



NEWSLETTER
OF THE EXOTIC FISH SECTION
AMERICAN FISHERIES SOCIETY

June, 1984

Neil E. Carter, Editor

Volume 4, Number 2

From the President

As most of you are probably aware, the Exotic Fish Section is sponsoring a Session at the upcoming annual meeting of the American Fisheries Society to be held at Cornell University on August 12-16. More information is provided in this newsletter, and I hope many of you will be able to attend.

Much interest has recently surfaced covering various aspects of exotic fish issues. First of all, the Fish Culture Section and Fisheries Management Section are co-sponsoring a symposium entitled "The role of Fish Culture in Fishery Management". That symposium will be held at Lake Ozark, Missouri on March 31-April 3, 1985, and will devote an entire session to the role of exotic species introductions in fisheries management. I am sure many members of the Exotic Fish Section will want to attend this symposium. Secondly, a congressional hearing was just recently held that covered the spectrum of introductions of exotic organisms. Needless to say, fish received considerable attention. It is likely that once the election year has passed that we will see more of such congressional activity. A third area of activity has resulted from the Environmental Concerns Committee of AFS. They have asked that a Policy Statement on the issue of fish introductions, be developed by our Section. Walt Courtenay and I will be spearheading that activity over the next year. Apparently the 1973 policy statement developed by Courtenay and Robins has never been perceived as a policy statement, largely because it focused on Florida.

Standish Allen of the University of Washington has accepted the Chairmanship of the Grass Carp et al. Committee. He is rapidly forming a committee which will meet at the Cornell meeting. The following question was put to me recently by a well-known aquatic ecologist in Illinois: "Why was there so much ruckus raised about grass carp but virtually nothing is being said about bighead and silver carp?" I refer that question over to Allen's committee.

Enclosed in this newsletter are the results of the questionnaire regarding the Scope of the Exotic Fish Section. The results are self evident, and I am sure you can draw your own conclusions. Needless to say, this will be a major item on the agenda for our annual meeting at Cornell. Be ready to voice your opinions.

Also enclosed in this newsletter are descriptions of the candidates for next year's officers of the Exotic Fish Section. Please mail in your ballots.

Christopher C. Kohler

NEWS ITEMSThe 1984 AFS Annual Meeting

The program for the August 12-16 AFS Meeting at Cornell University is advertised as having "Something for Everyone". The theme of the meeting is Fisheries Management 1984: Philosophy, Science, Economics, and Politics. Of special interest to our membership is a session on Introduced Exotic Organisms. The Session's program listing and abstracts are given below as notification.

Strategies for Reducing Risks of Introduced
Aquatic Organisms

Sponsor: Exotic Fish Section

Convenor and Moderator: Dr. Christopher C. Kohler, Southern Illinois University,
Carbondale, Illinois

1. Introductory Comments to Session 10 min.
Christopher C. Kohler

ABSTRACT

Natural resources administrators are routinely called upon to make decisions regarding the well-being of ecosystems under their jurisdiction. Not the least of these are decisions concerning proposed introductions of exotic species. With respect to fishes, exotic species may be introduced for fisheries management or aquaculture, or they may be ornamental fishes intended for the home aquarist market.

The establishment of an exotic fish or other aquatic organism in an open waterway rarely occurs without consequences. Decisions regarding each introduction should be based on information that elucidates the potential benefits and risks. This Session will address strategies for reducing risks of introduced aquatic organisms on global, national and state levels. Special considerations with respect to aquacultural practices will also be discussed.

2. International Action for the Assessment and Control of Risks of Introduction of Exotic Aquatic Organisms
Robin L. Welcomme, Food and Agriculture Organization of the United Nations,
Rome, Italy 20 min.

ABSTRACT

Transfers of fish species between countries have been carried out with increasing frequency in the last two decades. While many such introductions have been of great benefit in that they have formed the basis for new fisheries or for expanded aquaculture, others have created growing international concern. It is obviously impractical to ban any future transfers of fish species but it is essential to ensure that any such introductions are beneficial both through the acquisition and dissemination of appropriate information and by the development of international understanding and agreement.

3. A Marine Perspective on Strategies for Reducing Risks of Introduced Aquatic Organisms
Carl J. Sindermann, National Oceanic and Atmospheric Administration,
Northeast Fisheries Center, Sandy Hook Laboratory, N.J. 20 min.

ABSTRACT

Transfers and introductions of marine species have occurred and are occurring on a worldwide basis, principally in response to perceived needs of expanding marine aquaculture industries. Greatest interest at present is in salmon (cage rearing and ocean ranching), shrimps, and bivalve mollusks, although other species are being considered. Any reduction of risks in these operations requires effective communication, adoption of codes of uniform practices, and attempts at international uniformity in inspections and regulations. The North Atlantic nations, functioning through the International Council for the Exploration of the Sea (ICES), have made some progress in satisfying each of these strategic requirements, and this activity may be taken as a model for other regional and national efforts. Adoption of a code of standard practices, development of uniform inspection protocols, and timely communication at appropriate levels are principal ingredients. A major concern, logically, is the introduction of diseases not presently endemic in an area or hydrographic zone. Recent worldwide transfers of a virus pathogen of penaeid shrimps can serve as an excellent example of the need for attention to an emerging problem. Examples of other potential effects, such as introductions of seaweeds which have negative ecological impacts, have already been seen in the coastal waters of several countries. Because of the virtual irreversibility of actions taken in marine waters, the problem of introductions is particularly acute, and calls for concerted international response.

4. Reducing Risks of Introduced Aquatic Organisms in North America
Walter R. Courtenay, Jr. and Jeffrey N. Taylor, Florida Atlantic University,
Boca Raton, FL. 20 min.

ABSTRACT

North American waters contain a variety of introduced aquatic plants, invertebrates, and fishes. Many species are exotic (of foreign origin) but most are transplants of native forms. While carelessness and accidental releases have led to the establishment of the majority of introduced aquatic organisms, a significant number have been purposefully or intentionally released, often without forethought or research as to their negative impacts on other living resources and habitat.

Introductions remain an important tool in fisheries management, but must be conducted on sound ecological bases rather than as expedients as has often characterized the past. Strategies are considered in the context of aquatic resource management for reducing risks of future planned introductions in North American waters. Because introduced species do not respect political boundaries, greater interstate, interprovincial, and international cooperation is required regarding introductions.

5. Reducing Risks of Introduced Aquatic Organisms: The Federal Perspective
James P. Clugston, U.S. Fish and Wildlife Service, National Fisheries
Research Laboratory, Gainesville, FL 20 min.

ABSTRACT

Executive Order 11987 on exotic species was signed by President Carter in May, 1977. This order generally instructs executive agencies, such as the Department of Interior, to restrict the importation and introduction of exotic species into natural waters of the United States. The Lacey Act, first enacted in 1900, and the National Environmental Policy Act of 1969 (NEPA) are the basic authorities for Federal agencies to carry out this order. The Lacey Act gives the Secretaries of Interior and Commerce the responsibility of restricting the importation of species considered injurious to humans or the Nation's wildlife resources. NEPA requires each Federal agency to prepare an environmental impact statement on any major action they propose which will significantly affect the environment.

The Fish and Wildlife Service, as part of the Department of Interior's charge, initiated a program in 1977 at Gainesville, Florida, to conduct and coordinate research on beneficial and potentially harmful characteristics of non-native fish introduced or considered for stocking into United States waters. Although funds were not available during ensuing years for laboratory construction and total staffing, numerous contract and cooperative exotic fish research projects were conducted. However, in 1983 Congress provided \$4,000,000 to build this facility. Construction of the main laboratory building began in early 1984 and is scheduled for completion in spring of 1985.

6. A Review of Florida's Efforts to Regulate, Assess and Manage Exotic Fishes
Paul L. Shafland, Non-Native Fish Research Laboratory, Florida Game and
Fresh Water Fish Commission, Boca Raton, FL 20 min.

ABSTRACT

More exotic fishes are established in Florida than in any other state. Some of these fishes are very successful in terms of range extensions and abundance. This situation is of considerable concern to the Florida Game and Fresh Water Fish Commission and has resulted in development of multifaceted programs. Existing programs can be grouped into three categories: prevention, assessment and management. Prevention involves law enforcement activities, coordination and education of concerned persons and, when possible, elimination of localized populations of exotic fishes. Assessment of released exotic fishes is accomplished via an active research program. Management practices involve commercial fishing and introduction of piscivorous gamefishes. This report briefly discusses these programs and concludes that they effectively address the existing situation in a manner commensurate to its importance.

7. An Aquaculture Perspective on Strategies for Reducing Risks from Introduced Aquatic Organisms
Jon G. Stanley, U.S. Fish and Wildlife Service, Washington, D.C. and
William L. Shelton, University of Oklahoma, Norman, OK 30 min.

ABSTRACT

Aquacultural systems in the United States which include exotic aquatic organisms have considerable potential. However, the development of the positive aspects must be balanced with efforts to incorporate a functional protocol over controlled entry of promising species. The process should include requirements for import permits, examination of potential conflict with native fauna and a period of efficacy testing. These should all be accomplished with adequate safeguards to prevent escape and naturalization. Reproductive control considerations should be a prime requisite of the initial testing period as well as preceding any subsequent utilization.

8. Panel Discussion:
All speakers plus audience participation 30 min.

A Symposium on the Role of Fish Culture in Fishery Management - (3/31-4/3, 1985)

This symposium will provide a state-of-the-art assessment of the modern role of fish culture in fishery management and will provide a forum for exchange of ideas between managers and culturists. The program includes five technical sessions of which one is devoted to the role of exotic species introduction in fishery management. Case history studies for freshwater and marine systems are scheduled. For further information concerning the symposium contact Delano R. Graff, Chairman, AFS Symposium Committee, Pennsylvania Fish Commission, 450 Robinson Lane, Bellefonte, PA 16823-9616 (Telephone 814/359-5154).

Grass Carp/Hybrid Committee

Chairman Stan Allen reports the following individuals have agreed to serve on the Grass Carp/Hybrid Committee:

Homer Buck, Illinois Natural History Survey
Harry Dupree, Fish Farming Experimental Station, AK
Bill Shelton, University of Oklahoma
Bob Wattendorf, Non-native Fish Research Laboratory, FL

The Committee will serve EFS by providing information on important issues facing the use of grass carp and its hybrids as a management tool, and how these issues are being resolved in the different states. Stan submits the following information for comments.

TRIPLOID GRASS CARP

A great deal of interest has been generated by the announcement by J.M. Malone and Sons of the production of triploid grass carp. Preliminary indications from at least two agencies actively evaluating these animals are that they grow at least as well as the diploid. Triploids of other fish species often grow as well as diploids, occasionally growing somewhat slower.

The utility of triploid grass carp derives from their concomitant, albeit hypothesized, sterility. There are at least two working definitions of sterility. Sterility in the aquaculture sense (gametic) implies absence of reproductive organs and compensatory rechanneling of reproductive energy to somatic growth. Triploids in other fish species have demonstrated moderate spermatogenic activity and little or no oogenic proliferation, hence from an aquacultural sense are mostly sterile. Sterility in the management sense (zygotic) implies the inability to produce viable offspring. Zygotic sterility has not been adequately demonstrated in triploids of any fish species although there is wide literature on triploid x diploid crosses in other organisms, e.g. newts, *Drosophila*, maize rice. Very few euploid progeny (possessing entire, rather than partial, sets of chromosomes) result. Euploidy would be a necessary condition for continued generations. Survival of aneuploids is dependent upon species and the nature of the chromosomal duplication or deficiency. It is likely that triploid grass carp backcrossed to diploids will result in subvital progeny but the definitive evidence is not in.

An issue presently within the manager's grasp is that of documentation of triploidy. Diploid and triploid grass carp are, at least on a gross morphological level, indistinguishable. Careful analysis may uncover morphometric singularities but this work is yet to be done in any pure triploid fishes. For now detectable differences include cell size, isozyme dose/locus, and of course amount of DNA/cell. The method currently emerging as the most expedient and amenable to hatchery conditions uses a Coulter Counter to measure nuclear size. The most extensive analysis of this technique in triploid grass carp was performed by Bob Wattendorf of the Non-native Fish Research Lab in Boca Raton, FL. Malone's fish are also screened using this technique. There are compelling reasons for maintaining high standards in the documentation of triploidy or the advantages of stocking triploids as management tools will be severely compromised.

Introduced Fish Section?

Earlier this year Bill Shelton and members of his panel, J. McCann and W. Courtenay, sent a questionnaire to the membership to determine the general consensus on the future orientation of the Section. They received 53 responses, about 27 percent of the current membership. Eighty-five percent favored broadening the scope to include transplants. The panel will study the bylaws and obtain official input before any name change is made.

Arizona Daily Star Report

No more African tilapia may be stocked in Arizona fishing waters. The Arizona Game and Fish Commission ordered a moratorium on putting them in waters where other game fish are present. The African weed-eating fishes are causing problems for bass.

In the last 20 years, tilapia have been imported and placed in municipal lakes, golf courses and private residential ponds and the lower Gila and Colorado Rivers. They also were put into areas such as the irrigation canals near Yuma.

From the Chicago Tribune--Here Come the Piranhas

In recent years, hook-and-line fishermen have caught quite a lot of piranhas in rivers and lakes of our Southern states. But piranhas are showing up more frequently in Northern states too. A piranha weighing a couple of pounds was caught by a fisherman at an Illinois Department of Conservation recreational fishing lake. Some have been caught in the Ohio River. A full-grown piranha was hooked and landed by an angler fishing Missouri's Big River, just south of Eureka.

Piranhas survive summer months in waters of the Northern states, but they can't make it through the winters. Authorities assume they get into the U.S. waters when some tropical fish fan finds the fish too large for his tank, and so releases it into local waters. They are excellent gamefish, and are considered among the more beautiful fish.--August 29, 1982

Oregon Advertisises Its Permit Policy

NOTICE - Permits are required for shipment of fish including bullfrogs, mollusks, and crustaceans, into or within the State of Oregon. Forms for all species (Except aquaria, for aquaria use) are available from the Oregon Department of Fish and Wildlife, P.O. Box 3503, Portland, OR 97208. Shipment of live fish, eggs, or larvae into Oregon is a violation of state and federal regulations unless permits are obtained.--*Aquaculture Magazine, January-February/84.*

The Proposed Introduction of Nile Perch (*Lates niloticus*) in Reservoirs of Australia

For many years a group of inland anglers, predominantly from Queensland, has argued for the introduction of *Lates niloticus* (Centropomidae) to Australia, a proposal which has engendered much debate. The basic arguments for the introduction are that the silver barramundi *Lates calcarifer* is the only native fish worth angling in northern Australian inland waters and, because many Queensland rivers are impounded (with more impoundments proposed), *L. calcarifer*, which breeds in estuaries, is becoming less common in and above impoundments; juveniles are unable to pass the dams to reach the upper reaches of the rivers. As a result, many rivers and newly-created impoundments in Queensland lack fish of angling potential. *Lates niloticus*, an African congener of *L. calcarifer*, breeds entirely in fresh water and is an excellent sport fish with fine edible qualities. The introduction of *L. niloticus* to northern Australian inland waters would therefore provide good angling from an otherwise vacant ecological niche, cause minimal ecosystem disturbance since it would merely involve a replacement of a close relative, and be a cheap and expeditious way of resolving the problem. Williams (1982) reviews the arguments against the introduction of *L. niloticus* and concludes that it should not be introduced into Australia without the most thorough scientific investigations. He points out that there would be considerable and largely unpredictable hazards involved in the introduction of the species, and that the rationale for introducing it, as well as the proposals for implementing the introduction, can be criticised on scientific grounds. Furthermore, a reasonable

ing northern Queensland anglers could well be provided
chery for L. calcarifer, with the development of a
a. As Williams (1982) points out, this suggestion
ad before any further consideration is given to the
cticus.--FAO Fisheries Circular No. 757, August 1983.

ons Committee, J.M. McCann, reports Dr. Jay Stauffer
ect with no opposition. Dr. Peter Moyle and Dr. Nick
ions for Secretary/Treasurer.

ing job for the Exotic Fish Section as Secretary-
rs. He is currently working at the Appalachian
y of Maryland, in Frostburg. He has accepted an
Pennsylvania State University, and begins his new
t research deals with Ichthyology and the Environ-
e is well-published and has co-edited the book,
anagement of Exotic Fishes."

S from Cornell University in 1966, and Ph.D. from
in 1969. He is a life member of the American Fish-
the Exotic Fish Section since its creation. He is
ries Biology, and Chairman of the Department of Wild-
University of California, Davis. Dr. Moyle has over
ch deal with introduced and exotic fish, including:
1966, and "Fishes: An Introduction to Ichthyology,"
le's current research deals in part with interactions
d fishes.

ved B.S. and M.S. degrees from Memphis State Univer-
r reuse systems for channel catfish. He received the
University for work on the culture of marine and
ted effluent of a power plant. In 1977 he joined the
ce as a research fishery biologist and began working
fic Director of the Southeastern Fish Culture Laborad
directs research on striped bass, catfish and
co-authored approximately 50 technical papers on
nce, including papers on stress and reproductive
as supersaturation, pond management, aeration tech-
rofessional activities in AFS include Past-President

Past-President of the Texas A & M chapter, currently
oard-AFS, has served on several other AFS committees,
on and chapter offices. Dr. Parker is a member of the
h Culture Section, the Fish Health Section and the Bio-
He is also a Certified Fisheries Scientist.

President:

Neil (Nick) Carter
Current President-Elect

President-Elect:

Jay R. Stauffer

(Write-in Candidate)

Secretary-Treasurer

Peter B. Moyle

Nick C. Parker

Detach and Mail

Please mail ballots by July 15, 1984 to:

Dr. James A. McCann, Nominations Chairman
U.S. Fish and Wildlife Service
P.O. Box 700
Kearneysville, WV 25430