From Reef to Tank

STORY AND PHOTOGRAPHS BY AMY MCDERMOTT

New England Aquarium, Boston

Brightly colored, graceful, and exotic, coral reef fish make tantalizing pets. But how exactly do they reach your aquarium? Over 90 percent of reef fish sold in the pet trade today come directly from the wild, sourced from at least forty-five different countries. So, chances are, any tropical fishes you see behind glass once swam on coral reefs.

I recently visited a warehouse in Los Angeles, California, only a few blocks from Los Angeles International Airport, where fish bound for pet shops and public aquariums were being held after importation. Prior to their arrival, the fish typically follow a route that begins in coastal communities throughout the tropics. Local fishermen collect them from reefs using nets or diving gear and sell them to distributors—often earning cents on the dollar of the fish's eventual retail price. Once the fishermen sell their catch, middlemen sort the animals in portside holding facilities, preparing them for export around the world, with the majority going to the United States and the European Union.

Protected waters near Oahu, Hawaii

Inside the drab gray building in L.A., rows and rows of aquariums serve as temporary holding tanks for fish of all shapes, sizes, and colors. Workers hurry across the wet concrete floors, quickly sorting incoming fish into tanks—trying to minimize the huge stress of transport on the fragile animals. Even so, mortality rates reach up to 80 percent in some species; many are injured during collection or handled poorly in transit.

The tanks themselves are impeccably clean with walls as blue as the open sea. It sounds soothing, but the fish must endure crowded conditions. I can see that many are agitated, zipping in crisscrossing lines across their holding tanks, hitting the walls as they swim frantically. Others drift stiff and leaflike, not likely to survive.

Why are so many aquarium fish still collected from the ocean, rather than raised in captivity? Eric Cassiano, a biologist at the University of Florida's Tropical Aquaculture Laboratory, explains, "In some cases we are just not currently able to grow the species in an aquaculture setting. [Or] we may be able to grow them, but with limited success." Thus cost and poor success rates create a strong incentive to take reef fish from the wild.

Moreover, the marine pet trade has brought a new source of income to often-impoverished fishermen of the developing world. New research published in the journal *Current Opinion in Environmental Sustainability* points out: "Coral reef animals can be removed for the [marine aquarium trade] in a way that is carefully targeted, low-volume, with little environmental impact, and closely monitored. Done in this way, there are many places that the [marine aquarium trade] can provide livelihoods for reef-side communities." Eliminating wild capture could be economically disastrous for many. And in response to an outright ban on harvesting reef fish, illegal fishing efforts would likely expand.

In the face of this dilemma, many conservationists advocate for improving the existing industry by reducing the harvest of rare or heavily exploited species, and transitioning to captive farming in some cases. Unless tastes change, it seems likely that such farming will increase in the next decade. Perhaps one day only the hardiest and most abundant species will be taken off reefs and make their way to the L.A. warehouse I visited, and we may be able to strike a more equitable balance between animal welfare and economic demands in the aquarium trade.

Amy McDermott is a graduate student in the Department of Ecology, Evolution, and Environmental Biology at Columbia University. She was one of fifty graduate students, chosen from more than 800 applicants across the U.S., to participate this past June in the Communicating Science workshop series, called ComSciCon'14, in Cambridge, Massachusetts. Pleased to encourage the endeavor, Natural History *will be publishing a selection of articles that arose from the workshop over the next several issues.*