

# **PROPOSED NANFA ENDANGERED SPECIES CONSERVATION PROGRAM**

**by John Bondhus, Monticello, Minnesota**

Almost every year a new North American freshwater fish species becomes extinct. Most of these extinctions could have been prevented by reproduction in aquariums or in protected areas. Many became extinct because people willing to help simply did not know which species were in greatest need of help or what they could personally do to help. Many NANFA members are working individually on conservation programs but no coordinated effort exists. Therefore, the NANFA board of directors would like to establish a species conservation program to coordinate and help promote activities.

NANFA is a unique organization. It's heavy emphasis on aquarium study of North American fishes may give it more potential to prevent extinction's of our native endangered species than any current organization including the

government. The federal government has a program for endangered fishes, but less than \$1,000,000 is allocated each year for fish recovery programs (U. S. Fish and Wildlife Service 1992). Congress simply lacks the political willingness to spend money except on a few high visibility species. A few other conservation efforts are being done by state and federal agencies. The largest being at the Dexter National Fish Hatchery that allocates about \$400,000 from game fish hatchery funds. Most programs depend on the individual initiatives of dedicated biologists who find their own ways to get grant money or do them on their own time. Today, at least 50 species get no funds or attention at all. Many other organizations have started conservation programs and some like the Desert Fishes Council and the Aquatic Conservation Network have been very

successful in working with universities and government agencies to attain common goals. Only NANFA covers the entire North American collection and has a heavy focus on aquarium reproduction. A large percentage of the biologists working on rare fish conservation programs are already NANFA members. Many of our amateur members are very knowledgeable as well, especially in breeding and collecting fish. Aquarium spawning is not a permanent solution but it's better than total extinction. Often, it's the last line of defense. It can buy time until an adequate recovery plan is implemented and it's an area NANFA member's usually enjoy.

For more than thirty years now, I have been watching sadly as more and more species become extinct. I kept telling myself the government would start doing something about solving this problem. I really hoped with the Endangered and Threatened Species Act of 1973 something would start to happen, but only a token amount of money is allocated to it. In fact, our congress allocates less than a cent per person per year for fish recovery programs. Many low priority species are deliberately ruled out for federal reproduction programs because of lack of space. One species no longer existed in the wild and its removal meant automatic extinction. (Minckley, W. & Deacon, J. 1991). Yes, they raised a tremendous hullabaloo about the Snail Darter *Percina tanasi* and delayed a major dam construction to protect it but this was done only with publicity and legal pressures. At the same time, just in the last few years, three or four easily reproducible species became extinct with

no efforts expended. These species would have been relatively easy for NANFA club members to breed and perpetuate.

I have always felt "well, there is not much I can do because the government would not let me breed endangered species with the regulations in place." I was wrong. Al Castro, phone number 415-467-9344 told me you do not even need a permit in most cases to keep, breed, and distribute them. This assumes you legally obtained them and do not buy or sell them. An exception may be if they are covered by your local state game and fish laws. Normally these laws cover only game and commercial species living within the state's waters.

#### **STUDYING CURRENT SPECIES STATUS TO ESTABLISH PRIORITIES**

The more people we become involved, the more species we can save. This involvement is often due to lack of knowledge of what needs to be done, how urgent it is, or how to do it without legal troubles. We can maximize this involvement by communicating to members the current project needs, status on each species and applicable laws. There are at least one hundred species on Federal Threatened and Endangered Species Lists and at least as many that are as rare but not officially listed yet. In addition there are locally threatened stocks in almost every state (Schmidt, K. 1990). We can gather information on each of these species, report on their current status and then members can more easily select projects that fit their interests, resources, and abilities. What we do can only increase the current efforts of others

and to help ensure more species survive. We should maintain a data base on what is actually being done for each of these species and who has legally obtainable species.

In many cases, there are programs in place, and we should support organizations doing those programs. Members may want to volunteer to help on some of these programs. Let me give you an example -- a frequent NANFA member, J.R. Shute is currently working on seven species. He developed a non-profit organization to do this, Conservation Fisheries, Inc., 7108-A Commercial Park Dr., Knoxville, Tenn. 37918 and has secured funding from various organizations to work on these seven species.

This example may be interesting to you because a non-profit organization can pay its employees a reasonable salary. Many of our members could get jobs this way doing what they really like. There should be money available for protecting endangered species in both the public and private sectors. The traditional sources, state and federal grants may be more limited than private grants. Large corporations can easily justify spending a million dollars for the publicity value alone if they can see concrete ways to tie the success of a major effort into their company's image or their management's personal values.. We need to put our collective creative efforts together to find new ways to redefine the economics of species conservation. NANFA can help here by publishing new fund raising ideas that you may develop for your project. If one or two other members develop similar

programs to what J. R. Shute is doing we would be instrumental in helping to save several species. The limitation to a project is usually taking the initiative to raise money to get the job done, taking the time to do it themselves, or organizing volunteers.

Many species became extinct because nobody was involved. No central communication system existed to communicate the serious status until it was too late. Certainly someone cared with the Snail Darter. In other species, they never reached the political limelight, and died for lack of a few thousand dollars worth of efforts. For example, 10 years ago there were five species of *Gambusia* that are endangered. Today, probably only 3 of the 5 still survive. How complicated can it be to take a simple live-bearing fish as this and reproduce it in several members' aquariums to at least provide some redundancy in case the wild population is lost. The Goodenough gambusia (*Gambusia amistadensis*) program lacked this redundancy and that species is now totally extinct. This extinction was caused by hatchery errors occurring simultaneously at the only two captive breeding locations. (Hubbs and Jensen, 1984). With captive breeding its very common to make mistakes and there must be a much higher level of redundancy here than in the wild. The captive breeding populations need to be perpetually managed in a data base as members change their interests or accidentally lose their individual populations so an adequate number of separate locations are maintained with frequent transfers of genetic stock between them.

## **DEVELOP AND REVIEW SPECIES SURVIVAL PROGRAMS**

The U. S. Fish and Wildlife service have developed individual species recovery plans for most of the official U. S. Threatened and endangered species. That does not mean there is money to implement these plans. They need help from other organizations to implement these plans and today they are receptive to offers for help. The most important part of any plan is to implement it. The government has reasonably good plans for most of the endangered and threatened species but no money or firm timetable to insure their success. Grass root support from NANFA members and others can double or triple the number of plans that are carried through to completion.

Plans should also be reviewed and suggestions made to Fish and Wildlife where you feel they can be improved. For example, I think the Maryland Darter *Etheostoma sellare* program (U.S. Fish and Wildlife Service 1985) with the known limited population should have had a captive breeding program included in it. This may have been its fatal flaw. It's possible that no one realized that many members of NANFA are successfully breeding many species of Darters. Of course, it's always easy to look back in time and suggest solutions. Let's start reviewing these plans and try to prevent future mistakes from being made. Your suggestions could prevent a future extinction.

We can also develop plans for the non-listed rare species before they reach the more serious status levels. You may prefer working on these species because

of the greatly reduced or non-existent rules and regulations specially if you are interested in distributing fish you have reproduced to others. Plans are also needed for Canadian and Mexican fish.

## **HABITAT STUDY AND SPECIES COLLECTION**

Many of the species on the endangered list may already be extinct. For a species on the verge of extinction, it is not good enough to assume it may be extinct. That very assumption frequently leads to the loss of the last few remaining animals in the wild. It's not uncommon at all to see endangered species become extinct as far as the government is concerned, and then show up accidentally ten, twenty or thirty years later in a small isolated population. The Maryland Darter has been described as probably extinct (Wheeler 1991). The San Marcos Gambusia *Gambusia georgei* and the Scioto Madtom *Noturus trautmani* have been listed as probably extinct as well (U. S. Fish and Wildlife Service 1992). That determination is frequently made without an adequate survey of the species potential habitat. Many species thought to be extinct show up 10 or 20 years later in an isolated location. Today, with declining habitat conditions in many areas, ignoring an extremely rare population is almost like condemning it to extinction. If we truly believe in saving the gene pool and the value of each individual species, they deserve more than just a passing "they are probably extinct so we should not worry about them any more." We should organize collecting trips of sufficient length to make a true determination, and if necessary find some financial backing that can help support this effort. Ideally, the collecting team

should include an expert collector like Konrad Schmidt to be sure no habitat areas are uncollected.

Even if we are unsuccessful in locating the target species the time will not be wasted. Watershed species diversity studies need to be conducted in almost every state especially in the tributary watersheds above dams where many rare species exist. This work is fun and can be done at the same time as you collect for your aquarium. It's also a great way to personally learn a lot about your local habitat and species.

Many species are not yet being held in captivity and it's very difficult to get individual permits to collect these. The Fish and Wildlife Service has several good reasons it is very reluctant to approve individuals to legally collect these species but it can be done. Al Morales just got a permit for the Desert Hole pupfish *Cyprinodon diabolis*. It took 2 years of research, a detailed proposal, and a lot of paperwork but he did it and his contribution may make a real difference. Contact him at 303-756-0107 if you want to know more about this. He is willing to provide guidance to others who are serious about species conservation. It's a lot easier to get fish for captive breeding before they are classified as threatened or endangered. Many species are just as rare yet still unprotected as the official listed species but for political or other reasons never made the list. For example, the Cowhead Lake tui chub *Gila bicolor vaccaceps* never made the list because the single population occurs primarily on a private ranch. The landowner would likely be uncooperative

with restoration efforts if it were listed (Moyle, P and Yoshiyama, R. 1994). The best way to determine which fish are rare and not yet listed would be to review the American Fisheries list (Williams et al 1989) and compare it to NANFA list (Schmidt K. 1990) which shows only official Federal and State listed species.

#### **DEVELOP A BREEDING PROGRAM**

Several of the endangered species are so limited in their current range that they do not even have a large enough population to survive even an occasional environmental event that can occur every 10 years or so. In the past when fish were eliminated from a small river or creek the population was restored from nearby populations. Dams and other barriers have changed that and now these species must be moved artificially between habitats to maintain population stability. Unfortunately, some of these species are so rare in their limited habitat that it's too risky to take a large enough quantity to stock the additional area. At the same time the habitat is too small to ever get a larger population. Captive breeding requires fewer specimens. They must be bred artificially to get this reintroduction capability as well as to provide a backup population.

Within NANFA, there are many real serious expert breeders. We need to develop a data base of breeders and species they are interested in, their success rate, and whether they have any available species to distribute. Paul Loiselle at the NY Aquarium for Wildlife Conservation and Dave Schleser at the Dallas Aquarium are actively looking for serious aquarists to help keep several species alive. The

AKA protocol does not allow them to give them to individual aquarists. They are, however, willing to donate them to a club that maintains a serious record-keeping system. In addition, we need to gather the data on breeding techniques and put it in the same data base. For example, Ray Katula has bred many species. We do not know which species so we can not ask for help on a particular species. Another example that comes to mind is the late Nancy Garcia, who specialized in the Darters. It would really have helped if we had notes in our data base on all the different Darter species she reproduced. When we select some of the endangered species to reproduce, a lot can be learned by breeding the species that are closely related. Many members could help in this program without even getting permits to breed the actual endangered species.

Each species we work with takes a different program to ensure its survival. For example, in the *Gambusia*, one of the principal threats is from hybridization with other *Gambusia* species. The survival plan might include getting several members to develop genetically diverse founder populations that are regularly supplemented with wild fish under a strictly controlled process. The 2nd generation could be spread out in aquariums across the country or in remote farm ponds where they are safe from hybridization.

Once we have solved the breeding problems of an endangered species, we could distribute some of these fish to other members who are willing to help reproduce that species. There are already species of fish that are extinct in the wild

that are being kept alive in aquariums around the world. It would certainly be helpful if the same thing would happen with North American species. Yes, there is some risk of genetic impurity among the hobbyist breeders or in farm ponds but even this is better than the outlook for a totally extinct species. We could develop a pedigree listing program where amateur aquarists would be allowed to maintain specimens suitable for reintroduction.

Breeding articles on the endangered species and the related species to them should be published in NANFA whenever possible, as they can be used to help researchers working desperately on solving a particular breeding problem. For example, right now J.R. Shute, is looking for any information he can get on what triggers spawning in the Madtoms. Especially the Smoky Madtom *Noturus baileyi* and the Yellow Fin Madtom *Noturus flavipinnis*, to reproduce in aquariums. Contact him at (615) 922-3906 if you have any ideas here.

### **EXPANDING THE WILD POPULATION**

Probably the most important thing to ensure a species survival is to improve its original habitat. In some cases the habitat was so small, like the Devils Hole Pup Fish, that it may be eliminated. A quick study of what is required for the habitat is necessary, and then to select several sites to introduce this species should be started immediately. A lot of environmental damage has been caused by species introduced into new habitats and it's very risky to introduce a new species. All reintroductions must be carefully reviewed with government officials and

follow American Fisheries Society suggested guidelines.

Reintroducing non-endangered but locally extirpated species needs to be done as well. State fish and game departments do reintroduce and maintain local game fish populations but usually not non-game species. The resulting reduced species diversity can upset the balance of nature in many unintended ways. It also leads to reduction of range and gene pool diversity for many not yet rare species. Ideally, the entire species list should be restored similar to what Konrad Schmidt is doing on the Knife River. (Schmidt, K. 1993)

To summarize, I believe NANFA and you can do a lot to help us reverse this unfortunate trend of species extinction.. Let's work together with government biologists, public aquarium workers, and academicians to maximize our efforts. To me it is tragic that in a country with so many resources, we cannot ensure the survival of all of our native species. Let's do something about it. Please contact me and volunteer to help on this project in any way that you choose. If you are already working on rare fish conservation let us know so interested members can network with you. Fill out the enclosed form and send it in today. Let's not wait for the government to do it, let's get in and make a real contribution ourselves.

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Your help is needed! Please complete the information below and check the areas you are working in or are interested in, and return to me at the address below as soon as possible.

NAME \_\_\_\_\_  
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**PROJECT CATEGORY**

**MAJOR TYPES OF TASKS**

- \_\_\_ Study and report on species status
- \_\_\_ Develop species survival programs
- \_\_\_ Habitat study and collection
- \_\_\_ Develop breeding programs
- \_\_\_ Expanding the wild populations
- \_\_\_ Programming of maintaining database
- \_\_\_ Fundraising for projects
- \_\_\_ Committee Chairperson

- Research, writing articles and data base
- Planning, securing government permits
- Research, field study and collection
- Breeding fish, maintain breeders data base
- Restocking, publicity, lobby governments
- Programming, typing, network file server
- Selling, letter writing, grant writing
- Organize and coordinate commetee efforts

Please indicate below the field of study and species of most interest to you: \_\_\_\_\_

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