abundant along the California coast, increasing fishing effort in areas that are important feeding habitat for leatherbacks and important to a range of marine life and fish counters conservation efforts to maintain the health of the California Current ecosystem.



## APPENDIX 6 – FISHERMEN’S VIEWS OF SWORDFISH FISHERY ARE MIXED

Federal fishery managers who are driving efforts to expand the swordfish fishery along the California coast claim that expanding the fishery is essential to fishermen’s jobs and local swordfish supplies. However, a government survey of current drift gillnet and harpoon permit holders about the future of the fishery provided a far more mixed view of its importance to fishermen.

The survey results were derived from 48 responses out of 130 questionnaires sent to current drift gillnet and harpoon permit holders in the swordfish fishery by the California Department of Fish and Game with input from NMFS in 2012<sup>247</sup>. Of those, 15 harpooners and 27 drift gillnetters participated.

The survey found that few if any drift gillnet permit holders fished full-time in the swordfish fishery. Most of the respondents had not participated in the fishery in one to three years or more (19 of 27 or 82 percent). Instead they fished in the larger and more sustainable albacore, salmon and crab fisheries.

Nearly 90 percent of drift gillnet permit holders who responded said that they would accept a buy-out of their permit, boat and gear if offered. Many planned to leave the gillnet fishery to retire, change fisheries or find another line of work.

As far as changing gear, most responded “No, but maybe” with some kind of financial incentive or entry into a fishery currently closed to them. Some expressed interest in switching to another gear type such as longline; however, for many, their boats are too small to fish outside the EEZ. There was slightly more interest in longline if it could be fished within the EEZ, which has been prohibited since 2004 to prevent bycatch of endangered species.

When it came to the harpoon fleet, most of these respondents indicated that the fishery was economically viable and would probably be more so without the drift gillnet fishery. In general, the respon-

dents did not indicate a strong need for change. However, few details on the views of harpoon permit holders were offered in NMFS’s summary of the survey results.

In contrast, the drift gillnet respondents viewed the harpoon fishery far more negatively, saying it was not economically viable. NMFS emphasized the views of the drift gillnet fleet in the survey results as it does in most of its documents.

The agency’s bias toward more large-scale industrial fishing such as drift gillnetting and longlining is also reflected in the analysis of the survey. The agency reports that when respondents were asked if changes in the gillnet fishery were needed in order to make it more viable, the respondents “overwhelmingly” agreed that changes were needed, specifically to the PLCA. However, the actual response numbers to this particular question were not summarized in the survey results published by the agency as they were for some of the other questions above. The actual survey questions and responses have not been made public. So it is hard to know how accurately the summary or this or other responses describes the views of the fishermen.

However we do know that NMFS fishery managers blame the decline of the drift gillnet fishery on the PLCA and claim that weakening it is the solution. As other sections in this report point out, the fishery began to decline long before the PLCA was established. And the agency has not yet provided any science or economic statistics to prove that the fishery would be “revitalized” if fishing is allowed in protected sea turtle habitat.

The survey seems to provide more questions than answers and to show that swordfish fishery permit owners hold a range of views about the swordfish fishery. These views don’t necessarily support the claims or objectives of federal fishery managers.





- <sup>1</sup> California Drift Gillnet Fishery bycatch data compiled by Turtle Island Restoration Network from these published reports:  
  
Julian, F. and Beeson, M. 1998. Estimates of marine mammal, turtle and seabird mortality for two California gillnet fisheries: 1990-1995. *Fishery Bulletin* 96 (2):271-284.  
  
Carretta, J.V. et al. 2004. Estimates of Marine Mammal, Sea Turtle and Seabird Mortality in the California Drift Gillnet Fishery for Swordfish and Thresher Shark: 1996 - 2002. *Marine Fisheries Review*, 66 (2). pp. 24-25.  
  
Carretta, J.V. and Enriquez, L. 2004 through 2012. Annual Administrative Reports on Marine Mammal and Seabird Bycatch in the California Gillnet Fisheries, National Marine Fisheries Service, Southwest Fisheries Science Center.  
  
Observer Program Data Summaries at <http://swr.nmfs.noaa.gov/psd/codg-ftac.htm>
- <sup>2</sup> California Drift Gillnet Fishery bycatch data compiled by Turtle Island Restoration Network from NMFS bycatch reports. See EndNote 1.
- <sup>3</sup> The Pacific Leatherback Conservation Area (PLCA) was established in 2001 to protect leatherbacks from gillnets. It closes coastal waters from August 15 to November 15 every year between Point Sur and Lincoln, Oregon, out to the 200-mile Exclusive Economic Zone. The regulation was incorporated into the Fishery Management Plan for Highly Migratory Species by the Pacific Fishery Management Council in 2004. See 50 C.F.R. § 660.713(c)(1).
- <sup>4</sup> MFS Sustainable Fisheries Division. Biological Opinion on the continued management of the drift gillnet fishery under the Fishery Management Plan for U.S. West Coast Fisheries for Highly Migratory Species 2012/03020:DDL. May 2013.
- <sup>5</sup> NMFS Bycatch data compiled by TIRN, see Endnote 1
- <sup>6</sup> NMFS. Letter December 12, 2011. Rod McInnis. Response to October 21, 2011 letter from Turtle Island Restoration Network, Oceana and Center for Biological Diversity regarding bycatch in the California/Oregon Drift Gillnet Fishery swordfish fishery.
- <sup>7</sup> NMFS. List of Fisheries for 2013. Proposed Rule. 78 Federal Register 77 (Monday, April 22, 2013). pp. 23717, 23720.
- <sup>8</sup> Id. p. 23717 .
- <sup>9</sup> NMFS Bycatch data compiled by TIRN, see Endnote 1
- <sup>10</sup> Carretta, J.V. and Enriquez, L. 2012. Marine Mammal and Seabird Bycatch in California Drift Gillnet Fisheries in 2010. Administrative Report LJ-12-01, National Marine Fisheries Service, Southwest Fisheries Science Center.
- <sup>11</sup> Julian and Beeson.
- <sup>12</sup> NMFS. 2011. U.S. National Bycatch Report [W. A. Karp, L. L. Desfosse, S. G. Brooke, Editors]. U.S. Dep. Commer. NOAA Tech. Memo. NMFS-F/SPO-117E. p. 362 and NMFS observer reports 2002 - 2012.
- <sup>13</sup> NMFS Bycatch data compiled by TIRN, see Endnote 1.
- <sup>14</sup> NMFS. Letter December 12, 2011. Rod McInnis.
- <sup>15</sup> NMFS Sustainable Fisheries Division. Biological Opinion on the continued management of the drift gillnet fishery under the Fishery Management Plan for U.S. West Coast Fisheries for Highly Migratory Species 2012/03020:DDL. May 2013. pp. 93 - 94.
- <sup>16</sup> United Nations General Assembly Resolution 46/215. 1991. Web. 04. 06. 2013. <[http://www.un.org/depts/los/general\\_assembly/general\\_assemblyresolutions.htm](http://www.un.org/depts/los/general_assembly/general_assemblyresolutions.htm)>
- <sup>17</sup> NMFS. Atlantic Swordfish Fishery; Management of Driftnet Gear. Final Rule. 64 Federal Register 17 (Wednesday, January 27, 1999) p. 4055
- <sup>18</sup> NMFS. U.S. and Morocco Shake Hands on Sustainable Fisheries. Nov 13, 2012. Web. 05. 17. 2013. <[http://www.nmfs.noaa.gov/ia/slider\\_stories/2012/11/11\\_13\\_u.s.\\_morocco.html](http://www.nmfs.noaa.gov/ia/slider_stories/2012/11/11_13_u.s._morocco.html)>
- <sup>19</sup> Read, Andrew J., Phebe Drinker, Simon Northridge. 2006. Bycatch of Marine Mammals in U.S. and Global Fisheries. *Conservation Biology*. 20: 163-169.
- <sup>20</sup> Žydelis R., Small, C. & French, G. 2013. The incidental catch of seabirds in gillnet fisheries: A global review. *Biological Conservation* 162: 76-88.
- <sup>21</sup> Id.
- <sup>22</sup> U.S. Pacific Fishery Management Council (PFMC). HMS Stock Assessment and Fishery Evaluation (SAFE) 2012. p. 7
- <sup>23</sup> NMFS. Biological Opinion. May 2013.
- <sup>24</sup> NMFS. Biological Opinion. May 2013.
- <sup>25</sup> NMFS. Sustainable Fisheries Division. What is Bycatch. Web. 04. 06. 2013. <[http://www.nmfs.noaa.gov/by\\_catch/bycatch\\_whatism.htm](http://www.nmfs.noaa.gov/by_catch/bycatch_whatism.htm)>
- <sup>26</sup> See 50 C.F.R. § 660.713(c)(1).
- <sup>27</sup> NMFS bycatch reports compiled by TIRN.
- <sup>28</sup> NMFS bycatch reports compiled by TIRN.
- <sup>29</sup> Tapilatu, R. F., P. H. Dutton, M. Tiwari, T. Wibbels, H. V. Ferdinandus, W. G. Iwanggin, and B. H. Nugroho. 2013. Long-term decline of the Western Pacific leatherback, *Dermochelys coriacea*: a globally important sea turtle population. *Ecosphere* 4(2):25.
- <sup>30</sup> Lewison, R., Freeman S., and Crowder, L. Quantifying the effects of fisheries on threatened species: the impact of pelagic longlines on loggerhead and leatherback sea turtles. *Ecology Letters*. 2004. 7:221-231.
- <sup>31</sup> Spotila J.R., et al. Worldwide population decline of *Dermochelys coriacea*: are leatherbacks going extinct? *Chelonian Conservation and Biology*. 1996. 2:209-222.
- <sup>32</sup> In 1989 with the enactment of Section 9028 of the Fish and Game Code, the California Legislature prohibited pelagic longline fishing in the EEZ off the California coast by banning the use of hook and line fishing gear longer than 900 feet.
- <sup>33</sup> NMFS. Highly Migratory Species Fisheries Management Plan Biological Opinion. February 2004. Pp. 227, 230.
- <sup>34</sup> NMFS. Endangered and Threatened Species. Final Rule To Revise the Critical Habitat Designation for the Endangered Leatherback Sea Turtle. 77 Federal Register 17. (Thursday, January 26, 2012). pp 4169-4201.
- <sup>35</sup> NMFS bycatch reports compiled by TIRN.
- <sup>36</sup> PFMC. April 2013. Agenda Item B1. Formalization of Council Decision at the March Council Meeting. Motion 12. p 4.
- <sup>37</sup> Pacific Fishery Management Council. Supplemental Public Comment 3. November 2006. Center for Biological Diversity, Turtle Island Restoration Network, and Oceana. Agenda Item C.3.c.
- <sup>38</sup> NMFS. Biological Opinion. February 2004.
- <sup>39</sup> IUCN Red List of Threatened Species. Swordfish. 2011 Assessment. Web. 04.06.2013. <<http://www.iucnredlist.org/details/23148/0>>
- <sup>40</sup> See summary of California drift gillnet fishery regulations in NMFS May 2013 Biological Opinion, pp. 13-17. See also California Fish and Game Code Section 8561-8582.

- <sup>41</sup> U.S. Pacific Fishery Management Council (PFMC). Stock Assessment and Fishery Evaluation (SAFE) 2010. p. 21.
- <sup>42</sup> NMFS. Biological Opinion. May 2013. p. 8. Depth of net is 100 to 150 mesh lengths of 18 to 20 inches deep equal to a maximum of 3,000 inches or 250 feet.
- <sup>43</sup> PFMC HMS SAFE report 2012. p. 7.
- <sup>44</sup> PFMC HMS SAFE Report 2012. p. 7.
- <sup>45</sup> PFMC HMS SAFE Report 2012. p. 7.
- <sup>46</sup> PFMC HMS SAFE Report 2012 p. 28.
- <sup>47</sup> NMFS Biological Opinion. May 2013.
- <sup>48</sup> PFMC HMS SAFE Report 2012..
- <sup>49</sup> PFMC. NMFS Report on Meetings with California Drift Gillnet Fishermen. March 2012. Agenda Item B.3.b.
- <sup>50</sup> PFMC. Highly Migratory Species Management Team Swordfish Management Data Report and Future Management Recommendations. March 2012. Agenda Item B.3.b
- <sup>51</sup> IUCN Red List of Threatened Species. Swordfish. 2011 Assessment. Web. 04. 06. 2013. <<http://www.iucnredlist.org/details/23148/0>>
- <sup>52</sup> NOAA Fisheries Fact Sheet North Pacific Swordfish 2013
- <sup>53</sup> IUCN Red List of Threatened Species. Swordfish. 2011
- <sup>54</sup> IUCN Red List of Threatened Species. Swordfish. 2011
- <sup>55</sup> Myers, R.A., and Worm, B, Rapid worldwide depletion of predatory fish communities, *Nature*, 2003, 423: 280-283.
- <sup>56</sup> Seaweb, Give Swordfish a Break campaign. Web. 05. 28. 2013. <<http://www.seaweb.org/initiatives/swordfish/>>
- <sup>57</sup> NOAA Fisheries Fact Sheet North Pacific Swordfish 2013
- <sup>58</sup> NOAA Fisheries Fact Sheet North Pacific Swordfish 2013
- <sup>59</sup> PFMC HMS SAFE Report 2012, pp. 120-121
- <sup>60</sup> NOAA Fish Watch. Pacific Swordfish. Population Status. Web. 04.06.2013. <[http://www.fishwatch.gov/seafood\\_profiles/species/swordfish/species\\_pages/pacific\\_swordfish.htm](http://www.fishwatch.gov/seafood_profiles/species/swordfish/species_pages/pacific_swordfish.htm)>
- <sup>61</sup> U.S. Food and Drug Administration (FDA). Mercury levels in commercial fish and shellfish. Web. 04.06.2013. <<http://www.fda.gov/Food/FoodborneIllnessContaminants/Metals/ucm115644.htm>>
- <sup>62</sup> FDA and EPA announce the revised consumer advisory on methyl mercury in fish. 2004. Web. 04.06.2013. <<http://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/2004/ucm108267.htm>>
- <sup>63</sup> NOAA Fisheries Common Thresher Shark Fact Sheet.
- <sup>64</sup> NOAA Fisheries Common Thresher Shark Fact Sheet.
- <sup>65</sup> NOAA Fisheries Common Thresher Shark Fact Sheet.
- <sup>66</sup> NOAA Fisheries Common Thresher Shark Fact Sheet.
- <sup>67</sup> NOAA Fisheries Common Thresher Shark Fact Sheet.
- <sup>68</sup> Monterey Bay Aquarium Seafood Watch. Seafood Report. Swordfish. All Regions. Original Report Published July 9, 2007  
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**END PHOTOS - Pacific leatherbacks spotted by whale watchers in Monterey Bay Sanctuary.**

*Photo by Giancarlo Thomae*





*A Western Pacific leatherback sea turtle returns to the sea after nesting on a beach on Bird's Head Peninsula in Indonesia. Females from this critically endangered population swim across the Pacific Ocean to feed on jellyfish along the California coast. Photo by Deasy Lontoh.*

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