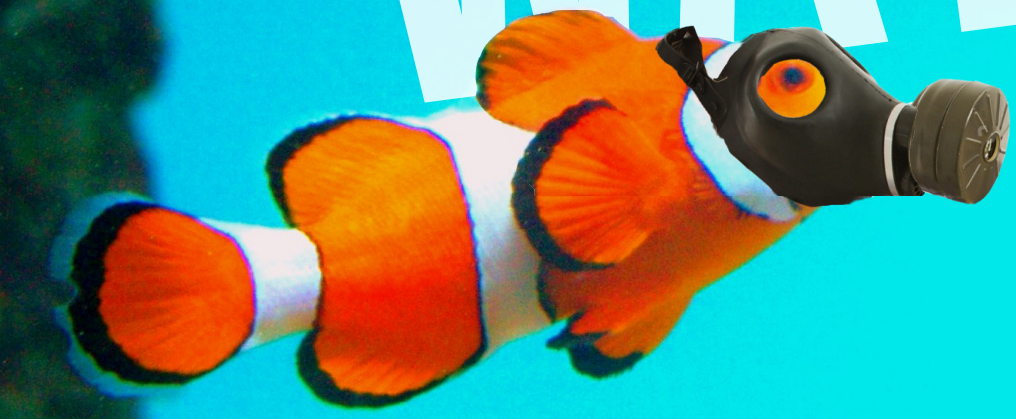
POISONED WATERS



HOW CYANIDE FISHING AND THE AQUARIUM TRADE ARE DEVASTATING CORAL REEFS AND TROPICAL FISH

Center for Biological Diversity
For the Fishes
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Royal blue tang fish / H. Krisp

EXECUTIVE SUMMARY

The release of Disney/Pixar's *Finding Dory* is likely to fuel a rapid increase in sales of tropical reef fish, including royal blue tangs, the stars of this widely promoted new film. It is also likely to drive a destructive increase in the illegal use of cyanide to catch aquarium fish.

The problem is already widespread: **A new Center for Biological Diversity analysis finds that, on average, 6 million tropical marine fish imported into the United States each year have been exposed to cyanide poisoning** in places like the Philippines and Indonesia. An additional 14 million fish likely died after being poisoned in order to bring those 6 million fish to market, and even the survivors are likely to die early because of their exposure to cyanide.

A heavy toll is also being taken on coral reefs and other tropical inhabitants. Many shrimps, crabs, mollusks, and other invertebrates are killed in the vicinity of the cyanide that's squirted on the reefs to stun fish so they can be captured for the pet trade. An estimated square meter of corals dies for each fish captured using cyanide."

Reef poisoning and destruction are expected to become more severe and widespread following *Finding Dory*. Previous movies such as *Finding Nemo* and *101 Dalmatians* triggered a demonstrable increase in consumer purchases of animals featured in those films (orange clownfish and Dalmatians respectively).

In this report we detail the status of cyanide fishing for the saltwater aquarium industry and its existing impacts on fish, coral and other reef inhabitants. We also provide a series of recommendations, including reiterating a call to the National Marine Fisheries Service, U.S. Customs and Border Protection and U.S. Fish and Wildlife Service to use their authority under the Lacey Act to halt the import of fish captured via cyanide poisoning.

OVERVIEW OF THE MARINE AQUARIUM TRADE

To understand the true impacts of cyanide fishing, it helps to first understand the extent of the aquarium trade.

The global trade in tropical marine fish is estimated to move *20 million to 30 million* fish annually [1], [2]. In 2003 this trade was valued at $200 million to $330 million, supplying fish for up to 2 million marine aquarium owners worldwide [1]. Tropical reef fish retailers sell roughly 1,800 different species, but the majority of sales focus on the 20 most popular fish species. Unlike their freshwater cousins, the vast majority of marine aquarium fish are collected from the wild. Currently 95 percent to 99 percent of all saltwater fish in the market are wild-caught [1], [7], [8], [9].

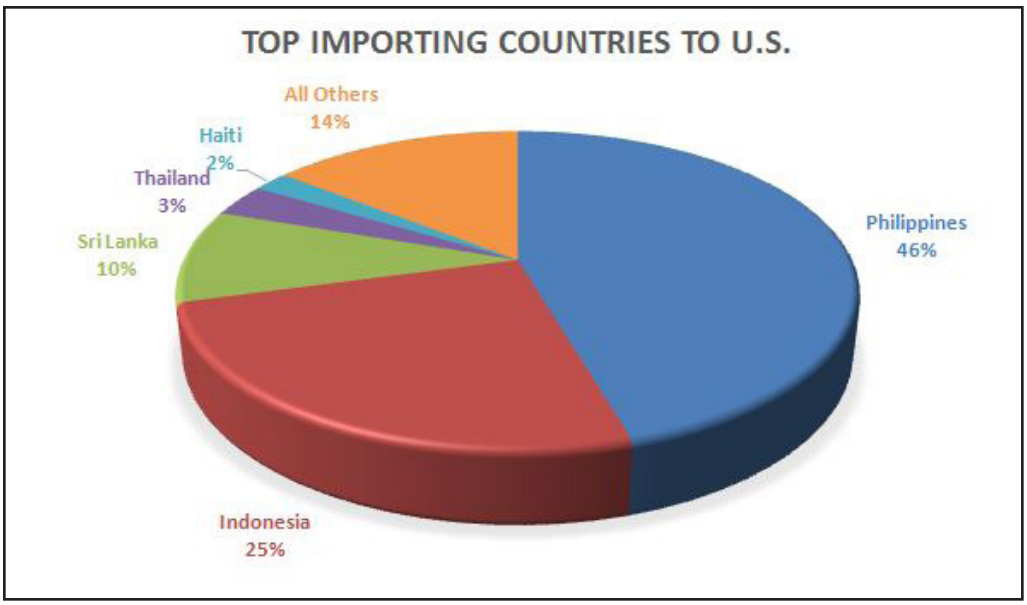
A few countries play outsized roles in the aquarium trade. On the supply side, about 80 percent of all fish are collected from three countries: the Philippines, Indonesia and Sri Lanka [4]. On the demand side, the United States buys up to 80 percent of all tropical aquarium fish on the global market, distantly followed by Europe and Japan [3], [5], [6]. Recent data gathered by the Center for Biological Diversity reveals that, from 2005 to 2015, U.S. imports of marine aquarium fish averaged more than 12 million per year [4].

TOP 15 SALTWATER FISH SPECIES SOLD IN THE U.S. [3]

1. Green chromis (*Chromis viridis*)
2. Blue damselfish (*Chrysiptera cyanea*)
3. Threespot dascyllus (*Dascyllus trimaculatus*)
4. Yellow tang (*Zebrasoma flavescens*)*
5. Whitetail dascyllus (*Dascyllus aruanus*)
6. Orange clownfish (*Amphiprion percula*)
7. Yellowtail damselfish (*Chrysiptera parasema*)
8. Four stripe damselfish (*Dascyllus melanurus*)
9. Azure damselfish (*Chrysiptera hemicyanea*)
10. Fire goby (*Nemateleotris magnifica*)
11. Banggai cardinalfish (*Pterapogon kauderni*)
12. Mandarinfish (*Synchiropus splendidus*)
13. Royal blue tang (*Paracanthurus hepatus*)
14. Flame angelfish (*Centropyge loricula*)
15. Maroon clownfish (*Premnas biaculeatus*)

* Yellow tangs are sourced from Hawaii waters, and the exact number of fish collected is poorly documented. The number of yellow tang sold annually may be higher than the threespot dascyllus or blue damselfish.

Orange clownfish



CYANIDE FISHING EXPLAINED

Unfortunately the marine aquarium trade has caused the decimation of some local fish populations, major changes in age structure, and the promotion of collection practices that destroy reef habitats. [10]. The worst of these practices is cyanide fishing.

To catch fish with cyanide, crushed cyanide tablets are placed in squirt bottles filled with seawater [1]. The dissolved cyanide is then sprayed directly onto the reefs near the targeted fish to stun the fish and make it easier to scoop them up [11], [12].

The scale of cyanide fishing is staggering. A new study by For the Fishes and Haereticus Environmental Laboratory found that approximately 50 percent of the wild-caught marine aquarium fish tested after purchase from U.S. wholesalers and retailers showed signs of exposure to cyanide [21]. According to data gathered by the Center for Biological Diversity, this means that cyanide poisoning affects an average *6 million* tropical marine fish imported as pets into the United States annually.

The damage from cyanide fishing is far-reaching. Unlike a tranquilizer dart with a carefully measured dose of a safe, pharmaceutical compound, liquid cyanide is indiscriminate, often lethal, and unsafe for marine animals even in low doses. Instead of precisely targeting one fish, the cyanide squirts out of the bottle and immediately forms a lethal cloud that easily spreads down the reef — stunning, damaging or killing everything it comes into contact with [12], [13], [14]. In some cases 55-gallon drums of cyanide have been dumped overboard to capture fish [12], [15].

The cyanide also damages coral and the wildlife that depend on healthy reefs. Much of the coral nearest to where a fish is collected is killed on contact, leading one biologist to estimate that one square meter "of reef is destroyed for every live fish caught using cyanide" [13], [17].

Most fish don't survive long enough to make it to an aquarium: For every cyanide-exposed reef fish in the aquarium trade that makes it to a home aquarium, several may die prior to being purchased. [1], [12], [15]. All told, 80 percent to 90 percent of cyanide-caught fish die within weeks of exposure [1], [12]. The survivors suffer from crippling damage to their hearts, brains, livers and spleens [14].

Because only a fraction of fish caught using cyanide live long enough to make it to market, that means that, each year, approximately *14 million* additional cyanide-exposed fish may die prior to entering into the United States. Possibly millions more non-target fish are left to die on the reef and after making it through customs. Scientists and experts have called cyanide fishing "the single largest source of mortality and environmental damage in the coral reef wildlife trade" [12], [22].

James Cervino / NOAA

THE EFFECT OF *FINDING DORY*

Royal blue tangs (*Paracanthurus hepatus*), like the star of Disney/Pixar's newest movie *Finding Dory*, are a prime example of many of the problems with tropical fish ownership. None have been successfully bred in captivity, so every royal blue tang for sale has been taken directly from its reef in the wild [23], [24]. Royal blue tangs, like many other wild-caught saltwater aquarium fish, are commonly caught with cyanide. This means that behind many royal blue tangs at the pet store lies an untold story of death and destruction.

Prior to the release of *Finding Dory,* concern has been growing that worldwide sales of royal blue tangs may increase, further depleting wild royal blue tang populations [26]-[40]. A similar trend was observed after the release of *Finding Nemo*, which triggered a sharp rise in the sale of orange clownfish, in what many experts and journalists have dubbed the "*Finding Nemo* effect." [41].

Cyanide fishing is a central, and egregiously underreported, aspect of the aquarium trade. The release of *Finding Dory* offers an urgent opportunity to highlight the fact that collecting royal blue tang and clownfish species in the wild using cyanide can have severe impacts on their tropical ecosystems.

The royal blue tang may have one of the highest rates of cyanide collection of any fish on the market [21]. For this reason, it is critically important that consumers do not respond to the movie *Finding Dory* by seeking to bring blue tangs into their homes, but rather by supporting coral reef and reef fish conservation.

LAWS NOT ENFORCED

Cyanide fishing is illegal in the largest exporting countries, including the Philippines, Indonesia and Sri Lanka, which collectively supply 80 percent of the tropical fish in the aquarium trade [42], [43], [44]. The United States builds off those laws with a law of its own, called the Lacey Act, which makes it illegal to import "any fish or wildlife taken . . . in violation of any foreign law." [45], [46]. Put simply, the Lacey Act makes it illegal to import any fish from Indonesia, the Philippines or Sri Lanka that were caught using cyanide.

Although cyanide fishing is illegal, destructive and unsustainable, little progress has been made to end it. Incentives to continue this practice are high, while enforcement is absent on both sides of the ocean.

Enforcement authorities in the major exporting countries are ineffective and under-resourced [19]. On the import side, U.S. officials tasked with inspecting newly arrived shipments of tropical fish have failed to take common-sense steps, such as subjecting shipments of tropical fish to testing for exposure to cyanide, despite the availability of proven detection methods [13], [47]. Without testing imports of saltwater aquarium fish for exposure to cyanide, U.S. officials have no way of knowing whether imported tropical fish have been caught illegally. Thus the vast majority of fish illegally caught using cyanide enter the country undetected.

In the middle are fishermen, suppliers, wholesalers and retailers who have profited from the practice of cyanide fishing for decades and have been unable or unwilling to curtail the practice. This means public awareness can play an enormous role in confronting the epidemic, particularly as *Finding Dory* is being advertised and watched around the world.

HOW TO END CYANIDE FISHING

We can all do our part to keep wild tropical fish and their reefs safe. One of the simplest ways to help is not to own a tropical fish tank. If you already own a tropical fish tank, don't buy tropical fish that have been taken from the wild.

If you are unsure which fish are captive bred and thus safer to purchase, you can download the award-winning Tank Watch app, which identifies tropical fish to avoid because they are typically or exclusively sourced from coral reefs [48]. You should also avoid fish marketed as "tank raised" or "captive raised" because these fish are typically still collected from the wild, possibly using cyanide.

Take action by encouraging the federal government to ban imports of wild fish caught using cyanide. Visit http://ow.ly/znqF301kNDP to take action now, or send your own letter to Eileen Sobeck, the assistant administrator for the National Oceanic and Atmospheric Administration Fisheries, at TheSec@DOC.gov. Only with sustained pressure will those entrenched in, and profiting from, this destructive practice be likely to shift to less harmful methods of collecting and raising tropical aquarium fish.

Cyanide fishing is a widespread practice that has killed fish and destroyed reefs for decades. Fueled by market demand and facilitated by the tropical fish aquarium trade, this fishing practice needs to stop. To end cyanide fishing, we need robust regulation and enforcement of existing laws prohibiting it.

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