



NEWSLETTER

of the Introduced Fish Section,  
American Fisheries Society

July 1988

Peter B. Moyle, Editor

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FROM THE PRESIDENT

The Executive Committee of the American Fisheries Society met in Seattle on 10-13 March, 1988. I was in attendance to represent the Introduced Fish Section. The growth of the Society in the past 20 years has been phenomenal compared to earlier years, and as the Society has grown it has become increasingly involved in issues influencing aquatic resources at both the national and international levels.

Because the opportunities and challenges facing the Society are always more extensive than the available personnel and budget, the Society must establish priorities. We now have a Long Range Plan developed with input from members who responded to a recent survey. The Plan provides formal guidance to the EXCOM and should help provide a continuity to priorities even though the membership of the EXCOM changes annually. The Plan remains flexible enough to adapt to changing ideas as the views of the members change in future years. The Long Range Planning Committee and the EXCOM has asked the Sections, Chapters, and Divisions to review the plan prior to the meeting in Toronto in September. Copies have been sent to officers of the Introduced Fish Section for review and will be provided to other members upon request.

The Society has established the AFS PRO Club, Professionals Recruiting Others, to stimulate membership recruitment. A notice about the PRO Club and a membership application form are included on pages 17 and 18 of this issue of the Newsletter. Recruit a new member and establish yourself as a PRO!

The Federal Fisheries Responsibilities Committee has developed a budget (\$40,500 for the first year and \$26,000 for the second year) to fund a quality campaign to improve management and reorganization of federal fisheries programs. The campaign would use newsletters, brochures, visual aids, personal meetings, and formal presentations to stimulate political motivation. Funding from outside of the Society is being sought, but assistance from the subunits, including the Introduced Fish

Section, is needed. I propose that we contribute \$500 to this project and ask that you consider it prior to the Section's business meeting in Toronto.

Other news of the Society includes the following:

1. Manuscripts submitted to the Society's journals are being processed and printed at a much faster rate than for nearly any other similar outlet. The capacity for manuscript publication in the Society may soon (or perhaps presently) exceed the rate of submittal.
2. The EXCOM approved the concept of a dues rebate to the Chapters similar to that now available to the Divisions. An implementation plan is to be prepared for consideration by the EXCOM in Toronto.
3. Proceeds from this year's annual raffle will go to the J.

Francis Allen Scholarship. Please let me know if you would like to work on the raffle or if you have ideas for contributions (fishing or hunting trips, books, prints, etc.) that might be donated in the name of the Section. Also each Section and other subunits are requested to sell (and also individually purchase) as many raffle tickets as possible. I have received a number of them and will quickly forward them to you upon request.

Recent Section activities include a review of the proposal to introduce zander in North Dakota, comments on the introduction of exotics into the Great Lakes via the ballast water of international vessels, and the appointments of Chris Kohler, Jim Clugston, and Mark Konikoff to the nominations and Ballot Committee. Contact me or one of the other officers if you desire or would like to contribute more information on any of these or other issues relating to the Section or the Society, and especially to receive your allocation of raffle tickets.

--Nick C. Parker  
205/683-6175

FROM THE EDITOR

This newsletter would be largely devoted to California problems if it were not for the frequent submissions of material to me from section officers, past and present, newsletter representatives, and faithful readers. In the latter category, I would particularly like to thank ERIC A. ISAACSON who apparently reads the LA Times from cover to cover and sends in the back page stories that deal with introduced fishes. Occasionally the stories are not hard to find--the LA Times devoted an entire page to the Nile perch under the headline "The fish that's killing Lake Victoria."

Recently two of our regional representatives resigned: KEVIN HOPKINS from the northwest and BOB HOWELLS from the southwest. Thanks to both for their contributions! HIRAM LI has agreed to replace Kevin, but a

volunteer is needed to replace Bob. The job is easy (just send in what you come across), and the psychic wages high. Any takers?

The response to my request for comments on print size of the newsletter did not cause any undue problems in my university's mail room, but the responses that did come in (including one from CARL SULLIVAN) indicated that keeping the information content high and the cost low was most important. This point was made particularly strongly by RALPH MANNS, a fishing writer, who uses the information in articles he writes (he recently published a good article in the In-Fisherman entitled "Tilpia: shooting ourselves in the foot again."). So unless we receive a major endowment or a massive influx in members, the newsletter format will stay the same.

--Peter B. Moyle

#### ZANDER I

The following is the text of widely distributed memo from executive director Carol Sullivan:

Based on the continued concerns of professionals in states and provinces adjacent or downstream of North Dakota and considering the option of requesting the Fish and Wildlife Service investigate zander for possible listing as an injurious wildlife species, Paul Brouha telephoned Dale Henegar, Commissioner of the North Dakota Game and Fish Department, to ascertain his current plans for importation of zander. Henegar was pleased with the inquiry and provided the following information:

A biologist has been assigned to complete the protocol and the job is nearly completed. Zander eggs should arrive in spring from a source in Finland. The stock has been repeatedly tested and no incidence of viruses has been found. When the eggs arrive they will be quarantined and a staff veterinarian and biologist at North Dakota State University-Fargo will continue to test and monitor the stock for disease. Eggs will be hatched at a secure chlorine-treated hatchery on the shore of Spiritwood Lake. Effluent from that hatchery will be chlorinated and normal isolation and prophylaxis procedures will be followed.

Assuming no decision is made to destroy the eggs and that the juvenile fish are successfully reared, plans are to introduce them into two closed basin lakes--Spiritwood Lake and Williams Lake. One is highly saline, and both are eutrophic lakes with normal game fish complexes (walleye, muskie, bass, panfish). It is illegal to possess any fish dead or alive from these lakes.

These fish will be monitored as they grow and interact with the fish complexes. Spawning success will be assessed (the

fish are reputed to readily adapt to artificial substrates in eutrophic lakes and to spawn later than walleye--when in North Dakota the weather has stabilized). Based on the data collected, an evaluation will be made of whether the zander possess desirable characteristics. The lakes can be poisoned and will be if the introduction doesn't look good (they evaluated the amur and poisoned them after they tested them--amur are now illegal in North Dakota).

It was pointed out to Dale that while on the basis of his explanation it appeared he had complied with most of the technical aspects of the protocol, he had not involved surrounding jurisdictions in publicity and review. He indicated he had not done so because he knew nothing more about the fish than was in the literature. He said he would involve surrounding jurisdictions in review when he had information based on local data and observations. He felt people knew they weren't going to "just throw these things around" and that no plans would be made to introduce the zander into the Red, Cheyenne, or Missouri Rivers before involvement of potentially affected jurisdictions.

Dale indicated that while the zander was a new fish to most people, he'd started looking into it in 1965 when most of the North Dakota reservoirs were new. He was looking for a fish that would fit into the new systems. He noted that Jim Ragan, Chief of Fisheries, had spent a week in Holland evaluating the zander and the similarity of the environmental situations and had concluded the species was ideal and would provide a real sporting opportunity. He ended his description by predicting the zander (he called it pike perch) would be widespread in 20 years.

Despite the described safeguards, Dale acknowledged there was no way to be absolutely sure there wouldn't be "minnow bucket" introductions. He noted anyone could import eggs in a thermos and stated he understood there was already a population of zander in upper New York state that had been privately imported.

Given the situation described above, it appears that North Dakota has largely followed the protocol even if they haven't shared their documentation and publicized their actions. We hope North Dakota will improve interstate fisheries science communications in order to increase the comfort level of neighboring jurisdictions.

In closing, I wish to suggest that the new USFWS Exotic Fish Lab in Gainesville, Florida, be asked to study and evaluate the zander. It seems high time that the fish either be formally cleared for introduction or perhaps classified as a potentially injurious species. It is my understanding that the Gainesville Lab was created for just such a purpose.

## ZANDER II

The following is a position paper by our president, Nick Parker:

The preliminary environmental assessment for introduction of zander into North Dakota has been reviewed by the officers of the Introduced Fish Section. Copies of the reviews by Peter Moyle, President-Elect, and Paul Shafland, secretary-treasurer, are enclosed. I have combined the verbal comments of Jim Clugston, immediate Past-President, and the major points of Moyle and Shafland along with my own views to develop a position that hopefully we can all support. Until further action is taken by the members, should they elect to do so, this response will be our "official" position.

It is probably impossible for anyone to evaluate introduction of non-native species without some bias. Probably within the Introduced Fish Section are some members that are opposed to movement of any species outside its native range. Others consider the potential benefits of some introduced species to far outweigh the risks. Most members probably agree that more information than that presently available for any proposed introduction would be desirable. However, resource managers must make decisions daily using information bases that are far from complete. It is with recognition of these inadequacies and our own biases that the proposal to introduce zander into North Dakota was evaluated.

It appears likely that zander will be introduced into the United States. Based on their experience with amur, which was evaluated and then eradicated from the state, the officials in North Dakota are expected to prudently evaluate the zander in two relatively isolated lakes to determine its suitability. They have stated their willingness to destroy all zander in the state should they prove to be undesirable.

It seems prudent for the Introduced Fish Section and the American Fisheries Society to neither support nor oppose introduction of the zander but to recommend an evaluation program to thoroughly quantitate changes in community structure if it is introduced. I would like to see a resolution somewhat similar to that passed by the Society regarding oil leases on the Alaska National Wildlife Refuge. It should state, "If the North Dakota Department of Game and Fish or any other agency introduces the zander into the United States, the Introduced Fish Section and the American Fisheries Society strongly recommend that a thorough ecological evaluation be conducted to quantitate changes in population structure attributed to this species." A study of this type would be of value not only to North Dakota, but also to managers in other states where zander might be introduced.

The sport fish qualities of zander should also be addressed. How are zander perceived in Europe where they were introduced?

What tackle is required? If they are perceived as desirable by anglers in North Dakota, what measures exist to prevent anglers from transplanting fish to other locations?

There are still several questions that should be answered. The reviews of Shafland and Moyle address other points in detail. However, I think that Paul Shafland's responses to the opinionnaires and his evaluation that the North Dakota personnel probably know more about the zander and waters in North Dakota than anyone else is correct.

The state has seemingly made a good faith effort to address concerns expressed by others. It also seems that the Society may have responded a bit hastily and without adequate information when the proposal was developed and passed in Winston-Salem to oppose introduction of zander. I hope that we can now temper that response and work with personnel of the North Dakota Department of Game and Fish to fully evaluate zander if they are to be introduced. The resolution passed by the Dakota Chapter could be reworded to be less confrontational and still deliver the concerns of the Society.



DELUDA Free Press - CHANDON © 1982 Los Angeles Times Syndicate  
August, 1892: J.A. Poppe, traveling from Holstein, Germany arrives on our shores with five carp, the first to be introduced to America.

Editor's note: Carp were actually first introduced in 1872 by Mr. Poppe, who brought them to California by ship from Germany. Only five survived the trip, but it was enough to start Poppe in the business of selling carp, descendants of fish tough enough to survive a trip around Cape Horn!

#### AUSTRALIA TAKES THE LEAD AGAIN

In the last issue of the newsletter, an abstract was published detailing how Australia after careful consideration had banned the introduction of Nile perch. A further indication of this cautious approach to introductions can be found in FAO Circular No. 757 "A review of fish stocking in the large reservoirs of Australia and New Zealand" by P. L. Cadwallader (Snoba Creek Freshwater Fisheries Research Station, Fisheries and Wildlife Division, Ministry for Conservation, Victoria, Australia). The abstract is as follows:

This is a review of stocking native and exotic fish species in Australian and New Zealand reservoirs. As the sport fishery is the far dominant type of fishing activity on these water bodies, most effort has been spent on stocking salmonids. Salmo gairdneri and S. trutta have been the main species stocked in reservoirs in New Zealand and the cooler parts of Australia. In New Zealand, S. gairdneri are self-sustaining and form the basis for a major recreational fishery. Trout stocking aspects are dealt with in detail, and alternatives to stocking with trout are suggested. More recently, there has been a tendency to stock preferentially native fish wherever ecological conditions allow. There is great scope and potential for stocking indigenous fish, particularly in south-eastern Australia, but Queensland is at present the only Australian state whose reservoir stocking is now based entirely on Australian native fish.

#### PAPUA NEW GUINEA TAKES A CAUTIOUS APPROACH TO INTRODUCTIONS

A paper that your editor highly recommends to IFS members is "Considerations of fish introductions into the Sepik River, Papua New Guinea" in Aquaculture and Fisheries Management (1987, 18:231-241) by David Coates. This paper describes some of the problems faced by fisheries managers in developing countries. The abstract:

The fish fauna of the Sepik River system, Papua New Guinea, is described. The fish species diversity in this large river is low, even by comparison to other rivers in the south of the island. There are particular biological constraints to increasing the yield of the fishery based on native fish stocks. The introduction of appropriate fish species would significantly improve the stocks upon which the fishery is based. The economic cost of stocking is not an issue. Yield estimates suggest that the long-term benefits of improved stocks could be considerable, especially important for a protein-malnourished population of Papua New Guinea. The indigenous freshwater fish fauna is unique and arguments against stocking relate to the conservation of that fauna and the existing fisheries. Alternatives to stocking are discussed. If stocking does not occur, then a permanently disadvantaged fishery must be accepted. Decisions rest with

the government and will be based on further research and consideration. Considerations must relate to the particular inland fisheries development problems in the country. The approach being taken is to appraise fish introductions properly before they occur. A cautious approach is recommended, and suggestions about particular species that might be suitable for introduction are premature at present.

#### USDA MAY GRANT APPLICATION FOR TESTS OF GENETICALLY ALTERED CARP

The U.S. Department of Agriculture's Office of Agricultural Biotechnology may grant researchers from Johns Hopkins University in Baltimore and Auburn University in Alabama permission to test genetically altered carp in outdoor ponds.

Researchers from the two universities genetically modified the carp by adding a growth control gene from rainbow trout to the carps' normal gene structure. The result, they claim, are carp that on average grow 20% faster with a better feed ratio than unmodified carp.

"We have applied for the permit to test the fish in outdoor ponds because we really feel that we have gone as far as possible using only laboratory or indoor research," says Dennis Powers, chairman of the biology department at Johns Hopkins. "There are a number of basic research questions that we need to investigate under outdoor conditions. For example, not all the modified fish have a greater growth rate at what would be outdoor temperatures. Some actually grow more slowly."

Powers says that there is not yet enough data to determine whether the extra gene in the carp can be passed on from generation to generation, or just what the controlling mechanism is behind the faster growth. The ability to pass the gene on is especially critical because the technique for inserting the gene is not very reliable or economic. "If we had to insert the gene for every generation of fish," Powers says, "the technology could not be economical."

If tests are allowed, the carp will be housed in a number of small ponds at the Auburn University Fisheries Center in Auburn, Alabama. The ponds, Powers says, will be closed off from other water sources and covered by wire mesh to prevent birds from foraging the fish.

Critics of the proposal are concerned that the application to test the fish outdoors is being reviewed by USDA without any agreed guidelines and that without guidelines "grave mistakes" could be made.

"We have never before had the ability to create a fish species that would not exist in nature," says Andrew Kimbrell, a lawyer for the Washington based Foundation on Economic Trends. "Under natural conditions, trout and carp do not mate so when we create new species for our own industrial purposes we are really playing God. Already we are spending lots of money cleaning up the results from other industries that we began without thinking ahead. Do we want to make some of those mistakes again?"

Officials at USDA say they hope to be able to give a yes or no decision on the ban by the end of September. Researchers involved with the project say they have similar research going on with trout, salmon, and striped bass.

---Washington Aquafarm Letter 5(10): 1-2.

UNEXPECTED PROBLEMS DEPARTMENT I

If you did not read closely Jim Deacon's fascinating article in Fisheries (13:18-24), you would have missed a cautionary tale about the unexpected effects of fish introductions. The article deals with the woundfin, Plagopterus argentissimus, an endangered species. One of the causes of the decline of the woundfin is heavy infestations by Bothriocephalus acheilognathi, the Asian fish tapeworm. This tapeworm was introduced into North America with grass carp, Ctenopharyngodon idella, which transmitted it to red shiner, Notropis lutrensis, among other fishes. The red shiner was introduced into the Virgin River drainage, bringing with it the tapeworm. The shiner appears to be displacing the woundfin, but the tapeworm may be the main mechanism responsible. For further information see the excellent papers by IFS member R. Heckman, coauthored with J. Deacon and P. Greger in Great Basin Naturalist (1986, 46: 662-676) and J. Parasitology (1978, 73: 226-227).

RUFF FISH IN FOR TUFF TIMES?

The most newsworthy introduced fish story of recent months was the discovery of a reproducing population of ruff, Gymnocephalus cernua, in the St. Louis River estuary of Lake Superior. Clippings from newspapers as disparate as the Bergen Record and the Los Angeles Times were sent to the editor. The ruff is a small (to 25 cm) carnivorous percid that is widely distributed in Europe but has little favor as a sport fish. The biggest fear from the introduction is that the ruff will compete with or prey on the young of more desirable native percids such as walleye or yellow perch. The ruff was apparently introduced by way of ballast water pumped from a ship, the means by which a number of other species have also been introduced into the Great Lakes. The various fisheries management agencies concerned with Lake Superior are investigating ways to eradicate the fish. They are also looking for ways to reduce the probability of more organisms being introduced by ballast water (Information provided by W. H. LEGRANDE.)

The introduction of fish and invertebrates by ballast water is a world-wide problem whose scope is little appreciated. For a recent review see J. T. Carlton 1985, Transoceanic and interoceanic dispersal of coastal marine organisms: the biology of ballast water. Oceanogr. Mar. Biol. Ann. Rev. 23: 313-371.

The following was presented by Jon G. Stanley to the Great Lakes Fisheries Commission:

In 1983 or 1984 ships from Europe probably discharged ballast water containing Bythotrephes cederstroemi, a large Cladoceran zooplankton. In December 1984, it was found in Lake Huron and by Fall 1985 it was throughout Lakes Erie and into Lake Ontario. By August 1986 it populated Lake Michigan and in 1987 all of Lake Superior.

Bythotrephes has not become very abundant, but it is very important in Great Lakes communities. Because of its large size it is an easy target for several fish. In Lake Erie, it is eaten by yellow perch, white bass, walleye, and white perch. In 1986, it was abundant in the diet only in July, whereas in 1987 it had become so abundant that all four species consumed it from June through October and it was the most abundant food item for yellow perch and white bass. All age groups ate Bythotrephes except walleye older than three years. In Lake Superior, it is the prey of coho salmon and brown trout. Probably all planktivore fish select Bythotrephes.

This exotic has the potential for causing significant changes in community dynamics. Because it is relatively large it preys on all sizes of zooplankton. John Lehman from the University of Michigan believed it caused a 10- to 50-fold drop in abundance of Daphnia species that graze on algae. The algae abundance, however, did not change. The loss of Daphnia could affect fish that normally feed on them.

We are lucky this time because Bythotrephes appear to be a desirable fish food and should not become much more abundant than they are now. They are only a minor nuisance in fouling lines and nets. Next time ballast water could contain exotic organisms or diseases that bring economic disaster.

Editor's note: Donald Scavia et al. (1988, Can J. Fish. Aquat. Sci. 45: 165-177) present a model of plankton dynamics in Lake Michigan in which they state: "We conclude that summer plankton composition in Lake Michigan is controlled largely by predation. The model further predicts a return to a plankton community similar to that in the 1970's under a scenario of increasing invertebrate predation by ... Bythotrephes cederstroemi."

RESOLUTION ON AQUACULTURE AND SPECIES INTRODUCTIONS

The Fish Genetics Section passed the following resolution at the last AFS meeting:

Whereas, aquacultural fisheries in the United States are an increasingly valuable and significant economic national resource; and

Whereas, aquaculturally developed products, introduced exotic species, hybrids, and genetically engineered fishes and aquatic organisms have the potential to impact or influence the genetic diversity of natural fishery stocks--if sound methodologies are not employed to control escapement, placement, disease and interspecific hybridization; and

Whereas, stewardship of our natural resources is a shared government and public sector responsibility; and

Whereas, management of natural fishery resources, including strains and stocks of fish and other aquatic organisms, at the government and public sector levels is often fragmented; and

Now, therefore, it is resolved, that the Fish Genetics Section of the American Fisheries Society, in concert with others, should support aquacultural development; however, at the same time encourage and participate in efforts to see that aquaculture and introduction of exotic species be integrated as tools to enhance or protect our natural fishery populations by ameliorating pressure on them, being careful that these developments do not compromise the genetic integrity of these natural fishery resources;

Also, be it resolved, that the Fish Genetics Section of the American Fisheries Society and its parent organization establish procedures and guidelines for evaluating and/or surveying species, hybrids, and genetically engineered fishes and other aquatic organisms to be considered for aquaculture or introduction to natural and man made habitats and establish procedures and guidelines to determine potential impacts on resident natural populations of aquatic organisms;

And also, be it resolved, that the Fish Genetics Section of the American Fisheries Society recommends that the parent organization adopt a similar resolution in support of controlled aquaculture and introduction of exotic species and conservation of natural fishery populations.

A RUDD AWAKENING

As if the ruff was not enuff, we now have to worry about yet another European import, the rudd, Scardinius erythrophthamus, thanks in good part to the unrestricted importation and rearing of the fish by bait dealers. The following is a condensed version of a research information bulletin on this fish prepared by the National Fisheries Center (USFWS, J. A. McCann, director).

The rudd is a member of the minnow family (Cyrinidae) native to Europe and central Asia. Rudd was recently re-imported into the United States for use as a bait minnow. Alabama and Florida currently have regulations prohibiting importation of rudd, and several other states are considering similar action. The rudd is tolerant of a wide range of environmental parameters.

The rudd resembles the golden shiner (Notemigonus crysoleucas). Maximum reported length is 41 cm TL and weight is 2.06 kg. Lengths of 20-30 cm are typical in most areas. Maximum known age is 17 years, but most adults live 10-12 years.

Rudd inhabit shallow, vegetated areas of canals, reservoirs, lakes, and slow-flowing streams. Its diet consists of insects, snails, crustaceans, vegetation, and occasionally small fish and fish eggs. Rudd attain sexual maturity at 2-4 years of age, at a length of 11-14 cm.

Alabama: Rudd were distributed to several bait dealers in central and northern Alabama in August 1987. Tanks at one bait shop overflowed during the fall of 1987, resulting in the escapement of rudd into First Creek, near Rogersville, Lauderdale County. Fish from another dealer in Pell City, St. Clair County, were confiscated by State Game and Fish agents in February 1988.

Arkansas: Rudd were introduced into Arkansas at least three years ago for culture as a potential bait minnow. Six minnow farms have had moderate success propagating this species. Floods in the fall of 1987 inundated over 4000 acres of minnow ponds in Loanoke and Prairie Counties, resulting in the escapement of rudd. We have one report of a collection of rudd from the White River Drainage, Prairie Country.

Maine: The Maine Department of Inland Fisheries and Wildlife reported the first specimen of rudd taken in the state was from Cobbosseecontee Lake, Kennebec County, in 1973. Currently, this species is established in two tributaries of the Kennebec River, Kennebec County.

New York: Rudd were first reported from New York in 1925. In 1969, three specimens were collected from tributaries of the

Hudson River: two were taken from a portion of the Roeliff-Jansen kill and one from Copake Lake, Columbia County. The establishment of the rudd in this area was confirmed in 1980.

North Carolina: One bait dealer in South Carolina reports receiving shipments of rudd from a dealer in Stanly County, North Carolina, who purchased his stock from a minnow farm in Arkansas.

South Carolina: Rudd are being marketed as largemouth bass bait by one dealer in Florence County.

Tennessee: Rudd were sold by one aquarium shop in Knoxville as an ornamental fish. This stock came from another fish distributor in Knox County, but it is not known how widely rudd have been distributed in the state.

In its native habitat, rudd survives in waters that are iced-over during winter months. In some areas, it tolerates summer temperatures as high as 37.8 C. It survives in brackish water up to 10 ppt. Given this, rudd have the potential to become established in all fresh waters of eastern, central, and western North America, including the southern portions of Canadian provinces bordering the United States, southward to at least central Florida. It is possible that it could become established as far south as southwestern desert streams and southern Florida. The most likely potential for establishment is in the southeastern United States.

Rudd have the potential for competing with and depredate on native fish species. It is an omnivorous feeder and has been shown to switch its diet if competition exists. It also is able to tolerate adverse water quality conditions and should do well in shallow weedy habitats where population increases can be expected. While its population has remained low in the northern United States, it will likely become locally abundant in areas of suitable habitat in the southern portion of the United States. It also could potentially hybridize with the related golden shiner.

Rudd distribution discouraged.

Very little is known about rudd and its potential impact on native fishes and aquatic ecosystems in general. Until research has been conducted to determine its value as a bait minnow and its potential impact on native fishes, we recommend that its distribution be discouraged.

For further information, contact: Jim Williams or Dawn Jennings, USFWS, National Fisheries Research Center, 7920 N.W. 71st St., Gainesville, FL 32606.

#### INTRODUCING THREATENED AND ENDANGERED (T&E) SPECIES

In a commendable effort, the Western Division of AFS has developed guidelines of the introduction of T&E fishes. Recommendations for such introductions were drafted by Jack Williams, Don Sada, and Cynthia Williams, with the help of 11 other biologists. The report will be published soon in Fisheries, but a preview of the coming attraction is provided here.

Introductions of threatened and endangered fishes often are an integral feature in the recovery program for these species. More than 80% of threatened and endangered fishes have recovery plans that call for introductions to establish a new population, supplement an existing population, begin artificial propagation, or establish an educational exhibit.

Despite the large number of introductions that have occurred in recent years and are proposed for the future, no systematic procedure to conduct these introductions has been developed. As a result, introductions of some rare fishes have been successful while recovery for many species has progressed slowly. In at least one instance, the introduced fish eliminated a population of another rare native organism.

Draft guidelines for introductions of endangered and threatened fishes are presented. The guidelines are intended to apply when an introduction is proposed to supplement an existing population or to establish a new population. However, portions of the guidelines may be helpful in other situations, such as establishing a hatchery stock. The guidelines are divided into three components: (1) selecting the introduction site, (2) conducting the introduction, and (3) post-introduction monitoring, reporting, and analysis. Implementation of these guidelines should increase the success of future efforts to recover rare fishes.

#### CONFERENCE PROPOSED ON MARINE FISH REINTRODUCTIONS

Dr. Joseph J. Graham, Fisheries Research Laboratory, Maine Department of Marine Resources, W. Boothbay Harbor, ME, 04575, is proposing a conference on the reestablishment of marine fish populations, especially herring, in Georges Bank. The abstract of his proposal is:

The goal of the planning conference is to publish, using historical and present scientific knowledge, the best approach(es) to inoculating an area with a particular stage(s) of herring leading to the reestablishment of a population. Application of these deliberations to other fresh and salt water fishes would be explored to detect generalizations common to many species. Successful reestablishment in the case study area (Georges Bank) could reestablish a valuable fishery and directly benefit the coastal herring fisheries of

the United States and Canada. The conference working divisions are: (1) inoculation with life history stages, (2) environment and ecological conditions, (3) scale of inoculation, (4) verification of inoculation, and (5) interaction of inoculation with fisheries.

#### UNEXPECTED PROBLEMS DEPARTMENT II

The following is the abstract of: Widespread hybridization between native Atlantic salmon, Salmo salar, and introduced brown trout, S. trutta, in eastern Newfoundland by E. Verspoor from J. Fish. Biol. 32: 377-384:

Hybridization between native Atlantic salmon and introduced brown trout was found to occur at a mean frequency of 0-9% in Atlantic salmon populations in eastern Newfoundland. Hybrids were detected in five of the 10 watersheds studied, but consideration of sampling error suggests that they could have been present in the remaining five watersheds although they were not detected. The frequency found in the Newfoundland and other North American salmon populations is significantly greater than the 0-3% reported for salmon populations in the British Isles, and both are higher than frequencies observed in salmon populations in Sweden. The higher frequency in North America is in accord with the prediction that hybridization between species will be more frequent where one species is introduced than in areas where both are native.

#### ANYONE OUT THERE STUDYING GOLDFISH ECOLOGY?

Dr. F. G. Whoriskey, Jr. (Dept. of Renewable Resources, Macdonald College of McGill University, 2111 Lakeshore Rd., Ste. Anne de Bellevue, P.Q. Canada H9X 1C0) needs to contact other biologists who are studying the ecology of wild goldfish, or who know of reports on the subject. He states "I have found the published literature on feral goldfish to be very thin (nonexistent, actually)."

#### MYSID SYMPOSIUM PLANNED FOR TORONTO AFS MEETING

The Mysid/Fisheries Symposium will be a one-day special session within the AFS annual meeting. The ecological role of Mysidaceae is of international interest due to their behavior and impact upon zooplankton communities, fish populations, and sport fisheries. Introduction of Mysis relicta to enhance fish forage and fisheries has been widespread. Accumulated evidence indicates the impacts of mysid introductions are mixed, with emerging problems as well as some benefits for fisheries management. For information, contact Eric Bergersen, Colorado Cooperative Fish and Wildlife Research Unit, 201 Wagar Building, Colorado State University, Fort Collins, CO 80523, 303-491-6942.

#### TEXAS ADOPTS SOME RESTRICTIONS ON TILAPIA

Austin--The Texas Parks and Wildlife Commission has adopted rules governing possession of tilapia, an Asian fish that has made inroads into some public waters of the state.

Meeting in Austin, the commission approved regulations intended to stop the spread of tilapia in public waters while allowing use of certain tilapia species for human food and as live forage in private ponds.

The rules place all species and hybrids of tilapia on the Partially Restricted Fish List. No live tilapia can be placed in public waters. Blue tilapia, Mozambique tilapia, and hybrids of the blue and Mozambique tilapia may be cultured under a Tilapia Permit and Fish Farmer License for use as human food. Mozambique tilapia only may also be used as live forage in private waters completely surrounded by private land.

The regulations also said the blue, Mozambique, and hybrids between the two may be possessed by aquarists under proper permits and licenses.

Tilapia caught in Texas public waters must be immediately killed unless they are being collected by a licensed fish farmer under a Tilapia Permit for use in an aquaculture facility. Culture and transport of blue and Mozambique tilapia or their hybrids are permitted under specific guidelines and restrictions, including the certification of tilapia as to species, according to the rules.

#### UNEXPECTED PROBLEMS DEPARTMENT III

The following was submitted by past-president Jim Clugston from the Florida Fish Farmer, a newsletter of impeccable reputation. It therefore must be true, even if it does not cite the National Enquirer:

Outraged and hurt by her husband's constant extramarital affairs, an angry woman tried to end his love life completely by dumping six killer piranha fish in his bath.

Melvin Deiro, 36, finally managed to drag himself out but only after being bitten dozens of times. He needed nearly 100 stitches because of the nasty bites from the ferocious piranha. Meanwhile, his wife Giselle was charged with aggravated battery after her husband was treated at a nearby hospital, charges, Melvin says, he'll now drop.



## Join the Introduced Fish Section

(You must be a member of AFS parent society)

Please fill out and return to:

American Fisheries Society  
5410 Grosvenor Lane, Suite 110  
Bethesda, Maryland 20814-2199

Date \_\_\_\_\_ Recommending Member \_\_\_\_\_

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State/Providence \_\_\_\_\_ Country \_\_\_\_\_

I am a member of AFS and have paid my 1988 dues. Therefore, I would like to pay for the Introduced Fish Section dues only - \$3.00.

I would like to join AFS and the Introduced Fish Section. I would like to pay:

- \* Domestic Rate (\$37.00) plus Water Quality Section (\$3.00), for a total of \$40.00.
- \* Domestic Rate (Student) (\$18.50) plus Water Quality Section (\$3.00), for a total of \$21.50.
- \* Foreign Rate (Student) (\$20.50) plus Water Quality Section (\$3.00), for a total of \$23.50.

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Bethesda, Maryland 20814-2199

Paul Shafland

Paul Shafland received a B.A. from Luther College and a Master's Degree from Southern Illinois University. In 1975, he was employed by the Florida Game and Fresh Water Fish Commission as Assistant Project Leader of Non-Native Fish Research. He currently serves as Director of the Commission's Non-Native Fish Research Laboratory and Leader for state-wide Species Directed Research Section. Paul's main research interest involves the assessment and management of exotic fish in Florida. Paul has been a member of the American Fisheries Society since 1973, and has participated in the Introduced Fish Section and its predecessor, the Exotic Fish Committee, since 1979. He served as IFS' Secretary-Treasurer for the past two years and is co-organizer of this year's IFS sponsored special session to be held at the parent society's annual meeting in Toronto.

Carl J. Sindermann

Dr. Carl Sindermann is a Research Biologist with the National Marine Fisheries Service and is currently on the staff of the Oxford (Maryland) Laboratory. Formerly director of marine laboratories in New Jersey, Maryland, and Florida, he has been active in international Council for the Exploration of the Sea's Working Group on Introductions and Transfers of Marine Organisms, as well as a member of the U.S.-Japan Joint Natural Resources Panel on Aquaculture. He has held adjunct professorships at a number of universities, including the University of Rhode Island, the University of Guelph, Cornell University, and Georgetown University, and was earlier on the faculty of Brandeis University.

He is the author of more than 100 technical papers in marine biology and three technical books, one of which received an outstanding publication award

from the Wildlife Society of America. He has edited four other technical books and, until recently, served as editor of the "Fishery Bulletin.

#### Al Zale

Al Zale is Assistant Unit Leader/Fisheries at the Oklahoma Cooperative Fish & Wildlife Research Unit at Oklahoma State University. His current research, in conjunction with the Oklahoma Department of Wildlife Conservation, focuses on management-oriented problems concerning introduced striped bass in large rivers and reservoirs (summer mortality, exploitation, movements), hydropower impacts on fisheries, and population dynamics (crappie, smallmouth bass, leopard darters). He received his B.S. in Fisheries from the University of Massachusetts, Amherst, in 1978 and concurrently worked as a technician for the Massachusetts Cooperative Fishery Research Unit. His master's research at Virginia Tech concerned life histories of freshwater mussels. Al obtained his Ph.D. from the University of Florida in 1984; his doctoral research involved investigation of a variety of applied aspects of the thermal biology, ecology, and life history of the exotic blue tilapia in Florida. Following graduation, he remained at U.F. on a postdoc assessing impacts of waterfowl management on estuarine fisheries, prior to moving on to Oklahoma in 1985. Al currently serves as chairman of our membership committee and is an active participant in the Oklahoma Chapter of AFS.

#### Dawn Jennings

Dawn is a fishery research biologist with the Fish and Wildlife Services's National Fisheries Research Center in Gainesville, Florida. Since 1981, she has taken an active role in the Service's exotic fish program at the Gainesville Center. Her responsibilities include monitoring the status and distribution of

nationally established exotics, investigating the feasibility of newly proposed introductions, and providing information exchange with federal, state and private agencies. She has prepared an extensive test protocol for the Center to use for evaluating non-native fishes proposed for introduction. Her interests are in the areas of behavioral ecology and environmental physiology of exotic and endangered species. She received her B.S. degree in 1981 and is currently completing her M.S. degree at the University of Florida while working full-time for the Center. Her thesis research is investigating behavioral aspects of cold tolerance in Sarotherodon melanotheron at different salinities. Dawn has been a member of the introduced fish section since 1983.

## Join the PRO Club

As a member of the American Fisheries Society you recognize how important AFS is to you as a professional and how much the Society is doing to influence our profession, fisheries science, and resource management. Are you, however, aware that only about one-half of the fisheries professionals in North America belong to AFS? Did you know approximately 30% of Chapter members are not members of the Society?

Therefore, the AFS Executive Committee has sanctioned the establishment of the AFS PRO Club--Professionals Recruiting Others. This incentive program will work as follows: Once you have recruited a new individual, associate, or library member for AFS, you are a new member of the current year's PRO Club. When you recruit 10 members, you become a life member of the PRO Club and will receive a gold AFS PRO Club pin. Also, in September 1988, at the Toronto annual meeting, we will hold a drawing for a fishing trip to Alaska in conjunction with the 1989 AFS annual meeting. You could win that super trip by recruiting one member between now and August 15th. You don't have to be present to win; however, we will have a "by invitation only" social at the meeting for all AFS PRO Club members and the person(s) they recruit.

So share in the AFS experience--strengthen your professional society--join the AFS PROs!!!

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open, volunteer needed

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July 1988