

Zero Sum Fisheries

Our traditional notions of winners and losers may not apply to marine fisheries.

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I'm very interested in marine conservation and fisheries management, as regular readers of this blog probably know. Often, the aquarium hobby and the reef side of the hobby in particular are accused of exacerbating environmental degradation and harming conservation efforts.

Hobbyists are frequently singled out for abuse by those who aren't too familiar with the hobby. For example, when lionfish established themselves in Florida waters and the Caribbean, of all the possible vectors for entry, the aquarium hobby took the most flak.

This criticism is certainly justified in some cases. I'm not claiming that the hobby is free from guilt, or that poor husbandry practices, ignorant pet fish releases into the wild, and terrible wild-capture practices haven't harmed wild fish and invertebrate populations. Consider the abominable ongoing practice of cyanide capture in the marine ornamental trade, for instance.

There isn't any excuse for this type of behavior. We know that many such practices are detrimental to both the environment and the hapless aquarists who end up with compromised livestock (to say nothing of the health consequences for local fishermen who are exposed to cyanide), though such practices are often highly profitable for certain business interests.

Guilt by Association

The problem is that the average hobbyist is lumped in with the unscrupulous collector or exporter. Thus, the entire hobby is convicted based on the actions of a few unethical people.

In such cases, the people committing the violations (many environmentally destructive ornamental capture and export – smuggling – practices are in fact illegal: just examine the CITES treaty and the nearly universal ban on cyanide capture as evidence of this) experience nearly all of the gain, while decent hobbyists, local fishermen and the environment as a whole suffer.

In spite of the negative actions of the few in the hobby who don't care at all about the creatures they are introducing into the trade, I've always argued that the aquarium hobby on the whole produces more benefits for conservation and the environment than it causes harm. I believe that conservation and the aquarium hobby go hand in hand.

Of course, many disagree with my position. The argument I hear most frequently centers on the claim that regardless of hobbyists' intentions, husbandry practices or their generally altruistic conservation goals, the hobby still takes wild creatures off the reef (even if they are captured and transported in an ethical manner), and therefore has a net negative effect on the environment by harming wild populations and the delicate balance of nature.

This sounds reasonable, and in many cases it is probably a true claim to an extent, though I dispute how much damage the hobby actually does compared to many other environmentally destructive practices, such as those implemented in food fisheries. But this argument is entirely beside the point.

I believe wild-capture practices for the ornamental aquarium trade don't have to harm wild populations if they are carried out in an appropriate manner. What's more, I believe that environmentally sustainable collection practices can actually increase wild fish population sizes and their general health while at the same time increasing the quality of ornamental species hauls.

This definitely sounds counterintuitive at first glance. How is this possible?

Getting to Win-Win

Ultimately, this all boils down to the "game" of fisheries management. It's often assumed that when fishermen take species from the sea that there are clear winners and losers. In the simplest version of this "game," the fishermen win and the wild fish population loses.

This doesn't have to be the case, according to a new article appearing in a recent edition of the Proceedings of the National Academy of Sciences, coauthored by Christopher Costello, associate professor of resource economics and renewable resources at the Donald Bren School of Environmental Science and Management, University of California, Santa Barbara.

According to Costello, with the right information Marine Conservation Areas (MCAs) can be optimally set up and can actually help certain wild fish populations increase in size while at the same time improving the profitability of fisheries.

Costello's article deals with food fisheries, but it's likely the idea can be extrapolated out to ornamental fisheries as well, given that the appropriate information for the given fishery is known and available.

This is very good news. It is widely believed that without management, almost every fishery would be destined for collapse. However, with the proper management techniques, we may be able to reverse damage done to wild populations and actually grow fisheries at the same time.

This is the very definition of a win-win game. Hopefully, with more research and better awareness coupled with a coherent management plan and appropriate enforcement mechanisms, we can overcome our tendency to overfish wild populations to the point of collapse.

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