

SUSTAINABILITY ISSUES COME HOME: CHOOSING SEAFOOD FOR ZOO AND AQUARIUM ANIMALS

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Abstract

It has been taken for granted that wild populations of seafood species would always be readily available. Unfortunately, there are limitations and a continued trend in the decline of fish populations both in the United States and around the globe. At the same time, the demand for seafood is increasing. Captive piscivorous animals must be provided with seafood to meet their specific dietary needs in terms of size and nutrients. Zoos and aquarium animals are contributing to the demand. At a time when these institutions acknowledge the serious state of global fish populations and marine ecosystems, the need to investigate the products purchased, to ensure the future of sustainable commercial seafood populations, is at hand.

Introduction

It has been taken for granted that wild populations of seafood species would always be readily available. There are limitations and a decline in fish populations around the globe, while at the same time the demand for seafood is increasing exponentially. Between 1950 and 1994 fishermen increased their catch 400 percent by doubling the number of boats and using more effective fishing gear.⁷ In 1989, the world catch leveled off at just over 82 million metric tons of fish per year. The Food and Agriculture Organization of the United Nations (2002) reports that 25 percent of the world's commercially important marine fish stocks are under-exploited, 47 percent are fully fished, 18 percent are over-exploited, 10 percent are depleted or slowly recovering. This means that 75 percent of the world's fisheries are at capacity and cannot support additional fishing pressure without populations declining. Yet the United Nations also estimates that demand for seafood will grow about 50 percent by the year 2010.

Over 4 million of fishing vessels extract more than 78 million tons of fish from the oceans each year. In addition to fish caught in the wild, 45 million tons of fish are farm-raised inland and along the world's coasts.⁵

With modern technology, the harvesting of seafood can go deeper and farther into the ocean than ever before. The short-term benefits seem remarkable; seafood that was once only seasonably available, like salmon, can be farmed year-round. There is access to new products from the depths of foreign oceans such as Chilean sea bass and orange roughy. In addition, farm-raised fish is more affordable.

These benefits, however, are having an impact on the overall health of the oceans and jeopardizing the long-term availability of seafood.³ Fish are extracted faster than they can reproduce and replenish their populations. As a result, populations are shrinking. For example, 90 percent of all large fish, including tuna, swordfish, marlin, cod, and halibut are gone.⁸ There is scientific concern that this is creating dramatically changing marine ecosystems.³

By-catch, the unintentional catch of fish, sea turtles, marine mammals, sea birds and other marine life that is thrown overboard dead or dying, also is impacting the health of the oceans. Scientists estimate that about a quarter of the world catch, or 60 million pounds of marine life, is discarded every year.^{1,2} In some cases, like that of the leatherback and loggerhead sea turtles, by-catch by commercial fishing operations jeopardizes the very existence of the species.^{10,12}

Habitat destruction by coastal development and fishing gear is another concern. Critical wetland and mangrove habitat has been replaced by hundreds of thousands of hectares of shrimp farms.¹¹ Nets dragged along the seafloor may destroy the habitat needed by marine wildlife, including commercially fished species, to survive.

Rampant illegal fishing also plagues the world's fisheries. Scientists estimate that four out of every five Chilean sea bass is caught illegally, and if this trend continues, this species could be commercially extinct within a few years.⁹

Over the last 30 years, many of us set our hopes on aquaculture to relieve the pressure on these troubled fisheries. But aquaculture has its problems too. A salmon farm of 200,000 fish releases the same amount of fecal matter as 65,000 people – but it remains untreated and is discharged directly into the ocean.⁶ Over the last decade, nearly 1 million farmed Atlantic salmon have escaped from fish farms and established themselves in streams in the Pacific Northwest, competing with wild salmon for food, space, and breeding habitat.¹⁴

Food Problems

Zoos and aquariums depend on the same commercial marine fisheries that provide food for the human consumption for animals in their collections. These institutions attempt to purchase the freshest, most nutritious and economical seafood available to meet the animal's dietary needs. Many of these institutions have witnessed firsthand, over the last decade, the decline in the species of seafood available for animals in captivity, and are aware that certain sources of seafood harm the health of marine and coastal ecosystems.

Some of the top seafood species used by zoos and aquariums, including capelin and herring, have been affected by fishing pressure. In recent years, a higher proportion of younger and smaller capelin make up the majority of the spawning population.⁴ Herring fisheries in the North Atlantic collapsed in the 1960's.¹³ Today, both capelin and herring are strictly managed to rebuild these fisheries, so they may support increasing demand.

Fishing pressure alone is not responsible for fluctuations in seafood supply. Environmental factors also play a role. The population size of Columbia River smelt, for example, depends greatly on freshwater flow. Due to dams and pollution, water flow has been reduced, as have the runs of smelt. Ocean conditions are thought to be another culprit. Smelt runs declined in El Niño years and increased during La Niña years.¹⁵

Questions for Suppliers

Zoos and aquariums are not immune to the consequences of declining of fish populations and degrading of fish habitat. Fewer fish means fewer products available for captive animals, higher prices, and environmental costs that are largely unknown.

A few simple steps may help ensure an abundant supply of feed fish for captive animals and preserve the health of marine ecosystem. By asking pertinent questions and purchasing seafood from appropriate sources, sustainable and environmentally responsible fishing and fish-farming operations will be supported. Good vendors are receptive to questions and may be able to help provide the information needed. The common and species name of the seafood is important information. An order of smelt, for instance, may be one of many species (marine, fresh water, silversides, Columbia River, etc.). It also is valuable to know if the product is wild-caught or farm-raised, as well as, how and where it was caught or farmed. If the product comes from multiple sources throughout the year, a list of the countries, fishing/farming methods, and time of year for the catch should be provided. Once this information has been accrued, the next step is to determine that these products are from sustainable fisheries or fish farms.

In the fall of 2002, Brookfield Zoo, Monterey Bay Aquarium, and the John G. Shedd Aquarium formed a partnership to begin gathering information about captive-animal feed sources and their sustainability. Currently, these institutions are researching the species of seafood used by zoo and aquarium husbandry departments. These three institutions represent only a small portion of institutions who purchase seafood for their animal collections. In an attempt to create a comprehensive database of information, records of the type of seafood products most institutions use are necessary. A survey will be distributed to AZA institutions requesting information including types of seafood fed and quantities of seafood purchased. The feedback will help direct the research efforts. To take an active role in keeping seafood available and learn more about seafood sources, the sharing of information is crucial. The data collected will help provide the tools needed to make better choices for healthy ocean resources.

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