Aquarium Fish Hobby: Its Impact on the Economy and Environment of Southern Florida

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The purpose of this paper is to call attention to a fishery that exists for tropical marine fishes for use in aquaria. Like other fisheries there are both recreational and commercial aspects, the recreational fishery being represented by those persons who go into the field to collect fishes for their own use, the commercial fishery being represented by those who sell their catches in local or distant markets. Unlike most fisheries, the gear employed is essentially the same in recreational and commercial fishing. Some may doubt or question that such fishes qualify as commercial fishes, but certain species may be sold for $20-$30 apiece in northern markets and the total value per year runs into many millions of dollars in return to the fishermen alone. Obviously these are fishes of considerable value.

I have recognized for some time that some basic conflicts were arising that inevitably would lead to legislation and control of the fishery. The difficulty is that viable statistics are unavailable and, in fact, are not now being kept, a very poor basis for initiating legislation. Also, legislation concerning most fisheries is initiated by state and federal agencies. Municipalities may act to close areas to fishing but do not alter the basic fishing law. The fishery for marine tropical fishes is subject to control at all levels and control is being initiated at the local level without state guidelines. The aquarist attempting to capture fish for his home aquarium may soon encounter a bewildering array of laws as he seeks his fish from one locality to another along our coast.

It is my hope to gather data on this fishery and to encourage the state in its efforts to this end with the aim of seeing a position paper prepared on the topic for presentation to the Florida Chapter of the American Institute of Fisheries Research Biologists for approval and publication. The aim is to provide needed guidelines and to prevent unnecessary or undesirable legislation.

This preliminary report is to describe the problems as I see them and to call for accumulation of proper data by which the fishery can be evaluated, particularly with regard to the following: (a) biological impact of the fishery; (b) economic value of both recreational and commercial aspects of the fishery to Florida; (c) social conflicts; (d) miscellaneous matters such as educational needs, forums whereby aquarists can discuss the problem with agency officers (both state and federal), the need for basic bological studies on the major fish species and an assessment of available biological knowledge of all fishes of present or potential value in this regard.

Types of Fishes

A wide variety of fishes are sought including gobies (Gobiidae*), sleepers (Eleotridae), blennies (Blenniidae, Clinidae), demoiselles (Pomacentridae*), angelfishes (Pomacanthidae*), butterflyfishes (Chaetodontidae*), fairy basslets (Grammidae*), grunts (Pomadasyidae), soldierfishes (Holocentridae), sweepers (Pempheridae), goatfishes (Mullidae), topminnows (Cyprinodontidae). In all, several dozen families and more than 100 species are involved, though the number most intensively fished and traded in Florida is currently about 50. In the list above, those with an asterisk include the species most often sold commercially and exported to northern markets. Most of the species are short-lived, with a life span of one to several years and with a rapid population turnover. None is an endangered species and the nature of the fishery is such that none is going to be threatened by either recreational or commercial aspects of the fishery. The situation in Florida is not to be compared to southern California (especially Catalina Island) where small populations (outposts) of fishes more common to the south are subject to intense collecting activity. Garibaldis *(Hypsypops rubicunda),* for example, are highly visible, brightly colored fish and their removal from a cove or section of coast, though not endangering the species, does detract from the general scene. California has a narrow, steep rocky shore and shelf, and thus the fishing effort is concentrated in a much smaller zone than in Florida.

Gear

The gear used in the fishery is varied. Some collectors use small dip nets (over very fine mesh) and jars and rely on their deftness to capture prey. Others employ a variety of slurp guns; essentially suction tubes of clear plastic with a pistol-grip release and an attached container into which the prey is tumbled. Chemicals are used to stun fish which then are recovered, and placed quickly in good water in a jar. Chemicals are expensive and are employed in small amounts (a few cubic centimeters at a time) through a squirt bottle. They are particularly successful for hole-dwelling species. Such applications do not affect surrounding areas and are not an environmental problem. The State of Florida Department of Natural Resources has been studying this problem and the results of their studies should soon be available (Edward Jovce, personal communication).

Location of the Fishery

Almost all of Florida's coastline is involved in this fishery but the major effort is from Palm Beach (where the nearness of the warm Florida Current to the shore provides suitable temperature for tropical species) through the Florida Keys. Elsewhere in the United States, most activity is in Hawaii and California but fishes are caught along most of the eastern seaboard in the summer when lenses of Gulf Stream water bring juveniles of tropical fishes into coastal waters.

Even in Florida the populations of some species north of the Keys are temporary, being established each summer as the water warms and disappearing during cold winters when the temperature drops suddenly. Why should not an ephermeral resource of this type be utilized?

Conflicts and Value

Conflicts between the fishery and other groups that use the same environment exist under certain circumstances. Collecting activity of any sort is not compatible with the purposes of underwater trails which are set out for the education and enjoyment of those who want to dive and observe or photograph but not collect. Such areas are very limited. In these and other limited high-use areas, collecting activities can be distracting and local areas can be depopulated, reducing the value of these areas to other users.

Whereas most fishermen purchase tackle and bait, those who collect marine tropicals purchase swimming and diving gear, tanks, air, etc. A club outing can take up many motel rooms. Food is purchased and boats are rented, so the impact in an area especially during slack periods in tourism can be considerable. Data on numbers of man hours spent in collecting, and dollars spent for transportation, room, board, boat and gear rental, and other merchandise are needed, and the collection of such data should be undertaken by the clubs themselves so that they can demonstrate effectively to the state the economic value of their activity. Data on numbers, kinds, and dollar value of fishes caught are essential and the State of Florida Department of Natural Resources apparently already is working to this end. With regard to the commercial end of the fishery, estimates of taxes received from the state from fish sales, and the value of the fishery to the transportation industry are needed. Tropical fishes comprise a major item of air transport in Florida though probably only a small percentage of this involves marine tropicals collected in Florida.

Finally I emphasize that I have discussed only fishes. Problems involving the collection of coral and other invertebrates and especially the collection of live mollusks for their shells involve a different set of problems and coral collecting, in particular, can be extremely damaging to the environment.

CONCLUSIONS

1. The collection of marine tropical fishes for personal use and sale constitutes a *bona fide* fishery.
2. The fishery does not involve species important to other fisheries nor does it involve endangered or threatened species.
3. The fishery has no impact relative to the biological success of any fish species.
4. Information is needed relative to the economic impact in Florida of both recreational and commercial aspects of the fishery. Man days, dollars spent on food and lodging, boat and gear rental, and the purchase of aquarium products are all relevant to this impact.

5. Information is needed and is currently being acquired by the Department of Natural Resources relative to the effects of chemicals on coral and on the fishes collected.

6. Regulation is required only where there are direct conflicts between this fishery and other recreational uses such as nature trails and underwater photography. Except for such areas, there is no *a priori* basis for excluding this fishery from state and national parks and monuments or reserves.