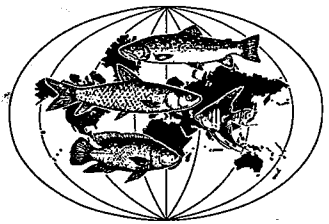

NEWSLETTER

of the Introduced Fish Section
American Fisheries Society

July 1987 Nick C. Parker, Editor Volume 7, Number 3

FROM THE PRESIDENT

Progress has been made in establishing regional representatives to help our Newsletter Editor. Their roles are to contact you for pertinent information and to serve as a liaison between you and the Editor. Six individuals are identified at the end of this issue. A volunteer to represent California and Nevada is still needed. Although most of you have never responded to our pleas for information, please do not hesitate to contact them if something newsworthy develops in your area. A telephone call is all that is required.

One mission of the Fish and Wildlife Service's National Fishery Research Laboratory in Gainesville, Florida, is to evaluate the effects of exotic fishes introduced or considered for introduction into U.S. waters. An assignment within this mission is the exchange of information on exotic fish issues between the Service's six Regions and this laboratory. Even though my term as President is nearly over, the Laboratory will continue to provide appropriate information from Federal sources for inclusion in the Newsletter.

It is hard to believe that this year is drawing to a close and our Annual Meeting is just a few weeks away. You have had the chance to review the May-June issue of Fisheries and know that the program of the September 13-17 meeting in Winston-Salem provides something for everyone. Please note that the Section's annual meeting is scheduled for Wednesday, September 16, at 3:30 PM in Conference Room 5, Benton Center. Hope to see you there.

Although the 1987 Annual Meeting is yet to come, we are organizing a special session for the 1988 Annual Meeting. Our tentative title is "Quantitative Effects of Introduced Fish on Endemic Fishes." Much has been written about the "effects" of exotic fishes on native communities. However, as most of you know, many results are conjecture and lack good data. We hope

this session will identify studies that measure beneficial and detrimental effects of planned and accidental introductions. We already have two papers promised. Another area which we could address is economic effects of introductions. Please write to me if you wish to participate in any way. We will discuss our plans at the Section's Annual Meeting in Winston-Salem and keep you advised in future Newsletters.

Jim Clugston

TRIPLOID GRASS CARP LEAFLET

The U.S. Fish and Wildlife Service recently published a Leaflet entitled "Triploid Grass Carp for Aquatic Plant Control." The reduction or elimination of unwanted aquatic plants has developed into a major and costly task throughout the United States. This leaflet reviews the development, life history characteristics, and use of triploid grass carp as a biological control of aquatic plants. Advantages of using triploid grass carp over other herbivorous fish and their availability are identified. Copies of this publication may be obtained from the National Fishery Research Laboratory, 7920 N.W., 71st Street, Gainesville, Florida, 32606.

NEW YORK EVALUATES TRIPLOID GRASS CARP

The New York Bureau of Fisheries has stocked triploid grass carp at densities of 15, 25 and 40 fish per vegetated acre into four warm water ponds on Long Island. The fish, certified as triploids by the U.S. Fish and Wildlife Service, were stocked into ponds with resident fish communities including largemouth bass, chain pickerel, bluegill, pumpkinseed, yellow perch, bullhead, and golden shiner. The primary aquatic plants in the ponds include water milfoil, waterweed, purple bladderwort, and water bulrush. During the next 3 years fisheries personnel will monitor the aquatic plan biomass, water quality, fish community structure and condition to document changes from baseline conditions prior to introduction of the grass carp.

For more information, contact Edward Woltmann, New York State Department of Environmental Conservation, Bureau of Fisheries, SUNY Stony Brook, Stony Brook, New York 11794 or phone 516/751-7900.

GREAT LAKES FISHERY COMMISSION MODEL FOR MANAGEMENT OF INTRODUCTIONS

The Great Lakes Fishery Commission is planning to develop a model program for management of introductions in the Great Lakes basin. A steering committee will be appointed and conduct an initial scoping workshop. Later a working group will hold a

symposium and publish the proceedings. For more information, please write:

Margaret Dochoda
Great Lakes Fishery Commission
1451 Greem Road
Ann Arbor, MI 48105

INFORMATION WANTED

Mr. Joseph Mann, Jr., is seeking information on a South American catfish from the Amazon. The catfish commonly called a paraiba (Brachyplatysfoma filamentosum, Lichenstein) apparently grows to a very large size and one was pictured on the cover of Michael Goulding's 1980 book, The Fishes and the Forest. If you have information on the life history or culture of this species, please contact Joe at 2141 Knox Ave., St. Louis, Missouri 63139 or send me the information and I will include it in the Newsletter. -- Editor.

CURRENT RESEARCH

Dr. Mark R. Jennings, Department of Herpetology of the California Academy of Sciences prepared two papers on the influence of introduced species on native species for the June meeting of the American Society of Ichthyologists and Herpetologists, in Albany, New York. The title and abstracts are as follows:

INTERACTIONS OF DESERT PUPFISH (Cyprinodon macularius) AND MOSQUITO-FISH (Gambusia affinis) IN SYSTEMS OPEN TO EGRESS.

Varying numbers of desert pupfish (Cyprinodon macularius) and mosquitofish (Gambusia affinis) were introduced separately into experimental habitats open to egress to determine resource requirements for each species and the relationship between numbers and resources. Laboratory environments where "voluntary" colonization was achieved, were created for both species. Results indicate that both fish have the innate ability to regulate numbers in their respective populations of pupfish in habitats containing constant resources and open to egress, there was no significant change in population size for either species as compared to single species populations. Adult pupfish and mosquitofish are able to co-exist successfully in habitats open to egress for short periods of time because they use very different resources and do not grow in number beyond resource limits. These data suggest that replacement of desert pupfish by mosquitofish in the southwest is either a phenomenon likely to occur in closed environments or the result of longer interactions between all life stages.

THE PATTERN OF BULLFROG (Rana catesbeiana) INTRODUCTIONS IN THE AMERICAN WEST: HISTORICAL SIGNIFICANCE AND IMPACT ON NATIVE RANIDS.

The introduction and progressive expansion of bullfrog (Rana catesbeiana) populations in the American West is described with data collectively drawn from published records, museum collections, field notes, and personal observations. Bullfrogs were first introduced into ID, CA, and HI in the 1890s as a source of food and to help control insect pests. Populations from these introductions provided much of the stock for subsequent releases in nearby states. These transplants, coupled with new stock from the eastern U.S. and aborted frog farming operations, have resulted in the widespread occurrence of bulfrogs throughout the American West. The ability of bullfrogs to colonize and survive in localities west of the Great Plains is likely the result of land use practices over the past 100 years. The impacts of farming, canal building, flood control, fish introductions, mining, urbanization, and livestock grazing all favor bullfrogs over native western ranids. It is suggested that land use practices, coupled with widespread introductions of non-native fishes, have effectively given bullfrogs an advantage over native ranids in the American West.

Source: American Institute of Fisheries Research Biologists Briefs 16(3):2, June 1987.

NATIONAL PARK SERVICE ACTIVITIES

In July 1986, the U.S. National Park Service sponsored the Fourth Triennial Conference on Research in the National Parks and Equivalent Reserves at Ft. Collins, Colorado. A symposium entitled "Ecology and Management of Exotic Species" was held during the conference, at which three presentations dealing with exotic fishes were made:

"Exotic Fishes in National Parks" by Walter Courtenay

"Elimination of Selected Non-Native Fish Populations in Yellowstone National Park" by Robert E. Gresswell

"Distribution and Ecology of Exotic Fishes from Everglades National Park" by William F. Loftus

Papers based on these presentations will be published in a Proceedings volume in 1987.

Introduced fish research by National Parks Service in southern Florida pre-sently includes investigations of the status and distribution of these fishes in three national park areas (Everglades National Park, Big Cypress National Preserve, and Biscayne National Park), a study of their food habits and reproductive biology, documentation of impacts on native species, and

an evaluation of management techniques for a blue tilapia population. In addition to the papers mentioned above, two additional papers on southern Florida exotic fishes are in press:

Loftus, W.F. 1987. Possible establishment by the Mayan cichlid, Cichlasoma urophthalmus (Gunther) (Pisces: Cichlidae), in Everglades National Park, Florida. In press, Florida Scientist 49.

Loftus, W.F. and J.A. Kushlan 1987. Freshwater Fishes of southern Florida. In press, Bulletin Florida State Museum, Biol. Sci.

Submitted by: William F. Loftus, National Park Service, Everglades National Park, P.O. Box 279, Homestead, Florida 33030.

TILAPIA STATUS IN PENNSYLVANIA

As previously reported in this Newsletter (Vol. 7, No. 2), Pennsylvania Power and Light Company in conjunction with the Pennsylvania Fish Commission attempted to eradicate blue tilapia (Oreochromis aureus) and hybrids from the Lower Susquehnna River. The steam electric power plants were taken off-line for a period of time sufficient to allow plume temperatures to remain at 5°C or lower for 24 hours. Several follow up fisheries surveys indicated the tilapia kill was complete as no live tilapia have been collected or seen.

It is possible that tilapia will reappear in the Susquehanna River due to the discovery by local anglers that tilapia are excellent bait for many local game and pan fishes -- e.g., muskellunge, smallmouth bass, largemouth bass, walleye, etc. At least one local bait dealer was reported to be importing and propagating tilapia. Tilapia were reportedly found to be sought after as a recreational fish as well.

A report detailing the eradication of tilapia from the Susquehanna River in the vicinity of the Brunner Island Steam Electric Station is available from W. F. "Ric" Skinner, Senior Scientists-Consulting, PP&L Ecological Studies Lab, 4417 Hamilton Blvd., Allentown, PA 18103.

THE AFS LECTURESHIP PROGRAM

The American Fisheries Society plans to launch a lectureship program in 1987 to offer AFS subunits the opportunity to have outstanding members of the profession as speakers at their meetings. Based on a study of similar programs in other scientific societies, an AFS Lectureship Committee developed the following guidelines for operating the program last year. These were approved by the Executive Committee in September 1986.

Lecturers will be selected on the basis of general and logical criteria such as reputation, speaking effectiveness, and availability. They will be appointed to the lectureship panel for specific periods of time so that new speakers are added to the panel each year. The lecturers will choose their own topic(s), which may be concerned with specific fisheries questions or frontiers of research, or with general issues relating to fisheries, science, or society.

Information about the lecturers and their topics will be published in Fisheries, after which AFS subunits -- Chapters, Sections, Division -- may contact speakers directly and make all arrangements. Subunits are asked to provide evaluations of speakers to the lectureship Committee, and if the speaker requests it, to the speaker as well. Lecturers should report to the Committee on the lectures they give, and both hosts and speakers are encouraged to identify problems encountered and include suggestions for improvement in their reports.

For additional information or to provide comments about the Society's Lectureship Program, please contact President Gerking or D.W. Coble, Chairman AFS Lectureship Committee, Wisconsin Cooperative Fishery Research Unit, University of Wisconsin, Stevens Point, Wisconsin 54481.

LETTERS TO THE EDITOR

Dear Nick:

Yes! Many of us read the Newsletter. We don't respond because we have little newsworthy information for the Section or the Editor.

TVA introduces fish only in conjunction with the fisheries agency of the state in which they are released. But TVA and its fisheries staff has a great interest and responsibility in these and other releases in waters under TVA jurisdiction. TVA biologists occasionally advise against state releases which we feel are unwarranted or imprudent. We seldom publicize such opposition since the states have final control of the action.

Please do continue your good efforts to keep the Newsletter current and informative for me and the many others who make no input. We are very interested in introductions and their effects and depend on the Newsletter to keep us up-to-date. Thanks for helping.

Sincerely,

Ben D. Jaco, Sr. Aquatic Biologist
Fisheries and Aquatic Ecology Branch
Division of Air and Water Resources

Editor's Response: Thanks for your support, Ben. Now let me hear from those state officials who do have final control over introduction and release of non-native species.

Dear Mr. Parker:

I wish to respond to your request for more information from section members who have used FISHNET on CompuServe Information Services. I have been affiliated with FISHNET since before it was accepted as an official special interest group (SIG) forum by CompuServe. I was instrumental in the establishment of a few of the forum's within the forum (I.E. the Public Aquarium Forum and the Aquatic Sciences area). I currently am the liason for the Aquatic Sciences area, and as such am responsible for approving access to this section of FISHNET.

The FISHNET staff will practically bend over backwards to accommodate the section members' needs. In fact, an idea comes to mind that you, as the president-elect of the section, may wish to consider. That is a special live conference to promote the section members' use of FISHNET. Such a conference could be for as short as a couple of hours or as long as an entire weekend. A topic, for consideration, might be "The Aquarium Hobby-Industry's Role in Promoting and Preventing Exotic Introductions".

I'd be willing to assist you and the section in any way I can. Please feel free to contact me at 816/842-5936. My CompuServe personal identification number (PIN) is 73307,2052; you can leave private messages to me via Easy-Plex(R) or "public" messages via the forum with this number.

Sincerely,

John Farrell Kuhns
AquaScience Research Group, Inc.
1100 Gentry
North Kansas City, MO 64116

Editor's Response: Thanks, John, for the suggestion of a live conference over FISHNET. Members what do you think? Do we have sufficient interest in John's idea?

Dear Mr. Parker,

I was glad to see the article in the latest issue of the newsletter of the Introduced Fish Section on the threat to the haplochromine cichlids of Lake Victoria. The apparent mass-extinction is utterly horrifying. I think it is the most dramatic example imaginable of the ecological havoc that an introduced fish species could cause. At least I had never imagined a catastrophe of this scale.

I am enclosing a copy of an article by Dr. Paul V. Loiselle that appears in the April 1987 issue of the Buntbarsche Bulletin, detailing the drive to save as many Victorian species as possible.

When I contemplate the vast sums being expended to preserve the California Condor, and other endangered species that very likely are beyond help, it seems absurd to me that hundreds of cichlid species are being lost that could be saved at a minimal cost. I would appreciate greatly any suggestions you might have as to what persons, institutions, or agencies could be approached to aid Victorian fishes.

Sincerely,

Eric A. Isaacson
Fifteenth Floor
400 South Hope Street
Los Angeles 90071-2899

Editor's Note: The article by Dr. Loiselle follows:

Is it Too Late to Save Lake Victoria's Haplochromines?

Cichlid keepers, unlike bird and herptile enthusiasts, have not to date been faced with serious threats to the continued existence of any of numerous species that engage their attentions. Within the past year, this situation has deteriorated dramatically. Recent data have shown the Haplochromis species flock of Lake Victoria to be under tremendous pressure from an introduced predator, the Nile perch. The outcome of this unplanned experiment in evolutionary ecology may well be the extinction of many of these distinctive, vividly colored endemic cichlids.

Although this crisis manifested itself in an unmistakeable fashion only recently (See Fryer et al. 1985. Destruction of fisheries in Africa's lakes. **Nature** 315 (6014), May 1985 for further details), the potential for disaster has been building slowly since the initial --unauthorized -- introduction of the Nile perch into Lake Victoria in 1960. The numbers of the introduced predator grew slowly at first, due to predation on its eggs and larvae by the lake's indigenous species. However, within the past five years, the Nile perch population has grown sufficiently to have a major impact upon the endemic Haplochromis species.

To understand why this is the case, a little background information on both the Nile perch and the Victorian haplochromines is necessary. The 200-odd haplochromine cichlids endemic to Lake Victoria are rather small fish as members of the

Family Cichidae go. Most species average between 4" and 6" in overall length. Even the largest predatory species barely reach 10" total length. Furthermore, while fish-eaters are well represented in the species flock, these native predators are relatively inefficient at capturing and handling their prey. The Nile perch, by way of contrast, is one of Africa's largest freshwater fish. Mature specimens routinely grow to 6.5 feet total length and can attain weights in excess of 600 lb. It is a super-efficient swallowing machine capable of engulfing prey up to a foot long so swiftly that it literally seems to vanish before an observer's eyes.

Obviously, all of the native cichlids are grist for the Nile perch's mill, and it is evident that those species that live offshore over open bottoms have been decimated by its voracious appetite. Of equal importance is the effect that size for size, Nile perch have a more capacious gape than do any of the lake's many specialized predator haplochromines. This gives them distinct edge in any competitive interaction.

The situation is not hopeless. The nile perch is an important food fish. Ultimately, a viable fishery capable of holding down its numbers in Lake Victoria can be developed. However, this will take time. local fishermen will have to be taught alternative fishing techniques of both catching and preserving this species. In the meantime, captive breeding provides the only hope for saving a significant number of Lake Victoria's endemic haplochromines from extinction.

As part of an international effort to salvage as much as possible from a grim situation, the Horniman Museum in London has been afforded the status of Fish Rescue and Breeding Center. This institution, which is funded by the London Educational Council, has demonstrated its long-term commitment to such an effort by allocating building space for an aquarium room, purchasing a computer system to keep track of breeding information and genetic lines, and hiring the staff necessary to maintain such a facility.

Such a project is necessarily costly to carry out. In consequence, the Center is seeking matching funds to allow the utilization of monies already pledged to support the necessary renovation of the space allocated to the project. Essential work includes installing a mezzanine floor capable of supporting the weight of the aquaria necessary for such a breeding program, installing an appropriate drain system, and purchasing 50 drilled glass quarantine aquaria. Dr. Gordon Reid, the Center's director, estimates that $20,000 in matching funds are needed to get the Center up and running.

This is clearly an effort which both the organized aquarium hobby and the pet industry should enthusiastically support. The British Cichlid Association, not surprisingly, has taken the lead in this effort. In addition to putting on an auction to raise money for the Center, it has also brought this situation to the

attention of organized hobby groups outside the U.K. The prime directive of the American Cichlid Association, embodied in Article 1 of our charter, impells a comparable commitment to save as many of these remarkable cichlids from extinction as possible. A formal request for financial assistance from the F.R.B.C. is presently under review by the aposite committee of the Jordan Endowment, and the A.C.A.'s Board of Trustees is exploring alternative means of providing support for its program. I have sent a personal check to the Center and strongly urge all A.C.A. members to do likewise. A $10,00 contribution from each member of the A.C.A. would provide 60% of the matching funds the Center needs to begin its work.

Furthermore, we cannot rely upon European efforts alone to salvage something from this debacle. The Victorian cichlid fauna is extensive and the resources mobilized to date are modest in the extreme. Logistic limitations have forced parties to the rescue effort to write off all of the major feeding guilds save the molluscivores. The only hope for preserving a representative selection of Victorian haplochromines from extinction is to actively engage as many public aquaria as possible in a coordinated captive breeding program. Such programs for "higher" vertebrates have been in place in zoos for decades and many have enjoyed notable successes. There is no reason why such an approach cannot work equally well for these cichlids. I therefore urge all A.C.A. members living in cities fortunate enough to boast a public aquarium to do their utmost to alert the management of these facilities to this crisis and to lobby vigorously for their participation in a coordinated captive breeding program for Lake Victoria haplochromines. Anyone wishing additional information to use in such lobbying efforts should contact me at the address given below.

Finally, individual hobbyists and commercial breeders alike have an important role to play in any captive breeding program. Their expertise in cichlid husbandry constitutes an important resource that must be brought to the attention of public institutions that choose to play a role in a comprehensive rescue effort. Furthermore, their willing participation in such a program will enormously facilitate the task of maintaining the largest possible gene pools of those species selected for captive breeding. The first step in this process is to organize a data base that will allow interested parties to keep track of existing aquarium stocks of Lake Victoria cichlids. Anyone interested in participating in such a project is invited to contact me at their earliest convenience at the following address:

Dr. Paul V. Loiselle
24 Briarwood Rd.
Jersey City, NJ 07305
Telephone: (201) 432-1150 (W)
(201) 435-2650 (H)

Aquarists and the pet industry have received a great deal of flak for their supposed insensitivity to such environmental

concerns as the use of cyanide to collect coral reef fish and the danger posed by the inadvertant introduction of exotic species in such places as Florida and California. A real show of support for efforts to save as many Lake Victoria haplochromines from extinction as possible by individual hobbyists, aquarium societies and all levels of the pet industry would go far to counter this negative image, while making a valuable contribution to the preservation of many beautiful, aquaristically desirable fishes. Please show your concern for the future of the cichlids of Lake Victoria by sending your contributions, made out to the "Fish Rescue and Breeding Center," to:

Dr. Gordon McGregor Reid
The Horniman Museum
London Road, Forest Hill
London SE23 3PQ
UNITED KINGDOM

Reprinted from **BUNTBARSCHE BULLETIN**, official publication of the American Cichlid Association, Inc. Any person interest in the American Cichlid Association, Inc. is cordially invited to apply to: Glenn Eaves, Box 32130, Raleigh, NC 27622.

REPORT OF MEMBERSHIP COMMITTEE

As of 29 May 1987, membership in the Section stands at 182. This total can be expected to accrue slightly as late renewals trickle in, but it seems probable that we will once again be faced with a deficit in our required membership to retain voting privileges in the Excom (despite the herculean efforts of membership committee members Larry Eng, Wayne Hubert, Jim Moulton, and Jim Terrell). The expanded scope of the Section and upgrading of the Newsletter will eventually alleviate this recurring problem, but in the meantime (i.e., right now) members need to ensure the viability of our Section by recruiting colleagues, friends, acquaintances, and even total strangers. The Section's activities have made, and will continue to make, advances in the management of introduced fishes. The Newsletter provides up-to-date information needed by every manager or researcher involved with introduced species. Can non-members afford to remain uninvolved and in the dark? This Section is, after all, the primary forum for policy development and information transfer on introduced fishes in North America. Do your co-workers a favor and recruit them to the Section. And don't forget, Section memberships are useful (and inexpensive) birthday gifts for technicians, graduate students, and other underpaid personnel unable to cough up $3.00.

Submitted by: Al Zale, Chairman
Membership Committee

PLEASE VOTE

Bob Wattendorf, Chairman of our Nominations Committee has provided the following candidates for 1988:

President-Elect

Jon G. Stanley is Director, Great Lakes Fishery Laboratory, Ann Arbor, MI. He presently is working with introduced species and their impact on native fauna in the Great Lakes. Before coming to Ann Arbor he was Supervisory Fishery biologist in the Cooperative Research Unit Program, Washington, DC, and Leader of the Maine Cooperative Fishery Research Unit. He also has held positions of Fishery Biologist at the FWS Fish Control Laboratory and the Fish Farming Exerimental Station, and Assistant Professor positions at DePaul University and the University of Wisconsin-Milwaukee. He has conducted research on transplanted alewives in the Great Lakes and the northeast and on methods for preventing reproduction of introduced species. Visits to the Soviet Union to interview Soviet biologists lead to an analysis that predicted the consequences of grass carp introduction into the Mississippi River systems. In the American Fisheries Society, he has served as Resolutions Chairman for the Northeastern Division and the parent society, Secretary-Treasurer of the Atlantic International Chapter, Chairman of the Nomination Committee for the Introduced Fish Section, and member of the Time and Place Committee for the parent society. He has been an invited speaker or coauthor at sessions on exotic fishes at various AFS national meetings and was a Special Editor of the Transactions issue on "Grass Carp in the United States."

Peter Moyle received his MS from Cornell University in 1966, and Ph.D. from the University of Minnesota in 1969. He is a life member of the American fisheries Society, and member of the Introduced Fish Section since its creation. He is presently Professor of Fisheries Biology, Department of Wildlife and Fisheries Biology, University of California, Davis. Dr. Moyle has over 60 publications, many of which deal with introduced and exotic fish, including: "Inland Fish of California," 1966, and "Fishes: An Introduction to Ichthyology," 1982, with J. Cech. Dr. Moyle's current research deals in part with interactions between native and introduced fishes.

Secretary-Treasurer

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 also supervises the Sportfish Enhancement Project. 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 since its formation. He served as Secretary-Treasurer of this Section during the past year.

Al Zale is Assistant Unite Leader/Fisheries at the Oklahoma Cooperative Fish and 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) as well as hydropower impacts and crappie and non-game population dynamics. 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 AFS Chapter and the Warmwater Streams Committee of the Southern Division.

NEWSLETTER REPRESENTATIVES

NORTHEAST

Scott Fahle
6 Walden Place
Dennis, MA 02638
(617) 775-8883 work
385-2020 home

Southeast

Dr. Rich Noble
Zoology, NCSU
Campus Box 7617
Raleigh, NC 27695
(919) 737-2741

Great Lakes

Dr. William Le Grande
Department of Biology
University of Wisconsin
Stevens Point, WI 54481
(715) 346-4254

Southwest

Bob Howells
Heart of Hills
Research Station
Junction Star Rt Box 62
Ingram, TX 78025
(512) 866-3356

Northwest

Dr. Kevin Hopkins
Department of Fisheries
and Wildlife
Oregon State University
Corvallis, OR 97331
(503) 754-2228

Northcentral

Dr. John Peterka
Department of Zoology
North Dakota State Univ.
Fargo, ND 58105
(701) 237-8449

OFFICERS - 1987

President

Jim Clugston
U.S. Fish & Wildlife Service
7920 N.W., 71st Street
Gainesville, FL 32606
(904) 378-8181

President-Elect

Nick C. Parker
U.S. Fish & Wildlife Service
503 Bibb Street
Marion, AL 36756
(205) 683-6175

Secretary-Treasurer

Paul Shafland
Florida Game and
Fresh Water Fish Commission
801 N.W., 40th Street
Boca Raton, FL 33431
(305) 391-6409