



## NEWSLETTER

of the Introduced Fish Section  
American Fisheries Society

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October 1990

Hiram W. Li, Editor

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### NEWSLETTER CONTENTS

President's Corner, From the Editor, Call for Papers (in Hawaii!), Legislative Testimony, Heavy Metals in Commercial Aquarium Fish Foods, U.S. Great Lakes Non-Indigenous Species Coordinating Committee, SCOPE, Risky Business, Regional Updates: Arkansas ("Are blue tilapia like Ginzu Steak Knives?"), California ("The Melt-down Pot"), Hawaii ("Thank God, We Were Wrong", "Do the Rat Thang"), Oregon ("Ollie Ollie Olson Free"), Wisconsin ("GRASScarp Cartel Busted"), Africa ("Nile Perch Watch"), Minutes of the 11th Annual Business Meeting

### PRESIDENT'S CORNER

My participation in IFS and especially this Newsletter, has been a tremendous learning experience which has also been very rewarding and enjoyable. As my part diminishes, I want to strongly encourage others to become more actively involved. I especially want to encourage more managers to participate, not just because I am more of their opinion than others, but because there is a tendency for managers to avoid presenting their ideas in an open forum such as this. In the end, both the resource and the profession will be better off if every IFS member becomes actively involved in this Newsletter.

During the past couple of years, I have tried to represent the manager's perspective on fish introductions; a perspective that is opposed strongly by some theoretical fisheries ecologists. The primary difference between the perspectives of these two groups seems to be mostly a question of how to balance our need and desire to utilize natural resources for commercial and recreational purposes with our desire for allowing natural processes to take place without interference from man. In the pure sense the latter desire is a matter only for intellectual debate that focuses on the "What if..." question since man cannot extricate himself from this process. On the other side, uncontrolled overutilization of natural resources would certainly have counterproductive, if not catastrophic societal impacts.

The economic value of fishing (\$28 billion annually in U.S.) together with the incalculable intrinsic, biological and scientific worth of our fisheries resources, should provide us with an adequate incentive for insisting that we work toward a balanced approach between preservation and utilization. In the absence of a balanced approach, both societal appreciation for the resource and, in turn, the resource itself will diminish to the detriment of all concerned. Errors at the extremes, whether in the name of preservation, conservation or utilization, will likely lead to surprisingly similar undesirable results. Ultimately, promoting a realistic and pragmatic balance

between these competing needs and desires may be the most important responsibility we face as professional resource scientists.

The dichotomy illustrated by the above opposing perspectives forms the basis of a quandary nearly all new fisheries managers face, even though few were given notice of it during their 4-8 years of college training. Nowhere is this quandary better exemplified than when one considers the issue of introduced fish. While random voluntary exposures to potentially detrimental events are never recommended nor condoned, prejudging the outcome of such events based on textbook generalization or uncritical extrapolations of data is not science, no matter how eloquently and intellectually satisfying the arguments are made. Some of the problems surrounding the science of introduced fish assessments go back to the uncritical acceptance of superficially simple ecological concepts that are not so simple in application (e.g., the concepts of niche and competition). Might introduced species compete detrimentally with native species? Certainly, maybe even generally if we look at all trophic levels... but not absolutely nor necessarily.

Objective data analyses and pragmatic risk assessments are essential elements of scientific evaluations and scientific assessments of introduced species should not be exempted from these any more than any other environmental or personal hazards we face. Less rigorous assessments and opinion-based articles (like this one) should be encouraged in appropriate semi-technical and nonscientific publications or even scientific journals, as long as they are clearly identified as such. Concluding that all introductions are inherently detrimental is like concluding my use of an automobile should be prohibited since thousands of people are killed in them annually (= nonrisk adjusted conclusion of a potentially harmful event). Similarly, how can something in science be judged 'inherently detrimental or harmful' without a better reason than it was put there by man plus a few interesting but nonetheless hypothetical speculations?

Unfortunately, we do not know as much about introduced species and their effects as we generally assume. This realization is unnerving and it presents us with a situation we instinctively avoid. Maybe this is why many years ago I heard a highly-respected fisheries professor lament "Most major [scientific and social] advancements are predicated by significant funerals [of vocal proponents of traditional ideas]."

-Paul L. Shafland-

#### FROM THE EDITOR

There is a movie, "Rashomon", directed by the cinematic great, Akira Kurosawa. It was adapted from a famous short story by Ryunosuke Akutagawa. The action takes place at the Rashomon Gate, a famous landmark in Japan. The audience knows that a woman was assaulted, a man killed and that a bandit was arrested for murder. The fascination of the movie is that we do not know why or how the events took place because they are told from the point of view of the woman, the bandit, and the ghost of murder victim, each of whom is putting the "best face" on their testimony before the judge (and the movie audience) at a murder trial. Truth is relative. Scientific communication is like that. We have the results, measures of statistical reliability, and the interpretation by the investigator. We have judges (referees and editors) and an audience. From this we must infer the facts and deduce the truth. Refereed literature is judged more critically. The medium of a newsletter is another story.

The recounting of events concerning the introduction of the Nile perch to Lake Victoria reminds me of "Rashomon" because the information that we receive is largely from non-refereed sources and various groups that have put the best face on their testimony. We will keep you informed as we receive reports from a variety of sources (see later in this issue), but let the audience beware.

I am receiving more clippings and reports, thank you. This is the heart of the newsletter. When you do contribute, please be sure that the source of information is referenced. I try to attribute sources for the readership so that they can follow-up a lead. Thanks to Paul Shafland for getting Mike Fitzsimons to contribute valuable information concerning the status of the Hawaiian goby (see below).

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One of the best chapters in E.O. Wilson's book, Biodiversity, is a chapter by a theologian on the Christian view of biodiversity. In brief, the argument is developed that the loss of a species through lack of stewardship is a sin against God. Dominion over the earth given to man is a fact. It is quite evident that Man has altered the planet. Unlike the heretical notions of James Watt, this does not give Man license; dominion also means responsibility and stewardship. William Gibson from the Center for Religion, Ethics and Social Policy at Cornell University reminds us that in Genesis 1:31, "God saw everything that God had made, and behold, it was very good." How much should we manipulate? Holmes Rolston, a professor of Philosophy at Colorado State University, argues that God loves wildlands, desolate wastes and fierce landscapes and does not want all places cultivated and subdued. He bases his argument on the following passage from Job (38:25-27): "Who has cleft a channel for the torrents of rain, and a way for the thunderbolt, to bring rain on a land where no man is, on the desert in which there is no man; to satisfy the waste and desolate land, and to make the ground put forth grass?" I bring this up here because Paul's Letter to the Membership (not to the Corinthians) is an interesting discussion of value systems as well as science. It is not just the culture of Academia that has developed an aesthetic for natural systems. Species are introduced to bring about added value. Yes, but what are those values and at what expense? Is the introduction of species strictly for pleasure to an undisturbed community a sinful indulgence? Restoration ecology is another question altogether ethically. Here it is a matter of science. Are the principles understood? Has the method been tested? How has it been tested?

#### References

- Akutagawa, R. 1952. *Rashomon and other stories*. Translated by Takashi Kojima. Liveright, New York.
- Cobb, J.B. 1988. A Christian view of biodiversity. Pages 481-485, in E.O. Wilson (ed), *Biodiversity*. National Academy of Sciences.
- Gibson, W.E. 1990. Theology and ethics for a new mission. *Church & Society* LXXX(4):5-15.
- Rolston, H. III. 1990. *Wildlife and wildlands: a Christian perspective*. Church & Society LXXX(4):16-40.

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I was sent a survey concerning the biology and management of introduced species, a joint project sponsored by the Nature Conservancy and the Yale School of Forestry and Environmental Studies. I found many of the survey interesting, but also disturbing as I was not confident in ranking items in some of the questions. E.g.,

Rank the following mechanisms contribution to the loss of biodiversity on a relative scale from 1 to 5. A "1" contributes the greatest and "5" contributes the least to the loss of species and diversity. Use each number only once.

- Over-exploitation (e.g., harvesting plant & animal species at rates faster than reproduction)
- Habitat destruction and fragmentation
- Direct impacts of introduced species
- Pollution
- Cumulative effects (e.g. loss of change in abundance of one species affecting abundance of another species)

The trouble with this question is that our planet is so perturbed that in several instances many of these processes are linked. Thermal pollution can cause the introduced inland silverside to survive cold habitats in Illinois and displace the brook silverside. Overharvesting of Doug-fir fragments habitat fragmentation making dispersing Spotted Owls juveniles more

susceptible to Great Horned Owl predation, causes Marbled Murelets to disappear because key nesting habitat is destroyed. There are other similar questions (in my opinion). Members, that haven't been contacted about the survey ask to take part (if for nothing else, to cancel out all my misjudgments). Contact Dr. Peter Schuyler (if you haven't been contacted as yet to participate) via The Nature Conservancy, Western Regional Office, 785 Market St. San Francisco CA 94103, (415) 777-0487 or The Yale School of Forestry and Environmental Studies.

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LEGISLATIVE TESTIMONY

Initiated by John Dentler and drafted in final form by Paul Shafland, IFS submitted comments on House Bill S.2244, "To prevent and control infestations of the coastal and inland waters of the United States by the zebra mussel and other nonindigenous aquatic nuisance species". Several points were made in this letter many of which are listed below:

- 1) The bill does not, but should distinguish between accidental and purposeful introductions.
- 2) Should the bill include bans on purposeful introductions, input from professional biologists is absolutely required to balance state, federal, and public concerns with costs and benefits of species introductions.
- 3) Accidental introductions from ballast water discharges are of concern everywhere and not merely a problem of the Great Lakes, therefore, we recommended that Title I of the bill be amended to cover all U.S. ports, both freshwater and marine.
- 4) Whereas we recognize the effectiveness of the U.S. Coast Guard to monitor ballast water for exotic species, we suggested that personnel of the U.S. Fish and Wildlife Service and the National Marine Fisheries Service also be responsible for ballast water inspections.
- 5) We recommended that the states should have quick access to funds in order to eradicate exotics because they are vulnerable to control efforts only during a brief period of time.

Copies of the letter are available by request from Paul Shafland or Hiram Li.  
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CALL FOR PAPERS AND POSTERS

"Introduced Aquatic Organisms in the Pacific Basin"  
Honolulu, Hawaii  
XVII Pacific Science Congress  
27 May-2 June 1991

The Hawaii Chapter of the American Fisheries Society is organizing one of the technical sessions of the XVII Pacific Science Congress. Scientists working on any aspect of the biology of introduced aquatic organisms and input from a broad geographic range and from a broad spectrum of research approaches and management perspectives are welcomed. Titles and brief abstracts for papers or posters for presentation to the chairperson are due at the following address no later than 10 January 1991 at the following address:

Dr. James D. Parrish  
Hawaii Cooperative Fishery Research Unit  
2538 The Mall, University of Hawaii  
Honolulu, Hawaii 96822

Telephone: (808) 956-8350  
FAX: (808) 956-6751

The session will be organized into two sections. The first section will be a formal oral presentation of contributed papers. Authors of selected papers will be given 15-20 minutes for presentation and questions. The second section will be a panel discussion involving several invited scientists who will address general aspects of aquatic organisms introduced in the Pacific Basin, e.g., quantifying adverse and beneficial impacts, and management

strategies. Posters will be accepted upon arrival and displayed at a central location.

ABSTRACT INSTRUCTIONS

General Guidelines

- If the abstract form is unavailable, please substitute a clean, white sheet of paper. In this case, the abstract must fit within an area of 5 7/8 inches by 5 7/16 inches and should be centered on the page.
- The ENTIRE abstract must fit within the box provided.
- The typed copy must be free of smudges and dark enough for reproduction.
- Indent the start of each new paragraph 4 spaces.
- Do NOT use capitals or underlines for emphasis.
- Do NOT use type smaller than elite (12 pitch) or 10 points.
- Please remember, the abstract will not be retyped or edited; the author(s) are responsible for spelling, grammatical, and typographical errors.

Format

1. Title. The title must start on the first space of the first line within the box provided. It must be in all capital letters.
2. Leave one blank line between the title and the next line.
3. Authors. The presenter's surname should begin the next line, followed by initials and affiliation. Additional names should be listed with initials first, followed by surname and affiliation.
4. Leave one line blank.
5. Following the blank line, start the body of your abstract; do not forget to indent for each new paragraph.
6. Leave one blank line following the last line of text of the body of your abstract.
7. Key Words. Following the blank line, please type the heading, "key words:" and follow it with a list of key words for your abstract. The list of key words must fit within the space provided on the abstract form and must not exceed three lines of text.  
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Heavy Metals in Commercial Aquarium Fish Foods

Correspondent: Herbert Axelrod'

Assays for heavy metals in some commercial aquarium fish foods were conducted by laboratories contracted by Herbert Axelrod and by the Institute of Ichthyology at the University of Guelph, Guelph, Ontario through a study sponsored by Dr. Axelrod. Preliminary results indicate that several commercial flakes are extremely high in toxic metals. There are no established regulations or standards for fish food now. Toxicity and dietary requirements for many metals for fishes are unknown. The following items were excerpted from the report from the Institute of Ichthyology:

"Several metals known to be toxic at low concentrations (Baker 1982) are found in relatively high concentrations in the foods tested. For example, cadmium is reported to be highly toxic at levels of 0.5 parts per million; we measured levels as high as 3.2 parts per million. Manganese has been reported to have toxic effects on fish at concentrations as low as 6 parts per million; we measured concentrations as high as 92.8 parts per million. Similarly, aluminum can have toxic effects at concentrations as low as 0.1 parts per million, compared to our measured levels as high as 556 parts per million; copper can be toxic at 2 parts per million and some food contains 20 parts per million, chromium can be toxic at 0.2 parts per million and some food contain 19 parts per million for iron and 30 parts per million for zinc. The foods we measured contained levels as high as 6,000 and 128 parts per million of iron and zinc."

"There are clearly substantial differences among even the limited number of different brands of fish food tested thus far.....This indicates that there is either considerable variation among constituents used by different manufacturers, or differences in manufacturing processes, and/or extreme variation among batches of food. For example, calcium content of the three (commercial products) foods we tested varied by almost an order of magnitude, from 8,500 to 61,000 parts per million."

Research on the nutrition and health of fishes presented with laboratory diets in comparison to those fed commercial fish foods are being conducted.  
[Editor's note: Tables of analyses are available upon request from Herbert Axelrod, One T.F.H. Plaza, Third and Union Avenues, Neptune New Jersey 07753 or from the Editor]

#### References

Balon, E.K., F.W.H. Beamish, M.M. Ferguson, J.F. Leatherland, D.L.G. Noakes, E.D. Stevens, G.J. Van Der Kraak (Institute of Ichthyology, University of Guelph, Guelph, Ontario, Canada N1G 2W1). The impact of dietary metals on growth and reproduction in fish. Interim Report to H.R. Axelrod, T.F.H. Enterprises, Inc., Neptune New Jersey, U.S.A.

<sup>1</sup> One T.F.H. Plaza, Third and Union Avenues, Neptune N.J. 07753.

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U.S. Great lakes Non-Indigenous Species Coordinating Committee  
Correspondent: Jon Stanley<sup>2</sup>

The dramatic impact of ballast water introductions (when exotic species is the subject of an Article in Sports Illustrated, what can be next? Gentleman's Quarterly ?) has necessitated the formation of a committee by the Great Lakes research community in the States. The membership currently constitutes the Great Lakes Environmental Research Laboratory of NOAA, the National Fisheries Research Center-Great Lakes (USFWS), each of the six Great Lakes Region Sea Grant Programs, the Cooperative Institute for Limnology and Ecosystems Research, and USEPA. Cooperative links with Canadian entities will be established. The strategic objectives, briefly summarized, are to integrate science and policy with regard to non-indigenous species issues through coordination and integration of research, education and technology transfer, as well as the development of conceptual and predictive models. Six categories of research have been initially identified concerning non-indigenous species: (1) biology/life history analysis, (2) ecosystem effects of introductions, (3) socio-economic analysis of costs and benefits of introductions, (4) control and mitigation, (5) prevention of introductions, (5) spread of established non-indigenous forms.

<sup>2</sup> National Fisheries Center--Great Lakes, U.S. Fish and Wildlife Service, 1451 Green Road, Ann Arbor, MI 48105.

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SCOPE (Scientific Committee on Problems of the Environment)

Correspondent: Nick Parker<sup>3</sup>

The purpose of SCOPE is to examine the influence of humans on their environment and to study the effects of environmental changes upon mankind. "It is SCOPE'S responsibility, while maintaining the scientific focus of its activity, to consider the implications of its scientific results in terms of socio-economic aspects, and to provide adequate advice to decision makers for the formulation of environmentally sound policies. As of March 1990, 23 projects were in operation or in preparation. The following is the text of a report of a workshop co-sponsored by SCOPE and the G.B. Pant Institute of Himalayan Environment and Development, Naini Tal, Uttar Pradesh, India 18-21 September 1989.

#### "Ecology of Biological Invasion in the Tropics

The SCOPE program of Biological Invasions has stimulated many meetings; national symposia in Australia, the Netherlands, South Africa, the United Kingdom and the USA, meetings of working parties on modelling, nature reserves and Mediterranean-climate regions, and a synthesis workshop held in Hawaii.

The workshop specifically discussing invasions into tropical ecosystems is the last meeting of this programme.

During the meeting, seven background papers were discussed: a) a review on invasions by plants into the Indian sub-continent highlighted some of the more important invasive species, analyzing the biogeographical regions from where they had come; b) a presentation of a wide-ranging study on fish introductions into tropical waters distinguished between natural lakes in the tropics, which are rare, and man-made reservoirs, which are frequent. Compared with the dramatic effects of the Nile perch in sub-Saharan Africa, the species of Tilapia which have been widely introduced in the tropics seem to have virtually no effect on the native fish species; c) a paper focused the discussion of introduced freshwater fish species on those which occurred within the Indian sub-continent; d) aquatic plants were considered in a pair of papers--factors seen to be important in determining which aquatic plants became invasive include: the barrier factors determining whether a species is physically capable of reach an area; the susceptibility factors, relating to the reproductive capacity and morphological plasticity of the invading species; e) a historical perspective explored the history of colonization of Europe, especially the Alps, after the last glaciation; and f) the final paper, concentrated on using biomass; if invasive species cannot be controlled, how can they be used for the common good of local communities?

.....  
Throughout the meeting there were several discussions, including one broadly ranging general discussion. From this, three priorities for research in the tropics were identified. One of these was a comparative study of the invasiveness of the introduced Eucalyptus species. Second, a comparative study of the introduced Tilapia species was seen to be essential. Both of these research projects would essentially be information collation and databasing, making results available to the whole of the international community. Biological control programmes formed the third research priority; control of Lantana camara and Chromolaena (Eupatorium) odoratum were seen as urgent.

More importantly for the tropics, the socio-economic context of much biological research is important. The local people are often dependent upon local products, which may be drastically influenced by invasive species, though it may be the invasive species themselves that have become important to the local community. The involvement of the local community, and of scientists with the local community, was seen as essential for the long-term success of tropical land use research programmes.

In concluding the workshop, it was apparent that once again, it was impossible to predict which species will become invasive. Due to this predictive inability, the only safe practice is to avoid, as far as possible, introducing new species to tropical countries. First, for socio-economic development, one would explore which of the native species can be used. Only as a last resort should alien species be introduced."

-Prof. P.S. Ramakrishnan  
School of Environmental Sciences  
Jawahar Lal University-New Delhi

<sup>3</sup> Texas Cooperative Fish and Wildlife Research Unit, Texas Tech University, Lubbock, Texas 79409-2125.

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Risky Business.....Tilapia Farming Correspondents: John Cassani<sup>4</sup> and Bruce Coblentz<sup>5</sup>

There is a message here, somewhere, can you find it? The Department of Wildlife, Fisheries and Parks has advised SeaChick, a fish farming operation of Escatawpa, Mississippi to stop producing Tilapia because the company does not adhere to state regulations which prohibit the release of non-native fishes into the environment. The crux of the problem is that the company claims it cannot install a sand filter to receive aquacultural effluent as a means of preventing tilapia escapes. SeaChick claims that the state is "changing the rules" in the middle of the game and believes that the department officials should "protect the welfare of tilapia growers". The department is uncertain how escaped tilapia may affect the welfare of the native fish fauna and their policy is necessarily conservative.

Meanwhile, out West where our native salmonid stocks continue to decline....  
 [Editor's note: I may have run into a bad batch of tilapia, but my dinner tasted like carp from a muddy pond....yep, in my younger days, I did carp.]

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Silver Salmon Steaks or Roasts	Cook Camp to \$4.98

Hiram -  
 The end of the world is at hand!  
 Bee

Reference  
 Aquaculture News. Mississippi tells SeaChick: no more tilapia. July 1990

\* Lee County Hyacinth control District, P.O. Box 06005, Ft. Meyers, Florida 33906.

\* Department of Fisheries and Wildlife, Oregon State University 97331.

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 REGIONAL UPDATES

Arkansas

Are blue tilapia like Ginzu Steak Knives? Correspondent: Dawn Jennings\*

No, according to a report in Arkansas Aquafarming. Whereas, tilapia may be valuable for various applications of fish farming, they have limitations [Editorial note: the famous TV ads for the steak knives make you believe that anything can be done with the knives just short of defense of home and family against a trained Ninja]. Blue tilapia (*Tilapia aurea*) in Arkansas can be a seasonal crop and do well when raised with channel catfish in a polyculture;

however they must be sold by October because they are susceptible to cold temperatures. A secondary by-product is that off-flavored channel catfish dropped from 62 percent to 8 percent in experimental trials. Channel catfish raised in this polyculture did not benefit to any degree. However, during the fall, low temperature inhibits activity by blue tilapia which are then captured easily by channel catfish broodstock at a particular time when energy is needed for egg development. Catfish broodstock raised with tilapia had higher hatch rates and spawning times than broodstock fed a commercial feed.

As of this writing tilapia were being tested as a trotline bait and as a forage for striped bass and largemouth bass [Editorial note: isn't this a bad idea? Won't this encourage bait bucket introductions? Didn't the spread of blue tilapia cause the state of Florida some concern?]. The article ends with the following statement, "It is only after we broaden our view of the species and accept their innate characteristics as potential to be utilized rather than constraints to be overcome, that their real value emerges". [Editorial note: Do we really need to try open heart surgery with a Ginzu Steak Knife?]

Reference

Torrans, L. The role of blue tilapia in Arkansas aquaculture. Arkansas Aquafarming, Coop. Extension Service.

\* National Fisheries Research Center-Gainesville. U.S. Fish and Wildlife Service, 7920 NW 71st street, Gainesville Florida 32606.

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 California

"The Melt-down Pot"

Correspondent: John Dentler\*

Give me your poor, your oppressed, your introduced fishes. This seems to be the fate of California. Pete Thomas in his column, "Outdoor Notes", reports that northern pike have been found in Frenchman Reservoir located at the headwaters of the Feather River near the Nevada border. A rotenone operation was planned by the California Department of Fish and Game to prevent its spread to the entire San Francisco-San Joaquin drainage.

\* NOAA National Marine Fisheries Service, Southwest Region, 300 S. Ferry St. Room 2016, Terminal Island, CA 90731.

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 Hawaii

"Thank God, We Were Wrong!"

Correspondent: Mike Fitzsimons\*

[Editor's note: I extracted an item from the Hawaii Star Bulletin and published it in Volume 10, Number 1. The news item stated that the Hawaiian freshwater goby 'o'opu alamo'o (*Lentipes concolor*) is a candidate for listing as an endangered species. Interactions with introduced species were among the causes listed responsible for the demise of the goby. The following are excerpts from Mike Fitzsimon's letter].

"These remarkable little fish are not endangered. They actually are common on the outer islands of Hawaii, Maui, Molokai, and Kauai. Last summer, they even were found in two streams on Oahu, where they were thought to have been eliminated from the island that holds almost 85 percent of the State's human population. The illusion that these fish are rare can be attributed directly to their behavior. When the young fish migrate from the ocean into fresh water, they penetrate much farther inland, to greater elevations, and above higher waterfalls than any of the other four species of gobioid fishes that inhabit Hawaii's freshwater streams and estuaries (Fitzsimons and Nishimoto, 1990). In addition, females, non-courting males and young fish are cryptically colored and quick to hide when approached. Unless a person is willing to hike inland some distance away from the coastal highway, climb down into a deep valley, and lie quietly in a cold stream for several minutes, he is not likely to see these fish.

The Sierra Club petition is based on a study published 10 years ago by Timbol and others (1980, Water Resources Research Center Rept. No. 5, Univ. Hawaii). These biologists did an exceptional job in sampling most of the major streams on all five major islands in the Hawaiian Chain in a single year, but we now know that they missed many streams with *Lentipes* and, in

other streams, their sample sites were not sufficiently far inland to include the fish. From pp. 6-7: 'Because of time and budget limits, only one site could be sampled in most streams. The nearest accessible sites with physical characteristics of known Lentipes habitats were sampled. One Lentipes stream on each island was selected for intensive sampling (2-8 sites). I have no criticisms of the study done by Timbol and others, but I question the Sierra Club's using the report as the major supporting evidence for the petition. Since the 1980 study, there have been additional studies on Lentipes and the other native freshwater fishes, and, last February, new data were summarized in the invitational symposium/workshop entitled "New Directions in Research, Management and Conservation of Hawaiian Freshwater Stream Ecosystems: convened in Honolulu by the Hawaii Division of Aquatic Resources. The Sierra Club has not incorporated this new information either into their original petition nor into additional comments submitted recently (July 16, 1990) to the U.S. Fish and Wildlife Service regarding the listing petition."

References

Fitzsimons, J.M. and R.T. Nishimoto. 1990. Territories and site tenacity in males of the Hawaiian stream goby Lentipes concolor (Pisces: Gobiidae). Ichthyol. Explor. Freshwaters 1:185-189.

\* Museum Natural Science, Louisiana State University, Baton Rouge 70803-3216

"Do the rat thang" (Spike Li)

Correspondent: John Dentler\*

The Hawaiian legislature passed a bill to strengthen enforcement of efforts to restrict fish importation to the islands. Imported fish will fall into one of three categories: prohibited-absolutely barred; restricted-acceptable experimental and aquacultural purposes; and permitted-admissible fish for aquarium hobbyists. This was a response to the introduction to Hawaiian waters of 18 exotic fishes, largely aquarium ornamentals. University of Hawaii's Sea Grant College reported that the Hawaii Department of Land and Natural Resources (DLNR) discovered that "Manoa stream and several others were infested with South American armored catfish in lower regions, where public access is easier compared to middle and higher regions. For now, the fish are not capable of migrating upstream." A long-term eradication program is planned, but DLNR is not optimistic about the prognosis of containment. DNLN is engaged in an educational program to inform the public about the harm they can cause by doing the wrong type of right thing (freeing the poor little fish). Brochures, TV announcements, posters in pet stores discuss the problems associated feral fish. People that have fallen out of love with their fish are encouraged to abandon them at a pond supervised by the Humane Society, a pretty nifty idea. The fish are given, free of charge, to loving foster homes.

Reference

Pineda, L.Q. August 1990. Pet fish damage native streams. Makai "Toward the Sea" 12(8). University of Hawaii Sea Grant Program.

Oregon

"Ollie Ollie Olson Free"

Correspondent: Keith Hatch\*

Cowlitz county commissioners found that a fish screen needed to prevent sterile grass carp from escaping Silver Lake while permitting passage of salmon and steelhead River from the Columbia River would cost \$300,000, about the cost of the fish. Sterile grass carp are the cornerstone to prevent the lake from turning into a marsh by the end of the century, according to a university study. Ron Gurans, president of Operation COWSLIP (Clean Up Weeds from Silver Lake If Possible) doubted the need for the screens. "Carp are bottom-feeding fish and would be unlikely to swim over a dam leading to Outlet Creek, Gurans said. 'If you lose a few of them, so what?' At \$300,000, the screens would cost as much as the fish, he said. It seems more economical to ditch the screens and invest money to buy new carp as those placed in the lake die."

[Editorial note: I hope every single carp, if planted, are guaranteed to be sterile as an escape of a fertile pair could result in the dispersal of the

grass carp all over the Columbia Basin. More on Silver Lake below, the problems of invasion from the Lake to the Columbia River. Quotes from the Oregon Bass and Panfish Club Newsletter.]

"Where did these fishes we enjoy catching come from?...Those of us who enjoy the taking and eating of the catfish, should take a pilgrimage to Silver Lake, northeast of Castle Rock, Washington. For this lovely little lake is a hallowed place since beyond all dispute it was the first nursery of the catfishes of the lower Columbia. In 1882, or maybe sooner, an unknown benefactor planted catfish, of the bullhead variety, in its very suitable waters. By 1888, they had increase to such abundance that they had to descend down the Toutle and Cowlitz to the Columbia River. In Hugh M. Smith's Acclimatization of the Fish in the Pacific States, as published in the Bulletin of the U.S. Fish Commission, 1894; the story of the abrupt appearance and phenomenal increase of the catfish in the Columbia region is told in some detail." [Editor's note: several reservoirs in Oregon were treated with rotenone to reduce the numbers of brown bullheads, benefactor indeed!]

Reference

Stepankowsky, A. Commissioners delay decision on Silver Lake weeds. The Daily News, 18 September 1990.

\* Fisheries Resources Office, U.S. Fish and Wildlife Service, 9317 Highway 99, Suite I, Vancouver WA 98665.

Wisconsin

"GRASS(carp) Cartel Busted"

Correspondent: William LeGrande\*

William H. Bennett, the late great Anti-drug Czar, had it right. Much of the illegal substance abuse actually is the result of indulgence by the yuppies and the wealthy for weekend recreational pursuits. More data has come in to support his contention! The Milwaukee Sentinel (31 May 1990, June 1990) reported that the owners of Sea Ranch were indicted by a federal grand jury in Monroe, La. (the notorious Monroe Cartel) for illegally shipping 2,000 grass carp to nine Wisconsin country clubs. Reportedly, Sea Ranch earned over \$200,000 a year by selling illegal grass carp. They were warned three times to stop by the Wisconsin Department of Natural Resources. Golf course managers believed that the use of grass carp was legal (perhaps heavy users are subject to neurological damage). The result of escapes resulted in the spread to every major watershed in southeast Wisconsin according to Ronald Piening, DNR biologist. The Penalty for users was a \$98 forfeiture fee and the cost of drainage of ponds and eradication efforts. Carp eradication caused the death of 46,000 game fish with a value of \$410,000 in more than 50 ponds. The owners of Sea Ranch pleaded guilty and face up to 10 years in prison and fines of up to \$500,000 and will pay to the state over \$440,000 in restitution fees. MORAL: BE COOL IN WISCONSIN. KEEP YOUR NOSE CLEAN! DON'T USE GRASS(carp)!

References

Mulvey, M. Voracious carp seen in area waterways. Milwaukee Sentinel, 31 May 1990.

Associated Press and Sentinel staff writer. Two enter guilty pleas in fish sale. Milwaukee Sentinel, June 1990.

\* Museum of Natural History, University of Wisconsin-Stevens Point, Stevens Point, WI 54481-3897.

Africa

"Nile Perch Watch"

Correspondents: Paul Shafland and John Dentler\*

Why did Lake Victoria's fishery decline and what caused the reduction of species in the system. How did this happen? Who is to blame? Reporting by Michael Hiltzik (Los Angeles Times, 28 Aug. 1990) presents some new information. Quoting A.W. Kudhongania, Director of the Uganda Freshwater Fisheries Research Organization, Hiltzik reports that overfishing was detected as long ago as 1928 and that part of the decline can be placed on seining operations. This was exacerbated by four trawlers operating on Mwanza Bay and

by 1979, the fishery had collapsed in a quote from John Okedi, Chairman of the Zoology Department of Makerere University in Uganda. Also according to Okedi, the Nile Perch was introduced according to sentiment and in 1962 Ugandan officials dumped 35 perch fry off the pier at Entebbe and stocked an additional 335 fish a year later. Kenya then followed suit. This differs from accounts of pond escapes (see IFS Volume 10 number 2) and if true, the Nile Perch was purposefully introduced. The sadness is that both errors in management result in social catastrophe due to loss of biodiversity. The favored species *Bagrus*, *Labeo*, and *Tilapia* are rarely found in the markets; their prices soared as prices dropped for the abundant Nile Perch. As of this report, perch sells for 50 cents a pound, but *Tilapia* sells for five times as much. The populace does not like the taste of perch. The article ends by quoting Okedi; "It's a wrong assumption that the lake can be fished so heavily. The authorities have not listened to our advice, but we say that within five years you'll have no resources to fill these factories. I think we've reached the climax of Nile perch, and from now on the population will decline very rapidly. That will spell doom for the fishermen, and malnutrition for the people."

Harrison et al. (1989) believe that positive steps may be possible to save the fish fauna if the status of haplochromine stocks, the distribution of the Nile perch, and the role of overfishing vs. the introduction of Nile perch on the decline of the fishery can be determined. They cite several lines of evidence that situation is not yet beyond hope. They report that surveys by the British Museum (Natural History), the Haplochromis Ecology Survey from the University of Leiden (HEST) and The Tanzanian Fisheries Research Institute at Mwanza in 1986 and by the British Museum (Natural History), the National Museums of Kenya and the Kenya marine and Fisheries Research Institute sampled a large variety of habitats with a variety of gears (obviously trawls are limited to certain types of habitats). Their findings are that, indeed, haplochromines are rare in most areas where Nile perch were abundant, but in refuges in Kenyan waters and in lightly fished areas off Tanzania, haplochromines and tilapiines were captured. Therefore, overfishing cannot be ruled out and by extension, control of fishing can be managed for haplochromine fishes.

#### References

Harrison, K., O. Crimmen, R. Travers, J. Maikweki, and D. Mutoro. 1989. Balancing the scales in Lake Victoria. *Biologist* 36:189-191.

Hiltzik, M.A. Lake Victoria's Demise is a fish-eat-fish story. *Los Angeles Times*, 28 August 1990.

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#### Minutes of the 11th Annual IFS Business Meeting 27 August 1990, Pittsburgh, Pennsylvania

President Paul Shafland called the 11th Annual Business Meeting of the Introduced Fish Section (IFS) to order at 12:35 h. Approximately 22 people attended the meeting, resulting in a quorum of members present.

Minutes of the 10th annual IFS Business Meeting as printed in our Newsletter 9(4):18-20 were approved.

President Shafland emphasized continuing to encourage involvement with the Section. Our membership has increased to 271 members, up 53% from last year. This is the largest IFS membership to date!

President Shafland commented that the subject of introduced fish will be a big issue for the 1990's. There will be involvement in fisheries management, aquaculture, and in evaluating effects and potential control of nuisance exotics, such as the recently established zebra mussel.

The Section provided comments on the Congressional testimony for Bill HR 4214: The Nonindigenous Aquatic Nuisance Species Act of 1990. The Section is also involved with co-sponsoring a symposium on introduced fishes at the Pacific Ocean Science Congress next year with the Hawaii AFS Chapter.

Several ideas for consideration by the Section in the future include organizing an awards committee, providing translation services for scientific

articles, investigating some creative financing methods to enhance our budget, and producing a section brochure.

Treasurer Dawn Jennings reported that the IFS EXCOM voted to increase membership dues from \$3 to \$4 beginning in 1991. The Treasurer's Report showed a balance of \$809.95. This includes a donation from Dr. Herbert Axelrod of \$510.00 last year.

Paul Shafland summarized a report from the aquarium fishes committee received by Herbert Axelrod on the analysis of various contaminants in commercially available tropical fish feeds. The report indicated that several metals known to be toxic at low concentrations were found in relatively high concentrations in the foods tested. Research will continue to determine the effect of metal concentration on the growth and reproduction of the fish.

A ballast water statement prepared by Dr. Peter Moyle was published in the Newsletter. The parent society EXCOM approved it for publication in Fisheries for comment by all AFS members which is a prerequisite for becoming AFS policy. Section members voted to accept the statement as our official position on ballast water introductions.

Bill Loftus presented the ballot committee report. Only 8% of Section members voted. It was suggested to make the ballots easier to be mailed in the future and to include a deadline for mailing. Election results were as follows: Jay Stauffer is the new President, Hiram Li is President Elect and Alexander Zale is Secretary-Treasurer.

President Shafland reviewed the suggested changes to the by-laws. These changes were approved by AFS EXCOM and were presented to the Section for approval as follows:

- a. On consent of the Executive committee and vote of the Membership, officers can be re-elected to the same office for two but not more than two consecutive terms.
- b. The President-Elect shall serve as Membership Committee chairperson and the immediate Past-President shall serve as the chairperson of the Nominating Committee.
- c. Newsletter Editor: The Newsletter Editor shall prepare the Section Newsletter annually, be appointed by the President for renewable terms of one year, and serve as a non-voting officer of the SECTION Executive Committee.

The Section voted to accept the changes to the by-laws with the exception of (a). That change was voted down and continues to state that "no officer shall hold the same office for two consecutive terms except the Secretary-Treasurer who may hold office for two consecutive terms."

Paul Shafland, Chairman of the consensus Committee, stated that reports are being prepared by Dr. Walter Courtenay and Donald Horak on the issue of introductions. This is an attempt to develop a better understanding of the controversy between fisheries managers and other on the subject of introduced fish.

The Genetics Committee, represented by Lisa Seeb, is presently developing a policy for releasing genetically manipulated fishes. Anyone with interest on providing input on this subject is encouraged to contact Jim Seeb.

John Cassani presented the Grass Carp Committee report. Their objective is to produce management guidelines for the use of grass carp by the end of the year. The committee chaired a symposium at the Pittsburgh meeting entitled "Grass Carp: Evolution of a Resource Management Tool."

Dawn Jennings stated that the membership directory was progressing well and should be published soon.

The Purposefully Introduced Fishes Committee prepared a review of the proposal to introduce rainbow smelt into Lake Powell, Utah.

meeting over to the new president, Jay Stauffer. President Stauffer made several suggestions for ideas in the coming year. He recommended that the Section consider methods to generate new revenues to sponsor another symposium in 1992. We should address the issue of genetic manipulation of native species of fish and the effects of introduced strains on native stocks of the same species. We should also investigate the effect of removing exotic fishes from their native habitats for the purposes of importation to other countries.

President Stauffer will be on sabbatical between December 1990 and August 1991, so get your suggestions in early!

The meeting was adjourned at 13:50 h.

--Dawn Jennings,  
Secretary-Treasurer

#### 1990-1991 IFS Officers

President: Paul Shafland, Florida Game and Fresh Water Fish Commission, 801 N.W. 40th Street, Boca Raton, FL 33431 [(407) 391-6409]

President-Elect: Jay R. Stauffer, Jr. School of Forestry, Pennsylvania State University, University Park, PA 16802 [(814) 863-0645]

Secretary-Treasurer: Dawn Jennings, USFWS, 7920 N.W. 71st Street, Gainesville, Florida 32606 [(904) 378-8181]

Newsletter Editor: Hiram W. Li, Oregon Cooperative Fisheries Research Unit, Department of Fisheries and Wildlife, Oregon State University, Corvallis, OR 97331 [(503) 737-1963; FAX (503) 737-3590]

Past-President: Peter B. Moyle, Department of Wildlife and Fisheries Biology, University of California, Davis CA 95616 [(916) 752-6355]

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Secretary-Treasurer: Alexander Zale, Oklahoma Cooperative Fish and Wildlife Research Unit, 404 Life Sciences West, Oklahoma State University, Stillwater OK 74078 [(405) 744-6342]

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