

# The bottom line: An investigation of the economic, cultural and social costs of industrial longline fishing in the Pacific and the benefits of sustainable use marine protected areas

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## Abstract

Industrial longline fishing can be understood as a case study of the cultural, economic, environmental and social impacts of unsustainable fishing technology. While much attention has been attributed to the impact of industrial longlines on the marine ecosystem, little is known about the impact of longline fishing on local food security, employment, cultural belief systems and traditions, revenue generation from marine tourism and climate change. New data demonstrate that the contributions of Marine Protected Areas, marine tourism and recreational fishing to local coastal economies dwarf the contributions of longline fishing. When combined with the impact of overfishing on coastal fishing communities and fish consumers, policies promoting sustainable fisheries must be expanded to take these other factors into account along with issues of biodiversity.

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## 0. Introduction

Mounting scientific evidence has documented the extensive damage caused by high seas industrial longline fishing in the Pacific to the marine ecosystem. What has received less attention is that industrial longline fishing also has extensive negative economic and social consequences for coastal communities and the nearly 1 billion people that rely on fish for their primary source of protein.

The impact of high seas longline fishing in the Pacific, which consists of the largest tuna fishery in the world, can be felt throughout our planet. Sea turtles, seabirds, marine mammals and other threatened marine species are caught, injured and killed by industrial longlines in large numbers and pushed to the edge of extinction. Industrial longline fishing not only threatens marine wildlife but human societies that rely on the ocean for their own well-being.



**Shark being finned on a Costa Rican longline vessel before a loophole allowing it was ended**

*Photo: PRETOMA*

A recent investigation has found that pelagic longline fishing may be contributing to the depletion of local fish stocks, thereby threatening the food security of coastal

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communities primarily served by small-scale “artisanal” fishermen and women [1]. Additional recent scientific studies have identified industrial longlining as the cause of the decline in the population of large pelagic fish species including billfish, sharks and tuna by as much as 87–99% in the Atlantic, Gulf of Mexico and the Atlantic since the 1950s.

The modest profits of medium- and large-scale industrial longline fishing are negated by hidden costs generated by massive government and intergovernmental subsidies, risk of fishery collapse, damage to small-scale fishing, threats to local food security, losses to indigenous island cultures integrally connected to sea turtles, sharks and the ocean, damage to local marine ecosystems, and harm to more lucrative sustainable economic activities such as sportfishing, tourism, whale watching and diving. Small-scale fishermen are finding their fisheries depleted by foreign industrial-scale vessels encouraged by heavy subsidies; local seafood consumers face rising prices and shortages, and native peoples are losing their traditional fishing grounds. When the industrial longline vessels deplete the local fisheries and move their operations that once provided a payoff to individual nations, local communities are left with the crisis of trying to feed their families and communities from badly damaged marine ecosystem. This damage to local coastal communities is being carried out to catch fish that are primarily exported to markets in wealthy countries in Europe and North America as well as in Japan.

The benefits of conservation to both developed and developing countries are immense. Recent studies have shown that sustainable use Marine Protected Areas (MPAs)<sup>1</sup> that prohibit industrial fishing are extremely successful in replenishing the biological diversity of both target and non-target marine species in a period of 1–5 years and for less than the cost of subsidizing industrial fisheries. Because developing countries are home to the overwhelming majority of sea turtle populations, for example, these countries have the most to gain from protecting the species. In fact, a number of communities in developing countries home to sea turtle nesting habitats have profited from successful efforts to conserve sea turtle populations through enhanced eco-tourism.

MPAs are a valuable tool for fisheries management because they allow local control of the marine food supply. This ensures that these resources are not drained away from the local communities merely to be exported abroad for short-term profit.

On the other hand, aside from shouldering the cost of subsidizing a marginally profitable and inefficient longline industry, developed nations must also pay the costs to

public health from mercury contaminated longline caught tuna, shark and swordfish.

The crisis caused by longline fishing is a case example of the systemic damage being done by unregulated industrial fishing in a newly emerging, increasingly unregulated global economy in which nations are encouraged to exhaust our shared ocean to generate commodities for export to wealthy markets. Industrial longline fishing is a case example of a destructive fishing practice which the United Nations General Assembly, World Summit on Sustainable Development, Convention on Biological Diversity, the United Nations Millennium Ecosystem Assessment Synthesis Report, and two consultative committees of the UN Food and Agriculture Organization (FAO) in addition to about 900 scientists from 83 countries and 230 non-governmental organizations from 54 countries have recommended be prohibited.

### 1. The impact of industrial longline fishing on marine biodiversity

Pelagic longline fishing in the Pacific is a highly unselective fishing technique that uses monofilament lines at the shallow surface of the high seas stretching as much as 60 US miles with as many as thousands of baited hooks. These large vessels originate from a number of countries including the US, Japan, Taiwan, Spain and other Asian and Latin American countries and primarily export their catch to the US, Japan and the European Union. Targeting highly migratory predatory fish species including tuna and swordfish, industrial longlines also catch or kill as many as 4.4 million sea turtles, billfish, sharks, marine mammals and seabirds [2,3].<sup>2</sup>

Most threatened by industrial longline fishing are leatherback sea turtles which migrate thousands of miles across the Pacific to lay their eggs, feed and reproduce. According to recent scientific reports, the number of nesting female Pacific leatherback sea turtles has declined by 95% since 1980 and is expected to go extinct within the next 5–30 years unless efforts are taken to reverse their decline [4–6]. One of the largest threats to their survival is pelagic industrial longline fishing. Leatherback sea turtles get hooked on longlines and often drown before the line is reeled and the sea turtle can be released.

Longlines are also one of the main threats to the survival of sharks and billfish. Recent studies have documented the rapid decline of large predatory fish species such as billfish, sharks and tuna. In the Pacific, the biomass of large predatory fish caught by longline fishing, for example, has

<sup>1</sup>Sustainable use MPAs are defined as allowing uses such as small-scale artisanal fishing, recreational fishing, wildlife viewing, diving and snorkeling for example as long as they have minimal impact on the marine environment.

<sup>2</sup>The bycatch data are extrapolated from reported Hawai’ian longline bycatch by US NOAA Fisheries. The phrase “catch or kill” is used because very little is known about post-hooking mortality. While some individuals may survive capture, too little is known to estimate how many will die later or be recaptured due to their injuries. According to Lewison [3], “fisheries bycatch can resulting direct mortality, but can also lead to delayed mortality or sublethal injuries, both of which are challenging to measure.

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