NATIVE FISH: Thoughts of a Naturalist

by Tom Baugh

Over the past few years, especially in my role as Contributing Editor for Freshwater and Marine Aquarium Magazine, I have received quite a few letters and phone calls from all over the nation and from at least half-a-dozen other countries. Most of this correspondence and communication centered around questions that ranged from "I caught a minnow in the creek out back. It has red spots. What is it?" to some rather sophisticated queries which led to a lot of head-scratching and research on my part.

I have answered many of these questions before in my FAMA articles, in Tropical Fish Hobbyist, and in my book "A Net Full of Natives: Some North American Fishes." But new people are constantly developing an interest in native fishes; they have the same questions that many of us had when we started.

If you are newly devoted to the study of North American native fish and are reading this, you've already made the first correct move: you've joined the North American Native Fishes Associasion. As you may or may not know, NANFA is essentially a volunteer organization. Although small, the membership has been growing due to increasing interest in native fish and aggressive leadership.

The Literature

Your NANFA membership, first of all, entitles you to our publications. My recent election to the NANFA Board of Directors has put me a little closer to the seat of power and I have every reason to believe that our publications will become more regular and substantive in the near future. One thing I know for certain--because I am in part responsible--is that our publications will carry reviews of current literature dealing with North American fish. And literature is where the new student of fishes should start; not necessarily with the technical literature unless you have a background in the biological sciences, but with the interpretive literature.

If I were starting all over again, the first thing I'd do is contact the agency in my state responsible for the protection and management of wildlife and find out if they have a publication on the fishes of my state. Many states, though not all, have such a publication. These guides range from free pamphlets to expensive, four-color books. I have an associate, a fish pathologist, who collects these state

books. His collection is impressive. But you won't need any more than one; or, at the most, several of these publications. Next, I would buy a copy of the latest edition of Samuel Eddy's "How to Know the Freshwater Fishes," published by Wm. C. Brown Company, Dubuque, Iowa. Last year the North Carolina State Museum published a monumental tome entitled "Atlas of North American Freshwater Fishes." This 854-page book costs about $20, but it is worth it. If you live near a college or university, these books may be available in the reference section of the library.

For those of you interested in tackling the technical literature, I suggest the journal "Copeia," which should be available in a college or university library. Finally, if you don't already subscribe to Freshwater and Marine Aquarium Magazine, do so. You can count on frequent native-fish articles and high-quality color photographs. The above references plus NANFA publications should help you meet most of your information needs.

The Law

While you're checking on the availability of state publications, you might also check into the state laws concerning fish collection and aquariculture. Most states are quite liberal on collection, some require a collection permit, and others allow no legal collecting. Make sure you know your rights and obligations. Another point related to law is the status of endangered, threatened, and specially protected species. Know what these species are and who has jurisdiction over them. I know that many people don't bother to check with the responsible agency; I always have and will continue to do so.

Collecting

Collecting is a joy! The haul of a net reveals wonders that make me feel like a child at Christmas. I'm sure that feeling of wonder is the reason I study living things. I also feel a deep sense of responsibility for the fish and other creatures that I remove from their natural habitats and bring into my aquaria. That sense of responsibility has molded my philosophy about collecting. I always try to follow several simple, self-imposed rules when collecting.

First, I try to know as much about my subject as I can before I go into the field. Where am I most likely to find the fish I seek? Will it be in open water or under a log? Is it a stream- or lake-dweller?

Second, I determine beforehand just how many animals I'm going to collect. This question of number is often related to my purpose in collecting and the facilities I have for maintaining my specimens once I get them back to the laboratory or fish room. Speaking from experience, it is very easy to collect more animals than you can safely

transport or maintain, and this can lead to high mortality among your specimens.

Third, I always transport fish in a four- to five-gallon plastic bucket and aerate the water with a battery-operated pump. I describe such a pump-backpack arrangement in my article "A Field Pack for Transporting Small Native Fish" which appeared in Freshwater and Marine Aquarium Magazine, vol. 1, no. 6, June 1978. A constant air supply reduces stress and helps assure safe arrival of fishes.

Fourth, keep it simple! Remember that the more you add to your collecting kit, the more you have to carry around and worry about. My other collecting equipment includes a short-handled aquarium net; a long-handled (5-6 ft.), fine-meshed minnow dip net; and a pair of rubber hip waders. You'll find that this simple list of equipment will help you catch fish and hold and transport them. As the years roll by, you'll add additional odds and end; but try to keep it as simple as possible.

Maintaining Your Collection

In general, there are no rules for the keeping of native North American fish in aquaria that don't also apply to tropical fish. If you have worked successfully with tropical species, you should also be able to work successfully with North American species.

One of the keys to successfully maintaining fish often overlooked by aquarists is the standardization of equipment, operation, and technique. Standardization is one of the things that helps keep your local tropical-fish retailer in business.

Like most of us who have been working with fish for some time, I've developed my own approach which has worked well for me and may work well for you. I've reported this approach in the Materials and Methods section of almost every professional paper I've published, and will repeat it here.

I have standardized most of my aquaria by using 20-gallon-high tanks (size is not important as long as you select one size and stay with it for all of your main holding-tank needs). I also use small, two-gallon tanks for all of my breeding work and larger, longer tanks for behavioral observation. My air supply is furnished by several of the same make of pumps; my undergravel filters are all the same make.

All of my fish, then, are held in 20-gallon-high tanks with subgravel filtration. The subgravel filters are covered with at least two inches of medium-sized, neutral-colored aquarium gravel I change 2.5 gallons of water from each tank each week and replace it with tap water which has sat

for 168 hours. Also, each week I run the water from each aquarium through a Diatom filter for two hours. I feed Tetra Min Staple Food at 6 a.m. and frozen San Francisco Bay Brand brine shrimp at 4 p.m.

There is obviously nothing spectacular in this system. But it does allow me to know exactly what equipment I'll be working with, when I'll be working with it, and how I'll be working with it. By standardizing equipment, techniques, and operations, I save time and effort which I then apply to the actual study of fish.

Safety

Safety is important in everything we do. When I go into the field, I try to take a friend along with me. If one of us gets in trouble, the other is there to help. Whenever possible, I try to let someone know where I'll be working and when I can reasonably be expected to return. Field safety becomes even more important, with some very specific problems and risks, in areas such as large marshes and southwestern deserts. Journeys into these ecotypes require careful planning and may also require special equipment.

Safety is as important in the laboratory or fish room as in the field. A fully equipped 20-gallon tank weighs about 200 pounds. If, because of a poorly constructed or weak stand, this aquarium falls on any part of you, it is likely to be a long time before you get into the field again. In addition, the combination of electricity and water which exists almost anywhere fish are kept is a disaster waiting to happen. Great care should be exercised any time electrical appliances are used around water.

Shipping Fish

As with transporting fish from the field, fish you ship or receive from others should be exposed to the smallest amount of stress possible. In shipping, I put as few specimens in a clear plastic bag (which I get from my tropical-fish retailer) as I can. I fill that bag with air from a pump, then twist the top of the bag, bend the top over, and secure the top with a new rubber band. I place the first bag in a second bag and repeat the process, sans air. I place the bags in a sturdy cardboard box and fill the spaces between the bags with styrofoam "popcorn," then close the box with pieces of strapping tape, wrap the box in brown paper, and secure the paper with more strapping tape. Both the address and the destination should be legible.

I mail all of my fish Air Mail Special Delivery, preferring to pay a little extra for the comfort of knowing that the fish stand a reasonable chance of arriving at their destination a little earlier. Oh, by the way, I mark all of my boxes

"LIVE FISH" on all sides and on the top and bottom. In the dozens of shipments I've made, I know of only one which arrived in less than optimal condition.

The Collector as Naturalist

One of the advantages of working with native North American fishes, especially in your own area, is that you have an opportunity of studying the habitat as well as the animal. The natural history of a fish is not complete unless a habitat and a fish's interaction with it are also described.

Although collecting is enjoyable, it can be hectic. Take some time to learn to identify the plants, the complexion of the soil, the nature of the water, and the many other factors which contribute to the existence of the fish you are collecting. There are hints in the natural environment which, when understood, can help lead to more successful aquariculture. Many of you who have followed my FAMA articles will know that I try to report on as much of the natural history of a species as possible. I enjoy investigating the role of a species in its environment. I not only want to know what a fish eats, but also what eats it. The opportunity to investigate the natural history of a stream or pond throughout the seasons can contribute significantly to your knowledge and your enjoyment of the fish you collect and keep.

Contributing

I see that I've referred to FAMA again and that brings me back to where we started--with the literature. The editors of our association publications are always looking for meaningful articles dealing with native fish. You don't have to be a professional wordsmith to contribute. Take a few minutes to write about your collecting or aquariculture experiences and then submit them to John Eccleston. There are enough professional communications specialists in NANFA to give your submission a little attention and polish, if it needs it. Remember that your knowledge can be very helpful to others who share your interests in North American native fish.

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