

# DESERT FISH SURVIVAL: The Long and Short of It

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Localized native fishes restricted to one or more springs or streams are highly vulnerable to man-made manipulations. Because of man's dependence on both ground and surface water, the number of endangered and extinct fishes will increase unless land planning, better water laws, and more effective fish protection programs are developed. Predicating preservation on the right to live or scientific value is not sufficient if a community believes its own survival is tied to water use. Fish protection has ridden the crest of general environmental concern but fish lack the emotive force of some bird and mammal species. Because of their dependence on a limited area, their survival offers an excellent educative tool on ecosystem protection.

Although interest in all forms of wildlife has spiralled in recent years, we have been made acutely aware of the ill effects of increasing development. The westward migration trends, desert agriculture, subdivisions, and energy development (hydrological, geothermal, coal, shale oil, and nuclear) are sprawling out into previously remote areas with limited water supplies. Because most surface water is appropriated (sometimes overappropriated) increasing emphasis is being placed on groundwater development. Furthermore, there is a strong tendency to use up the stored Pleistocene groundwater to start off development, often agricultural, then switch over to occupations requiring less water when nonrenewable water is used up. An added argument for using up this stored water is that water will only come up where it is wanted and is not then "wasted".

Such activities spell doom for fishes constrained to springs. Many forms are already extinct; many are endangered. (Those in rivers have already been drastically affected by water diversions and alterations i.e., the cui-ui, Lahontan cutthroat, woundfin, Colorado squawfish to mention a few in Nevada.)

At the present time the best hope for such isolated fish species lies at the federal level under the new Endangered Species Bill. However, the state-federal issue is so touchy, fish preservation can get lost in politics. Because communities should feel positive about local wildlife, state and local governments should be encouraged to understand the wildlife plight and to incorporate wildlife needs into planning for the future. The 1974 Federal Endangered Species Act encourages state motivation and may prod needed changes in state wildlife and water laws. The natural resource agencies and scientists can provide the information for such motivation. Conservationists and local citizenry can be brought more enthusiastically and knowledgeably into fish protection if the basis for such preservation is well-developed.

Desert fish are an ideal species for education and planning purposes. Because of their restriction to a limited habitat, threats to them are pinpointed. When a fish species lives in a small habitat, one cannot use the euphemism sometimes seen in literature "they had to move somewhere else" or "they retreated to more remote areas". When animals are moved from islands created by rising dams, or from the path of proposed highways, seldom is there any media discussion about whether other suitable areas for the animals exist, and, if so, why these habitats are not already occupied. The public, hearing about such projects, must be excused for presuming that wildlife is independent of its habitat. Except by transplanting, such options are not available for desert fish.

The survival of fish in its natural habitat is protection for nearby plants and animals dependent on the same water supply. Whereas the impact on the water source loss cannot always be noted on the more mobile birds and mammals, the loss of an entire fish form through water alteration is quickly comprehensible to the public. Furthermore there is less likelihood that the habitat will be modified to increase fish numbers than there is for some birds and mammals. Game animals have sometimes had their habitat modified to their advantage but not necessarily the advantage of other species.

A threatened desert fish is more likely to illustrate gaps and inadequacies in legislation and management than more widely dispersed species, where agency management is more diffuse. A species restricted to one state, or county, points up state obligations or lack of authority.

Fish do not evoke the immediate empathy that big-eyed baby seals, free-spirited and majestic wild horses, or closely structured wolf families do. But anthropomorphic identification is there in the vulnerability of a desert fish species: a small population within a limited area, restricted by long years of adverse conditions reminds man of his frailty and mortality, and his feeling of constant harassment by the fates.

The fish at Ash Meadows, Nye County, Nevada graphically illustrate the trials of fish protection. The Devils Hole pupfish, the most famous of the Ash Meadows inhabitants, has lived in only one part of one spring from 10,000 to 50,000 years. In 1969 the water level of Devils Hole started to decline at the same time a nearby ranching corporation started pumping groundwater.

Fortunately for the Devils Hole pupfish, it is protected by special circumstances. It is the only native Nevada fish to enjoy substantive safeguards. (Just how substantive they are is still being determined in the courts.) Those few species on Bureau of Land Management or Forest Service land often get the short end of multiple management, but the Devils Hole pupfish's sole purpose for the American public, is to continue to be as it has always been under the aegis of the Death Valley National Monument. A U.S.G.S. marker installed in 1963 removed any dispute about the history of water level in Devils Hole. The decline of water occurred at the height

of environmental concern when passage of the 1966 and 1969 Endangered Species Acts opened a new era of concern for wildlife.

That the Devils Hole pupfish is part of a particularly interesting family of isolated island species, fascinating for evolutionary studies, is also an added public attraction. The long involvement of Dr. Carl Hubbs and Dr. Robert R. Miller, both as scientists and conservationists, combined with the Phil Pister's dynamic and dedicated concern, gave the needed spark to develop solid public support, a support which may not previously have existed for a non-game fish.

The rapidly declining water level placed the federal government in a quandary and an unusual outlay of funds were expended for hydrology studies, a task force, and transplant efforts. Although the Federal Government has won the initial step in protecting the Devils Hole pupfish, it is instructive to ponder what implications the case has for other fish. The degree of concern for the Devils Hole pupfish was partially a result of its being confined to a single morphologically unique spring. Its limited population, small size, and number of studies gave additional popularizing values. Most of our fish species are scattered in several rather common springs and are more amenable to transplant efforts.

The Devils Hole pupfish case does not appear to have altered substantially the Division of Water Rights procedures for water allocation. Because so many of Nevada's fish species are in privately owned waters and surrounded by private lands, we must try harder to draw in a greater public. In the Ash Meadows area, the Bureau of Land Management has developed a refuge at School Spring, although it lacks clear title to the water. The Nature Conservancy has purchased the land around Big Spring. But until water rights are purchased and tested in court, the whole future of Ash Meadows remains clouded.

Fish are an important tool in getting the public to understand the importance of water allocation, land use, and wildlife survival. Most laymen are single species oriented and have difficulty comprehending complex ecosystems, or political and economic conditions. Scientists, natural resource agencies, and conservationists should work together to develop educational methods which obtain the needed changes.

The Desert Fishes Council, having worked conscientiously to protect the pupfish, is now reaching out to monitor and protect other desert fishes. It is, however, a small group, somewhat limited in what it can do by having so many members who are agency people. Most conservation groups, overwhelmed by vast numbers of issues, cannot afford much time and detail to a single fish species.

For fish survival to impose its needs on the public, information must be packaged in a way to make it most immediately effective. Miram Romero, a member of the Desert Fishes Council and many conservation groups, has drafted a format she believes would give the concerned person the kind of information he needs to act quickly. A summary of her suggestions is presented in Table 1.

When the International Union for Conservation of Nature and U.S. Redbooks were published, they were a great step forward in pooling necessary information to decide which species needed additional help. Yet we are all aware that fish survival depends as much on political and economic interests as it does on scientific knowledge. Governmental representatives and media are keys to wildlife survival. The more information available on who is who, the greater the fish's chances of survival. While the enclosed format may look formidable to you, most of the information could be quickly filled out by whoever is doing fieldwork.

I have added the additional category "Rationale". One cannot assume that existence vs. nonexistence is sufficient argument. Nye County, which hosts the Ash Meadows complex, has one of the largest land areas and one of the smallest populations in Nevada. Neighboring Clark County, with most of the state's human population, and, hence, political power, is eyeing surrounding desert valleys, all with endemic fish, one with a wildlife refuge, to supplement its water supply.

On the other hand, for rural communities to grow, they must depend on very limited water supplies. In Nevada, islands of private lands are surrounded by a sea of public lands. Almost all water is privately owned as is land around water supplies. In assuring the continuance of a rural America, and keeping U.S. public's options open, rural communities must be sustained and grow.

What will the protection of wildlife give this local community? What monetary gain do the fish represent? If we look again at Ash Meadows, we note that Nye County has received little. Nevada has gained little as well. The very minimal research monies have primarily gone out-of-state. If protection of the pupfish, and other desert fishes, is to be sustained over a long period of time, the community must receive some economic incentive, through tourism research, or recreation expenditures, or direct compensation.

In developing this rationale one should ask--What is special about this fish species? For the public to grasp the survival issue, it must feel a personal interest in its life history or its uniqueness. Wherever possible, the fish should be described in laymen's terms.

Is that particular habitat important to other wildlife species? Is this the only water supply for some miles around? Have anthropologists been interested in the area because of Indian artifacts? Is the water supply important for recreation, hunting, or fishing?

How will the diminishing water supply affect nearby people's water rights? As the watertable declines, obtaining water becomes more expensive. The quality drops. Citizens can be urged to demand stronger safeguards. In Ash Meadows, developers have attempted to instill a people vs. fish philosophy. The reality in Ash Meadows is big business vs. the small water right owner whose contribution seems negligible and his power nonexistent.

The survival of desert fish maintains a high quality of life by assuring adequate water supplies for limited development. The species' existence, together with other life forms in and around the spring, and the spring itself "wasting its sweetness on the desert air" assure diversity that many of us feel is essential for personal as well as ecological reasons.

**Table 1. Status information on endangered species<sup>1</sup>**

**Pinpointing the Subject: Species & Habitat**

- A.1. Geography: carefully described using topo map if available and distance from some known geographical point.
2. Status of species and habitat.
3. What is needed to preserve original habitat i.e. research, legislation, purchase.
4. What is needed to preserve ecological stability: how much water, what quality, vegetation, associated organisms.
5. Transplant projects: why, when, how many, how long ongoing, at what cost?
6. Legal Status of habitat and alternatives of that status.

**Getting into Action: Who's Who**

- B.1. Agencies involved: names, addresses, positions.
2. Governmental representatives: senators, representatives, county officials, regional government.
3. Scientists: those who have done work on the fish or are head of committees or organizations having some influence in developing management programs.
4. Conservation groups: Those directly concerned or which might become involved.
5. Media: Journalists and news broadcasters who are sympathetic: on local, regional, or national newspapers and television.
6. Agencies which might affect drainage or groundwater: Corps of Engineers, Soil Conservation Service, Division of Water Resources, Dept. of Health.
7. Members of Committees involved with fish protection.

<sup>1</sup>Developed by Miram Romero.

