

Fixing the Broken Triangle: Working to Build Bridges Between Aquarium Hobbyists, Fisheries Biologists, and Academics

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The 2010 NANFA Convention hosted an informal round table discussion to tease out ideas on the subject of how aquarists, fisheries biologists, and academics can work closer together to further the cause of aquatic conservation. Essentially, aquarists have a unique range of skills that could be of great value to share with fisheries biologists who wish to work with native fishes in captivity. Difficult to start at first, conversation soon was underway in what could be done to help these programs further their objectives. The leaders represented individuals with a diverse range of backgrounds including state fisheries biologists from Nevada, California and Arizona. Representing the NANFA hobbyists' viewpoint was advanced aquarist and dedicated fish breeder Bob Muller. The audience contained a range of folks including aquarists, natural historians as well as others from public aquariums and US Fish and Wildlife biologists who all contributed to the discussion. The main goal of the discussion was how aquarists could get involved in documenting aspects of the breeding biology of poorly known species that require state or federal permits to work with the fish. But it became clear through the discussion that there is also a major disconnect between the worlds of fisheries biologists and aquarium hobbyists.

From my perspective as a professional aquarist at a public institution, I get to interact with a variety of "fishy" groups with different responsibilities, skills and limitations. But ultimately, they all share an interest in trying to do what is best for native fishes. I think of it as being a "triangle" of groups involved or interested in the problem. In one corner are government officials who are in charge of managing our natural resources. In the second corner is academia where research into various aspects of native fishes is conducted. Finally, in the third corner are the interested hobbyists who have a special knack, driven out of sure will with little to no economic gain, to maintain and breed their charges. In my position as a professional aquarist, I regularly deal with all three corners. My job affords me the ability to house endangered species, it also enables me to work closely in-situ with researchers in the field, and of course, I deal with

hobbyists regularly who are interested in general aquarium fish.

There are some general stereotypes of each of the three groups. Hobbyists generally get a really bad rap. They are the ones who have the reputation of carelessly supporting a trade that contributes to the destruction of habitat, the decline of species due to over collection, and promulgate the feeling that fish are for the most part disposable. They are generally undisciplined in their techniques, uneducated in many of the scientific issues, and are only interested in species that glitter or glow. Government fisheries biologists on the other hand often seem above the law and all-assuming to many hobbyists. They often times seem like they do not care about what they view as little details that may be brought up by caring citizens. Academics and conservation biologists often come across as condescending and all-knowing. Their hubris attitudes leave some folks feeling condescended and unimportant. I think that by identifying each groups' weaknesses, even if overly stereotyped in the above examples, we can identify opportunities for the various groups to get together to work synergistically on important issues. Essentially the different groups should be seen as complimentary pieces that fit together neatly to complete the puzzle. For example, how many hobbyists know what is important in the social or breeding behavior of a species for reintroduction purposes? How many researchers or fisheries biologists have extensive experience as aquarists? How many academics do you know of that have an intimate knowledge of breeding a species outside of a hatchery setting? There are clearly a few persons in the above stated groups with well rounded experiences spanning most of the disciplines, but most do not. Simply put, there is a great opportunity here for aquarists to play a key role in helping conservation professionals in the field; and NANFA can act as a major facilitator.

Hobbyists often have great interest in biological aspects of fish and frequently are familiar with their natural history in the wild, transportation, and breeding various species. Often times however, they are not familiar with the scientific process or research published in the scientific literature, both areas that academics and conservation

biologists rely on to make important management decisions. I would argue however that hobbyists do a significant amount of research. Although most of the research is in the form of observations, it is indeed anecdotal. This doesn't make the information any less important, just not as defensible by the scientific method. Oftentimes, these anecdotal observations are the impetus for scientific study. But the lack of the use of the scientific process in verifying a hypothesis is sometimes still proven by repeated observations over extended periods of time. In my opinion, hobbyist's passion could easily be considered soft science, more reliant on qualitative rather than quantitative data, but still potentially important for making species management decisions. In the simplest of terms, hobbyists represent a tremendous information resource that is mostly only available informally.

Things that are often taken for granted within aquarist circles may not be well known or documented. For example, during the roundtable discussion, Bob Muller relayed an example of fry behavior that was common in his experience, but relatively unknown in the academic community. Upon breeding a *Pteronotropis* species, it was noted by a researcher the seemingly unusual behavior of the fry sticking to the glass. Bob commented on how he had not only had other *Pteronotropis* species fry exhibit this behavior, but other tropical species of minnows which had exhibited this behavior too. Although anecdotal, information like this can be important for a variety of reasons. It may shed some light on the relatedness of species; animals that are closely related share similar developmental stages. Therefore, an endangered *Pteronotropis* minnow would probably share similar developmental trends as the one in the example above (considered a surrogate species), therefore an important nugget of information for the management of that particular endangered species. Furthermore these details may show some important physical requirements that a species must have to reproduce successfully, i.e. large smooth slabs of rocks for fry to stick to! A conservation biologist would certainly want to make sure these physical attributes were present in a stream that he might want to be introducing this minnow to.

With all the good information shared at the conference, it became quite apparent that the problem is quite simple: there are way too many fish species that need help and not enough people, or money, to help them. Conservation officials in government capacities explained their very real issues in that they only have so many hours to do their work, and they are strapped with little to no help (usually any extra help is only temporary). Another constraint, especially in the west, is that biologists are usually responsible for expansive areas, which means that travel time alone takes up a significant amount of their time budget. So what is a conservation official to do? Essentially they end up spending most of their time trying to solve the latest crisis, which limits their ability to proactively avoid crisis before they happen. To further complicate matters, many state fish and game departments are

also responsible for sport fish management, which at times is directly in conflict with native fish management, especially in the western USA.

The question went out to the convention attendees as to how individuals, or NANFA, could help the process. In order for the puzzle to be completed, a few things need to happen. First and foremost is that there needs to be a better working relationship between all groups involved. This could be helped by simply making fisheries biologists aware of the skills that hobbyists have and how easy it is today with the internet for "outside" aquarists to connect. Also it is important for all to know that hobbyists are very enthusiastic to help fisheries biologists and others interested in any aspects of native fish conservation and research. This also means, however, that professionals in the field (government conservationists and academia) need to reach out to those hobbyists who might be good candidates for helping. There are other important steps that can be taken, some of which NANFA can play a significant role in. NANFA can broadcast various projects being conducted at local institutions and facilities for interested aquarists to familiarize themselves with. Additionally, programs and contacts need to be created both from the professional institutions and also from the hobbyist organizations (and NANFA) to encourage cooperation and participation from each group's members. For example, academia could instruct inquiring hobbyist organizations as to a legal surrogate species for an endangered species. The hobbyist organization, or NANFA, can then start a program with this species, taking notes in a format that can help the researchers and management officials, and present the body of information. Another way for NANFA to help is to schedule outings with local hobbyist organizations to collect water parameters several times a year in selected areas where species of special concern may be. During these events trash can be collected, recycled and properly discarded.

NANFA is not the first organization to work towards helping the conservation of fishes and therefore this also gives us resources on how to proceed with this concept. Other special interest organizations such as the American Killifish Association (AKA), the American Livebearer Association (ALA), and the American Cichlid Association (ACA) all have, or have had, some type of conservation programs in place. The ACA probably has the most well developed program called the C.A.R.E.S Preservation Program. Its goals are to bring awareness to the particular critical situation, recognize and encourage hobbyists who are maintaining the individual species, and to share the data gathered in the program. NANFA's program can be similar in that our program can work towards these goals and most importantly potentially directly influence how policy and procedures on imperiled species are implemented in our own country by helping to contribute valuable information that can shed some light potentially unknown behaviors, such as unique breeding behaviors.

Historically, NANFA has been a leader in emphasizing conservation in the form of research and conservation grants, publishing *American Currents*, and via interactions as part of its annual conventions. Despite the presence of NANFA on internet since 1996, we are still not widely known in the broader academic and agency communities. We need to do more to make others aware of the general fish keeping and native fish advice that NANFA has within its ranks. This can be done by getting members involved at local, regional and national meetings such as the American Fisheries Society, Desert Fishes Council, Southeastern Fishes Council, American Society of Ichthyologists and Herpetologists. Some efforts to do this have occurred, but it is something that requires ongoing efforts. There is considerable potential for matching up people with mentors from within the ranks of NANFA or by identifying advanced aquarists who may be members of other local aquarium societies. In some cases it may be local, but with the internet this is less of an issue. For instance, Steve Parmenter talked about setting up some local fish at a school pond or aquarium. But such a scenario would be well complemented by the school using NANFA's resources to help

whenever they run into problems (e.g., via the NANFA forum). Or perhaps people within NANFA may know people in someone's local area that has fish keeping knowledge that can help in a more hands on manner. NANFA can help put the pieces of the puzzle together.

I became involved in NANFA more than 15 years ago at the pestering of a local NANFA member here in Northern Ohio. What most amazed me about this organization was the fact that hobbyists, with no prompting other than pure interest, were so dedicated to the education and conservation of their native water ways. The passion of these folks was truly inspiring since they were not motivated by financial gain or employment. This to me is what makes NANFA so different than other hobbyist aquarium organizations. And that is why I feel that NANFA can be the bridging organization between the consummate professionals and passionate hobbyists who only have true intentions. But, NANFA is an organization that is run by volunteers. And for NANFA to succeed in these ventures, it takes volunteers to make it happen. We are NANFA, you and me, and we need to get others involved to make these goals a reality. 🐟

Meet the pupfishes of Ash Meadows in this fascinating DVD by Tom Webster



Crystal-clear pools shine like emeralds on a desolate desert valley floor. While pupfishes “play” in these oases, conservationists battle to save their habitat from water-thirsty developers, and biologists and aquarists team up to remove thousands of exotic fishes, crayfishes and frogs.

This 30-minute DVD introduces you to the three kinds of pupfishes that live in the desert springs of Ash Meadows, Nevada, and the efforts of native fish enthusiasts to save them. Also included is little-seen footage of divers entering Devils Hole to count the Devils Hole Pupfish (which holds the distinction of living in the most restricted habitat of any vertebrate in the world).

The 23,000 acres of the Ash Meadows National Wildlife Refuge was the site of the 2010 NANFA Convention, October 14-19. If you didn't make it, this DVD will show you some of what you missed. If you did make it, this DVD will be a cherished souvenir.

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