Impact of Collection Activities on Freshwater Fishes

Bonus content from the April 2009 FAMA magazine article "Not Without Impact."

By Jonathan Fung

A recent study compared fish sizes, abundance and species diversity among three sites under differing fishing pressures in the Peruvian Amazon (Gerstner et al., 2006). The researchers used seines and minnow traps to sample the local fish biota, while also measuring water quality for the effects of habitat differences. The authors chose to sample the Rio Nanay region as a high-fishing-pressure site because this area has historically been an area active in collecting aquarium fish and is located near one of the major Peruvian cities (Iquitos) involved with aquarium fish export. The authors then chose regions of Rio Apayacu as an area of medium fishing pressure because it is located several hours away from Iquitos by motorboat, and thus is only accessible by a few of the wealthier operators. The researchers then surveyed from regions of the Rio Yanayacu-Pacaya-Samiria National Reserve as an area of low fishing pressure because it is located several travel days from Iquitos and is accessed only by wealthy operators, with motorboats, who seek high-value species, such as arowanas (Osteoglossum spp.).

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Popular freshwater aquarium fishes that fetch a lot of money, such as this arowana (Osteoglossum spp.), are highly sought after by practitioners of the aquarium fish trade in Amazonia. Photo by Clay JacksonThe data from this study indicates that the high-fishing pressure sites had lower species diversity, fewer fishes and smaller-sized fishes. These findings are consistent with the reports of many local fishermen. They are not only catching a decreasing number of aquarium species, but they must travel further to capture the same number of fish as previously. Moreover, some populations of heavily fished aquarium species, such as wild Discus (Symphysodon aequifasciatus), have locally disappeared.

This study has value in that it shows wild stocks of some popular freshwater aquarium fishes are as equally threatened as are some marine fishes, whether by degradation of their habitat or by overfishing.

Cases of endemic species are much more prominent due to the nature of freshwater aquatic systems. As discussed in previous examples, limited biogeography of a species is associated with its higher vulnerability to population collapse and extinction.

Fortunately, most freshwater aquarium fishes in today’s aquarium trade are tank-raised alternatives produced by aquaculture.

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