

1984 ANNUAL MEETING PROGRAM
NEW YORK CHAPTER - AMERICAN FISHERIES SOCIETY

February 2-4, 1984
The Beeches'
Rome, New York



ABSTRACTS



ABSTRACT

Author

A TURNER¹, G PIEHLER¹, AND D MATHUR²

Title

DESIGN OF AQUATIC MONITORING/IMPACT ASSESSMENT STUDIES:
REGULATORY AND STATISTICAL PARADIGMS

Abstract

Design of monitoring and impact assessment studies historically has been dictated by lead agency outlines for ER's, SPDES requirements, solution of specific problems (eg, impingement), time and money. A posteriori attempts to analyze resulting data often underscored a common malady: some data on everything but not enough on anything. The senior authors recently reported on design criteria for the Somerset (Lake Ontario) SPDES monitoring program, the salient points of which are also reflected in a Delphi panel evaluation of monitoring criteria conducted this summer by the University of Washington/EPRI.

This paper considers alpha and beta errors, unbalanced designs and definition of null and alternative hypotheses relative to fish habitat utilization in lotic systems. Applicability of statistical paradigms to the Instream Flow Incremental Methodology (IFIM), Habitat Evaluation Procedures (HEP) and FERC licensing process is discussed.

1. Envirosphere Company, 160 Chubb Avenue, Lyndhurst, NJ
2. RMC Environmental Services, Muddy Run Ecological Laboratory, Drumore, PA



ABSTRACT

12/15/83

Author

Mark Mattson and Dennis J. Dunning

Title

Relative Efficiencies of a 1 M Epibenthic Sled,
a 3 M Beam Trawl and a 6 M High-rise Trawl

Abstract

The Hudson River Cooling Tower Hearings illustrated the need for fishing gear which would contribute to the most reliable juvenile abundance index estimates. In response to testimony which criticized the use of a 1 M epibenthic sled for collecting juvenile fishes, a study was conducted which compared the relative efficiencies of a 3 M beam trawl, a 6 M high-rise otter trawl and a 1 M epibenthic sled. Total catch and density of juveniles, was highest and most precise when estimated from high-rise trawl samples, followed by the beam trawl and epibenthic sled samples.

Although the results of the study do not permit an absolute estimate of gear efficiency or the identification of the specific design parameters which were responsible for the different gear performances, they do illustrate the need for gear comparability studies in determining relative catch efficiency.



ABSTRACT

Author

Werner, Robert G., Steven R. LaPan and Michael S. Kruse
SUNY College of Environmental Science and Forestry, Syracuse, NY

Title

WETLANDS AS FISH SPAWNING AND NURSERY AREAS: SUCCESSION OF FORAGE SPECIES

Abstract

Larval fish were sampled using lighted traps in Flynn Bay on Grindstone Island in the St. Lawrence River. The larval fish community that uses the bay as a nursery area is described. The dominant species early in the season were yellow perch, bluntnose minnow and johnny darter. This was followed by a transitional period where the community was dominated by a mixture of several species of cyprinids. As the summer progressed centrarchid larvae became more abundant and the samples in late June and early July were dominated by sunfish and bass larvae. The catch declined in the latter part of the summer. The distribution of each species within the bay with respect to habitat characteristics such as water depth and vegetation is outlined. Growth rates of the more common larvae are presented. Implications of water level management on nursery areas such as this is discussed as is the potential effect of these species on young game fish such as pike and muskellunge.



ABSTRACT

Author

Lloyd R. Wilson
Center for Laboratories & Research
NYS Dept of Health, Albany

Gerhard K. Gruending
Center for Earth & Environmental Science
SUNY Plattsburgh

Title

Composition of Fish Populations and Energy Flow in Sewage-impacted
and Non-impacted Lake Champlain Wetlands.

Abstract

The structure and function of the fish community in Stevens Brook, a wetland receiving direct sewage effluent, was investigated and compared to the fish community of Scotion Creek, a wetland receiving no known sources of sewage. These two Lake Champlain wetlands, which have similar morphometric features, are located in St. Albans, Vt. and Plattsburgh, NY. Sampling was conducted biweekly from May through September using Alaskan style trap nets and seines. The total catch from Stevens Brook was 720 fish encompassing 14 species. The most abundant species were Ictalurus nebulosus (brown bullhead), Cyprinus carpio (carp), and Notemigonus crysoleucas (golden shiner). Stomach analyses of selected species indicate that fish populations were consuming organic debris, phytoplankton, and aquatic invertebrates which are indicative of eutrophic waters. A total of 520 fish encompassing 18 species were caught from Scotion Creek. Perca flavescens (yellow perch), Notemigonus crysoleucas (golden shiner), and Lepomis gibbosus (pumpkinseed) were the most abundant species. Stomach analyses of selected species showed that fish populations consumed Amphipoda, Gastropoda, and other invertebrates associated with the dense beds of submergent macrophytes. Submergent macrophytes were virtually absent in Stevens Brook. Analyses of the species composition and abundance, calculated species diversity, feeding habits, calculated k-factors, and total biomass indicate that the fish communities of the two wetlands are dissimilar. The structural and functional differences in the fish communities reflect the distinct habitats and pathways of energy flow provided by the sewage impacted and non-impacted wetlands.



ABSTRACT

Author

Krueger, C. C. and G. R. Spangler

Title

Genetic identification of sea lamprey (*Petromyzon marinus*) populations from the Lake Superior basin.

Abstract

Sea lamprey (*Petromyzon marinus*) ammocoetes collected from 18 locations within Lake Superior were electrophoretically analyzed for genetic variability at 25 enzyme loci. Analysis by F statistics and χ^2 tests indicated that a significant degree of population structuring occurs among lampreys from Lake Superior. Cluster analysis of genetic distances generally grouped collections that were in close geographical proximity to each other. A weak but significant correlation was detected between genetic and geographic distances. It was concluded that multiple populations of sea lamprey occur within Lake Superior. If this is the case, then sea lamprey control emphasis might shift from individual streams to population regions to minimize the rate of reestablishment subsequent to chemical treatment. It may also be wise to avoid the planting of fish species with migratory habits so as to prevent the passive transport of adult lampreys out of their populations areas.



ABSTRACT

Author

Antonios Pappantoniou, George Dale and Robert E. Schmidt

Title

Biology of the Cutlips Minnow, Exoglossum maxillingua.

Abstract

The cutlips minnow is a poorly studied cyprinid native to the north-eastern United States. As part of a broad investigation of its life history, select populations were studied; the Waccabuc River in Westchester Co., supplied one such population. A total of 221 specimens were collected by electroshocking during 1980. Analysis of gut contents revealed that the diet consisted mainly of benthic insects. Diet shifted with age/size of specimens and also fluctuated with season. Population and growth dynamics were also examined. Cutlips minnows lived to a maximum of IV+ years, with the II+ and III+ age classes predominating in this population. The length-weight relationship was $\text{Log}W = -5.24 + 3.21\text{Log}L$ ($r=0.98$). Specimens were sexed and their gonads weighed. This information was used to calculate the gonosomatic index, and sex ratio. The gonosomatic index reached a peak in May for both sexes. Chi-square analysis showed that the sex ratio was significantly skewed towards the females (1:1.36).

Assessment and Mitigation of Water-Level Fluctuations
on Salmonid Habitat in New York

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Bureau of Environmental Protection
New York State Department of Environmental Conservation
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In the 1980's, New York and other Northeastern states will be experiencing an accelerated demand for water (both consumptive and nonconsumptive) from a variety of users -- hydropower, agricultural, municipal and industrial. As such, state and federal natural resource managers will be forced to reassess their current and future salmonid management objectives in light of the potential impacts from this demand. While the assessment and mitigation of impacts will often be accomplished via limited information and relatively short time-frames, opportunities will be presented to rectify adverse impacts which have persisted for decades and to initiate long-range watershed management programs much sooner than expected. Caution must be exercised since environmental impacts and their mitigation are frequently singled out as a major deterrent. Therefore, the presentation and negotiation of concerns, such as water level fluctuations, must be in a reasonable, rational and responsible manner, or there is a risk of being bypassed by decision-makers and the general public.

The purpose of this paper is (1) to provide an assessment of the various fisheries impacts associated with water-level fluctuations and (2) to discuss the forms of mitigation currently being negotiated for the protection and enhancement of New York salmonid habitats and associated fisheries. Depending upon their location, magnitude, frequency and duration, fluctuating water-levels can have both direct and indirect effects on the survival, reproduction, growth and/or movement of salmonids. Impacts on salmonids appear to be fewer for ponded waters. Mitigative activities can include revision of proposed operating modes, establishment of minimum flows and/or habitat modifications. Case histories for certain New York waters will be discussed.



ABSTRACT

Author

Walter A. Popp and Steven P. Gloss

Title

Interactive segregation of juvenile landlocked Atlantic salmon and rainbow trout in experimental stream channels

Abstract

The potential for competition between Atlantic salmon (Salmo salar) and rainbow trout (Salmo gairdneri), both occurring in riffles at the juvenile fluvial stage, has increased recently due to Atlantic salmon restoration efforts in the northeastern United States and the appearance of steelhead trout in Canadian Atlantic salmon streams. Spatial distribution, growth, and behavioral interactions of salmon parr and juvenile rainbow trout were studied in experimental stream channels which simulated natural riffle-run-pool habitats. Each of four replicate stream sections was 15 m long by 2 m wide, varied in depth from 0.25 m in the riffles to 0.80 m in the pools, and ranged in velocity from 1.0 m/sec at the upstream end to 0.15 m/sec at the downstream end. Salmon and trout were introduced both allopatrically and sympatrically, either simultaneously or by allowing one of the species to establish prior "residency" before introduction of the other.

Rainbows exhibited a preference for the pools, whereas salmon were found in both riffles and pools. Both species tended to aggregate when in pools. In experiments in which fish were restricted to riffle habitat, both species were more territorial. Allopatric salmon and rainbows occupied upstream habitat. In sympatric sections, when introduced simultaneously, salmon occupied habitat downstream from rainbows which dominated the upstream end. When salmon were allowed to establish prior "residency," they were displaced by introduced rainbows from upstream riffle habitat to downstream areas. Rainbows were more aggressive and consistently occupied preferred habitat for both species.



ABSTRACT

Author

Mike S. Kruse
Steven R. LaPan

Dr. Neil H. Ringler Col. of Envir. Sci.
Dr. Robert G. Werner and Forestry

Title

Biology of Northern Pike (Esox lucius) and Muskellunge (Esox masquinongy) in the St. Lawrence River

Abstract

A study of interactions between northern pike (Esox lucius) and muskellunge (Esox masquinongy) in the Thousand Islands region of the St. Lawrence River was initiated in 1983. Ripe northern pike were netted from March 18 to May 25, whereas ripe muskellunge were captured from May 9 to May 26. Ages of adult northern pike and muskellunge were determined through analysis of scales, cleithra, and pelvic fin-ray sections. Estimates of eggs/female in northern pike ranged from 2,524 to 149,245. Fecundity and egg diameter were positively correlated with length, weight, and age of fish. From July 6 to August 28, 59 juvenile muskellunge (23mm-145mm) were captured almost exclusively in the upper 0.1m of the water column. From June 15 to September 18, 421 juvenile northern pike (42mm-206mm) were captured predominantly at depths greater than 0.1 m. Growth in length of juvenile muskellunge appears to be substantially greater than that of northern pike. Percids and centrarchids dominated the diet of juvenile northern pike. The highest catch/effort for juvenile muskellunge occurred in a bay NE of Clayton, N.Y. which also produced the lowest catch/effort for juvenile northern pike. The opposite was true for Flynn Bay which produced the highest catch/effort of juvenile northern pike and the lowest catch/effort of juvenile muskellunge.

Connie Neff Environmental Resources Center, Fredonia New York 14063

An Investigation of Chautauqua Lake's Mechanical Macrophyte Harvesting Program

Implications that the weed control program in Chautauqua Lake may be adversely affecting the declining muskellunge population prompted this three year study. Impacts of mechanical harvesting on the plant community and a method of improving fish habitat were investigated. In 1981, mechanical harvesting followed peak macrophyte biomass accumulation and reduced biomass 27 to 34 percent. The biomass was depressed through the fall and the following summer. The 1982 harvest occurred before peak biomass accumulation, removed little biomass and did not depress biomass that fall or the following summer.

Macrophyte species diversity did not change due to harvesting for 1981-1982. However, the dense stands of Najas flexilis and Myriophyllum spicatum and the decline of other desirable fish habitat species since 1930, may be a result of years of macrophyte control.

Since Potamogeton amplifolius is believed to be excellent habitat for muskellunge, this plant was chosen for transplanting. P. amplifolius plants were transferred from the one known area of abundance in the lake to test grids in 2 to 2.5 m water. Transplants reproduced, doubled in number the first year, and have maintained this density for over an additional year.

It is recommended that the Chautauqua Lake weed control program alter its harvesting schedule to harvest macrophytes close to the time of peak macrophyte biomass. In addition, while we realize that the more dense macrophyte stands should probably be harvested, protected areas should be established for the propagation of diverse macrophyte species as optimal gamefish habitat.



ABSTRACT

Author

KOCHIK, John F., Biology Department, SUNY Plattsburgh NY 12901

Title

Age and growth of rainbow smelt (Osmerus mordax) in Lake Champlain

Abstract

The rainbow smelt (Osmerus mordax) plays important roles as both a forage and sport species in Lake Champlain. The smelt's use as a sportfish has remained relatively constant over the past century while its role as a principle forage species has been recently increased through the introduction and reintroduction of salmonids.

Smelt were collected by the New York State Department of Environmental Conservation in August, 1980 using bottom trawls in 15m to 61m of water. A total of 2,996 fish were collected and scales from 595 of these smelt were analyzed; scales from one individual were taken as a representative sample for each size increment(1mm) from each of 8 geographical zones.

Smelt scales were mounted between microscope slides and analyzed using a projecting microscope. The shiny-line method was used to determine age and both the Dahl-Lea and Lee methods were used to backcalculate the size of the smelt at each age.

The present growth rate and average size of rainbow smelt appears to be smaller than the estimates of 1929 and 1950 populations age and growth. This seems contradictory to the expected upward shift in the growth rate of a population being utilized by recently introduced predators. Alternate hypotheses to explain this phenomena are presented.



ABSTRACT

Author

Larry A. Greenberg

Title

Interactive Segregation Between Two Species of Etheostoma (Family: Percidae)

Abstract

The role of biotic factors in determining the distributions of temperate stream fishes is poorly understood. I investigated the role of interactive segregation on the spatial distributions of two species of darters, Etheostoma simoterum, the Tennessee snubnose darter, and Etheostoma rufilineatum, the redline darter, in the Little River of Tennessee. To test whether either species affected the distribution of the other, both species were selectively removed from plots in run and riffle habitats. The only distributional change occurred for Etheostoma simoterum in runs. After E. rufilineatum was removed, E. simoterum's distribution shifted away from shore. Corroboration of the stream experiments was obtained by testing the association of each species to artificial shelters in aquaria. When in the presence of conspecific fish, both species showed a strong preference for the shelters. However, when both species were placed together, E. rufilineatum continued to utilize the shelters, whereas E. simoterum rarely occupied them. Both field and lab experiments suggest that biotic factors may be important determinants of the distributions of stream fishes.

ABSTRACT

Mark Adam Somerville, Environmental Resources Center, SUNY Fredonia

The Effects of Mechanical and Chemical Removal of Macrophytes on the Littoral Zone Fish Communities of Chautauqua Lake, New York.

From 1981-1983 the effects of mechanical removal and chemical destruction of aquatic macrophytes on littoral fish communities of Chautauqua Lake, New York were studied. Fish communities were sampled on a weekly basis with shore seines. Sample plots consisted of a harvest, buffer, and control zone of equal sizes (30 m x 30 m).

All sizes of fish decreased dramatically for a few days after harvesting. Within two weeks after harvesting, large fish (≥ 81 mm TL) significantly ($P < .05$) increased in numbers compared to the control zone. Medium sized fish (50 mm - 80 mm TL) significantly increased within three weeks after harvesting.

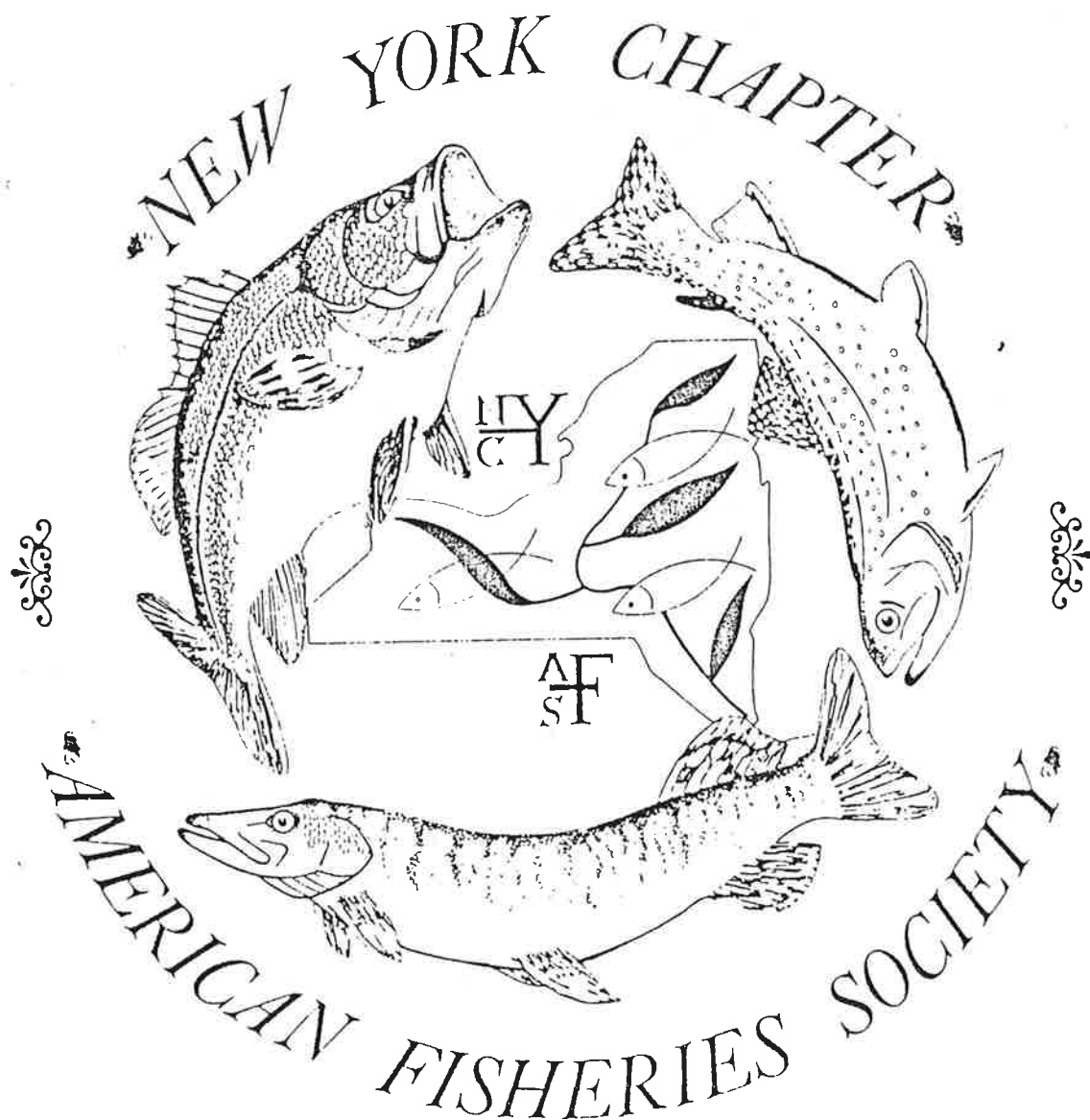
Fish abundances in harvested weeds were compared to abundances in fish communities. In 1981-1983, the mean fish removed by harvesting were 5000, 367, and 639 fish/ha, respectively. Sunfish (*Lepomis* sp) composed (40%) in the harvester samples, but were less than 15% in the fish communities themselves. Fish < 70 mm TL made up $> 90\%$ of all but one harvester sample.

The herbicide Diquat was applied to plots with a 9.14 m x 9.14 m (1982) or four 91 cm x 91 cm x 91 cm (1983) cages containing yellow perch (*Perca flavescens*) and sunfish. No reduction in survivorship was found at 1.0 or 2.0 ppm Diquat. Our data suggest a significant ($P < .005$) reduction in survival of perch at 3.0 ppm Diquat.

Consideration of biological and ecological needs of the lake fauna may improve the efficiency and costs of future management of Chautauqua Lake's macrophytes.

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February 2-4, 1984
The Beeches'
Rome, New York



2:20 - 2:25 p.m.	Introduction of Remaining Papers, Mike Duttweiler
2:25 - 2:45 p.m.	"Status of Major Finfish Populations", Dr. David Conover, Marine Sciences Research Center, SUNY/Stony Brook, Paper written with J.L. McHugh, Marine Sciences Research Center
2:45 - 3:05 p.m.	"Status of New York's Shellfisheries", Robert Malouf, Marine Sciences Research Center, SUNY/Stony Brook
3:05 - 3:25 p.m.	"Management and Research Needs from a State Perspective", John Mason, New York State Department of Environmental Conservation, Stony Brook
3:25 - 3:45 p.m.	Questions, Answers and Wrapup
3:50 - 5:15 p.m.	Business Meeting
5:30 - 6:30 p.m.	Social Hour
6:30 - 7:30 p.m.	Dinner
8:00 - 9:30 p.m.	Movies

1) "A Second Chance" - EPRI

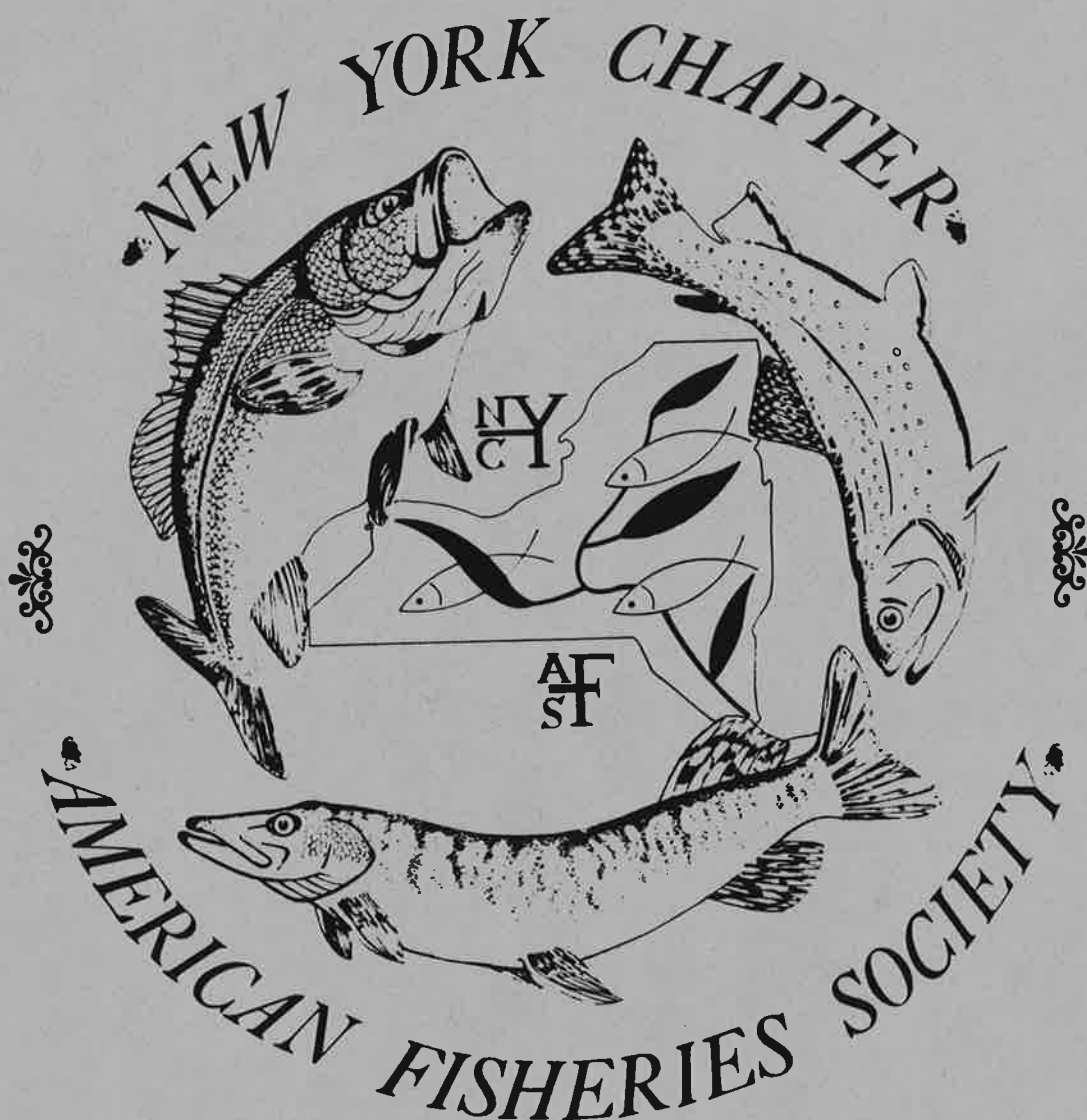
Saturday, February 4
8:00 - 9:00 a.m. Breakfast

Contributed Paper Session II
A. Garry Smythe, Beak Consultants, Inc., Chairman

9:00 - 9:20 a.m.	"Wetlands As Fish Spawning and Nursery Areas: Succession of Forage Species", Robert G. Werner, Steven R. LaPan, Michael S. Kruse
9:20 - 9:40 a.m.	"Composition of Fish Populations and Energy Flow in Sewage-Impacted and Non-Impacted Lake Champlain Wetlands", Lloyd R. Wilson and Gerhard K. Gruendling
9:40 - 10:00 a.m.	"Genetic Identification of Sea Lamprey (<u>Petromyzon marinus</u>) Populations from the Lake Superior Basin", Charles C. Krueger and G.R. Spangler
10:00 - 10:20 a.m.	Coffee Break
10:20 - 10:40 a.m.	"Effects of Peaking Flow Conditions on Habitat Selection by Juvenile Rainbow Trout in an Experimental Stream," Steve Gloss and Walter Popp
10:40 - 11:00 a.m.	"Biology of the Cutlips Minnow, (<u>Exoglossum maxilllingua</u>)", Antonios Pappantoniou, George Dale and Robert E. Schmidt
11:00 - 11:20 a.m.	To Be Announced



NEW YORK CHAPTER - AMERICAN FISHERIES SOCIETY



MEMBERSHIP DIRECTORY 1984 - 1985

EFFECTIVE APRIL 15, 1985

1985 OFFICERS - NEW YORK CHAPTER

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GAYLORD ROUGH

Elected at the Annual Meeting of the New York Chapter on February 1, 1985. The Annual Meeting was held at The Beeches Conference Center, Rome, New York, February 1-2, 1985.

1985

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Dieter Busch

Special Committee

New Initiatives
Newsletter
Publicity
Workshop

Thomas Field
Joseph Buttner
Gary Neuderfer

MEMBERSHIP LISTING

The names of all members who paid dues for 1984 and/or 1985 through April 15, 1985 are listed alphabetically. The last name appears first on the first line on the left hand side, followed by the first name and initial. Immediately below the name is the member's affiliation; either the member's employer or, for students, the academic institution. An "S" in parentheses indicates that the member is a student.

The member's home address is given in the second column. If no home address is given the employment or school address is used. In the third column are listed one or two telephone numbers, the number on the first line is the home number and the number on the second line is the business or school number.

In the fourth column a coded number(s) represents the major field of interest of the member. The interpretation of the codes follows:

1. Administration
2. Aquaculture
3. Aquatic biology, ecology (freshwater)
4. Biological controls
5. Benthic organisms
6. Communications (writing, publications, publicity)
7. Exotic species
8. Fish and fishing - general
9. Fish behavior
10. Fish biology - freshwater species
11. Fish biology - marine species
12. Fish biology - estuarine species
13. Fish biology - salmonids and cold-water species
14. Fish biology - warm-water species
15. Fish larvae
16. Fisheries management (population dynamics, habitat improvement, etc.)
17. Genetics
18. Health-medicine, aquatic animals
19. Ichthyology, taxonomy
20. Illustration
21. Impact assessment
22. International fisheries development
23. Legislation and law enforcement
24. Limnology
25. Pesticides
26. Physiology
27. Plankton
28. Pollution
29. Power plants
30. Research
31. Striped bass
32. Sturgeon
33. Toxicology - all phases
34. Water quality - analysis, improvement, etc.
35. Crustaceans
36. Education/Teaching

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Abraham, William J. NYS DEC	8913 Strutt St. Wayland, NY 14572	716-728-5067 716-226-2466	16
Adams, Lynn (S)	ERC-SUNY Fredonia Fredonia, NY 14063	716-672-7757 716-673-3375	3,10,33
Aloi, Michael CESF - SUNY	157 Cambridge St. Syracuse, NY 13210	315-474-1160	
Aleveras, Ronald LMS Engineers	82 Cardinal Dr. Washingtonville, NY 10992	914-496-9619 914-735-8300	8,13,16,21
Arnold, Stephen LMS Engineers	One Blue Hill Plaza Pearl River, NY 10965	914-358-8776 914-735-8300	3,16,21,24,28, 29,30,32,34
Bader, Andrew P. SUNY ESF	Dept Forest Biol SUNY-CESF Syracuse, NY 13210	315-476-7113 315-478-9392	3,5,24
Bakst, Larry	182 E. 3rd St. Brooklyn, NY 11223		2,14,16,31
Bao, Isaac Y. Osborn Labs	362 State St. Brooklyn, NY 11217	212-624-7752 212-226-8500	
Barnhart, G.A. NYS DEC	R.D. #1, Box 142 Schaghticoke, NY 12154	518-692-7349 518-457-5698	13
Bartella, Mark C.	99 Roland St. Buffalo, NY 14212	716-892-5860	16,38
Beebe, C. Allen Texas Instruments	75 St. James St. Kingston, NY 12401	914-338-5684 914-741-4500 Ext. 225	3,10
Bergstedt, Roger USFWS	R.D. 3, Box 375A Oswego, NY 13126	315-343-6628 315-343-3951 Ext. 243	16
Best, Mary Cornell Univ. (S)	1018 Bradfield Hall Ithaca, NY 14853	607-273-4027 607-256-4494	3,5,21,24,34
Biddinger, Greg Illinois EPA	1032 W. Iles Ave Springfield, IL 62704		33
Bishop, Daniel NYS DEC	4141 South St. Marcellus, NY 13108	315-673-1257 607-753-3095	
Black, Warren D. USEPA	255 Ziska Ave., Apt. B-7 Jerico, NY 11753	212-264-5170	21
Blake, John W. NYS Power Authority	23 Cross Ridge Rd. Chappaqua, NY 10514	914-238-5441 212-397-2941	3,28
Blake, Leigh NYS DEC	P.O. Box 122 Felts Mills, NY 13638	315-773-5811 315-782-0100 Ext 262	

Chang, Chang-Hwa CUNY-City College (S)	84-49, 168 St., Apt. 1-L Jamaica, NY 11432	212-658-6331 212-873-1300	3,10,11,12,13, 14,15
Chiotti, Thomas L. NYS DEC	83 Morris Rd. Freeville, NY 13068	607-838-3733 607-753-3095	10,13,16
Chipman, Brian D. VA Polytech & S.U.	Dept Fish & Wildlife Blacksburg, VA 24061	703-951-1191 703-961-5320	10,16,37
Colesante, Richard NYS DEC	118 Mill St. Constantia, NY 13044	315-623-9475 315-623-7311	2,3,10
Colquhoun, James NYS DEC	56 Paxwood Rd. Delmar, NY 12054	518-439-1231 518-457-6178	3,18,33,34
Cone, R. Scott Cornell U	Fernow Hall, Cornell U Ithaca, NY 14853	607-272-8036 607-256-3191	3,10,13,14,17, 19,24,28,34
Coonradt, Stephen NYS Power Authority	Blenheim Gilboa P.O. Box F Grand Gorge, NY 12434	518-827-5526 607-588-6061	
Cosper, Terry C. Cosper Env. Serv.	Cosper Env. Serv. Inc. Northport ERC, Eaton's Neck Rd. Northport, NY 11768	516-754-1046	2,3,4,10,11,12, 15,16,21,27-30, 33,34
Coutu, D. James NYS DEC	232 Winslow St. Watertown, NY 13601	315-788-3837 315-782-0100 Ext. 262	10
Creech, Cliff NYS DEC	648 Old Stage Rd. Groton, NY 13073	607-898-3965 607-753-3095	8,13,16
Cull, Catherine Conestoga-Rovers & Assoc.	7 Glenbourne Ct. Williamsville, NY 14221	716-632-9337 519-884-0510	24,34
Culligan, William NYS DEC	510 Peru Rd. Groton, NY 13073	607-898-3331 607-753-3095	16
Culp, Terry R. Ichthyological Assoc.	P.O. Box 2 Stamford, NY 12167	607-652-3408 607-652-3563	21,29
Daniels, Robert A. NYS Museum	NYS Museum CEC 3132 Albany, NY 12230	518-872-2137 518-474-5800	3,10,19
Davall, Russ NYS DEC	R.D. 1 Homer, NY 13077	607-749-2730 607-753-3095	
Davis, Debra N.O.A.A.	NMFS, Beaufort Lab, Box 570 Beaufort, NC 28516	919-728-4595	9,11,26,28
Dean, Howard NYS DEC (Retired)	9241 Main St. Westernville, NY 13486	315-827-4606	3,5,25,28,34
DeFries, Eric SUNY-ESF	81 Pleasant Ave. Lancaster, NY 14086	716-683-3303 315-422-5285	2-5,7-14,16, 19-26,28-32,34

Ewell, William S. Eastman Kodak Co.	296 Cross Gates Rd Rochester, NY 14606	716-247-3083 716-588-4528	2,3,15,18,23, 30,33,34
Fairchild, Robert P. U.S. Army	P.O. Box 455 Ft. Monroe, VA 23651	804-727-3451	6,22,24,36
Festa, Patrick J. NYS DEC	4 Birchwood Dr. Clifton Park, NY 12065	518-371-4566 518-457-6937	16
Field, Thomas C. Self, Fernwood Hatchery	R.D. #1 Gansevoort, NY 12631	518-793-1282 518-793-1282	2,16
Finkelstein, Samuel NYS DEC	8 Madeley Lane Stony Brook, NY 11790	516-751-3926 516-751-7900	1,8,11,12,30, 31
Flack, Frank M. NYS DEC	432 Wescott St. Syracuse, NY 13210	315-475-2838 315-337-0910	2,3,8,13,16,30
Flick, William Cornell University	Paul Smith's, NY 12970	518-327-3529	13,16
Flint, R. Warren SUC Oswebo	R.C. King Hall, SUNY Oswego, NY 13126	315-343-3773 315-341-3088	3,4,5,16,24,35
Foley, Robert E. NYS DEC	3 Frasier Ave Johnstown, NY 12095	518-762-1114 518-773-7318	26,33
Forney, John L. Cornell Univ.	R.D. 1 Bridgeport, NY 13030	315-633-2948 315-633-9243	3,16
Fox, Richard NYS DEC	SUNY, Bldg. 40 Stony Brook, NY 11790	516-698-3452 516-721-7900	11,16,20
Franke, Kevin J. SUNY CESF (S)	6504 Doe Rd. Saugerties, NY 12477	914-246-9078 315-422-5285	3,4,8,9,13,14, 16,19,21,23, 31-34
Fraser, Douglas Siena College	Dept. Biology Loudonville, NY 12211	518-873-2024 518-873-2467	9,10
Gala, William R. Fordham Univ. (S)	27 Melborne Lane Old Bethpage, NY 11804	516-249-6873	
Galati, Joseph NYS DEC	93 Lakin Ave. Jamestown, NY 14701	716-483-1368 716-673-3374	9,16
Gall, Wayne K. Buffalo Mus. of Sci.	36 St. Mary's St. Lancaster, NY 14086	716-681-8238 716-846-7472	3,5,10,24
Garrell, Martin Adelphi Univ.	Adelphi U., Physics Dept. Garden City, NY 11530	516-298-5095 516-294-8700 Ext. 7373	16,24,28
Gaskin, Peter N. Jefferson Comm. Coll.	R.D. 1, P.O. Box 245 Adams Center, NY 13606	315-583-5314 315-782-5250	10
George, Carl Union College	R.D. 4 Wagner Glenville, NY 12301	518-393-0629 518-370-6243	3,8,9,10,14,16, 18,19,21,24,30

Heinrich, Thomas NYS DEC	726 Grant Ave. Dunkirk, NY 14048	716-366-8471 716-366-0228	
Heitzenrater, W.	7055 Ridge Rd. Lockport, NY 14094	716-434-9387 26,29,30,34	3,4,5,8,21,
Hjorth, Doug C.T. Main Inc.	R.D. #3, Box 54 Pelham, NH 03076	603-635-3227 617-262-3200	3,5,8,9,10,11, 12,14,15,16, 19,21,27,28,29
Hobicht, Christopher Cornell Univ. (S)	26 Spruce Lane Ithaca, NY 14853	607-257-2490	16
Holmes, Edward D. NYS DEC	High Acres Hemlock, NY 14466	716-346-5761 716-226-2466	16
Holsapple, John NY Power Pool	P.O. Box 146 New Baltimore, NY 12124	518-756-9783 518-381-2122	33,34
Homa, John Jr. Ichthyological Assoc.	48 Teeter Rd. Ithaca, NY 14850	607-272-3778 607-257-7121	29
Hopper, Clayton	2552 Four Rod Rd. East Aurora, NY 14052	716-652-7740	14
Horn, Edward NYS DEC	R.D. 1, Box 308 West View Rd. Voorheesville, NY 12186	518-765-4271 518-457-6178	1,21,25,28,29, 33,34
Houston, Len U.S. Army Engrs.	138 79th St. Brooklyn, NY 11209	212-238-0279 212-264-4662	10,14,16,21
Huggins, Thomas	284 South Ave. Poughkeepsie, NY 12602	914-229-9048 914-452-2000	3,16,14,19,34
Hughes, Michael CESF - Syracuse (S)	204 Church St. Amsterdam, NY 12010	518-842-5236	3,11-14
Hughes, Steven USF & W/L	28 Gracie Rd. Cortland, NY 13045	607-272-7915 607-753-9391	2,26,31,37
Hurlbert, Philip J. NYS DEC	R.D. 1, Box 622 E. Meredith, NY 13757	607-278-5490 607-652-7364	
Johnson, Jim & Emily Oregon Dept. F/WL	4548 S.W. Fairvale Ct. Portland, OR 97221	503-245-5426 503-229-5413	1,5,6,13,15, 16,37
Jolliff, Thomas NYS DEC	Bedford Corners Rd. Cape Vincent, NY 13618	315-654-3156 315-654-2147	10
Jones, Cynthia Cornell Univ.	118 Fernow Hall Ithaca, NY 14853	607-256-2151	10,11,12,15, 16
Josephson, Daniel Cornell Univ.	Box 111 Old Forge, NY 13420	315-369-3801 315-357-5188	13,16,21,30

Leibovitz, Louis Cornell Univ.	Marine Biology Lab Woods Hole, MA 02543	617-540-8551 617-548-3705	2,11,18,30,36
Levine, Edward NYC DEP	NYC Dept. of Env. Protect. Ward's Island, NY 10035	212-409-6654 212-860-9340	28,30,34
Lichorat, Robert NYS DEC	Box 236, Rt. 310 Dewittville, NY 14728	716-753-3240 716-789-2705	10,13
Litwa, Michael NYS DEC	460 17th St. W. Babylon, NY 11704	516-957-0983 516-751-8200	8,9,11,16,31
Locicero, Felix US EPA	21-09A 46 St. Astoria, NY 11105	212-728-5482 212-264-1552	8,16,19,21,23, 31,34
Loeb, Howard NYS DEC (retired)	184 Georgetown Voorheesville, NY 12186	518-765-4935 518-765-4935	10
Long, John F&WL Mgmt. Board	Box 56 Niagara Falls, NY 14305	716-731-4002 716-285-7313	1,6,8,16,23
Lugthort, John ERC Fredonia	ERC, SUNY Fredonia, NY 14063	716-366-2105 716-673-3375	5
Mack, Alan D. NYS DEC	R.R. 1, Box 459 Lee Center, NY 13363	315-942-4556 315-337-1390	2,3,4,13,16, 17,18,30,34
MacNeill, David B. SUNY ESF (S)	SUNY-ESF, 226 Illick Hall Syracuse, NY 13210	315-463-4913	3,7,10,15,16
Makarewicz, Joseph SUNY Brockport	205 Darla Drive Brockport, NY 14420	716-637-9542 716-395-5750	3,13,21,24, 27,33,34
Malchoff, Mark Cornell Univ.	154 River St. Warrensburg, NY 12885	607-756-7910 607-256-2162	10,36
Mallon, Gregory SUNY Plattsburg (S)	18 Mara Rd. Huntington, NY 11746	516-771-6973	33
Mancroni, Wayne C. Hudson G&E	284 South Ave. Poughkeepsie, NY 12061	914-452-2000 Ext. 5734	
Marcellus, Kenneth	P.O. Box 323 Windsor, NJ 08561	212-460-6059	1,16,23,29, 31,34
Marra, John David NYS DEC	226 New York Ave. Mechanicsville, NY 12118	518-664-4019	3,5,8-13,16, 24,25,28,29, 33,34,36
Marsden, J. Ellen Cornell Univ. (S)	Fernow Hall, Cornell U. Ithaca, NY 16853	607-277-7310 607-256-8231	16,17,30
Martin, G. Thomas N.C.C.C.	Niagara Co. Comm. College Sanborn, NY 14132	716-754-4165 716-731-3271	5,28
Mason, Doran M. SUNY-ESF Syracuse (S)	SUNY-ESF, 226 Illick H. Syracuse, NY 13210	315-457-9985	3,15,27

Neuderfer, Gary N. NYS DEC	45 Norman Rd. Rochester, NY 14623	716-424-4926 716-226-2466	3,5,10,13,14, 28,33,34
Newell, Arthur J. NYS DEC	R.D. 1, Box 71 Westerlo, NY 12193	518-797-3299 518-457-1769	10,16,33
O'Gorman, Robert USFWS	161 West 8th Oswego, NY 13126	315-343-2351 315-393-3951	16
O'Grady, Dean P. Water Testing Lab, Inc.	8 Willowbrook Lane, Apt. 3 Manlius, NY 13104	315-682-8039	3
Olney, Louis G. Morrisville Ag Tech	Rocks Rd., Box 152A Morrisville, NY 13408	315-684-3448 315-684-7987	3,10
Olson, Robert A. SUNY Fredonia (S)	Jewett Hall, ERC Fredonia, NY 14063	716-673-2135 716-673-3375	3
Osterberg, Donald M. SUNY Potsdam	20 Grove St. Potsdam, NY 13676	315-265-8971 315-267-2261	3,10,30,36
Otis, Maurice B. NYS DEC	P.O. Box 243 Saranac Lake, NY 12983	518-891-1009 518-891-1370	1,8,16
Padilla, Miguel Fordham Law Sch. (S)	15 Marble Hill Ave. Bronx, NY 10463	212-562-5394	2,3,7,8,12,31
Paloumpis, Andraes A. Onondaga Comm. Coll.	4859 Pembridge Circle Syracuse, NY 13215	315-488-8231 315-469-7741	
Panek, Frank M. NYS DEC	24 Shell Rd. Rocky Point, NY 11778	516-744-9712 516-751-7900 Ext. 261	16
Pappantoniou, Antonios H.H. Lehman Coll.	Dept. Biol. Sci. Bronx, NY 10468	212-796-1660 212-960-8240	3,9,10,19,24, 26
Pearce, Bill NYS DEC	Box 316 Cape Vincent, NY 13618	315-654-2833 315-654-2147	3,9
Pearsall, Webster SUNY Fredonia (S)	Jewett Hall, SUNY Fredonia, NY 14063	716-366-2105 716-366-3375	8,9
Perrotte, William Marist College	Bio Dept. Marist Coll. Poughkeepsie, NY 12601	914-229-7898 914-471-3240	3,5,19,24,27, 33,35
Peterson, Clifford Concordia College	1 Concordia Pl. Bronxville, NY 10708	914-779-5392 914-332-9300	19,36
Petty, Arch NYS DEC (retired)	R.D. #2, Box 133 5 Miller Dr., Homer, NY 13077	607-749-4670	16
Pfeiffer, Martin H. NYS DEC	Box 141 Bloomingdale, NY 12913	518-891-4468 518-891-1370	10,16,21
Piehler, Glenn	160 Chubb Ave. Lyndhurst, NY 07701	201-460-6508	

Savercool, Daniel SUNY Oswego (S)	18 Frederick Drive Apalachin, NY 13732	607-625-3171	2,3,8,9,11,13, 16,19,24,25,30
Schachte, John Jr. NYS DEC	706 Floyd Ave. Rome, NY 13440	315-339-2518 315-337-0910	18
Schiavone, Albert Jr. NYS DEC	RD 4, Box 208 Watertown, NY 13601	315-658-2652 315-782-0100	10,14,16
Schleyer, Richard ESLO Derby, Inc.	P.O. Box 220 Pittsford, NY 14534	716-385-2805	
Schmidt, Robert E.	Simon's Rock College Alford Rd. Great Barrington, ME 01230	201-948-4253	15,19,30
Schoch, William F. NYS DEC	14 E. Pine St. Saranac Lake, NY 12983	518-891-1837 518-891-1370	3,8,13,16
Schonhoff, Bernard Cornell Univ.	Cornell Fld. St. RD 1 Bridgeport, NY 13030	315-452-0928 315-633-9243	3,8,10,14,16
Scott, Guy R. Niagara Mohawk	300 Erie Blvd. W. Syracuse, NY 13202	315-428-6622	16,21,29
Seeley, George NYS DEC	RD 2, Box 224 Delanson, NY 12053	518-895-8009 518-457-5430	1,2,3,8,16
Serio, James A. Blade Tackle Co.	481 S. Beech St. Syracuse, NY 13210	315-476-9806 315-475-3474	8,10,24
Setari, Christine NYS DEC	52 Red Maple Rd. Ridge, NY 11961	516-924-0422 516-751-7900 Ext 257	2,3,4,7,9,12, 15,18,36
Sheldon, Jeffrey A.	207 McKinley Ave. Island Park, NY 11558	516-432-3412	2,26,31
Sheppard, J. Douglas NYS DEC	3 Birchwood Drive Clifton Park, NY 12065	518-371-1355 518-457-6179	3,9,10,13,14, 15,16,19,21, 30,34
Sherman, Ruth Cornell Univ. (S)	CFU, Fernow Hall Ithaca, NY 14850	607-257-3767 607-256-2151	3,33,34
Shupp, Bruce D. NYS DEC	278 Pine St. Chestertown, NY 12817	518-494-3850 518-457-5420	1,10,16
Simonin, Howard	8314 Fish Hatchery Rd. Rome, NY 13440	315-827-4784	2,3,10,24,25
Skinner, Lawrence NYS DEC	Box 81, Route 43 West Sand Lake, NY 12196	518-674-2793 518-457-6179	3,33,34
Sloan, Ron NYS DEC	26 Mildred Lane Latham, NY 12110	518-785-9291 518-457-1769	9,25,28,33,34
Smith, C. Lavett Am. Museum Nat. Hist.	312 Anderson Ave. Closter, NJ 07624	201-768-2173 212-873-5252	3,19

Sutter, Thomas D. NYS DEC	15 Slingerlands St. Slingerlands, NY 12159	518-439-9097 1,2,7,19 518-439-8057 Ext. 226
Taormina, Anthony	108 Glenwood Ln. Port Jefferson, NY 11777	516-473-1869 36
Tupner, Alta EBASCO Services	160 Chubb Ave. Lyndhurst, NJ 07071	201-357-1797 201-460-6492
Tuttle, L. Raymond NYS Electric & Gas	Sterry Drive, R.D.1 Box 281, Greene, NY 13778	607-656-8702 10,29,33,34 607-729-2551 Ext. 4310
Urban, Timothy SUNY ESF (S)	6575 Salmon Creek Rd. Williamson, NY 14589	315-589-2858 3,9-14
Vaas, C. Randy NYS DEC	R.D. 3, Box 274C Fralick Rd. Watertown, NY 13601	315-788-7725 33,34 315-785-2246
VanVolkenburgh, Pieter NYS DEC	SUNY, Bldg. 40 Stony Brook, NY 11794	516-567-1738 1,2,5,11,16 516-751-7900
Vernall, Cindy SUC B (S)	160 Koster Row Egbertsville, NY 14226	716-836-6713 716-878-6410
Voiland, Michael P. Cornell Univ.	145 Greenway Blvd. Churchville, NY 14428	716-293-3279 10,16 716-395-2638
Wagner, Susan SUC Fredonia	Env. Res. Ctr. SUNY Fredonia, Fredonia, NY 14063	716-366-2105 3,34 716-673-3374
Waldman, John R. City College of NY (S)	84-08 126 St. Kew Gardens, NY 11415	212-849-2933 10,11,12,19,31
Webster, Dwight A. Cornell Univ.	Fernow Hall Ithaca, NY 14853	607-272-5109 10,13,16 607-256-6578
Wedge, Leslie NYS DEC	R.D. 1, Box 543 Homer, NY 13077	607-749-3292 3,8,13,16 607-753-3095
Wefring, David Int'l Paper Co.	P.O. Box 797 Tuxedo Park, NY 10987	914-496-6187 3,6,21 914-351-2101
Werner, Robert G. SUNY Syracuse	R.D. 3, Tracy Drive Skaneateles, NY 13152	315-673-4272 10,15 315-470-6804
Wich, Kenneth NYS DEC	22 Washington Ave. Coxsacki, NY 12051	
Widmer, Carl C. NYS DEC	R.D. 2 Naples, NY 14512	716-374-5048 13,16 716-226-2466
Wilson, Billie Aqua Shade, Inc.	P.O. Box 198 Eldred, NY 12732	914-557-8077

BYLAWS OF THE NEW YORK CHAPTER OF THE AMERICAN FISHERIES SOCIETY

Section 1 - Name and Objectives

1. The name of this organization shall be the New York Chapter of the American Fisheries Society, hereinafter referred to as the Chapter.

2. The objectives of the Chapter shall be those of the American Fisheries Society as set forth in Article 1 of its Constitution, and to encourage the exchange of information by members of the Society residing within the State of New York.

Section 2 - Membership and Dues

1. The membership of the Chapter shall be of the following classes:

(a) Member: Active Members of the American Fisheries Society in good standing, upon enrollment in the Chapter, shall be eligible to vote.

(b) Honorary Member: Persons who, by reason of professional or other attainments, outstanding service to the Chapter, or official position, shall be eligible for election as an Honorary Member upon nomination by two or more Chapter Members in good standing, and a 2/3 vote of the members present at an annual meeting. There shall be two classes of honorary membership:

(1) Distinguished Service and (2) Exofficio. Honorary Members shall be entitled to all rights and privileges of Members, except that Exofficio Members shall not vote or hold office.

2. Annual dues for Members shall be five dollars (\$5.00), except that dues for full-time students shall be two dollars (\$2.00). Honorary Members will not be required to pay dues. Dues of new members shall be payable when application for membership is accepted. Memberships not paid on or before July 1 shall be considered lapsed and those persons shall not receive publications of the Chapter and shall forfeit all rights and privileges of membership as long as dues are unpaid.

Section 3 - Meetings

The Chapter shall hold at least one meeting annually at the time and place designated by the Executive Committee. Notice of the annual meeting of the Chapter shall be mailed to each member at least one month before the date of such meeting. Business shall be conducted in accordance with provisions of these Bylaws, and/or Robert's Rules of Order in the absence of specific guidelines. The program shall be the responsibility of the Program Committee.

Section 6 - Executive Committee

The Executive Committee shall consist of the Chapter officers (President, President-Elect, Secretary-Treasurer, Secretary-Treasurer-Elect) and the immediate Past-President. The Chairpersons of standing committees and ad hoc committees shall be non-voting members of the Executive Committee. The Executive Committee is authorized to act for the Chapter between meetings and to perform appropriate duties and functions.

Section 7 - Chapter Committees

Chairpersons of Committees, except as listed in Sections 5 and 6, shall be appointed by the President. Committee members shall be chosen by the respective committee chairpersons. Standing Committees shall include: Auditing, Environmental Concerns, Membership, Nominating, Program, and Resolutions. The Nominating Committee will be chaired by the immediate past-president and the selection of nominees for office by the Nominating Committee will be done in consultation with, and subject to, the approval of the Executive Committee.

The committees shall be composed of the chairperson and any other members in good standing selected by the chairperson. The committees shall aid the President in the operation of Chapter business and activities. The President shall direct them in their duties. They may also be directed by vote of the membership at an annual meeting.

The term of office for members of the Chapter Committees shall end upon the discharge of the duties for which they were appointed, or at the next annual meeting of the Chapter, whichever comes first.

Section 8 - Voting and Quorum

Decisions at meetings of the Chapter shall be by a majority of those voting, except that amendments to the Bylaws require a 2/3 majority, and excepted further, the election of Honorary Members requires a 2/3 majority vote. Any member in good standing who cannot attend a meeting may request the Executive Committee in writing to register a vote on a previously published question and such a vote shall be counted with the votes of members present. Such votes shall not be used to determine a quorum. Proxy votes must be received by the Secretary-Treasurer before the annual meeting at which the vote is taken.

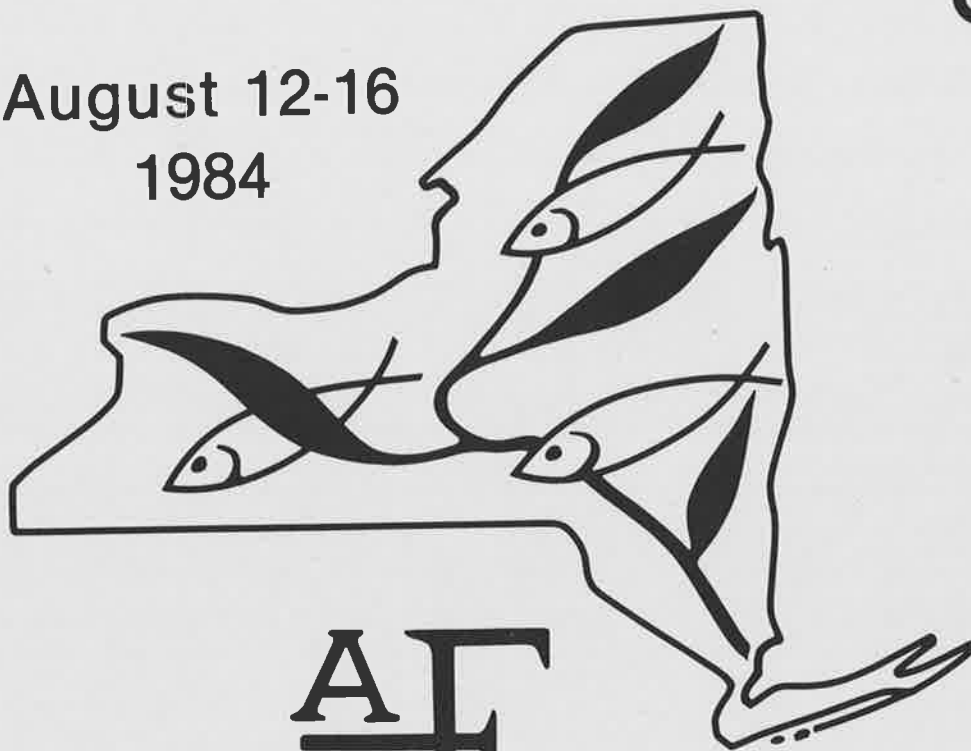
A quorum for the transaction of official business shall be 20 of the Chapter's voting members.

Section 9 - Registration

The Executive Committee may assess each registrant attending meetings of the Chapter a registration fee necessary to cover the costs of the meeting and Chapter activities. Collections shall be made by the Secretary-Treasurer or a representative appointed by that officer.

American Fisheries Society

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1984



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114th ANNUAL MEETING ITHACA, NEW YORK

Abstracts

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KEYNOTE ADDRESS & SESSION

"FISHERY SCIENTISTS--BETWEEN TWO WORLDS"

The seasoning of fishery science. William F. Royce, 10012
Lake Shore Blvd. NE, Seattle, WA 98125

Our sciences and activities have proliferated as we attack the fishery problems as people perceive them. We face a professional transition to a unifying concept of public service in the cause of the aquatic resources, their culture, and their environment.

This transition is forcing new social roles on us that deserve scholarly study. They are discussed under the titles (1) Understanding and Individuality, (2) Objectives and Organizations, (3) Goals and Policies, and (4) Ideals and Advocacy.

It is suggested that such studies should be based on the concepts that we comprise a living system and that our process of social change has many similarities to biological evolution.

Expanded horizons for fisheries management. John P.
Harville, 2430 S.W. Boundary St., Portland, OR 97201

Fishery scientists operate today in an arena significantly enlarged and diversified from that of past decades. National Standards mandated by the Congress under MFCMA incorporate socioeconomic concerns into the optimum yield concept, and require extensive public participation throughout the information review and decision-making process. Increasing user pressures and diminishing environmental resources escalate costs of resource conservation and productivity. The information explosion of the '70s has made quantum changes in information transfer capabilities and requirements.

To operate productively in this rapidly expanding arena, fishery scientists must adapt from the traditional philosophies and practices of past decades. They must accept and effectively make use of public input to the information base and the management decision process. They must nurture the climate and operational efficiency for cross-disciplinary communication and decision-making. They must enhance techniques for effective operation in both

Once touted as the solution to food supply problems, aquaculture has failed to meet the early simplistic expectations for a variety of reasons. Many commercial ventures were premature, based on inadequate knowledge, poorly planned and implemented. Often new high technology culture systems were tried by production-oriented companies without adequate attention to cost control, processing, marketing and business management. Some ventures were based on biological, economic or environmental premises which were proven faulty by later experiences. In some cases aquatic farming ventures could not get environmental permits and licenses because of pressure by other users under provisions of the coastal zone management laws and policies.

Nevertheless, trial and error experience, sound biological research, improved culture techniques and good planning, implementation and management have lead to the development of many successful aquatic farms.

Further expansion of aquaculture in the United States requires:

- sound planning and site selection
- solid biological basis for culture including in most cases, hatchery techniques
- effective farm and plant design and economical construction
- well trained production managers
- genetic improvement of the target species
- quality control and marketing
- effective public relations
- and other requirements for successful business ventures.

Some aspects of the feeding ecology of larval yellowtail flounder, *Limanda ferruginea*. W. Huntting Howell and Linda Marler, Department of Zoology, University of New Hampshire, Durham, NH 03824, (603) 862-2100

Simultaneous collections of larval yellowtail flounder, *Limanda ferruginea*, and their potentially available food were made in the Gulf of Maine to examine larval diet and prey selectivity. Of the 462 larvae examined, which ranged in length from 2.7 - 19.2 mm, over half had identifiable gut contents. Virtually the entire diet was composed of calanoid copepods. Predominant genera were *Calanus*, *Centropages*, and *Pseudocalanus*. Additional food items included gastropod veligers, fish eggs, euphausiid nauplii, and amphipod nauplii. Widths of food organisms ranged from 0.14 - 0.66 mm. Prey selectivity calculations, based on the numerical percentages of prey organisms in the diet and in the potentially available food, indicate that larvae prefer *Calanus*, *Centropages*, *Pseudocalanus*, gastropod veligers, and unidentified copepodite stage copepods. Two abundant cladoceran genera, *Evadne* and *Podon*, which were within the dietary size range, were avoided as food items. There was no indication that diet changed with larval size, and no indication of diet feeding rhythmicity. Although both larvae and their preferred food organisms were somewhat patchily distributed, the consistent overlap of the distributions and the abundance of prey organisms indicates that larvae were not in danger of starvation.

Maturation schedules for herring (*Clupea harengus harengus*) in the western Gulf of Maine. David K. Stevenson, Zoology Department, University of Maine, Orono, ME 04469, (207) 633-5572, David B. Sampson, Jean Chenoweth, and Margaret Hunter, Maine Department of Marine Resources, W. Boothbay Harbor, ME 04575

A multiple regression model which included year, time of year, length, and their associated interaction terms failed to show a significant effect of year or any year interactions on the gonad somatic index (GSI) of maturing male or female herring obtained from Massachusetts Bay - Jeffreys Ledge commercial catch samples during August 1 - October 31, 1978 - 1982. A simplified model in the form

$$GSI = +_1 TIME + _2 LENGTH + _3 TIME*LENGTH$$

produced different results for each sex. Length was the only significant variable for males whereas all three

The Atlantic Croaker Fishery. Brenda L. Norcross, Ocean Research and Education Society, Inc., 19 Harbor Loop, Gloucester, MA 01930, Dexter S. Haven, and Herbert M. Austin, Virginia Institute of Marine Science, School of Marine Science, College of William and Mary, Gloucester Point, VA 23062

Catches of Atlantic Croaker (Micropogonias undulatus) have fluctuated historically along the east coast of the U.S. Interannual variability in commercial catch resulted from climate-induced distributional changes, environmental vulnerability of larvae on the shelf and juveniles in the estuaries, and density-independence. These factors caused marked annual changes in year-class strengths. Fishing pressure contributes to these fluctuations, as overfishing a weak year class reduces spawning potential. Several poor year classes in a row can magnify this effect. The Atlantic croaker fishery should be managed based on the success or failure of individual year classes. No size restriction on fishing is necessary when the year class is strong. However, an average year class should be limited according to the present Virginia limit of eight inches, while a weak year class should be grown to spawning size by increasing the size limit to ten inches.

Aspects of the reproductive biology of tilefish off the coast of Georgia. Daniel L. Erickson, Michael J. Harris, and Gary D. Grossman, School of Forest Resources, University of Georgia, Athens, GA 30606, (404) 546-5260

A commercial fishery for tilefish (Lopholatilus chamaeleonticeps) recently has developed off the Georgia coast. At present, life history information for this species is insufficient for proper management. This study was designed to assess: 1) age at maturity, 2) seasonal reproductive cycling, 3) fecundity, 4) sex ratio, and 5) the hypothesis that tilefish are protogynous hermaphrodites.

Tilefish were collected by longlining during 1982 and 1983. Female tilefish first matured between 525-575 mm total length (TL) while males were first mature between 575-650 mm TL. Based on macroscopic and histological examinations of gonads, tilefish off the Georgia coast spawn during March, April, May, and June. Fecundity was a power function of length and ranged from 847,012 to 5,721,120 eggs for tilefish of 573 and 840 mm TL respectively. Our results

Progress is being made in developing and testing a set of field-based indices of marine degradation. Field-based indices are expected to overcome the problems of present regulations so dependent on laboratory bioassays. A hypothesis upon which the set of indices depends is: pollutant impacts can be reliably distinguished from natural variability, and indexed simply for use by environmental managers and policymakers. Given such simple but scientifically rigorous indices, policy and managerial decisions could be more consistent, equitable, and therefore, useful. Also, such indices could constitute socially-relevant measures of pollutant impact for use in field monitoring. The indices are expected to provide relevant monitoring data in risk assessment formats that can be used effectively for controlling pollutant inputs equitably.

Effects of a fixed-crest water control structure on brown shrimp growth rates and emigration patterns from shallow marsh nursery areas. R. Paille, E.E. Knudsen, W.H. Herke, and B.D. Rogers, Louisiana Cooperative Fishery Research Unit, 245 Parker Ag. Coliseum, Louisiana State University, Baton Route, LA 70803, (504)388-6051

The coastal marshes of Louisiana, primary nursery areas for commercially important fishery resources, are eroding at an alarming rate. Marsh managers are constructing water control structures to reduce erosion. The usual structures have been weirs (low level, solid dams) the crest of which are set six inches below average marsh level. The weirs have often been built in channels normally used as migration routes by estuarine-dependent organisms.

Juvenile brown shrimp were marked with fluorescent pigments and released in two nearly identical shallow marsh ponds, one having a weir at the only exit and the other having none. All emigrants were trapped immediately after exiting the two ponds; 22% of those marked in the weired pond, and 44% in the non-weired pond, were recaptured. Growth rates of shrimp were similar in the two ponds. Emigration of brown shrimp from the weired pond was delayed an average of 13 days. Peaks in emigration were correlated with new and full moons.

salmonids consume large numbers of alewives, alewife will decline and competitive interactions of the forage assemblage will shift to favor other species. Stomachs from sport-caught salmonids were examined to determine if diets were changing in response to changes in the forage base and to try to develop indicators of overuse and underuse of the forage base. It was found that diets of salmonids are more diverse now than they have been in other studies. Salmon and lake trout rely less heavily on alewife and more on smelt, chubs, and yellow perch. These findings are in accordance with predictions made from the theory of keystone predators and from optimal foraging theory.

Food items of salmonids in eastern Lake Michigan. Stuart Kogge and Niles R. Kevern, Department of Fisheries and Wildlife, Natural Resources Building, Michigan State University, East Lansing, MI 48824, (517) 355-4477, (517) 353-0647

The stomach contents of salmonids were analyzed to determine their food habits. Fish were sampled along the eastern shore of Lake Michigan from Michigan City, Indiana, to Charlevoix, Michigan. Stomach samples were taken from fish caught by anglers on charterboats from April to November, 1983. The study was part of a coordinated effort including investigators from Wisconsin, Illinois, Indiana, Minnesota and New York. The combined results should reveal changes in the forage base and thus should be useful to help managers determine salmonid stocking rates. Fish sampled included chinook and coho salmon, lake trout, brown trout and steelhead. In April and May, salmonids were inshore and fed predominantly on cladocerans and smelt. Coho salmon were most notable while chinook and lake trout also fed significantly on alewife. During the summer months, salmonids were in deeper water and fed predominantly on alewife. Coho salmon, in late summer, ate notable numbers of bloater chubs.

Food habits of Lake Michigan salmonids in Illinois waters. Jan Savits, John Janssen, and Kate Warpeha, Biology Department, Loyola University of Chicago, 6525 North Sheridan Road, Chicago, IL 60626 (312) 508-3281 and 3282

Studies of the forage base for the Lake Michigan salmonids indicate a shift in relative species abundance that may be the result of salmonid predation. The alewife has been the primary prey of the piscivorous salmonids in former years

primarily to a greater occurrence of alewives in the northern samples. Results suggest that this sampling technique can provide a cost-effective method of monitoring qualitative changes in predator-prey relations in the Great Lakes in real-time and may provide an early indicator of shifts in predator/prey abundance ratios.

Feeding ecology of white bass and white perch from two central basin Lake Erie habitats. Edward E. Emmons, Dept. of Biological Sciences, Bowling Green State University, Bowling Green, OH 43403, (419) 372-2332

Diets and habitats of white bass (Morone chrysops) and white perch (M. americana) were contrasted in two environments of Lake Erie from April through November, 1983. Size-selectivity of prey was correlated to resource availability. White bass consumed Notropis (spp.) whereas white perch fed primarily on zooplankton and benthic invertebrates. Food items of white perch varied significantly between open lake and marsh habitats. Preliminary analysis suggests that the diets of white perch and white bass do not overlap, indicating little potential for resource competition. Also, white perch preferred large prey items. White bass were opportunistic, feeding on prey items of various sizes.

HABITAT INTERACTION/UTILIZATION

Investigation of mechanical harvesting and muskie weed plantings as macrophyte management methods in Chautauqua Lake, New York. Connie Neff, Environmental Resources Center, SUNY at Fredonia, Fredonia, NY 14063, (716) 673-3375

Implications that the macrophyte control program in Chautauqua Lake, New York, may be adversely affecting the declining muskellunge population prompted this three-year study 1981-1983. Reduction in plant biomass due to July or August mechanical harvests and the feasibility of establishing muskie weed (Potamogeton amplifolius) plots for improving fish habitat were studied. Harvesters removed from 13 to 52% of macrophyte biomass from the four study sites. Macrophyte biomass was not depressed below controls when the harvest followed peak biomass accumulation by two or more weeks. Biomass depression within four to nine weeks after harvesting was achieved when plots were harvested six to eight weeks prior to peak biomass accumulation. Biomass

harvester samples, but were less than 15% in the fish communities themselves. Fish less than 70 mm TL made up greater than 90% of all but one harvester sample.

The herbicide Diquat was applied to plots with a 9.14 m x 9.14 m enclosure (1982) or four 91 cm x 91 cm x 91 cm cages (1983) containing yellow perch and sunfish. No reduction in survivorship was found at 1.0 or 2.0 ppm Diquat. Our data suggest a significant ($P < 0.005$) reduction in survival of perch at 3.0 ppm Diquat.

Consideration of biological and ecological needs of the lake fauna may improve the efficiency and costs of future management of Chautauqua Lake's macrophytes.

The effects of mechanical harvesting and herbicide application on the macroinvertebrates of Chautauqua Lake, New York. Garrit J. Lugthart, Environmental Resources Center, SUNY Fredonia, New York 14063, (716) 673-3374

Since changes in the invertebrate fauna can often adversely affect fish populations, the effects of mechanical harvesting and chemical treatment of aquatic macrophytes on the diversity and abundance of macroinvertebrates were examined from May to November of 1982 and 1983 on Chautauqua Lake, New York.

In the harvesting experiments, four sites were established. Each site consisted of two 30 x 30 m plots, one of which was harvested and the other served as a control. Eight samples were taken from each site weekly by means of a 0.5 m diameter plankton net randomly placed on the lake bottom. SCUBA divers removed all weeds and associated invertebrates within the net. The abundance of invertebrates collected in the harvested plots did not significantly differ from the abundance of those collected in the control plots.

The herbicide diquat was applied in six field experiments using 1, 2, and 3 ppm concentrations. In each experiment, five 30 x 30 m plots were set up, with two of the plots acting as controls. In addition to using the above sampling method, multiplate samplers were suspended in each plot. Invertebrate populations were not affected at the lower concentrations. However, at 3 ppm species of Chironomidae and Trichoptera decreased relative to those in control plots. A gradual recovery during the two weeks following application was observed. These temporary declines of important fish food organisms could be detrimental to fish populations if the herbicides are applied at critical periods during fish life stages.

and during the autumn, over larger substrate in Clearwater River tributaries. The use of areas with larger substrate materials in the autumn suggest that substrate may be a critical factor in providing cover for fish in these streams. Since steelhead were larger ($x = 90\text{mm}$) during the autumn, they may have needed more instream cover (i.e., cobble-boulder substrate) than during the summer ($x = 70\text{mm}$), when they mainly were found over gravel-cobble substrate. The data show that some variation, both among seasons and streams, exists for the parameters examined in terms of their utilization by subyearling steelhead in Clearwater River tributaries.

TAXONOMY

The potential of allozymic markers for the evaluation of bluegill subspecies. Kathryn E. Kulzer-Palacheck, Texas Parks and Wildlife Department, Junction Star Route, Box 62, Ingram, TX 78025, (409) 845-5701, and Ira F. Greenbaum, Department of Biology, Texas A&M University, College Station, TX 77843, (409) 845-7791

A hatchery stock of Lepomis macrochirus purpurescens originally from Lake Okeechobee, Florida, and a sample of L. m. speciosus (= L. m. macrochirus?) from Lake Conroe, Texas, were evaluated electrophoretically. Allozyme frequencies at 19 enzyme-encoding gene loci were determined. Diagnostic electromorphic differences between the two samples were detected at one esterase locus and allele occurrence differences were evident at several additional loci. Estimates of genetic similarity and distance between the populations sampled are consistent with those previously reported for comparisons of L. m. purpurescens and L. m. macrochirus. Comparison of allozyme occurrence data between our sample of Texas bluegill and populations of L. m. macrochirus reported previously does not lend support to recognition of Texas bluegill as a separate subspecies, L. m. speciosus, but does reconfirm an east-west clinal variation in allele frequencies at the phosphoglucosmutase locus. Although allozymic differences between the samples studied do not provide sufficient characters for reliable identification and gene flow assessment in all cases, the number of subspecies-specific alleles provides the potential for the development of bluegill strains that would enable reliable assessment criteria for both hatchery and stocking programs.

The effect of diet and rearing on the responses of largemouth bass to confinement stress. T.M. Brandt, J.H. Williamson, and G.J. Carmichael, San Marcos National Fish Hatchery and Technology Center, Rt. 1, Box 159-D, San Marcos, TX 78666

Recently, the fitness, or capacity to withstand stress, of largemouth bass (*Micropterus salmoides*) reared intensively has been questioned. Two methods were used in attempts to address this question of fitness. First, groups of fish were reared on five pelleted diets for four months. The diets varied in protein level (41-55%) and source (animal or vegetable). These fish (40 g) were then confined in a net suspended in water for 24 hours as a test of fitness. Both protein level and source were found to affect the responses of the fish to confinement, as mortalities varied among groups from 0% to 84%. Secondly, two groups of fish were employed. The first group was reared intensively on pelleted feed (48% protein) in raceways at 22 C for six weeks. This group was size graded and held without feed for 24 hours before being moved to holding tanks for another day. The second group was reared extensively to a similar size (2-3 g) on natural forage in rearing ponds before being harvested at 27 C and placed in tanks at 22 C for 24 hours. Both groups were fin clipped and then were confined in nets for 13-16 hours. The pond reared, forage fed group had 36% mortalities in the week following confinement compared to 6% for those reared on pellets in raceways. Studies are being conducted to further examine the role of diet in fitness.

The morphogenesis of nutritional cataracts in salmonid fish.
Marilyn J. Wolfe, National Institutes of Environmental Health Sciences, P.O. Box 12233, Research Triangle Park, NC 27709, (919) 541-7994, FTS;629-2431, Ronald C. Riis, NYS College of Veterinary Medicine, Cornell University, Ithaca, NY 14853, (607) 256-5454, ext. 2029, and Gary L. Rumsey, Tunison Laboratory of Fish Nutrition, U.S. Fish and Wildlife Service, Cortland, NY 13045, (607) 753-9391

Field reports from all over North America and the world indicate that lens opacities (cataracts) in trout and salmon have become and are a serious problem. The propensity of these fish to develop lens opacities appears, more than anything else, to be related to nutrition, feeds, and feeding. Cataracts can be reproduced in salmonids by feeding diets with select nutrient deficiencies and imbalances. The objective of the studies to be reported was to describe the sequential morphologic changes in the lens

The study differentiated the two skin diseases as follows:

(1) A Coccolithophorid Algal Dermatitis of the Spiny Dogfish (*S. acanthias*)

Lesions of this disease were characterized by the progressive development of pinpoint hemorrhagic vesicles to larger necrotic-ulcerative lesions having three concentric target-like zones (an outer zone of epidermal necrosis, a middle zone of epidermal hemorrhage and necrosis, and a punched out ulcerated center). Larger skin lesions were light in color, lacked the normal shagreen texture, and placoid scales. Coccolithophorid algal organisms were found proliferating in degenerating and necrotic epidermal cells and often formed pseudomembranous coverings over necrotic lesions.

(2) A Viral Dermatitis of the Smooth Dogfish (*M. canis*)

Lesions were first detected in the epidermis as small round to oval white depigmented areas of the skin less than 1 mm in diameter. These increased in diameter as the lesion developed. Larger lesions had a hemorrhagic-granular circumference and a dark center. Histologically, the depigmented areas consisted of swollen epidermal cells with deformed or fragmented nuclei and round reddish-orange intracytoplasmic inclusion bodies in hematoxylin and eosin stained sections. Electron microscopic examination of these cell types revealed intranuclear viroplasm and developing viral particles. Mature virions were found in cytoplasmic vesicles and free in the intercellular spaces. The morphology and possible classification of the virus is discussed.

Studies are still in progress to further characterize the etiologic agents, the pathogenesis of the diseases, and the range of host susceptibility. Since these are newly reported microbiological agents and diseases of primitive vertebrates, this work may contribute to a better understanding of comparative pathology and evolutionary processes.

This study has been supported in part by a grant from the Division of Research Resources, National Institute of Health (1-40-PR01333-03).

MARINE FISHERIES MANAGEMENT
SESSION I
FISHERIES MANAGEMENT UNDER THE MAGNUSON ACT

Fishery management under the Magnuson Act. Roland Finch,
Office of Fisheries Management, National Marine Fisheries
Service, Washington, D.C. 20235

The United State Congress passed the Magnuson Fishery Conservation and Management Act in 1976, extending the fisheries jurisdiction of the United States generally to 200 miles from its coastline and establishing authorities, principles, and procedures for regulating fisheries within the area created. An assessment of the extent to which the resulting fishery management regimes have achieved the objectives of the Act shows that gains have been made but there is still a long way to go. Problems of applying the elaborate Federal regulatory requirements to the frequent changes occurring in fisheries and their resolution are discussed.

Managing salmon fisheries under the Magnuson Act. Aven M. Andersen, National Marine Fisheries Service, Alaska Region, P.O. Box 1668, Juneau, AK 99802 (907) 586-7229.

At the present time, two fishery management plans govern the salmon fisheries in the U.S. Fishery Conservation Zone from southern California to northern Alaska. One plan governs the recreational, commercial troll, and Indian fisheries in the ocean off the coasts of Washington, Oregon, and California; the other governs (for practical purposes) the commercial troll fishery off the coast of Southeastern Alaska. Both plans are concerned primarily with chinook (Oncorhynchus tshawytscha) and coho (O. kisutch) salmon. This paper reviews the process followed to develop, review, adopt, and implement these plans and their annual regulations; it summarizes the complications caused by natural events, such as droughts and El Nino, by competing uses for freshwater, by Indian fishing rights and court orders, and by fishing on migrating mixed natural and artificially produced stocks. It also reviews trends in the harvests and the status of the stocks. Finally, it looks at the future management of these fisheries.

Conservation and Management Act (1976). This paper explores the manner in which sociological data has been used in determining optimum yield, and the subsequent allocation of resources, in fisheries managed under the Magnuson Act. This usage is compared with allocation practices of other Federal agencies which manage common property resources "for the benefit of the nation". Alternative strategies for improving the quality and use of the sociological data are explored and consideration is given to the development of a common Federal strategy.

The fishery regulation--its use under the Magnuson Act and Reaganomics. Donna D. Turgeon, Chief, Regulations Branch, Fees, Permits, and Regulations Division, National Marine Fisheries Service, 3300 Whitehaven Street N.W., Washington, D.C. 20235, (202) 634-7432.

The Reagan Administration's initiative to reduce regulatory burdens collided with the Agency's efforts to implement fishery conservation measures under the Magnuson Act. Extraordinary efforts were required to promulgate regulations for an increasing number of fishery management plans (FMPs) and amendments. The FMP approval/implementation process was conformed to integrate regulatory reform, guidelines have been developed to explain new requirements and review procedures, exemptions have been requested and granted under Executive Order 12291 for certain regulatory actions to enable faster response, and certain actions previously taken as rulemakings have been relegated to notice documents under "framework measures". The Agency has been responsive, but is the current level of regulation appropriate? Current status, future direction, and alternatives to regulation are presented.

Habitat conservation as an element of marine fisheries management. Robert Rubelmann, Office of Protected Species and Habitat Conservation, National Marine Fisheries Service, Washington, D.C. 20235.

Habitat conservation is discussed in terms of its contribution to productivity and as a function in the determination of maximum sustainable yield (MSY). Authorities for "fisheries management" are compared to those for habitat conservation and the major differences are addressed. The National Marine Fisheries Service (NMFS) current habitat conservation policy provides recognition of these relationships and differences, and gives direction to its programs. Future information requirements are outlined.

Changes in the mixed-function oxidase system of thermally acclimated bluegill. Gerald T. Ankley and Robert E. Reinert, School of Forest Resources, University of Georgia, Athens, GA 30602, (404) 542-5260

Certain pollutants have been shown to induce increased activity and higher levels of hepatic mixed-function oxidase (MFO) enzymes in several species of marine and freshwater fishes. Induction of these MFO enzymes has therefore been proposed as a biological monitor of pollution. However, changes in the fishes environmental temperature may also affect levels and activity of this enzyme system. In our study the effects of acclimation temperature on the hepatic MFO system in bluegill were examined. Three groups of bluegill were acclimated to 12, 22, or 32 C for two weeks. Levels of P-450, the active component of the MFO system, were not significantly different between the three groups. However, activity of the MFO enzymes, as measured by the in vitro metabolism of benzo-a-pyrene, did vary significantly ($p < 0.05$) between the groups. The amount of activity of the MFO varied inversely with acclimation temperature. SDS polyacrylamide gel electrophoresis revealed slight quantitative differences between proteins within the molecular weight range associated with P-450. This suggests that changes in the isoenzymes of this protein may be the cause of the activity differences. These results indicate that temperature induced changes in the activity of the MFO in fish are detectable and should be taken into account if the system is used to monitor pollution.

Utility of bone development measurements as indicators of contaminant stress in fish. Steven J. Hamilton and Paul M. Mehrle, U.S. Fish and Wildlife Service, Columbia National Fisheries Research Laboratory, Route 1, Columbia, MO 65201, (314) 875-5399

Spinal deformities in hatchery-reared and natural fish populations are readily identifiable as stresses that impair the health and well-being of those populations. Backbone deformities may be caused by a wide variety of agents ranging from nutrition and disease to environmental contaminants. We have developed a bone development technique for assessing vertebral biochemical composition, density, and mechanical properties as indicators and used these measurements as indicators of environmental contaminant stress. Laboratory studies have shown bone development is altered by a wide range of chemicals

Long-term effects of benzo-a-pyrene in sediments on the fathead minnow, *Pimephales promelas*¹. Virginia R. Tolbert, Environ. Sci. Div., Oak Ridge National Laboratory, Oak Ridge, TN 37831, (615) 574-7288

Polycyclic aromatic hydrocarbons (PAH) with relatively short residence times in the water column are retained in aquatic sediments for long periods of time. The sorptive properties of sediments determine residence times as well as the bioavailability of these chemicals. We are investigating the uptake of benzo-a-pyrene (BaP) by the fathead minnow exposed to BaP labelled sediments and the long-term effects of such exposure on this species. Two sediments, one with high organic content (12% C) and the other with low organic content (3% C) were labelled with ¹⁴C BaP at (1) 10 ug BaP/g sediment, (2) 1 ug/g, and (3) 0 ug/g (control). Growth of marked juveniles in three replicate tanks was compared at two week intervals over a six month period. Fish, sediment, and water samples were analyzed periodically to determine content and movement of BaP in the system. The relative growth of individuals at the high dose level for both sediment types was significantly less (P 0.05) than that of individuals at either the low dose or control levels. There was no significant difference between the growth rates of individuals at the low dose and control levels. At the high dose, the BaP content in the water and fish in tanks with low organic sediment was higher than in fish from tanks with high organic sediment. At the low dose level, there was no effect of sediment type on the bioaccumulation rate in fish. Long-term effects on reproduction will be measured when the fish reach maturity.

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Tolerance and behavioral responses of two nonsalmonids, *Ictalurus melas* and *Cyprinus carpio*, to gas supersaturated water. Robert H. Gray, (505) 375-2937, Thomas L. Page (509) 375-2936, Battelle, Pacific Northwest Laboratories, Richland, WA 99352, and Marco G. Saroglia, Ente Nazionale per l'Energia Elettrica, Center for Thermal and Nuclear Research, 20100 Milan, Italy

Carp (*Cyprinus carpio*) and black bullhead (*Ictalurus melas*) are ecologically and commercially important in northern

Brown trout (Salmo trutta) had moved upstream from the Slate River over half the distance to the portal. Rainbow trout (Salmo gairdneri) and white sucker (Catostomus commersoni), both present in the Slate River, are only infrequently found in the reclaimed stretch. Metals concentrations remain less than acutely toxic levels in waters of less than 100 mg/L alkalinity as CaCO_3 .

Fish assemblage characteristics of acid sensitive streams in the southern Blue Ridge Province. Dean L. Fowler, Michael J. Van Den Avyle, and Mark Hudy, School of Forest Resources, University of Georgia, Athens, GA 30602, (404) 542-5260

Fish assemblages of high elevation first and third order streams in the southern Blue Ridge Province were sampled to evaluate relationships between fish assemblage characteristics and stream sensitivity to acid inputs. Only seven species of fish were collected. Rainbow trout, brook trout, and longnose dace were most common. Fish abundance and diversity varied between orders and among streams but showed no clear relation to stream sensitivity (measured by pH and alkalinity). Stream pH and alkalinity under base-flow conditions ranged from 6.25 to 7.15 and 0.65 to 7.26 ppm, respectively. Depressions of pH following storms occurred to varying degrees in all streams. Chemical characteristics of these streams indicate extreme sensitivity to acid inputs; thus, the potential for damage to aquatic resources by acid precipitation in this region is great.

Comparative toxicity of nitrite to three species of freshwater fishes. R.M. Palachek and J.R. Tomasso, Aquatic Station, Southwest Texas State University, San Marcos, TX 78666, (501) 245-2284

Reported toxicity values of nitrite to fishes are often quite different. These differences have been attributed to inconsistencies in the quality of test water (e.g. pH, alkalinity, hardness, chloride). The objectives of this investigation were to study the effects of nitrite to three fish species under similar water quality conditions (pH = 7.9, alkalinity = 230 mg/liter, hardness = 260 mg/liter, chloride = 22 mg/liter, temperature = 23°C). The 96 hour median lethal concentrations of nitrite to channel catfish (Ictalurus punctatus), tilapia (Tilapia aurea) and largemouth bass (Micropterus salmoides) were 23 ± 6 , 53 ± 11 , and 460 ± 27 mg/liter (mean \pm S.E.), respectively.

AQUACULTURE-BEHAVIOR-PHYSIOLOGY

Increasing caged channel catfish production in farm ponds.

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The study objective was to test a management scheme in which farm pond production of fishes could be increased by sequential fish harvests. Periodic harvesting of caged channel catfish, caged blue tilapia, and wild fishes resulted in a gross yield of 3207 kg in six months from a 1.6 ha farm pond during 1982. This is a watershed livestock pond which is not completely drainable nor seineable. It has had historic caged catfish yields of less than 1100 kg per season. By stocking three sets of cages with three sizes of channel catfish fingerlings at the rate of 300 fish per 1.0 m³ cage (averaging 54, 104, and 173 g) and harvesting these as they reached market size, the standing crop of caged fish was kept below 1000 kg/ha, while the total yield was over 2000 kg/ha. A total of 6000 caged catfish stocked exhibited over 97 % survival and averaged 463 g at harvest. After the first set of cages was harvested in July, three cages were stocked with small blue tilapia (300 fish per 1.0 m³ cage) averaging 17 g for improvement of water quality. These were not fed and after 99 days averaged 64 g with over 98 % survival. A total of 435 kg of wild fishes (mostly channel catfish) also were captured during the caged fish production period. By using a combination of cage culture, periodic harvesting, and removal of wild fishes, the annual production of this farm pond was increased from less than 700 kg/ha to over 2000 kg/ha. This level is nearly that of well-managed aquaculture ponds.

Largemouth bass plasma electrolyte content, condition factors and growth in acidic north Florida lakes. Michael J. Maceina, Department of Wildlife and Fisheries Sciences, Texas A&M University, College Station, TX 77843-2258, (409) 845-5777, and Daniel E. Canfield, Jr., School of Forest Resources and Conservation, University of Florida, Gainesville, FL 32611, (904) 376-0732

Largemouth bass (*Micropterus salmoides*) were collected from 11 northcentral Florida lakes to examine plasma electrolyte

Comparative growth of *Tilapia aurea* cultured on phytoplankton, a commercial feed and an experimental sweet potato based feed. Luis Aguilar V., Facultad de Estudios, Superiores Cuautitlan, Universidad Nacional Autonoma de Mexico, Mexico D.F. Mexico, and Ronald G. Hodson, University of North Carolina, Sea Grant College Program, 105 1911 Building, North Carolina State University, Raleigh, NC 27650

Three treatments, each with three replications, were stocked with *Tilapia aurea* (also known as *Sarotherodon aureus*), at the rate of 22 fish per tank (equivalent to 20,000 fish/ha) on March 1, 1983. Treatment I received poultry manure (19% crude protein) collected daily from poultry raised in confinement, while treatment II received a commercial feed diet (50% crude protein) and treatment III received a newly developed sweet potato feed (20% crude protein). Water quality remained at acceptable levels for fish growth throughout the experiment. Stomach analysis of the fish fed manure showed that manure was used directly as a feed. After 45 culture days, food conversion rates based on dry matter inputs/gain and crude protein inputs/gain were 3.3 and 0.62 for the poultry manure treatment, 1.4 and 0.48 for the commercial diet and 2.3 and 0.54 for the sweet potato feed. Growth rates of tilapia averaged 0.04, 0.25 and 0.03 g/day, respectively, for the three treatments.

Bioenergetics, protein utilization, food conversion and growth of under-yearlings of major carp *Cirrhina mrigala* fed artificial diets. Saleem Mustafa and Nasreen S. Haque, Fisheries Laboratory, Department of Zoology, Aligarh Muslim University, Aligarh-202 001, India

Performance of practical diets with different composition was studied in major carp *Cirrhina mrigala*. The feeds were: A (mustard oil cake, wheat bran, sugarcane roughage, frog offal, egg shell, blood meal, cotton seed, linseed oil cake; ratio 25:25:20:20:2:3:5), B (mustard oil cake, wheat bran, sugarcane roughage, frog offal; ratio 25:25:30:20), C (wheat bran, linseed oil cake; ratio 50:50), D (mustard oil cake, wheat bran; ratio 50:50). Energy value, Kilocalories/g feed, and protein content, percent dry weight (parentheses) of A, B, C, and D were 5.798 (22.2), 6.280 (19.6), 6.742 (9.9) and 6.170 (9.3), respectively. The diets differed appreciably in their nutritional efficacy as evident from the parameters determined: Instantaneous growth rate, (1.08, A), (0.24, B), (0.07, C), (-0.81, D); food conversion efficiency, % (43.0, A), (8.6, B), (3.1, C), (-25.1, D).

Genetic conservation of North American walleye stocks: a review of problems and needs. Brian R. Murphy and David R. Terre, Department of Range and Wildlife Management, Texas Tech University, Box 4169, Lubbock, TX 79409, (806) 742-2843

The walleye (*Stizostedion vitreum vitreum*) is one of the most recreationally and economically important gamefish species in North America. Evidence exists to support the concept of a number of genetically and morphologically distinct stocks of walleye throughout the native range of the species. Due to its popularity, the species has been widely cultured and stocked, both within and outside its natural range. Stocking has often been performed with little regard for the genetic or geographic origin of the stocked fish, resulting in a disarray of native stocks throughout North America. Little thought has been given to preserving the genetic integrity of the species, and the potential problems that may result from indiscriminate stocking practices. The objectives of this review are to: 1) examine evidence for the existence of discrete stocks of walleye in North America; 2) describe the effects of indiscriminate stocking practices on native gene pools, and how such practices may be affecting walleye in particular; 3) review the present state-of-the-art in walleye population genetics; 4) outline the initial steps needed to preserve the genetic integrity of walleye in North America and manage the species on a genetic stock basis.

Effect of handling procedures on plasma cortisol and glucose levels in cultured red drum (*Sciaenops ocellata*). Lori Robertson and Peter Thomas, The University of Texas, Marine Science Institute, Port Aransas, TX 78373, (512) 749-6768

Laboratory experiments on fish and their culture under artificial conditions usually involves a variable degree of trauma associated with capture and handling. These physical stressors, if severe enough, elicit plasma catecholamine and corticosteroid stress responses which in turn cause secondary metabolic disturbances, such as a marked hyperglycemia. Chronic elevation of these biochemical parameters in fish may adversely affect their health. The purpose of the present study was to determine the degree of trauma associated with a variety of common handling procedures in juvenile red drum, a potential mariculture species. Plasma cortisol and glucose levels were monitored as indices of stress. Red drum were transferred from raceways to a small live box and held there for 30 min. before being returned to the raceways. This prolonged

The smallest steelhead were least willing to migrate and had the poorest survival in short- and long-term seawater survival tests. All three groups of steelhead avoided full strength and 20 ppt seawater until late spring. Large chinook were more willing to migrate than the smaller fish. Na^+K^+ -ATPase activity correlated with the migration tendency of the chinook groups. Percent migration and ATPase values of large chinook were more than four times that of the small fish during the early spring. Analysis of long-term survival rates for chinook groups was complicated by the presence of high levels of bacterial kidney disease.

Selected groups of steelhead and chinook were tagged with coded wire nose tags and released for subsequent analysis of adult returns, some of which are reported. Implications of these results on management decisions regarding rearing and released are discussed.

Utilization of dietary yeast nitrogen by lake trout
(*Salvelinus namaycush*). Steven G. Hughes, and Gary L. Rumsey, Tunison Laboratory of Fish Nutrition, 28 Gracie Road, Cortland, NY 13045, (607) 753-9391

Fishmeal has historically been used as the primary source of nitrogen in fish feeds. This practice is becoming increasingly difficult since fishmeal is both short in supply and very expensive. Yeasts and other single-celled organisms are viewed as excellent potential sources of protein since they are available in quantity and the economics of using them as a primary source of protein (nitrogen) are attractive. High levels of dietary nucleic acids result from significant (> 25% of the diet) incorporation of yeast into formulated rations. This elevates the level of uric acid in the plasma and produces toxic effects in a majority of mammals. It has been postulated, however, that nucleic acids are handled differently by fish because fish possess high levels of hepatic uricase, an enzyme that breaks down uric acid to urea and ammonia. This enzyme should enable fish to utilize higher dietary levels of yeast nucleic acid nitrogen than other domestic animals. A 12 week experiment was conducted wherein lake trout were fed a control diet or diets where 50% of the nitrogen was provided by one of six *Saccharomyces* sp. yeast preparations. Fish fed yeast whose cell walls had been disrupted grew at a rate equal to those fed the control diet. Fish fed a diet containing disrupted yeast which had been washed in a saline solution did not perform as well. This study indicates that properly treated *Saccharomyces* sp.

COORDINATED PLANNING AND RESEARCH OF RIVERINE
ESTUARINE SYSTEMS

Overview of Columbia River Activities of Northwest Power Planning Council and showing of the film "Journey of the Kings". Mark J. Schneider, Northwest Power Planning Council, 700 S.W. Taylor Street, Suite 200, Portland, OR 97205

The Northwest Power Planning Council was formed by Congress in 1980. An important part of the congressional mandate to the Council was to develop a fish and wildlife program to protect, mitigate, and enhance fish and wildlife of the Columbia River Basin to the extent affected by development and operation of any hydroelectric projects. The complexity and diversity of the development and implementation of this program will be reviewed. A movie, "Journey of the Kings", provides an overview of the major components of the program. Specific institutional and biological aspects of the implementation of the basin-wide program and subsequent session papers will be discussed.

Development of genetic guidelines for basin-wide salmon and steelhead enhancement planning: the Columbia River experience. John Marsh, Columbia River Intertribal Fish Commission, 2705 East Burnside Street, Suite 114, Portland, OR 97214

Abstract Unavailable

Fish health protection programs for major geographic areas. James Warren, USFWS, 317 Highway 99, Suite I, Vancouver, WA 98665

Abstract Unavailable

Research on the Fraser River through the Westwater Research Center. Ken Hall, University of British Columbia, Vancouver, British Columbia VGT 1W5

Abstract Unavailable

of PCBs and some pesticides. The toxic hazard indigenous to this fishing activity therefore still exists. A substantial fishing population has been identified in the New York - Newark Bay area with a broad range of perceptions and opinions about the resource. A formal questionnaire has been developed and used for the fall sampling season and is now being modified and adapted for use in a complete year's cycle of fishing activity for the spring, summer, fall and winter of 1984. Information from the questionnaires show a wide range of ambiguity by the fishermen as to the perceived risks of their behavior and a substantial amount of misinformation concerning water quality and food safety. From a public policy point of view the study has had feedback into this state regulatory agency and has been helpful in urban planning as it pertains to waterfront development, urban fishing piers and the safe utilization of an aquatic resource.

An assessment of population dynamics of striped bass by analysis of Mitochondrial DNA. Joseph Grossfield, Department of Biology, The City College of CUNY, Convent Avenue and 138th Street, New York, NY 10031

Despite numerous efforts in the past, the relative contribution of the three major hypothesized spawning units (stocks) to the present-day coastal striped bass fishery remains unresolved. This information is important in making management decisions about these fish. Recent developments also dictate the need for a detailed knowledge of any existing microgeographic variation in the population structure of the Hudson unit stock. These researchers will continue their attempt (in the present grant) to resolve these questions through the use of the current recombinant DNA technology. They will determine the fragment size heterogeneity to uniquely identify even microgeographic variation in populations. Such identification can be used to monitor both natural and hatchery populations of fish. This study will provide an assessment of the utility of innate genetic tag (mtDNA) to studies of fish population structure and an introduction of recombinant DNA technology into studies of populations of economically important natural resources. The progress so far in this research area continues to be promising. This technique still appears to provide a powerful discrimination between stocks, using a smaller sample size than previous techniques. In the second year, Dr. Grossfield will determine the extent of the differences in the biochemical "finger print" of a major striped bass stock.

in response to growing concern over habitat loss to the effects of increased development of the river for navigation and industrialization.

The UMRCC, over its 40+ year existence, has striven for balanced management of the Upper Mississippi's vast resources, meeting with both successes and failures. Of major concern are continued habitat losses to the effects of sedimentation, dredging and development. These concerns, largely raised by the UMRCC, have led to major study efforts through the Corps of Engineers (GREAT River Study) and Upper Mississippi River Basin Commission (UMRS Master Plan).

This paper examines the issues, organizations and politics of resource management on the Upper Mississippi River.

The Mississippi River research consortium. Raymond C. Hubley, National Fisheries Research Laboratory, P.O. 818, LaCrosse, WI 54601

Abstract Unavailable

Columbia River Fish Propagation Panel. James H. Johnson, Nez Perce Tribal Fisheries Department, P.O. Box 365, Lapwai, ID 83540, (208) 843-2253

The Fish Propagation Panel, an advisory committee of the Northwest Power Planning Council, was established in March, 1983. The seven member Panel assists the Council in coordinating its efforts to improve the propagation of wild, natural, and hatchery anadromous salmonids in the Columbia River Basin. The principal duties of the Panel as outlined in section 704 of the Columbia River Basin Fish and Wildlife Program include (a) developing an inventory of Columbia River tributaries to evaluate their potential for the increase of wild and natural propagation, (b) establishment of habitat improvement and passage restoration priorities, (c) developing measures to preserve wild fish and enhance natural propagation in the Yakima River Basin, (d) developing detailed hatchery propagation objectives and criteria that are consistent with natural and wild propagation objectives, and (e) developing a prioritized list of potential hatchery propagation measures to ensure coordination with the Salmon and Steelhead Conservation and Enhancement Act.

COMPETITIVE FISHING--POLICY ISSUES AND RESEARCH NEEDS

Status of competitive sportfishing in the United States--trends and state fisheries policies. Michael W. Duttweiler, Sea Grant Extension Program, Fernow Hall, Cornell University, Ithaca, NY 14853, (607) 256-2162

All state fisheries management units were contacted through a mail questionnaire with the objectives of: assessing the status of competitive sport fishing nationwide, describing state policies relating to competitive fishing, and detecting changes in either policies or tournament fishing itself over the past five years. To accomplish trend analysis, portions of a 1978 survey investigating nationwide competitive fishing for black bass were replicated. In addition, questions designed to indicate the scope of competitive fishing for species other than bass were included. Results include descriptive statistics for competitive fishing nationwide, characterization of the distribution and form of state competitive fishing policies, and itemization of specific policy and management issues relating to competitive fishing.

Ethical and philosophical concerns of competitive fishing. Larry A. Nielsen, Department of Fisheries and Wildlife Sciences, Virginia Tech, Blacksburg, VA, (703) 961-6959

Continued changes in tournament operation have removed most of the ecological arguments against tournaments. What remains is a fundamental belief by many people that competitive fishing is wrong. Competitive fishing, however, predates today's bass tournaments, and the tremendous popularity of tournaments indicates that competitive fishing can add to the optimum recreational yield of aquatic ecosystems. Fears that competitive fishing will replace other recreational fishing are unfounded; an appropriate model is the diversity of recreation that we call "golfing". The ethical responsibility of the fisheries profession is to embrace competitive fishing, continuing to reduce the bad and to exploit the good.

Certain levels of ecological theory yield hypotheses that can be tested if and as these changes take place in each of the Great Lakes. Accordingly, we established a network of sampling programs based on stomach samples taken from salmon and trout caught during fishing derbies. Collaborators in the program include University-based Sea Grant projects that complement projects conducted by state, provincial, and federal agencies. This presentation provides the general theoretical background and basic objective for the program. Sampling bias associated with sport-caught fishes will be addressed. Specific methods and results for many of the projects will be presented as poster sessions.

Estimates of adult salmon escapement and smolt outmigration are of no value unless they are broken out into species. This has been the largest problem facing sonar enumeration to date but research in size selectivity of test gill nets and sonar signal processing show promise that this will be overcome.

Estimation of juvenile sockeye salmon abundance and mortality in Lake Tustumina, Alaska, 1981-83. Richard E. Thorne, and Gary L. Thomas, College of Marine Sciences and Fisheries, University of Washington, WH-10 Fisheries Center, Seattle, WA 98195, (206) 543-7848

Hydroacoustic assessment techniques have been used to study the over-summer mortality of juvenile sockeye salmon in Lake Tustumina, Alaska, since 1981. The objective is to determine an optional level for stocking of hatchery-produced sockeye fry. Hydroacoustically-directed net tows were used to obtain species/cohort information, and up-looking transducers were used to determine the portion of fish not available to conventional transecting procedures. The results have shown no evidence of density dependent mortality at current stocking levels.

Estimates of adult and juvenile sockeye salmon (*Oncorhynchus nerka*) abundance in a lake via hydroacoustic surveys with an uncalibrated echo sounder. Terry Gjernes, Department of Fisheries and Oceans, Pacific Biological Station, Nanaimo, British Columbia, V9R 5K6, Canada, (604) 756-7222

A technique was developed to estimate limnetic fish abundance in remote lakes where equipment must be flown in by float-equipped aircraft. The technique makes use of an uncalibrated echo sounder that is equipped with a 40 log R (depth) time-varied gain. The accuracy of estimates derived from use of the technique was tested at a lake where reliable counts of adult and juvenile sockeye could be obtained as the fish entered or left the lake. Precision and, to some extent, accuracy of the estimates are dependent on the horizontal and vertical distribution of the fish. Accuracy is generally good, but more work is needed to increase the precision of the estimate.

STRIPED BASS OF THE NORTHEAST ATLANTIC COAST

Characteristics of the striped bass fishery off North Carolina. Harrell Johnson, Division of Marine Fisheries, 108 South Water Street, Elizabeth City, NC 27909

During 1980-84, the size, age, and sex composition of the migratory striped bass population over wintering off North Carolina were determined for each year's fishing season. Striped bass were sampled from the ocean sink net and winter trawl fisheries. Fish sampled were successfully sexed, utilizing the Sykes method. Sex ratios agree well with sex ratios of striped bass taken off shore of North Carolina during the early 1970's. Of the striped bass sampled, ages ranged from 5 to 18 years, with the majority of female striped bass sampled being from the 1971, 1972, and 1973 year classes. Length-frequencies distributions for male and female striped bass were also determined, as well as mean weights for each of the above age groups.

Characteristics of the striped bass pound net and gill net fisheries in Virginia. Joseph G. Loesch and William H. Kriete, Jr., Virginia Institute of Marine Science, School of Marine Science, College of William and Mary, Gloucester Point, VA 23062, (804) 642-2111

A total of 566 striped bass were sampled from the Virginia commercial fisheries between December 1981 and July 1982. Although only 91 of these fish were from the Eastern Shore, the 91 fish represented 32.9% of the total landings at Chincoteague and Cape Charles.

The catches of striped bass \leq age three were dominated by males. Sex ratios of this age grouping were not independent of the method of capture. Data from striped bass $>$ age four were few, and there was obvious heterogeneity within gear with respect to sex ratios.

The age range and catch of male striped bass exceeded the age range and catch of females in the Eastern Shore fisheries.

Male striped bass were more abundant than females in the 1982 spring and summer pound net catches in the Rappahannock River. The age ranges (1-15) in the spring catches by gill nets and pound nets were identical.

Population modeling done under the Emergency Striped Bass Study suggests that increases in adult spawning stocks are necessary to increase juvenile recruitment. Immediate coastal action is necessary to reduce mortality throughout the range of the Chesapeake stock of striped bass.

Relative contribution of striped bass recruitment from various tributaries to the fishing stock in the Chesapeake Bay. Martin L. Wiley and Chu-Fa Tsai, University of Maryland, Chesapeake Biological Laboratory, Solomons, MD

The commercial striped bass landings in each Chesapeake Bay tributary make up the following percentage of the total tributary landings: Potomac 42.5%, Choptank 11.2%, Upper Bay north of Sassafras 11.1%, James 9.5%, Rappahannock 7.5%, Nanticoke 6.0%, Chester 5.0%, York 3.5% and Patuxent 3.4%. The landings in each tributary were positively correlated with the landings in nearby tributaries and the r-value tended to decrease with distance. Evidently, the fishing stock in each tributary was recruited not only from within that river system but also from nearby rivers. The three year running averages of the striped bass juvenile indexes in the Potomac River were significantly, positively correlated with the commercial landings in the Potomac River, lagged three or four years, and were also correlated with landings in nearby tributaries such as Nanticoke, Rappahannock and York rivers as well as the total Chesapeake Bay landings. In contrast the juvenile indexes of the Nanticoke, Choptank and Upper Bay were not correlated with landings within their waters. These facts indicate that striped bass recruited from the Potomac River dominate the fishing stocks of the entire Chesapeake Bay.

Size, age, sex ratio and mortality rates of the striped bass found in the coastal waters of New York. Byron H. Young, New York Department of Environmental Conservation, Bldg. #40, SUNY, Stony Brook, NY 11794, (516) 751-7900 or 751-8200

The annual size, age, and sex structure of New York's coastal striped bass fishery were determined for the ocean haul seine, pound net, gill net, and hook and line fisheries between 1979 and 1983. The results of the size and age investigations demonstrate the importance of the smaller, younger fish to the fisheries. The sex ratios established demonstrate a dramatic shift from historic records. Estimates of total annual mortality and survival were

Sex ratios favored females. Comparison with previous work showed that recent data contains an increase in the percentage of males, suggesting that changes in coastal populations may have taken place.

The Von Bertalanffy model was used to describe growth rates. Growth parameters are presented for combined samples from each season.

The influence of mixed stocks on collected data is discussed.

Characterization of the Massachusetts commercial striped bass harvest for 1982 and 1983. Paul J. Diodati, The Commonwealth of Massachusetts, Department of Fisheries, Wildlife, and Recreational Vehicles, Division of Marine Fisheries, Cat Cove Marine Laboratory, 92 Fort Avenue, Salem, MA 01970

Sampling of the striped bass rod and reel fishery was conducted during May - October of 1982 and 1983. Biological sampling was conducted at wholesale fish houses throughout the state; geographically, these sites are located on the coastal boundaries of Essex, Plymouth, Barnstable and Bristol counties. In addition, some fish were sampled from Martha's Vineyard (Dukes county) and Nantucket Islands. Individual fish were examined for length, weight and sex. Scales were taken from each fish for age determination. This sampling program was designed to determine the characteristics of the commercial harvest.

Fishing is conducted primarily between April and November of each year with traditional peak catches occurring in summer and fall which appear to coincide with coastal migration. Landings in 1983 (224,000 pounds) reflected a precipitous decline (64%) from the 1982 harvest of 628,000 pounds. The present management restraint of a 24 inch minimum fork length requirement, allows recruitment of 4 year old fish to the fishery in the fall. Fifteen year classes (1964-1978) were present in both 1982 and 1983, with the 1972, 1971, and 1970 year classes constituting over 50% of the catch in each year. In 1982, 95% of all fish sampled were females. The sex ratio (female/male) ranged from 22:1 in August 1982 to 6:1 in October 1982. Preliminary 1983 information suggests no differences in these sex ratios.

in July 1983, with four food sources, 1) f/2 algae (Isochrysis galbana, Thalassiosira pseudonana and Chlamydomonas reinhardtii) grown in f/2 standard algal culture medium, 2) sewage algae (algae grown in 20% liquid fraction of the sewage effluent from the Blue Plains Sewage Treatment Plant of Washington, D.C.), 3) sewage particles from the effluent, and 4) mixtures of sewage algae and sewage particles. The results obtained to date indicated that E. affinis, the most important food source for striped bass larvae and fry in the Potomac River, grew and reproduced by utilizing sewage algae or primary sewage particles alone. Like striped bass larvae, this copepod was a food density dependent species whose survival rate, growth rate and reproductive rate increased as density of sewage algae or sewage particles increased. In other words, the abundance of striped bass larvae (spawning success) in the estuary depends on abundance of zooplankton, e.g. E. affinis, whose abundance, in turn, depends on abundance of sewage algae and sewage particles.

Contaminant effects on striped bass: a laboratory and field assessment. Paul M. Mehrle, Larry Ludke, Denny Buckler, and Susan Finger, Columbia National Fishery Research Laboratory, U.S. Department of the Interior, Fish and Wildlife Service, Columbia, Missouri

Striped (Morone saxatilis) populations have been declining along the east coast for the past ten years. Although the cause(s) of the decline in numbers remains unknown, overharvesting, habitat deterioration, contaminant effects, industrial development, and/or natural climatic events have been proposed as possible reasons. We initiated studies in 1980 to ascertain whether contaminants could be contributing to the east coast population decline. A comprehensive contaminant residue survey was conducted analyzing over 100 organic and inorganic contaminants in striped bass adults, eggs, and juveniles. The studies focused on striped bass populations in the Hudson, Choptank, Nanticoke, Elk, Potomac, Roanoke, James, Cooper, and St. Johns rivers, as well as selected hatchery-reared populations. We concluded from these investigations that striped bass contain relatively low residues of numerous organic and inorganic contaminants, but no single contaminant appeared to be in sufficient concentration or frequency to cause the observed decline in east coast stocks.

Laboratory toxicity studies were initiated to evaluate the toxicological significance of a mixture of chemical

Effects of heavy metals on disease resistance of striped bass. Richard D. MacFarlane, The Louis Calder Conservation and Ecology Study Center of Fordham University, 53 Whippoorwill Road, Armonk, NY 10504, (914) 273-9615

In May 1981, a study supported by the Chaffee Amendment and U.S. Fish and Wildlife Service was undertaken to determine the load of potential pathogens present in the gut flora of striped bass taken from the lower Hudson River estuary and coastal marine waters, and to investigate the effects of sublethal metal contamination on disease susceptibility. Hudson River striped bass were found to carry 100-1000 times more bacteria in their intestine than did coastal marine bass. Fish from both environments showed several opportunistic pathogens. The most predominant bacterial type found in Hudson River striped bass was Aeromonas hydrophila, Vibrio sp. was most abundant in bass taken from coastal marine waters. Striped bass injected or experimentally exposed to these and other pathogens showed serious mortalities.

When striped bass were experimentally challenged with Flexibacter columnaris and then continuously exposed for seven days to a mixture of arsenic, selenium, lead, cadmium, and copper, results four trials showed that the metal mixture consistently protected striped bass against F. columnaris infection. In individual exposures to five test metals copper was found to be nontoxic and to provide protection against columnaris infection, cadmium was similarly protective but 20% of test fish died of apparent toxemia, lead and selenium were neither protective nor toxic, and arsenic clearly enhanced infectivity.

This study involved short-term exposure of young-of-the-year striped bass to metals in hard water. Consequently, care should be taken in extrapolating these results to other systems involving different life stages of striped bass in environments of different water chemistry.

Investigations of hydrography, contaminants and early life history of Morone saxatilis in the upper Chesapeake Bay and Choptank Estuary. Charles Bostater, Cynthia Stenger, Rick Wagner, Maryland Department of Natural Resources, Annapolis, MD; John Austin, Ramona Travato, Jim Barron, and Joe Slayton, U.S. EPA Region III, Central Regional Lab., Annapolis, MD 21401

During the 1983 striped bass (Morone saxatilis) spawning season, measurements of habitat variables such as pH, water

that focus on "panfish" (male and immature female striped bass 28-40 cm long). Although the length limits recommended in an existing Interstate Fisheries Management Plan for Striped Bass will increase yield per recruit, more stringent regulations would further increase the yield.

Results of recent stock identification studies of striped bass (*Morone saxatilis*) taken from Rhode Island waters.
Mary C. Fabrizio and Saul B. Salla, Graduate School of Oceanography, University of Rhode Island, Narragansett, RI 02882-1197, (401) 792-6692

A major gap in the development of adequate management decisions regarding the Rhode Island striped bass fishery has been the lack of information concerning the probable origin of striped bass taken by the trapnet fishery. Two estimates of the relative contribution of Chesapeake Bay and Hudson River striped bass to the trapnet fishery in the fall of 1982 were made using multivariate discrimination techniques. A discriminant analysis based on morphometric data combined with data on the elemental composition of the otolith resulted in assigning 67% of the Rhode Island sample to the Chesapeake Bay and 33% to the Hudson River with 83 and 94% correct classification, respectively. A discriminant function analysis of the electrophoretic data on eye lens proteins resulted in 92 and 87.5% correct classification of Chesapeake and Hudson River striped bass. The Rhode Island sample was classified as 50% of Chesapeake origin and 50% of Hudson River origin with this technique. The combined evidence indicates that the present Rhode Island floating trapnet fishery includes significant numbers of striped bass of Chesapeake origin in the fall.

Elemental analysis of striped bass otoliths and information for riverine stock identification. F. Douglas Martin, David A. Wright, Richard A. Smucker, and Timothy Mulligan, University of Maryland, Chesapeake Biological Station, Solomons, MD

Otoliths from young-of-the-year or larval striped bass were examined using an X-ray microprobe technique. Samples from the following rivers were examined: Chester, Choptank, Potomac, Rappahannock, Pamunkey, and Chickahominy. Elements were normalized against calcium and were used in a stepwise discriminant function analysis program to determine how reliably samples could be separated and which elements contributed most to discrimination. Aluminum, chlorine,

USE OF ANGLER DATA FOR
MANAGEMENT DECISION MAKING

Trophy fish programs as management tools - advantages and limitations. Stephen P. Quinn, Georgia Department of Natural Resources, 2024 Newton Rd., Albany, GA 31708, (912) 439-4256

For the purposes of this presentation, a trophy fish program is defined as a program that gives awards to anglers who submit official affidavits for the capture of large fish. The 1972-1982 affidavits from the Massachusetts Sportfishing Awards Program were organized and analyzed to determine if the resulting data could be valuable to fisheries managers. The fifty state conservation agencies were surveyed to determine the status of trophy fish programs and what use has been made of such data. Thirty states have trophy fish programs but few utilize the results outside of publicity releases to increase angling interest. Analysis of the Massachusetts data indicated that a popular program with meaningful standards can provide several types of valuable information to fisheries managers. Unusual numbers of trophy-sized fish from a body of water may encourage biological investigation into causative factors. Productive waters for large fish may be candidates for special regulations to preserve them as trophy fisheries. Returns to a trophy fish program provide data to assess the effects of various management strategies on fish population structures. Statewide longevity data can be generated when scale collections are required as part of the application process. The usefulness of trophy fish program analyses for fisheries management is reduced with low angler participation or low number of public waters reported. Statistical analysis is limited due to many immeasurable factors which govern whether a fish will be entered in a trophy fish program once it is caught.

Data volunteered by anglers - can it be used in management? Albert W. Green, Gary C. Matlock, and Maury F. Ferguson, Texas Parks and Wildlife Department, 4200 Smith School Road, Austin, TX 78744, (512) 479-4863, and 479-4849

The Texas Parks and Wildlife Department (TPWD) has conducted several studies which had the purpose of evaluating the accuracy and precision of data volunteered by recreational anglers. TPWD found fish identifications volunteered by recreational anglers to agree 96% of the time with

"The Angler Factor: New York's Key to Quality Bass Fishing", a 23-minute slide presentation with a taped narrative was subsequently developed as the main thrust of the informational program. The presentation utilizes computer generated graphics, original artwork and photography to both inform the public and maintain their interest. It is being used by the New York State Department of Environmental Conservation Bureau of Fisheries, and is available through the Department's eight regional offices.

Performance of bass anglers in a diary cooperator program.
Bernard J. Schonhoff III, David M. Green, and William D. Youngs, Department of Natural Resources, Cornell University, Ithaca, NY 14853, (607) 256-2151

Over 600 anglers participated in a study to gather biological data on New York bass populations and evaluate the role of angler diary programs in bass management. Volunteers attended sessions prior to participation, were supplied with a measuring board and given a diary and instructions for recording catches. Semi-annual progress reports encouraged continued participation and alerted cooperators to recording errors. The diary program was evaluated by examining angler records, comparison with data collected by biologists and from the response to questionnaires sent to volunteers and agency personnel after field studies were completed.

Identification of potential volunteer anglers and sustaining interest of the volunteers was a major problem. Fifty-two percent of those volunteering failed to participate and 28% could not be contacted at the end of the bass season. The most successful 10, 20, and 30% of participating anglers caught 42, 61 and 75% of the bass, respectively. Recording errors were detected in 11.5% of the trips and most errors affected estimates of effort. Less than 3% of the trips had detectable errors that might affect estimates of population size and length distribution. Less than 1% of the bass were misidentified. Anglers measured 93 tagged bass within 20 days of when biologists measured them. Mean length of angler measurements was 2.5mm longer than biologists' measurements and variances were similar.

Most anglers were enthusiastic and some indicated that participation increased the enjoyment of fishing. About 25% began keeping personal diaries as a result of participating and anglers expressed a desire for more room in their diaries for personal comments. Thirty percent found record

Largemouth bass size structure comparisons for electrofishing and angler catches. Donald W. Gabelhouse, Jr. and David W. Willis, Kansas Fish and Game Commission, 832 East 6th Avenue, Emporia, KS 66801, (316) 342-0658

Before angler catch data can be used to meaningfully assess largemouth bass (Micropterus salmoides) size structure, angler selectivity biases for different sizes of bass must first be recognized by comparing size structure of angler catches to actual size structure, or at least that depicted by electrofishing. In Kansas, size structure of the largemouth bass catch from a given impoundment will reflect angler intention and depend on fishing technique, with tournament bass anglers, non-tournament bass anglers, and non-bass anglers each catching different proportions of stock- to quality- (8.0-11.9 in), quality- to preferred- (12.0-14.9 in), and preferred- to memorable- (15.0-19.9 in) length largemouth bass. In addition, duration of data collection should be considered. Angler-electrofishing catch relationships reflecting angler catch data collected over the entire fishing season from a given angler type can differ from more instantaneous comparisons if recruitment, growth, and mortality change sizes of largemouth bass available through the season, or if individuals of some sizes are caught repeatedly through the season due to length limits or voluntary release, while fish of other sizes are harvested.

Angler feedback: Philips Lake, Missouri. Richard O. Anderson, Missouri Cooperative Fishery Research Unit, Stephens Hall, University of Missouri-Columbia, Columbia, MO 65211, (314) 882-3524, FTS:276-5351

Philips Lake is a 37-acre private impoundment in Boone County, Missouri. It has been opened to fishing for members since 1966. Average annual membership has been about 40 families. The fish community includes primarily largemouth bass, channel catfish, bluegills, gizzard shad, and golden shiners. Harvest of largemouth bass has been regulated by a slot length limit since 1974. A voluntary angler catch reporting system was implemented in 1978. Numbers and sizes kept and released have been reported along with a rating of fishing success--poor, fair, good, or excellent. The percentage of cooperating members has been low. However, the data provided have made it possible to monitor trends in size distribution and fishing success. Data provided in 1983 suggest excessive bass density. If this interpretation

when recording time spent. A definition of time spent fishing included on the return sheet might help improve the accuracy of this estimate. The largest difference was in total number of fish caught and released. Total return sheet estimates were 100% higher than total estimates from the creel census. This difference is so large that it demonstrates a real problem with angler collected data. Since the fish are not taken from the stream, anglers may feel that there is little problem with "shading" the truth. The importance of all variables being recorded must therefore be stressed in order that accurate information may be retrieved from an angler report system.

Fishing effort and success in Missouri based on angler reports. A. Stephen Weithman, Missouri Department of Conservation, 1110 College Avenue, Columbia, MO 65201, (314) 449-3761

The purpose of this study was to estimate angler effort and success throughout Missouri. Licensed anglers (N = 2,500) who agreed to be cooperators were selected at random and questioned periodically in a telephone survey during 1983. They fished a total of 5.5 million days (6 days per angler) in Missouri in 1983. People mainly fished in reservoirs (50 percent of effort), followed by lakes and ponds (24 percent), rivers and streams (19 percent), and trout parks (7 percent). Traditional creel surveys were conducted concurrently at several large reservoirs. Estimates of angler effort and success based on the two different methods were similar. Two minor problems were encountered: (1) anglers were somewhat hesitant to report fishing at local lakes and ponds; and (2) accuracy of records kept on numbers and sizes of fish caught was quite variable. The cost of direct labor and operating expenses to collect catch and effort information from cooperating anglers was about \$28,000 (or about 3.5¢ per acre of water), compared to about \$100,000 for on-site creel surveys at nine large reservoirs. The technique of using cooperators will be useful in the future because it is an efficient way to collect angler effort and catch data state-wide. As a result, we will be in a better position to (1) set priorities for sampling fish communities, (2) evaluate regulations, stocking programs, and fish kills, (3) monitor fishing quality, and (4) acquire access sites on lakes and streams.

the reliability of catch per unit effort as an index of population size. The fidelity of the volunteered information was also judged by comparing catch per unit effort with an independent data set obtained from annual trap net samples of the spawning population.

Use of creel census and angler collected data in salmonid stocking decisions for the Wisconsin waters of Lake Michigan. Charles C. Krueger, Cornell University, Department of Natural Resources, Fernow Hall, Ithaca, NY 14853, (606) 256-2106, and Terrence R. Dehring, Bureau of Fish Management, Wisconsin Department of Natural Resources, Madison, WI 53707, (608) 267-7501

The sport fishery in the Wisconsin waters of Lake Michigan depends on the annual stocking of 5.5 to 7.5 million salmonids. A procedure was developed to recommend the species, life stage, numbers, and geographic distribution of salmonids to be annually stocked. Recommendations from the procedure are designed to maximize angler opportunity and catch of salmonids except lake trout. Primary inputs are angler species preferences and a catch objective. The proposed stocking required to meet the catch objective is calculated by species, and then evaluated and potentially reduced based on the expected predation on the forage base. The geographical pattern for distribution of the recommended stocking (except coho salmon) is determined through the use of past catch data and fishery facility availability (e.g., number of boat ramps) in management zones. Distribution of coho salmon uses a separate procedure based on knowledge about migration and catch in relation to stocking sites. The data base for past catch was established from contact creel surveys, a mandatory charter catch report system, and voluntary creel surveys of seasonally moored private boats. This data base is updated annually. In 1983, the combined data collection costs for the charter and moored boat creel data were approximately 17% of the cost for the contact creel survey. Angler catch is predicted for the recommended stocking by fishery (trolling, pier, shore, stream) and zone in order to allow comparison to the originally specified catch objective. Costs are determined for propagation and distribution of recommended stocking numbers. An interactive computer program of the procedure is available at cost from the authors.

from 17-25% from 1954-1983. These errors are the result of anglers having difficulty in estimating weights at release and are the greatest deficiency in this program.

Anglers also cooperate at varying levels in other Oceanic Pelagics Programs by making catch and effort information available to recreational billfish surveys and by donating angler-caught fish for age and growth studies. All these data are critical to the success of the Oceanic Pelagics Team, which is responsible for providing a comprehensive ecological profile on billfishes and tunas for stock assessment.

Limited entry in the Pacific halibut fishery. Marc L. Miller, Institute of Marine Studies, University of Washington (HF-05), Seattle, WA 98105

Over the last several years, there has been considerable interest by fishermen and managers alike in the possibilities of a limited entry-type regime in the Pacific halibut fishery. This interest has been sufficient for industry organizations to request that the North Pacific Fishery Management Council pursue a moratorium on new entrants to the fishery and consider the implementation of a limited entry program. This paper makes the case that limited entry remains a highly symbolic and complex issue likely to have different social and economic implications for the fishing industry. Reactions by fishermen in 1982 to the prospect of limited entry are described insofar as they illustrate the varieties in popular thinking concerning forms of social control and resource management.

U.S. fisheries management: process without purpose? Jim H. Branson, Douglas Larson, and Ronald W. Miller, North Pacific Fishery Management Council, P.O. Box 103136, Anchorage, AL 99510, (907) 274-4563, FTS:271-4100

This paper begins with an examination of the reasons why government manages fisheries in the United States, and a discussion of the goals and methods of management which have evolved. The goals of fisheries management are both explicit and implicit, but current practice weights some goals more heavily than others. Within the constraints of knowledge of the behavior and dynamics of fish populations, the focus of management has mainly been conservation of stocks and the welfare of resource harvestors at the expense of the national good.

There are several limitations to current management practices. In part because of the lack of information, we tend to manage for maximum physical yield from the resource rather than optimum yield. (Ironically, though, quotas are often set at less than biological estimates of annual surplus production in order to be conservative beyond the usual recognition of uncertainty in estimates.) Current management techniques rely on making effort inefficient in the short run and contributes to the causes of excess effort in the long run. Fisheries are maintained as open entry in deference to "free enterprise" arguments, yet we support fishermen through a variety of subsidies at the first signs of economic distress. Complicating the problems of

the Wisconsin Department of Natural Resources in their evaluation of fishery management policy alternatives. The present analysis evaluates the long-term policy utility of social science findings used in two major policy decisions: the continued stocking of coho (Oncorhynchus kitsutch) and the establishment of a salmon-trout stamp. The purpose of the analysis is to understand changes in the value preferences of certain types of anglers since the last study. more specifically, we are interested in why some anglers have shifted their preferences to new species of fish while other types of anglers have remained consistent in their preferences. Given these changes in fish preference, we are concerned with helping policy makers understand which findings can be expected to remain stable and which will change in predictable ways.

A study in leadership: the men up front and the grey eminences. M. Estellie Smith, Department of Anthropology, State University of New York -- Oswego, Oswego, NY 13126, (315) 341-4190

Using data from Federally-mandated Regional Fishery management Councils, the paper posits that two types of leaders -- those who make decisions and forge consensus versus those who establish the structure for implementing consensus -- exist in most durative decisionmaking groups. The one type of leader tends to be charismatic, given to quick decisions, and to risk-taking for large goals; the other is self-effacing, cautious, and mini-goal oriented. Both are necessary and complementary for effective operation of the organization. Thus it is not so much leadership quality as the group's ability to select the appropriate leader at the right time for the appropriate task that ensures group continuity and success.

The structure and process of decision-making under the MFCMA: the case of the Northern Anchovy Fishery Management Plan. Michael K. Orbach, Department of Sociology, Anthropology and Economics, East Carolina University, Greenville, NC 27834, (919) 757-6883, and Bilianna Cicin-Sain, Department of Political Science, University of California at Santa Barbara, Santa Barbara, Ca 93106, (805) 961-4352

The Magnuson Fishery Conservation and Management Act of 1976 (MFCMA) and the rules and regulations promulgated pursuant to it set up a prescribed set of interactions among a very

ENVIRONMENTAL STUDIES

Habitat-based models for predicting standing crops of nine species of riverine fishes. Anthony Rabern and Ronnie J. Gilbert, Georgia Cooperative Fishery Research Unit, School of Forest Resources, University of Georgia, Athens, GA 30602, (404) 542-5260

As aquatic resources become limiting, the need increases for objective quantitative methods to assess the biological consequences of habitat alterations. The objectives of this study were to assess possible correlations between 21 physical, chemical, and biological parameters of habitat quality and standing crops of nine species of riverine fishes in Georgia, and to develop correlations into predictive models. Stepwise multiple regression was used to assess the linear relationships among estimated standing crops and habitat quality parameters. Species models were derived for bowfin (Amia calva), American eel (Anguilla rostrata), gizzard shad (Dorosoma cepedianum), chain pickerel (Esox niger), lake chubsucker (Erimyzon sucetta), spotted sucker (Minytrema melanops), brown bullhead (Ictalurus nebulosus), warmouth (Lepomis gulosus), and spotted sunfish (Lepomis punctatus). Selected regression models identified habitat features within a given set of rivers that explained most of the variation in standing crop estimates. Chemical and biological variables appeared in all developed equations. Physical variables appeared in all except the two sunfish models. Species diversity was overall the most commonly selected variable, annual dissolved oxygen range was the most frequently used chemical variable, and average depth was the most used physical variable. Species models accounted for an average of 85.2% of the variability in standing crop estimates and R^2 values ranged from 0.653 to 0.975. Species models may be applicable only to habitats similar to those used in model development; however, model building techniques used are applicable to a wide variety of habitats.

Effects of temperature and discharge on the spawning time and duration of smallmouth bass in the New River Drainage, Virginia. Robert J. Graham and Donald J. Orth, Department of Fisheries and Wildlife Sciences, Virginia Polytechnic Institute and State University, Blacksburg, VA 24061, (703) 961-5320

The importance of eight temperature and three discharge variables in determining smallmouth bass (Micropterus

prevalence of ESD in many reptiles that lack heteromorphic sex chromosomes, and 3) the highly labile nature of sex differentiation and lack of sex chromosomes in most fishes, ESD is likely to be found in many additional fishes once further species are tested. Implications of this phenomenon for fisheries management, fish culture, and in furthering our understanding of how environmental factors affect fish populations will be discussed.

The influence of water temperature on interaction between redbase shiners and juvenile steelhead trout. Gordon H. Reeves, Department of Fisheries and Wildlife, Oregon State University, Corvallis, OR 97331, Fred H. Everest, USDA Forest Service, Pacific Northwest Forest and Range Experiment Station, Corvallis, OR 97331, and James E. Hall, Department of Fisheries and Wildlife, Oregon State University, Corvallis, OR 97331

The influence of water temperature on interaction between redbase shiners (Richardsonius balteatus) and juvenile steelhead trout (Salmo gairdneri) was studied in the laboratory and the field. Habitat distribution of the two species was determined in streams with different temperature regimes. Steelhead trout distribution was the same in allopatry (cool temperatures) and sympatry (intermediate temperatures). Redbase shiners and allopatry (warm temperatures) inhabited areas similar to those inhabited by steelhead trout in other streams. Habitats occupied by redbase shiners in the presence of steelhead trout (intermediate temperatures) differed significantly from those occupied in allopatry.

Temperature regimes in laboratory streams simulated temperature regimes of streams with varying intensities of land management. Redbase shiners were the competitive dominants at water temperatures above 20°C. Temperatures below 20°C juvenile steelhead trout occupied riffles, their preferred habitat, and were the competitive dominant. The social status of the individual steelhead trout influence the outcome of interaction with redbase shiners.

Water temperatures strongly influence the outcome of interaction between redbase shiners and juvenile steelhead trout. There is a need to consider the cumulative impact of land management activities on water temperature and on the composition of the fish community.

We used a bioenergetics model to evaluate the relative effects of temperature and food supply on growth rates of yellow perch in the two basins. Model results indicated that inter-basin differences in temperature were not sufficient to cause substantial size differences, but even small differences in rates of food consumption would result in major growth rate changes for this population.

To verify model inferences and examine the hypothesis that food availability controls yellow perch growth in Lake Erie, we initiated a three-year field study. Bimonthly, yellow perch were collected by trawling at a western and a central basin site every three hours for twenty-four hours; collected fish were graded, and then frozen on dry ice. In the laboratory, frozen yellow perch were thawed, stomachs excised, and weights of stomach contents determined.

Field estimates from 1983 showed that yellow perch from the central basin consumed food at substantially higher rates than those from the western basin. Thus, first-year field results support model inferences that forage availability--a predator density-dependent factor--is a likely regulator of yellow perch growth in Lake Erie. If these trends continue to be supported by field data, then density-dependent growth functions should be evaluated for incorporation into future fishery yield models.

Effectiveness of grass carp and redbelly tilapia for control of *Hydrilla verticillata* (L.F.) Royle in North Carolina.

Fred R. Tarver, III, Ronald G. Hodson, and George J. Pesacreta, Zoology Department, North Carolina State University, Raleigh, NC 27695-7617, (919) 737-3583

Grass carp (*Ctenopharyngodon idella* Valenciennes) and redbelly tilapia (*Tilapia zillii* Gervais) were introduced into lakes infested with the aquatic macrophyte hydrilla (*Hydrilla verticillata* Royle). In conjunction with chemical and physical macrophyte control methods, herbivorous fish studies will aid in devising a feasible and effective integrated program for hydrilla management in North Carolina. Grass carp introduced at a rate of 50 individuals ha⁻¹ before hydrilla emergence were capable of consuming all hydrilla within the first year. Introduction of grass carp two months after emergence of hydrilla reduced plant biomass that year by 50%, and also achieved a two-fold reduction in rooted biomass compared to the previous year. Tilapia were introduced two months after hydrilla emergence and caused a partial reduction in rooted biomass. However,

species. While fish community composition changed seasonally, the pattern of habitat partitioning remained consistent. Results indicate that some fish have a broad response to habitat (eurytypic) while others utilize a distinct subset of the available habitat (stenotypic). Using discriminant analysis we quantified specific categories of microhabitat which were heavily utilized by a seasonally changing group of stenotypic fish. We suggest a consistent pattern of habitat partitioning may occur in river fish communities which can be applied to management and impact analysis problems.

Evaluation of the use of fish community attributes to determine biotic integrity of small, coolwater streams.
Paul M. Leonard and Donald J. Orth, Department of Fisheries and Wildlife, Virginia Polytechnic Institute and State University, Blacksburg, VA 24061, (703) 961-5919

The index of biotic integrity (IBI) proposed by Karr (1981) was evaluated by examining the twelve proposed fish community attributes in seven streams representing a range of impacts as measured by a cultural pollution index based on mining, municipal sewage, and urbanization. Fish community parameters were modified for stream size and species composition in small tributaries of the New River Gorge, West Virginia. Attributes which showed consistent and characteristic changes with increasing stream degradation were number of fish species, proportion of individuals as tolerant species (*Semotilus atromaculatus*), number of individuals in sample, and proportion of individuals with disease or anomalies. Trophic composition attributes showed inconsistent results because of interaction with species tolerance to degradation and the inability of trophic classification terminology to accurately characterize some species food habits. Tolerant species with generalized food habits exhibited consistent increases in numbers and biomass with stream degradation. Three species composition attributes were inapplicable due to lack of objective information on the relative tolerance of many species and the low expected species richness in the families Catostomidae and Centrarchidae. The use of cyprinids is suggested, and a preliminary tolerance ranking of the six most tolerant cyprinids is proposed. This study illustrates some of the problems with applying the IBI where streams are short and drainage is pinnate resulting in a fish fauna that can be heavily influenced by the fauna of the larger river, and where steep gradient inhibits recolonization.

effectiveness of equilibrium harvest policies. To define typical levels of variability in recruitment, stock-recruitment curves were fitted to data from 13 multi-aged fish stocks. Most estimates of a log normal error variance were less than 0.75. Simulation studies then were used to compare alternative management policies for an anchovy (Engraulis capensis) fishery at several levels of variability in recruitment. These policies were to either maintain effort at the current average level or to reduce effort to the level which produces maximum sustainable yield (MSY). When a Beverton-Holt curve was used to represent the stock-recruitment relationship, significantly greater yields were obtained under the MSY effort policy at low levels of environmental variability. When recruitment varied widely, results of the two policies were indistinguishable. No differences in yield were detected when the Ricker curve was used to represent the stock-recruitment relationship. These results indicate that the effectiveness of a policy may depend on the behavior of the stock-recruitment relationship as stock size increases in response to reduced fishing mortality.

Diurnal rhythms of circulating gonadal steroids in female spotted seatrout (*Cynoscion nebulosus*) during the spawning season. Peter Thomas, Nancy J. Brown, and C.R. Arnold, The University of Texas, Marine Science Institute, Port Aransas, TX 78373, (512) 749-6768

While the reproductive physiology of several freshwater species with short spawning seasons has been studied in detail, there is a paucity of information on the hormonal fluctuations which occur in marine fish with extended spawning seasons. The spotted seatrout has an extended spawning season in south Texas (April through October), and females spawn several times during a single spawning season. This species, which inhabits estuaries along the South Atlantic and Gulf of Mexico coasts, supports important recreational and commercial fisheries in the U.S.A. The purpose of the present study was to determine if a diurnal rhythm in circulating gonadal steroid levels exists in the females of this multiple-spawning marine species.

Spotted seatrout were netted in July and August at several spawning sites in the vicinity of Port Aransas, Texas. Spawning occurred at dusk. There was a diurnal cycle in the gonadosomatic index (GSI) of females. The GSI was lowest at 02:00 hrs and increased steadily after dawn to reach a maximum around dusk. The circulating levels of the gonadal

Carolina-Georgia headboat grounds is stable and yields will probably remain stable if recruitment age remains high. However, it appears that some large species, especially speckled hind, may have incurred both growth and recruitment over-fishing. Off Florida, even small species exhibited very high Z, probably because of long-standing and intense recreational and commercial fishing. Increasing the yield from Florida waters may require increasing the recruitment age.

Migration of American shad (*Alosa sapidissima*) along the Atlantic Coast of North America. Michael J. Dadswell, Department of Fisheries and Oceans, Biological Station, St. Andrews, N.B. Canada EOG 2X0 (506) 529-8854

During 1979-1983, a total of 12,000 dart tags were applied to American shad in Bay of Fundy marine waters, and 6,000 to spawning shad in rivers tributary to the Bay of Fundy and the Gulf of St. Lawrence. Tag return rates from all batches averaged 4-5% and tag returns to date total 800. Some of the returns were from shad at large over 1,000 days.

Distinct patterns emerged. Contrary to the previous conception that shad summered mainly in the Gulf of Maine, there appeared to be three distinct summering regions in which shad were concentrated: the turbid basins of the inner Bay of Fundy, the turbid regions of the St. Lawrence River estuary and the coast of Labrador. Of these, the inner Bay of Fundy appeared the most important and it probably contained most or all of the ocean-feeding shad originating from the Delaware River to the St. John's River, Florida. There were also three distinct wintering regions: The Gulf of Maine-Scotian Shelf, off the North Carolina-Virginia Coast, and off the Florida coast. Migration to and from these regions followed a consistent year-to-year pattern, timing influenced by environmental perturbations. During summer feeding, migratory direction was influenced by residual current structure of the local oceanography. Overall migration was apparently controlled by temperature but with distinct temperature preference for both north and south ocean populations.

coincided with declines in primary production and standing crops of zooplankton, in reduced abundance and altered distribution of pelagic forage fishes, and in declines in salmon yields on north coast rivers. Few grilse were also caught in most rivers in 1980 after low sea and air temperatures in spring 1979. Highly significant relationships were found between mean June-July sea temperatures at Hraun on the north coast and yield of grilse the following year from the northern rivers Vatnsdalsa, Vididalsa, Hrutfjardara and Midfjardara and its three tributaries. Sea temperatures in April-May and May-June were also closely correlated ($p < 0.01$ and $p < 0.05$) with grilse catches on these rivers. Correlations were similar but less close for two-sea-winter salmon. Fewer statistically significant relations were found between sea temperatures and yields for south coast rivers; sea temperatures were higher there and oceanic conditions varied less between years. Inasmuch as low sea temperatures and low river temperatures often occur in the same years, salmon yields may be regulated by several adverse climatic and hydrographic factors acting in combination, resulting in delayed smoltification and reduced growth and survival at sea.

Comparison of fecundity, spawning time and age composition of Atlantic herring (*Clupea harengus harengus*) spawning groups in the Gulf of Maine. Kevin H. Kelly and David K. Stevenson, Department of Zoology, University of Maine, Orono, ME 04469, (207) 633-5572

Atlantic herring (*Clupea harengus harengus*) are reported to spawn at several locations in coastal waters of the Gulf of Maine. It has not been conclusively determined, however, whether separate spawning populations also exist. Differences in reproductive characteristics of fish spawning in different areas may represent adaptations indicative of reproductively isolated populations. In this study, mature herring were collected from four presumed spawning areas in the Gulf of Maine in 1982 for comparison on the basis of fecundity, age composition and spawning time. No significant differences in fecundity between groups were found, indicating that discrete populations could not be differentiated on the basis of fecundity. In fact, estimated fecundities from the two most distant locations - eastern Maine and Jeffreys Ledge - were the most similar. Data on gonadal maturation rates suggested that fish collected in mid-coastal Maine during late August and early September were actually part of the same group which spawned

north to south direction but tend to form aggregations within the gulf stream western boundary waters suggesting a preference for warm water. The leatherback turtle does not appear to be temperature dependent in the southeast and is randomly distributed throughout the study area. Estimates of density were derived utilizing current line transect methods. Both sun glare and sea states were demonstrated to negatively effect the ability of observers to site and positively identify turtles to species level. However, the resulting abundance estimates are extremely precise for the spring, summer, and fall surveys with coefficients of variations of less than 10%. Density estimates are corrected for the proportion of time per hour loggerhead turtles are apt to surface during normal periods of aerial observation.

light of existing questions about the Alaska buyback law. There are good reasons to doubt the workability of that law. Reforms of the buyback finance and permit and vessel purchase provisions are proposed and alternatives to buyback reviewed.

The interface between law and economics: the Atlantic mackerel, squid, and butterfish management plan. Stephen P. Freese, Mid-Atlantic Fishery Management Council, Dover, DE

The development of the Mid-Atlantic Council's Atlantic Mackerel, Squid, and Butterfish Plan reflects the changing interpretation and definition of optimum yield. Foreign nations can no longer readily expect access to the difference between maximum sustainable yield and domestic annual harvest. Changing attitudes and interpretations of what regulations are possible under the Magnuson Fishery Conservation and Management Act's definition of optimum yield have lead to the expansion of the mackerel, squid, and butterfish fisheries through export and joint ventures. This paper traces the development of the optimum yield concept, parallels this development the development of the Council's plan, and outlines existing problems with the current definition of optimum yield.

Fleet behavior in a multispecies system. Susan S. Hanna, Department of Agricultural and Resource Economics, Oregon State University, Corvallis, OR 97331 (503) 754-2942

Fishing fleets, or subfleets, are defined according to different operating modes among fishermen rather than by home port, fishery, or vessel type. Differences in catch mixes among vessels are categorized. A stock stability measure is derived to represent variability in available biomass for 12 species in the Oregon groundfish fishery. Catch mixes define the fleets by linking stock types to the mix of vessels catching each type. Hypotheses are investigated relating the degree of variability of stocks to the diversity characteristics of subfleets. Implications for response to policy measures by different subfleets are also examined.

POPULATION DYNAMICS

Population ecology of northern pike and muskellunge in the St. Lawrence River. Neil H. Ringler, Robert G. Werner, Michael S. Kruse, and Steven R. LaPan, Department of Environmental and Forest Biology, SUNY College of Environmental Science and Forestry, Syracuse, NY 13210

A comparative study of northern pike (*Esox lucius*) and muskellunge (*E. masquinonay*) is underway in the Thousand Islands region of the St. Lawrence River. Our work is designed to examine population characteristics, feeding relationships, and habitat features of esocids in a riverine system. During 1983 mature northern pike were captured in the Clayton-Grindstone area as early as March 18, whereas mature muskellunge did not appear in trap nets until May 9. Mature individuals of both species were taken as late as May 25. Fifty-nine juvenile muskellunge (23-145 mm) were captured from early July to late August, almost exclusively in the upper 0.1m of the water column. A total of 421 juvenile northern pike (42-206mm) were captured from mid-June to mid-September, predominantly at depths greater than 0.1m. A comparison of catch/effort data in two bays suggested an inverse relationship between densities of young northern pike and muskellunge. Growth rates (mm/day) of juvenile muskellunge averaged approximately two times greater than those of northern pike in 1983. Analysis of the larval fish community, sampled with light traps, has documented the seasonal pattern of succession of forage species. Diets of northern pike were dominated by percids (59%) and centrarchids (25%); muskellunge were not found in the stomachs of northern pike. Survivorship and fecundity data for muskellunge remain sparse, but additional useful data are being supplied by anglers and professional guides. Estimated fecundity of northern pike ranged from 2,524 to 149,245 eggs/female; egg diameter and fecundity were positively correlated with length, weight, and age of fish. Estimates of survivorship based on age structure (determined from fin rays, cleithra and/or scales) are to be combined with fecundity estimates to develop a Leslie projection matrix. The matrix may prove useful a) in assessing the significance of potential changes in survivorship, growth, and/or fecundity associated with revised angling regulations or altered environmental conditions, and b) in understanding differences in life history pattern among populations that spawn in different bays. Sampling during 1984 is planned to provide density estimates of larval, juvenile, and adult northern pike, and to estimate survivorship rates from tag returns. A radio-tagging program, established in

Evaluating potential sources of mortality for larval bloater: starvation vs. predation. James A. Rice, Center for Limnology, University of Wisconsin, Madison, WI 53706, (608) 262-3087, Larry B. Crowder, Department of Zoology, North Carolina State University, Raleigh, NC 27650, (919) 737-3664, and Fred P. Binkowski, Center for Great Lakes Studies, University of Wisconsin-Milwaukee, 600 E. Greenfield Avenue, Milwaukee, WI 53204 (414) 224-3026

Laboratory experiments were conducted to evaluate the relative importance of starvation and predation as potential sources of mortality for larval bloater (Coregonus hoyi) in Lake Michigan. For four groups of bloater larvae with successively later first feeding dates (4, 8, 13 and 18 d after hatching) final dry weight after 30 d was inversely related to the delay in first feeding. Cumulative mortality increased slightly with the delay in first feeding, but was generally low for all four groups that were fed. For larvae held without food at typical Lake Michigan temperatures, time to 50% mortality was 26 d, and some individuals survived 38 d. When fish starved for 30 d since hatching were exposed to food, 70% fed within one hr. For larvae fed constant rations, mortality rates varied inversely with feeding and growth rates.

Within one hr after hatching bloater larvae were swimming about 50% of the time at up to three body lengths/sec. Within six hrs activity levels approached 100%. Starved larvae showed no decrease in activity level until 21 d after hatching, but swimming speeds of starved larvae declined while those of fed larvae increased considerably.

Preliminary data on predation by 1+ and 2+ bloaters and 1+ alewives on larval bloaters indicate that all three of these predators capture both fed and starved larvae up to 35 d old with about 80% success. Handling times were on the order of a second or less.

Because of their strong swimming ability and resistance to starvation, it is highly unlikely that bloater larvae in the field starve to death due to low food encounter rates. However starvation may be an indirect cause of mortality due to reduced growth and swimming capabilities resulting in increased or prolonged susceptibility to predation.

Reproduction of shortnose sturgeon in the Connecticut River.
Jack Buckley and Boyd Kynard, Massachusetts Cooperative
Fishery Research Unit, 204 Holdsworth Hall, University of
Massachusetts, Amherst MA, (413) 545-0398

Movements and ecology related to reproduction of the shortnose sturgeon, Acipenser brevirostrum, a federally listed endangered species, were studied for four years. Telemetry was used to monitor the daily and hourly movements of 25 sturgeon, and 125 sturgeon were captured by gill nets that provided additional information on spawning site selection and reproductive condition. Detailed observations were made on pre- and post-spawning migrations and movements in a spawning area. The physical characteristics of a spawning area were studied for two years. Mean water velocities during the spawning period ranged from 0.36 m/sec to 1.2 m/sec, and the major substrate components were cobble and rubble. Sturgeon spawned over a short time period (3-5 days) and at decreasing river discharge of 12,000 cfs to 25,000 cfs and water temperature between 11.5 and 14.0°C. Evidence suggest that high river discharge over a prolonged period during the normal spawning season may preclude reproduction. A mark and recapture study from 1980 through 1982 was used to estimate the number of spawners and provided preliminary data on spawning periodicity.

Population dynamics of pink salmon in selected Minnesota tributaries to Lake Superior. Joseph P. Nicolette,
Department of Entomology, Fisheries, and Wildlife,
University of Minnesota, St. Paul, MN 55108

Pink salmon, Oncorhynchus gorbuscha, were introduced into Lake Superior in 1956 and since then, their abundance and range have increased continuously in the Great Lakes. Pink salmon have a two-year life cycle throughout their native North Pacific range and are thus comprised of even- or odd-year spawning stocks depending upon the year in which the spawning adults return to their tributaries. The following population parameters were estimated for the 1981 and 1982 runs in the Cross and Cascade Rivers, Minnesota: 1) absolute abundance of spawners, 2) age, size, and sex distribution of the spawners, 3) fecundity and growth of returning adults, and 4) egg deposition, egg fertilization rates, and embryo development. Lake Superior pink salmon appear to be no more than a small version of their Pacific coast counterpart with the major difference between the stocks being their age structures. The common occurrence of three-year-old pink salmon is unique to Lake Superior and

Estimation of predator growth using condition indices and physiological variables. S. Marshall Adams, Environmental Sciences Division, Oak Ridge National Laboratory, Oak Ridge TN 37830, (615) 574-7316, FTS 624-7316

Regression models utilizing easily measured condition indices and physiological variables were developed for estimating monthly growth of I^+ and II^+ largemouth bass. The model that best fit observed growth in 1980 was used to estimate growth in 1982. Conversely, the model that best fit observed growth in 1982 was used to estimate growth in 1980. The liver-somatic index (LSI) and standard metabolism at surface and thermocline temperatures were the most significant variables for estimating growth of I^+ and II^+ largemouth bass both years. Determination of monthly growth using the LSI requires 50% fewer samples than the usual method of following changes in monthly mean weight. Because the LSI responds relatively rapidly to levels of energy intake, temperature, and toxicant stress, this index can be used to estimate and to signal possible deleterious effects on fish before changes in growth can be observed. This approach could be a useful ecological and environmental management tool because frequent cost-effective growth estimates could possibly be used to identify the presence of ecological perturbations and to quantify their effect. The method may be particularly useful in cooler systems where metabolic demands are not extreme and for small fish where reproductive requirements are minimal.

Interactive segregation between two species of *Etheostoma* (Family: Percidae). Larry A. Greenberg, Division of Biological Sciences, Cornell University, Corson Hall, Ithaca, NY 14853-0239, (607) 256-3013 ext. 264

The role of biotic factors in determining the distributions of temperate stream fishes is poorly understood. I investigated the role of interactive segregation on the spatial distributions of two species of darters, *Etheostoma simoterum*, the Tennessee snubnose darter, and *Etheostoma rufilineatum*, the redline darter, in the Little River of Tennessee. To test whether either species affected the distribution of the other, both species were selectively removed from plots in run and riffle habitats. The only distributional change occurred for *Etheostoma simoterum* in runs. After *E. rufilineatum* was removed, *E. simoterum*'s distribution shifted away from shore. Corroboration of the stream experiments was obtained by testing the association

RECREATIONAL FISHING ECONOMICS

Assessing acid rain damages to sport fisheries in Canada.
Daniel R. Talhelm, Fisheries and Wildlife Department,
Michigan State University, East Lansing, MI

Abstract unavailable

The economics of California marine recreational fishing:
travel cost models using the NMFS surveys. Robert D. Rowe
and Arthur D. Ross, Energy and Resource Consultants, Inc.,
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This paper presents initial results for California from an ongoing effort to estimate the value of marine recreational fishing along the entire Pacific coast of the mainland U.S.A. The analysis uses survey data produced by the National Marine Fisheries Service (NMFS) in alternative travel cost models to estimate gross and net (consumer surplus) economic values. The surveys used are the Marine Recreational Fishery Statistical Survey (MRFSS), with over 100,000 observations for 1979-1981, and the companion socio-economic survey, with nearly 800 observations for 1981. Both surveys use a combined intercept and telephone approach. The travel cost models examined include single equation models, multiple equation models, and multinomial logit models. Values are calculated by modes for the aggregate level of participation in marine recreational fishing, as well as for an incremental fishing day and for incremental catch for selected species. The initial analysis suggests that consumer surplus estimates are significant, relative to actual expenditures.

The types of analyses that can be conducted with these data bases are limited by their content. Therefore, the elements of an "optimal" marine recreational fishing valuation questionnaire are discussed, and a sample instrument provided. This instrument will be pretested in the San Francisco Bay area in the summer/fall of 1984.

The value of fish aggregating devices to offshore
recreational fishermen in Hawaii. Karl C. Samples and John
T. Sproul, Department of Agricultural and Resource
Economics, University of Hawaii, Honolulu, HI 56822

Abstract Unavailable

ACID RAIN, IS IT A PROBLEM FOR FISHERIES?

The Congressional dilemma--decision making in the face of uncertainty. Rosina M. Bierbaum, Oceans and Environment Program, Office of Technology Assessment, U.S. Congress, Washington, D.C. 20510, (202) 226-2045

Reports of natural resource damage in this country and Canada, Scandinavia, and West Germany have made transported air pollutants -- particularly acid rain -- a focus of scientific and political controversy. The Clean Air Act, the major piece of federal legislation governing air quality in the United States, addresses local air pollution problems but does not directly apply to pollutants that travel many miles from their sources. Many individuals and groups, pointing to the risks of environmental degradation, are calling for more stringent Federal pollution controls. Others contend that the risks of economic dislocations resulting from a control program will not be justified and that any control strategy designed with current scientific knowledge may be inefficient.

Five key uncertainties are especially relevant to Congressional decisions about transported air pollutants. These include controversies about 1) the extent and location of current damages, 2) future damages (whether they are cumulative and/or irreversible), 3) geographic origins of observed levels of pollution, 4) the effectiveness of emissions reductions for decreasing observed levels of transported pollutants, and 5) whether the ongoing research program will provide significant new results.

There are four major approaches currently available for Congressional action on transported air pollutants:

- o mandating emissions reduction to further control the sources of transported pollutants;
- o liming lakes and streams to mitigate some of the effects of acid deposition;
- o modifying the Federal acid deposition research program to provide more timely guidance for Congressional decisions; and
- o modifying existing sections of the Clean Air Act to enable EPA, states, to more effectively address some aspects of transported air pollutants.

Detecting region-wide trends in surface water quality.

George R. Hendrey, Christopher G. Hoogendyk, and Nicholas F. Gmur, Terrestrial and Aquatic Ecology Division, Department of Applied Science, Brookhaven National Laboratory, Upton, NY 11973, (516) 282-3262

Studies of individual stations in the Northeast reveal long-term changes in chemical concentrations which may be related to acid deposition. Studies of populations of stations, such as the Adirondack Mountain lakes, indicate that acidification has occurred over the selected region, but since only end-members of a temporal change are known, the temporal pattern of change is unknown. By combining data from a large number of water quality sampling stations, it is possible to evaluate temporal patterns for geographically large regions. Because it is impractical to evaluate in great detail the quality of data from each of thousands of stations, patterns observed from analysis of such a large data set need to be confirmed by comparing them to patterns observed for more thoroughly examined stations. This multi-layered approach has the advantage of providing both the regional generality of a statistically based analysis, with a means of increasing verification of the patterns observed.

Fish community interactions, biogeographic factors and lake acidification. Frank J. Rahel, Department of Zoology & The Ohio Cooperative Fishery Research Unit, The Ohio State University, 1735 Neil Avenue, Columbus, OH 43210, (614) 422-8961

Relating changes in fish communities to acidification requires a knowledge of community composition prior to acid inputs. In the absence of reliable historical data, comparative biogeographic studies can be used to predict fish community structure from readily available limnological and morphometric data. A comparison of two groups of Wisconsin lakes that differ in their sensitivity to acidification revealed significant differences in fish community composition. Small, low-alkalinity lakes that are highly vulnerable to acid inputs lack many fish (including darters, walleye, sculpin and most cyprinids) that are common in nearby lakes which are less vulnerable to acidification because of higher alkalinity. None of these lakes had been culturally acidified and thus, these patterns reflect the influence of biogeographic factors (small size, low productivity, lack of inlet/outlet streams) and biotic interactions in structuring lake fish communities. In

3. Determine the number (and distribution) of lakes with sufficient data for analysis of trends in presence of fish species through time.
4. For this subset of waters, quantify the number (and distribution) of fish populations that have been lost.
5. Evaluate potential causes for the loss of fish populations on a case-by-case basis considering: lake acidification, habitat suitability, stocking records, introduction of non-native species, prevalence of beaver, and fishing pressure (or accessibility).
6. Extrapolate results for a best estimate of impacts on fisheries in the Adirondack region.

Because of variations in sampling procedures and data quality, data interpretation must be, in part, subjective. Lakes have been classified according to the types of evidence available indicating adverse effects of acidification.

An examination of the case for effects of acidic deposition on Ontario's fisheries. Gail Beggs, James MacLean, Ministry of Natural Resources, Fisheries Branch, Queens Park, Whitney Block, Toronto, Ontario, M7A 1W3; John Gunn, Ministry of Natural Resources, P.O. Box 3500, Station A, Sudbury, Ontario P3A 4S2;; and Michael Jones, Environmental and Social Systems Analysts, Ltd., 365 Bloor St., E., Suite 607, Toronto, Ontario M4W 3L4

A coordinated program of studies is being conducted to examine the impacts of acidic precipitation on fisheries resources in Ontario. The focus for these studies has been the development of models that predict both the extent and rate of impacts and the uncertainties inherent in these predictions. Data on water chemistry and fish communities in lakes across the province are being collected and compiled. Field and laboratory studies are being conducted to determine the levels of pH and aluminum that early life history stages of fish are being exposed to and the effects of this exposure on their survival. Experiments are also being used to determine the cause of observed failures in recruitment of fish in sensitive lakes. With these studies as a background, the case for the effects of acidic deposition on fisheries resources in Ontario will be critically examined.

the elimination of sensitive fish species, a survey was made of the water chemistry and fish populations of 20 lakes in Maine. The lakes were located in areas where surface water alkalinity was low, had not been reclaimed or stocked, and were similar in physical characteristics. Five of the lakes had been previously surveyed by state agencies. The lakes had mean pH values of 4.7 to 7.0.

There were no fish present in two lakes with pH 4.7-4.9. All other lakes with pH >5.0 contained fish. There was no relationship between the number of species or catch per unit effort and lake acidity for lakes that contained fish. Comparison of recent and historical water chemistry and fish species data for lakes that had previously been surveyed indicated that the lakes were slightly lower in pH and alkalinity, but the number and type of fish species present had not changed.

americana) comprise an abundant yet fluctuating component of the larval fish community. During spring 1982, laboratory studies were initiated to examine the feeding ecology and predator-escape responses of larval white perch. Preliminary predation experiments indicated that susceptibility of white perch larvae to predation by yearling bluegill may be strongly influenced by larval growth and maturational stage. Two predation experiments were undertaken during 1983. In the first experiment, larvae were divided into four food groups: a well-fed group, a malnourished group, and two intermediate delayed-feeding groups. Subsets of larvae were taken from each food groups and introduced to yearling bluegill predators (50-60 mm TL) in short duration (15 min) predation experiments. Larvae were tested from yolk-sac stage through approximately one month of feeding (3.5-18.0 mm TL). Larval survival was found to be strongly dependent upon growth. For example, mean survival rates for the well-fed group increased from less than 10% during the first 2.5 weeks (yolk-sac to 8.0 mm TL) to greater than 80% survival at five weeks after hatching (17-18 mm TL). A delay of two days in availability of high food concentrations during initial feeding resulted in subsequent delays of 0-4 days in length-specific survival values when compared to the well-fed group. Larvae subjected to a 4-day delay exhibited time lags of 2-8 days in length-specific survival values.

The effects of alternate prey (Daphnia magna) on the predation rates by bluegill on larval white perch were also examined. At a constant larval density, an increase in the density of alternate prey resulted in a decrease in the predation rate on the larvae.

It is apparent from these studies that food availability, larval growth and presence of alternate prey strongly affect the susceptibility of white perch larvae to predation by yearling bluegill. The relationship between susceptibility to predation and food- and temperature-related growth and survival of white perch larvae will be discussed.

The foraging of herring larvae (Clupea harengus): the effect of age and prey density. Robert G. Werner, Department of Environmental and Forest Biology, SUNY College of Environmental Science and Forestry, Syracuse, NY 13210, (315) 470-6804

A series of experiments designed to estimate the rate of prey consumption of herring larvae as a function of age and

high. I compared the growth and survival rates of early life history stages of blue tilapia and a representative native centrarchid (largemouth bass) at various zooplankton densities in laboratory experiments. Survivorship and growth of tilapia exceeded those of bass at equal zooplankton concentrations and, at a given age, tilapia were superior to bass in ability to prey on zooplankton. When compared at equal sizes, however, the predatory abilities of the species were comparable. The enhanced survivorship and growth of young tilapia were therefore apparently a result of their larger initial size - a quality directly attributable to larger ova. The mouthbrooding habits of this tilapia and large initial size also inhibit predation on young, further enhancing survivorship. The success of blue tilapia in colonizing new systems in Florida may therefore be, at least in part, a product of a highly-evolved reproductive strategy.

Competitive effects of bluegill sunfish on young-of-year largemouth bass. James F. Gilliam, Department of Biological Sciences, SUNY Albany, Albany, NY 12222, (518) 457-4615

The diets of bluegill sunfish and young-of-year largemouth bass in two Michigan lakes indicated that the bass' trophic niche was often included within the bluegill's, though the converse was not true. That is, the diets of bluegills in the littoral zone commonly consisted of about 70% chironomids and 20% other insects and/or Sida, while the diets of bass 15-35 mm standard length consisted largely of Sida and baetid mayflies.

Maximal growth rates of YOY bass were determined in experimental ponds in which bass were released from possible bluegill competition. This allowed comparison of the growth rates of the bass in the lakes with size-specific maximal rates (temperatures in the lakes and ponds were similar). In one lake (Three Lakes, Kalamazoo County), the bass grew at nearly maximal rates while feeding on invertebrates, including a large proportion of baetid nymphs. In another, (Lawrence Lake, Barry County), growth rates were substantially below maximal rates; in this lake baetids did not provide a "bridge" between cladocerans and centrarchid fry. In both lakes, growth rates following the switch to fry were substantially less than the maximal rates in the ponds; this occurred despite the fact that the bass in the ponds consumed only invertebrates (no fry were present). Thus, the shift to fry apparently occurred sooner than would be optimal if invertebrates were more abundant, and the view that piscivorous bass have escaped competition is deceptive.

Lake Michigan fishes: alewife (Alosa pseudoharengus), rainbow smelt (Osmerus mordax), yellow perch (Perca flavescens), and spottail shiner (Notropis hudsonius). Zooplankton densities (10^3 to $10^5/\text{m}^3$) were consistently high in months of maximum density ($1-10/\text{m}^3$) of larval fish. Adult and juvenile alewives were a major driving force in the nearshore aquatic ecosystem during May-September. Initially, alewives first cropped off the larger zooplankters, thereby structuring the nearshore zooplankton toward more abundant smaller forms, such as Bosmina and nauplii, ideal food for larval fish which reside in nearshore nurseries. Second, alewives appear to have preyed on yellow perch larvae during their newly hatched, planktonic stage thus reducing recruitment to the population. Recently, yellow perch have increased dramatically with a concomitant decline in the alewife population. In addition, certain large zooplankters, Daphnia and Limnocalanus, have also shown substantial increases in abundance. Warm water temperatures from May to July in 1973 and 1976 resulted in high young-of-the-year alewife abundances, while during cooler springs fewer young-of-the-year were produced. Rainbow smelt and spottail shiner larvae were usually temporally and spatially separated from adult and larval alewives, thus avoiding predation and competition with this dominant species. Spottail shiner populations seemed to be controlled more by density-dependent mechanisms, as their catches varied without any correlation with factors examined.

A marine perspective on strategies for reducing risks of introduced aquatic organisms. Carl J. Sindermann, Sandy Hook Laboratory, Northeast Fisheries Center, National Marine Fisheries Service, National Oceanic and Atmospheric Administration, US Department of Commerce, Highlands, NJ 07732

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.

Reducing risks of introduced aquatic organisms in North America. Walter R. Courtenay, Jr. and Jeffrey N. Taylor, Department of Biological Sciences, Florida Atlantic University, Boca Raton, FL 33431-0991, (305) 393-3331

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

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, 801 N.W. 40th Street, Boca Raton, FL 33431, (305) 391-6409

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.

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

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.

Comparison of riverine populations of smallmouth bass with and without a 12-inch minimum length limit. Douglas J. Austen and Donald J. Orth, Department of Fisheries and Wildlife Sciences, Virginia Polytechnic Institute and State University, Blacksburg, VA 24060, (703) 961-5320

Smallmouth bass provide an important recreational fishery in many areas of the country but rapidly increasing fishing pressure has, in many cases, reduced the quality of the fishery. In an attempt to maintain quality fishing numerous regulatory strategies have been employed by management agencies; one of these is the minimum length limit. The smallmouth bass fishery of the New River is regulated by a 12-inch minimum length limit in Virginia while no minimum length limit exists in West Virginia. The purpose of this study was to compare population parameters between these two sites in order to evaluate the utility of alternative harvest regulations.

Smallmouth bass populations in both sites were sampled in 1982 and 1983 by boat mounted electrofishing equipment. Scale analysis revealed that smallmouth bass in Virginia attain 12 inches at age V while those in West Virginia reached the same length at age IV. Length for age I smallmouth bass were significantly greater in Virginia than in West Virginia; however by age IV lengths at ages were significantly greater for West Virginia fish.

Relative weight (W_r), an index of condition, was generally greater for smallmouth bass in West Virginia. Smallmouth bass in the 6-12 inch length category had significantly greater W_r in West Virginia than in Virginia. However, W_r for less than 6-inch fish was inconsistent between years.

Although smallmouth bass growth equaled or exceeded the national average in both sections and the condition indices appeared acceptable the proportional stock densities of 2-5% in both sections indicated poorly structured populations. Further analysis of length-frequency distributions revealed that between 93 and 98% of smallmouth bass captured at both sites were less than 10 inches in length.

The 12-inch minimum length limit apparently has resulted in decreased growth rates and condition of smallmouth bass in the Virginia section of the New River.

for carcasses in established snorkeling and scuba routes. The estimate of angler-induced mortalities was divided by both creel census and trout abundance data to estimate single capture hooking mortality and the rate of exploitation. The hooking mortality rate per capture was 0.3%. In 1981, cutthroat trout which died after capture and release by anglers comprised 3% of the estimated population. Cutthroat trout were captured an average of 9.7 times during the study in 1981. Results are compared with other studies and the management implications are discussed.

Use of non-traditional spawning sites by Florida largemouth bass, in Orange Lake, Florida. Nick Bruno, R.W. Gregory, and H.L. Schramm, Jr., Cooperative Fish and Wildlife Research Unit, School of Forest Resources and Conservation, 117 Newins-Ziegler Hall, University of Florida, Gainesville, FL 32611, (904) 392-1861.

Spawning site selection by largemouth bass (Micropterus salmoides floridanus), was investigated in a lacustrine wetland in north central Florida. Although the lake contains a large, self-sustaining population of largemouth bass, it is devoid of substrates typically used for nest construction. Dense aquatic vegetation, limited water transparency (0.5-0.8m Secchi depths), and an unconsolidated organic bottom substrate precluded visual location of nests. We radio-tracked 30 adult male bass during the 1983 and 1984 spawning seasons to locate individual nesting areas. Intensive searches with an illuminated viewing scope revealed the exact nest locations. All observed nests were established on large rhizomes of spatterdock (Nuphar luteum) at depths of 1.0-1.5m. The value of certain aquatic macrophytes as nesting substrate for largemouth bass should be considered in wetlands enhancement/restoration efforts and nuisance aquatic plant control programs.

Increased harvest of striped bass in the sport fishery of the lower Susquehanna River below Conowingo Dam, Maryland. E. Terry Euston and John M. Rinehart, RMC-Muddy Run Ecological Laboratory, P.O. Box 10, Drumore, PA 17518, (717) 548-2121

The general decline of striped bass throughout the northeast, and particularly Chesapeake Bay, has created the need to document the present status of historical sport

stocking, yet the mean catch per hour for the entire study period measured only 0.19. In spite of "truck following", anglers captured few trout (8-14%) released on inseason stocking days. Pre- and post- study electrofishing inventories indicated the absence of natural reproduction and a low availability of wild trout to anglers. Survival of stocked trout two months after opening day was poor.

Management suggestions included: (1) heavier stockings at more frequent intervals; (2) plants should precede weekends, when nearly two-thirds of fishing effort occurred; and (3) increase the proportion of brown trout in each subsequent plant, since this species showed high returns but greater longevity than either brook or rainbow trout.

Limitations and a modification of the technique are discussed. In addition, a software program (BASIC and Pascal) was developed to simplify calculations. I will conclude with a short review of creel census methods currently employed by state fisheries agencies.

Evaluation of genetic stocks used in restoration of lake trout in Lake Ontario. Joseph H. Elrod, U.S. Fish and Wildlife Service, Oswego Biological Station, 17 Lake Street Oswego, NY 13126, (315) 343-3951

Lake trout became extinct in Lake Ontario during the early 1950's. An intensive effort to reestablish a self-sustaining population began in the early 1970's with sea lamprey control and annual stockings of hatchery-produced fish. Since fall 1979 most fish have been marked by coded wire tags injected into their snout which permits identification of groups according to year class, strain, stocking site, and other parameters. Catches of juveniles (age I-IV) during annual bottom trawling surveys have provided data to compare performance of the Lake Superior (SUP), Clearwater Lake (CWL), and Seneca Lake (SEN) strains.

All three strains of lake trout had similar patterns of dispersal from stocking sites; one year after stocking mean distance from stocking site to location of capture was about 50 km. The CWL fish were consistently taken at shallower depths and thus generally in warmer waters than the SUP and SEN strains. The CWL fish were significantly ($P < 0.5$) larger than their SUP counterparts at age II and older. Samples of SEN fish were too small for meaningful statistical

(range 0-21%) of the fish judged "live" at weigh-in. Fish mortality was not significantly ($P < 0.05$) related to number of fish caught, weight of fish caught, number of boats in the tournament, or water temperature. In each of these tournaments, 50% of the fish weighed in dead were attributed to an average of 14% of the contestants. Our results suggest survival of tournament-caught largemouth bass could be increased by appropriate angler education programs.



SPORT FISHING AND BOATING ENHANCEMENT COMMITTEE



COCHAIRMAN

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National Marine Manufacturers Association
2550 M Street, N.W., Washington, DC 20037
Phone: (202) 296-4588

COCHAIRMAN

Carl R. Sullivan, Executive Director
American Fisheries Society
5410 Grosvenor Lane, Bethesda, MD 20814
Phone: (301) 897-8616

MEMORANDUM

TO: Everyone interested in D-J Expansion

FROM: Carl Sullivan, Cochairman of Sport Fishing and Boating Enhancement Comm.

RE: Status of D-J Expansion

DATE: April 24, 1984

Despite news reports to the contrary, the Senate has not yet passed D-J Expansion, though a giant step has recently been taken in that direction. What really happened was this:

At 5:00 a.m., on Friday, April 13, after an all night session and by a vote of 76 to 5, the Senate approved the Dole Amendment, a 1,300 page, 5 year, \$48 billion dollar "tax package" amendment to H.R. 2163. (H.R. 2163, as you recall, is the July 12, 1983, House-passed amendment to the Federal Boat Safety Act—our D-J Expansion Bill.) The Senate version of H.R. 2163 is not yet ready to go to conference with the House because work is continuing on a second Senate amendment to include \$25 billion over 5 years of spending cuts. The Senators will go to work on these spending cuts as soon as they return from Easter recess.

When the Senate has considered and passed the spending reduction amendment to H.R. 2163 they are expected to combine their tax and spending amendments and substitute them for the language of the recently passed House tax/spending bill, H.R. 4170. When this is done the House and Senate will appoint conference committee(s) to work out the differences between the House and Senate versions of H.R. 4170 (see Note below). We have high hopes that the differences can be resolved without much difficulty, that both bodies will subsequently approve the compromise and that the President will then sign the bill into law.

With good luck, the process could be complete by the end of May.

NOTE:

The differences in the House and Senate versions of D-J Expansion include (1) effective dates of new taxes and transfer of marine fuel taxes from Land and Water Conservation Fund to Boating and Sport Fish Enhancement Fund (1 October 1984 or 1 October 1985); (2) whether electronic fish finders shall be included in the newly taxed items or not and under what terms; (3) whether the taxing point shall remain with the manufacturer or be moved to the last sale before retail; and (4) whether tackle boxes shall be taxed at 10% or 3%.

American Fisheries Society
American Institute of Fishery Research Biologists
American League of Anglers
American Striped Bass Society, Inc.
Atlantic States Marine Fisheries Commission
Bass Anglers Sportsman Society
Boat:U.S.
California Trout, Inc.
Coalition of Manufacturers for the Expansion/
Deferral of D-J
Federation of Fly Fishers
Gulf Coast Conservation Association
Gulf States Marine Fisheries Commission

International Association of Fish & Wildlife
Agencies
International Atlantic Salmon Foundation, Inc.
Isaak Walton League of America
Michigan United Conservation Clubs
National Association of Sporting Goods
Wholesalers
National Association of State Boating Law
Administrators
National Audubon Society
National Boating Federation
National Coalition for Marine Conservation
National Marine Manufacturers Association

National Wildlife Federation
Northwest Steelheaders
Pacific Coast Federation of Fishermen's
Associations, Inc.
Pacific Marine Fisheries Commission
Raleigh Salt Water Sportsfishing Club
Restoration of Atlantic Salmon America, Inc.
Salmon Unlimited
Sport Fishing Institute
Striper
Theodore Gordon Flyfishers, Inc.
Trout Unlimited
Wildlife Management Institute

The AFS Diary

VOL 10 No. 15

A WEEKLY REPORT TO THE EXECUTIVE COMMITTEE
FROM THE OFFICE OF THE DIRECTOR

April 13, 1984

THE ANNUAL MIDWEST FISH DISEASE WORKSHOP, sponsored by the AFS Fish Health Section and others will be held July 10-12, 1984 at the Little Rock, Arkansas Sheraton Inn where a \$28.00 single rate has been negotiated. For details, contact Fish Disease Section, Fish Farming Experiment Station, US.FWS, P.O. Box 860, Stuttgart, Arkansas 72160.

THE AFS/NORTH AMERICAN BENTHOLOGICAL SOCIETY liaison (Don Duff) has provided a copy of that Society's upcoming annual meeting program. The May 22-25 meeting will be held at NC State and will feature 234 technical papers. The comprehensive, pocket-size program contains abstracts for each paper plus a unique author index in the back. For details contact David Gerlong, NC State University, Zoology Department, Raleigh, NC

THE MAINE GOVERNOR'S OFFICE has responded to our letter of concern over reductions in fisheries science staff. The austerity motivated action has been reversed by the Maine legislature, but as of this writing the Governor has not signed the bill and may yet veto it. In recent months Maine biologists have gained great practical experience in the political process. Those are foreboding learning circumstances, but the "real world" lesson learned is no less valuable. Too bad it can't be taught in the classroom.

AN EXCELLENT PROGRAM is in store for participants in the May 19-20 annual meeting of the Potomac Chapter. Of particular interest are panels on (1) Acid Rain: Issues and Answers; (2) Interjurisdictional Fisheries Programs and Opportunities; and (3) Introducing Striped Bass to the Chesapeake Bay. Nationally prominent speakers will participate in each panel. For details, contact Hoyt Wheeland, 3700 Hayes Manor Lane, Olney, Md. 20832 or call (202) 634-7415.

THE SECOND ANNUAL "MUDBASS CLASSIC" will be sponsored by the AFS Virginia Tech Chapter on Saturday, April 28. This Cyprinus Carpio Caper was highly successful last year and might be even more so this year. For details contact, Donald Hershfeld, American Fisheries Society, VPI Chapter, Blacksburg, VA 24061.

MY APRIL 6 MEETING WITH THE SECRETARY OF INTERIOR went well. For 30 minutes we discussed (1) wetland protection, (2) abandoned mine land reclamation, (3) a possible Canaan Valley National Wildlife Refuge, (4) Outer Continental Shelf oil and gas development, (5) the Rigs to Reefs initiative, plus (6) AFS and its annual meeting.

THE MUSKIE SYMPOSIUM WAS AN OUTSTANDING SUCCESS according to AFS Managing Editor, Bob Kendall. Several hundred muskie scientists and muskie anglers joined in LaCrosse, Wisconsin, April 4-6 to participate in the Muskies, Inc./AFS sponsored symposium. AFS will be helping promote and sell the published proceedings and we will, of course, publish coverage of the event in FISHERIES. We commend all those involved for a major fisheries science contribution.

INADEQUATE FISHERIES BIOLOGIST SALARIES were the subject of another letter, this time to Florida Governor Graham. The formal reply includes the following constructive and responsive language:

"The Governor shares your appreciation of the importance of Florida's fisheries resources and supports the establishment of pay levels that will enable the State to recruit and retain the most qualified fisheries scientists. The Governor feels the Department of Natural Resources and the Florida Game and Fresh Water Fish Commission have done an outstanding job in this vital environmental area within the resources made available to them.

Florida must remain competitive in salary levels for all areas of State government. Because of uniqueness of Florida's fisheries resources, it is especially important in employment areas that will help sustain and enhance this resource. I am sending a copy of your letter and survey results to the Department of Administration, which has statutory responsibility for maintaining an equitable state pay plan. I am sure they will find this information useful and enlightening."

THE 1984 ANNUAL MEETING OF THE GREAT LAKES FISHERY COMMISSION is May 7-10 at the Hotel Syracuse in Syracuse. Direct questions to GLFC, 1451 Green Road, Ann Arbor, Michigan 48105 or phone (313) 662-3209.

The AFS Diary

VOL 10 No. 16

A WEEKLY REPORT TO THE EXECUTIVE COMMITTEE
FROM THE OFFICE OF THE DIRECTOR

April 20, 1984

MARCH RECRUITMENT was up by 30 new members compared to last year, which in light of limited employment opportunity is greatly encouraging. The 3rd dues billing will go out soon and it should substantially reduce our delinquent list.

FIVE YEAR MEMBERSHIP RECRUITMENT AND LOSS CHART

	1980	1981	1982	1983	1984
January	141	135	119	117	114
February	181	135	88	97	97
March	167	118	108	73	103
April	62	74	83	51	
May	66	80	58	64	
June	66	74	63	62	
July	43	47	51	45	
August	83	53	59	73	
September	119	54	104	48	
October	93	72	63	57	
November	69	68	58	72	
December	98	85	94	82	
Total New					
Members	1,188	995	948	841	
Delinquent	906	895	898	919	
NET GAIN	282	100	50	(78)	

AFS GOLDEN MEMBERSHIP CERTIFICATES are well received by our 50-year members. Fred A. Thompson of Vancouver, Washington writes, "This is to advise you that the Golden Membership award Certificate has been received, framed and hung. Thanks! It's nice to be remembered."

SECRETARY OF INTERIOR BILL CLARK has given me a 2-year appointment on the Outer Continental Shelf Policy Committee which advises the Secretary and the DOI in matters of OCS development. The Council meets twice annually and though non-salaried, it does reimburse expenses. In the event that I cannot attend a meeting, I have asked AFS member, Dr. Robert Ditton of Texas A&M to be my alternate. Bob Ditton has been a careful student of OCS development in the Gulf of Mexico.

THE AFS EXCOM FISHERIES RECEPTION held after the recent Boston meeting was immensely popular with guests and Excom members alike. A spectacular fresh seafood spread was generously provided by the New England Sea Food Foundation. Several highly complimentary letters and phone calls have been received from participants.

D-J EXPANSION TOOK A GIANT STEP CLOSER TO PASSAGE on Friday, April 13, when the Senate gave approval to its tax package. Hidden away in the 1325-page tax bill is the language which will achieve an estimated 300% increase in state D-J revenues. Before the bill can become law the Senate must approve a spending cut amendment to its tax package, then meet with the House to work out the differences between the House and the Senate versions. After 7½ years of active advocacy we are within a few "relatively" small legislative steps of achieving our goal. We haven't counted the chickens yet, but we're more and more confident that the eggs will hatch.

A SERIES OF ENVIRONMENTAL STUDIES are conducted or contracted for by the U.S. Minerals Management Service as part of their OCS development responsibility. AFS has been somewhat critical of past studies because of what we perceive to be insufficient attention to fisheries considerations. An opportunity to influence future studies has come with my appointment as Chairman of FY 86 Environmental Studies Committee for the mid-Atlantic region. The Committee meets soon to make recommendations and I will do my best to persuade others that fisheries issues deserve more consideration.

A NATIONAL MARINE POLLUTION WORKSHOP to identify and rank the importance of national marine pollution research issues will be held in Easton, MD May 22 - 24. The AFS invitation to participate was related to Water Quality Section President, Carlos Fetterolf, who will attend to represent AFS/WQS plus, of course, the Great Lakes Fishery Commission where he is Executive Secretary. For details of the workshop, call NMFS, Susan Harvey (301) 443-8823.

WE ARE DOWN TO OUR LAST 3 COPIES of the book "A Review of the EPA Redbook: Quality Criteria for Water" by the AFS Water Quality Section. We are not accepting any more orders for this publication.

THE NEW AFS DIRECTORY has been sent to all members in good standing. The alphabetic listing which comprises most of the Directory is fine, but somehow LIFE members were deleted from the state listings in the rear of the Directory. Sorry about that, but it's too late to correct until next year.

less cash
in state agencies' coffers . . .

Fiscal '84 D-J and P-R Funds Show Drops

By John G. Zervas

Fiscal 1984 will not be a good year for state officials in charge of federally funded fish and wildlife restoration programs.

The second of two apportionments, announced late in February by Interior Secretary William Clark, resulted in a decrease from fiscal 1983 of \$1.4 million (4.3%) in Dingell-Johnson Funds and a decrease of \$18.6 million (17.4%) in Pittman-Robertson Funds.

Total apportionments are as follows: D-J, \$31,380,000; P-R, \$88,450,000 (including \$15,450,000 in hunter education funds).

Fish restoration funds come from a 10% excise tax on rods, reels, lures and creels, and may be used by state agencies to purchase land and water areas for development of access sites and fishing facilities, and conducting research in fishery management.

Funds for wildlife restoration and hunter education programs come from an 11% excise tax on sporting arms and ammunition, a 10% excise tax on handguns, and an 11% excise tax on archery equipment and accessories.

Hunter education funds are used for safety programs and the construction, operation and maintenance of public target ranges.

The usual three states received the maximum 5% apportionment: Alaska, California, Texas; minimums of 1% went to 13 states (see table) and Puerto Rico; American Samoa, Guam, Northern Mariana Islands and the Virgin Islands each received one-third of a minimum share.

D-J funds are apportioned to the states based on a formula of 60% for the number of fishing license holders and 40% for land area including coastal and Great Lakes waters.

Under this formula, only six states received \$1 million-plus apportionments: Minnesota, Michigan, Wisconsin, Texas, California and Alaska.

FISCAL 1984 D-J FUND APPORTIONMENTS

New England		Percent
ME	\$ 313,800	1.0%
NH	313,800	1.0
VT	313,800	1.0
MA	313,800	1.0
RI	313,800	1.0
CT	313,800	1.0
**	\$1,882,800	6.0%

South Atlantic		Percent
DE	\$ 313,800	1.0%
MD	313,800	1.0
VA	487,592	1.5
WV	313,800	1.0
NC	469,511	1.5
SC	356,206	1.1
GA	583,498	1.9
FL	619,429	2.0
**	\$3,457,636	11.0%

Middle Atlantic		Percent
NY	\$ 756,058	2.4%
NJ	313,800	1.0
PA	793,133	2.5
**	\$1,862,991	5.9%

East South Atlantic		Percent
KY	\$ 510,387	1.6%
TN	572,765	1.8
AL	524,235	1.7
MS	401,702	1.3
**	\$2,009,089	6.4%

East North Central		Percent
OH	\$ 813,570	2.6%
IN	527,413	1.7
IL	719,217	2.3
MI	1,134,497	3.6
WI	1,101,470	3.5
**	\$4,295,167	13.7%

West South Central		Percent
AR	\$ 544,328	1.7%
LA	474,978	1.5
OK	611,698	2.0
TX	1,569,000	5.0
**	\$3,200,004	10.2%

West North Central		Percent
MN	\$1,271,901	4.1%
IA	477,896	1.5
MO	788,493	2.5
NO	350,926	1.1
SD	384,331	1.2
NE	408,643	1.3
KS	478,943	1.5
**	\$4,161,133	13.3%

Pacific		Percent
WA	\$ 761,050	2.4%
OR	742,059	2.4
CA	1,569,000	5.0
AK	1,569,000	5.0
HI	313,800	1.0
**	\$4,954,909	15.8%

Mountain		Percent
MT	\$ 716,120	2.3%
ID	528,469	1.7
WY	499,721	1.6
CO	793,055	2.5
NM	570,191	1.8
AZ	680,662	2.2
UT	546,514	1.7
NV	488,339	1.6
**	\$4,823,071	15.4%

Territories		Percent
AS	\$104,600	0.3%
GU	104,600	0.3
NMI	104,600	0.3
PR	313,800	1.0
VI	104,600	0.3
**	\$732,200	2.3%

U.S. Total	\$31,380,000	100.0%
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(Compiled by High/Low Research)

The Pennsylvania Fish Commission

The Northeast Division of the American Fisheries Society
Central Penn Chapter
and

LOCK HAVEN UNIVERSITY

A N N O U N C E

THE 1984

COLDWATER WORKSHOP

MANAGEMENT STRATEGIES FOR THE EASTERN BROOK TROUT

Program:

Invited Presentations and Poster Session

July 9-11, 1984

LOCK HAVEN UNIVERSITY ***** LOCK HAVEN, PENNSYLVANIA

For Further Information Contact:

Martin Marcinko
Pennsylvania Fish Commission
450 Robinson Lane
Bellefonte, PA 16823
(814) 359-5160

Robert C. Scherer
Lock Haven University
323 Ulmer Hall
Lock Haven, PA 17745
(717) 893-2065

The Diary

VOL 10 No. 17

A WEEKLY REPORT TO THE EXECUTIVE COMMITTEE
FROM THE OFFICE OF THE DIRECTOR

April 27, 1984

THE USFWS 1985 NATIONAL SURVEY OF FISHING HUNTING AND WILDLIFE ASSOCIATED RECREATION is about to get underway and Director Bob Jantzen has written AFS requesting our cooperation and asking for suggestions regarding the content of the 1985 questionnaires. Prior to responding I have sought the advice of the AFS Fisheries Management, Fisheries Administrators, and Fisheries Economics Sections. The national survey is updated every 5 years and is widely used by states and sport-fishing related businesses.

WALLEYE AND TOURISM - FUTURE MANAGEMENT STRATEGIES will be the theme of the Northwestern Ontario Chapter's September 18th-21st annual meeting. Chapter President, Dominic Baccante is asking for help in identifying examples where AFS Chapters have been involved in "promoting and/or participating in conferences/workshops of this nature." If your Chapter has been similarly involved with user-groups or government agencies, please contact President Baccante at P.O. Box 5000, Thunder Bay, ON P7C 5G6.

ONE WEEK WE HAD A RING NECKED PHEASANT on the Central Office property and the next week it fell victim to an automobile. The pair of mallards which last year nested by our small pond have returned, so hopefully spring is here.

A BLM/USFS BRIEFING ON THE NEW GRAZING FEE FORMULA was held on April 13 for the purpose of compiling a set of criteria against which the current fee formula and alternatives can be measured. Criteria for the present formula does not include fish and wildlife values sacrificed. I strongly stressed this omission during the briefing and both the FS and BLM staff agreed that fish and wildlife value criteria should be a consideration in the new fee formula and that they would make such a recommendation. Several other conservation groups supported the proposition. The present grazing fee expires next year and the two major public land agencies will make their new fee formula recommendation to Congress very soon.

1984-1985 IS THE YEAR OF THE OCEAN according to the National Oceanic and Atmospheric Administration (NOAA). The purpose is renewed recognition of the importance of the world's oceans in American life. For more information, write Year of the Ocean, NOAA/National Ocean Service,

External Affairs Staff. Herbert Hoover Bldg., Washington, D.C. 20230. Note: An upcoming Year of the Ocean activity is the June 17-20, University of Rhode Island conference on "Antarctic Politics and Marine Resources: Critical Choices for the 1980's."

AN EXCELLENT 16-PAGE NEWSLETTER (Vol 5, No. 1) has been produced by the AFS Early Life History Section. It is handsomely printed and contains Society-Section, and scientific news and is marvelously effective in facilitating the mission of the Early Life History Section. Editor is Fred Binkowski, Center for Great Lakes Studies, University of Wisconsin, Milwaukee, 600 East Greenfield Avenue, Milwaukee WI 53204 or phone (414) 224-3000. Other Section officers and newsletter editors should get a copy.

THE FIRST CALL FOR PAPERS for the March 31-April 3 Symposium on the Role of Fish Culture in Fish Management has been distributed. The Lodge of the Four Seasons, Lake Ozark, Missouri. The meeting is being organized by AFS Fisheries Management and Fish Culture Sections. Address correspondence to Delano Graff, Chairman, AFS Symposium Committee, Pennsylvania Fish Commission, 450 Robinson Lane, Bellefonte, PA 16823-9616 or phone (814) 359-5154.

THE FIRST WORLD ANGLING CONFERENCE has been set for Cap D'Agde, France, September 12-18 this year. We have been asked to tell our readers that additional information is available from the International Game and Fish Association, 3000 East Las Olas Blvd. Fort Lauderdale, Florida 33316.

TIMELY NORTH CENTRAL DIVISION RESOLUTIONS were approved and distributed following their last annual meeting. They include (1) Rehabilitation and Maintenance of Fish Habitat in the St. Mary's River Rapids; (2) Protection of Fishery Resources at Pumped Storage Power Plants and (3) Research Initiatives for Examining Effects of Long-Term Exposure to Low Gas Supersaturation Levels in Hatchery Systems. For information write, Harold Klassen, Division of Biology, Kansas State University, Manhattan, Kansas 66506 - (913) 532-6615.

The AFS Diary

VOL 10 No. 18

A WEEKLY REPORT TO THE EXECUTIVE COMMITTEE
FROM THE OFFICE OF THE DIRECTOR

May 4, 1984

THE AFS PERMANENT HOME FUND received \$4,430 in April as a direct result of the recent appeal to AFS members from President Janice Hughes and Fund Chairman, Chuck Campbell. Some additional gifts are expected in May.

MEMBERSHIP IN AFS IS REQUIRED FOR ANNUAL MEETING ATTENDANCE by New York state fisheries biologists. In a memo sent to his staff of 69 fisheries professionals, New York Chief, Bruce Shupp, said, "Any one of the following three criteria should be used for determining who is approved to attend the meeting on official duty, with per diem paid from your Unit's travel funds. (1) Anyone who is a current AFS member in good standing (just being a NY Chapter member does not qualify). (2) Anyone who is presenting a paper or serving on a panel. (3) Anyone who is serving on a subcommittee of the Meeting Steering Committee."

THE NIANGUA DARTER (*Etheostoma nianguae*) SHOULD BE CLASSIFIED AS THREATENED according to the Fish and Wildlife Service. AFS members have been asked to provide any available factual data concerning the status of the Niangua darter. We are also asked to advise USFWS of any special considerations that should be taken into account prior to final determination of the fish's status and to provide any other advice or guidance we feel is relevant. Send comments to the Division of Endangered Species, USFWS, Federal Bldg, Fort Snelling, Twin Cities, Minnesota 55111.

WE APOLOGIZE TO ALL LIFE MEMBERS for failing to include them in the state-by-state listing in the back of the new AFS Directory. All are listed in the alphabetical section, but somehow our computer service company failed to include them in the state listings and we didn't catch the omission in time.

THE ACID RAIN INFORMATION CLEARING HOUSE (716) 546-3796, has asked for a copy of FISHERIES (Vol. 9, No. 1) noting that the proceedings of the AFS Symposium on Mitigation Techniques for Acidified Surface Waters is of great interest to them.

THERE HAS BEEN SOME DISMAY THAT NEW LIFE MEMBERS WERE NOT LISTED as Permanent Home Fund contributors in the March/April issue of FISHERIES. It is true that the first 100 membership fees (\$50,000) were placed in the Permanent Home Fund. It is also true that they will be permanently recognized by having their names inscribed on a plaque in the new office. This is not exactly the same as a contribution. However, we do plan to list all Life Members in an early issue of FISHERIES.

THE AFS SLIDE MODULE "THIS IS AFS" is receiving good exposure among Western Division Chapters and at U.S. Forest Service workshops. Writes Don Duff, "It's certainly an excellent production. Brian Murphy and his Committee should be commended for their excellent job in getting it out." The slide module comes in cardboard slide mounts suitable for single projector presentation using a Kodak Caramate or similar self-contained system, or a carousel projector tied to a Wollensak-type tape recorder. For double projector phase-in presentation, it is available in glass slide mounts. It has also been transferred to a 3/4" video cassette. All of these 3 presentations may be borrowed from the AFS Central Office.

BUREAU OF LAND MANAGEMENT PROFESSIONALS are encouraged to maintain a high level of activity in professional societies. This policy is contained in BLM's Interoffice Memo 84-139 and it notes further that employee participation in professional societies benefits both the agency and the profession. This renewed agency support for professionalism resulted from last year's joint letter from the presidents of AFS, TWS, Society of Range Management (SRM) and the Society of American Foresters (SAF).

AN EXCELLENT REPORT HAS COME FROM THE COLORADO/WYOMING CHAPTER and its 83/84 President, Mary McAfee. Without question, the Colorado/Wyoming group of 191 members is one of the Society's most active and productive chapters. The first two paragraphs from Mary's report struck me as being well worth the attention of all AFS leaders.

"The last several years have been times of growth and change for our Chapter. There have been many debates and discussions on the purpose and direction of the group and a great deal of hard work on the part of several individuals dedicated to the ideal of an active and effective professional organization.

The result of all this is an excellent framework for a wide-ranging, substantive Chapter involvement in fisheries matters in the two states. Guidelines are in place for political activism, for interaction with other professions and with lay conservation groups, for communication of the results of our work, for the encouragement of students in fisheries, for the recognition of personal and professional excellence among ourselves, and for the enjoyment of our colleagues as friends. In short, our Chapter is ready to respond to any and all of us to the extent to which we commit ourselves to its program."

The ^A/_sF Diary

A WEEKLY REPORT TO THE EXECUTIVE COMMITTEE
FROM THE OFFICE OF THE DIRECTOR

May 11, 1984

VOL 10 No. 19

ANY DIARY READERS RESPONDED to our recent plea to write influential congressmen and senators on behalf of Fisheries Coop Unit funding and organizational integrity. We were pleased to receive copies of the letters and I thank every member who responded.

A "LIKE-NEW" 3-M 526 COPIER has been purchased to replace Bob Kendall's old 3-M 209 copier. In today's paperwork jungle, a good copier is absolutely indispensable.

AFS HAS BEEN ASKED to join a select group of conservation organizations who will open up new dialogue with top EPA administrative staff. Initial subjects for discussion are acid rain and non-point source pollution. Volunteer Advisory Staff member and past AFS president, Ray Johnson, will represent us at the initial meeting.

DINGELL-JOHNSON EXPANSION appears to be headed for early passage in the Senate followed by a conference with the House to settle differences between the House and Senate versions. The conference would begin as early as May 15.

THE U.S. FISHING INDUSTRY - FOCUSING ON THE FUTURE is the title of a June 7 National Fishing Week Conference in Washington. Presentations will be made by national sport and commercial fishing industry leaders. AFS will be represented by a small delegation of our Volunteer Advisory Staff. DIARY readers with a particular interest should contact AFS headquarters.

INNOVATIVE IDEAS FOR FUNDING NON-GAME FISH AND WILDLIFE PROGRAMS are being sought by the USFWS. Three AFS Volunteer Advisory Staff members attended an April 24 briefing and report that none of the 18 proposed funding sources to date have won even close-to-consensus approval. The DOI has asked for a "positive" report in compliance with non-game legislation. The draft report is due in July. Finding an acceptable solution will be difficult.

DOES ANYONE HAVE A FISHERIES CONTACT IN PERU? Carl George, long-time Northeastern Division stalwart is going there in July, but AFS has no members in Peru. If you can help, call him at (518) 370-6330.

AFS 1st VICE PRESIDENT, JOHANNA REINHART, and PFC Editor, Mary Jo Lewis, attended last week's CBE (Council of Biology Editors) meeting in nearby Warrenton, VA. Johanna, now Editor of the CANADIAN JOURNAL OF FISHERIES AND AQUATIC SCIENCES and former editor of TRANSACTIONS, spent two days in the AFS Central Office before returning to Ottawa. Johanna will become AFS president at the 1985 annual meeting in Sun Valley, Idaho.

AUSTRALIAN FISHERIES BIOLOGISTS, DR. COLIN GRANT AND ROSS WINSTANLEY, who are on temporary assignment with NMFS, visited the office last week in company with AFS Past President, and first AFS Executive Director, Dr. Bob Hutton. Hutton is currently Chief of the Constituent Affairs Staff at the National Marine Fisheries Service.

AN AQUATIC BIOLOGY POSTDOCTORAL RESEARCH ASSOCIATE opening is available at SUNY, Brockport, NY 14420. It requires a Ph.D., research/publication, biostatistical/computer experience. Write Dr. James Haynes, Dept. of Biological Sciences.

THE THIRD 1984 DUES BILLING was mailed to 1495 "tardy" members on 26 April. We will need 500 to 600 additional renewals to equal the percentage of the past few years.

A POSSIBLE TIDEWATER CHAPTER COMPOSED of AFS members in coastal areas of Virginia and North Carolina is being explored via a memo to 250 members in the area. We asked (1) are you interested? and (2) would you be willing to help make it happen? The Tidewater area has a large and growing population of fisheries professionals with no AFS chapter currently available to them.

A FISHERIES IMPACT STUDY has been given highest priority by the Mid-Atlantic Regional Technical Working Group which advises the Minerals Management Service in its Coastal Environmental Studies Program. As chairman of the Working Group's Environmental Studies Committee I have been pressing hard for attention to fisheries resources after years of what I consider to be "far-out" endangered species and marine mammal studies. The decision is now up to Minerals Management Service top executives.

The ^A/_S F Diary

A WEEKLY REPORT TO THE EXECUTIVE COMMITTEE
FROM THE OFFICE OF THE DIRECTOR

May 25, 1984

VCL 10 No. 21

DINGELL-JOHNSON EXPANSION PASSED THE SENATE on Thursday, May 17. The House and Senate must now appoint committees to see whether the House or Senate version or something in between will become law. The struggle is nearly won.

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SUPPORT FOR A MINERALS MANAGEMENT SERVICE FIN FISH STUDY has come from other members of the Service's Mid Atlantic Technical Advisory Group following my Subcommittee's recommendation that finfish studies have been greatly neglected while endangered species, marine mammals and abstract environmental studies have been overdone. I am very hopeful that funding will be forthcoming for a study of the IMPACTS OF OIL AND GAS OPERATIONS ON THE RECREATIONAL AND COMMERCIAL FISHERIES OF THE MID ATLANTIC REGION. If it's funded, it would be contracted out by MMS to coastal states or private research groups.

I SERVED AS TOASTMASTER FOR THE MAY 22 NATIONAL YOUTH SCIENCE CAMP BANQUET in Charleston, WV. As Director of the WV Centennial Commission in 1963 I conceived and organized the first camp as a centennial event. It was so popular that it has been held in West Virginia every year since. The camp brings the top two high school science seniors from each state to West Virginia for 3 weeks of outdoor recreation and science in a mountain wilderness setting. The camp sponsors covered my expenses for participating in the banquet just as they cover all costs, including travel, of holding the camp.

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THE AWARD OF HONOR of the Natural Resources Council of America has gone to Dr. Ray Johnson, AFS Past President and Volunteer Advisory Staff

member. Although retired, Ray's professional contributions through AFS and several other organizations have continued unabated. An NRCA award ceremony and reception was held on May 17.

A NATIONAL WILDERNESS RESEARCH CONFERENCE will be held July 23-26 at Colorado State University. The request for having the notice published in FISHERIES came too late to be used (a minimum of 4 months is necessary for an effective notice). Persons interested in this interdisciplinary meeting should write CSU College of Forestry and Natural Resources, Fort Collins, CO 80523.

A PUBLICATION - CONTEMPORARY FISHERIES RESEARCH IN LOUISIANA has been produced by the Louisiana AFS Chapter and a copy thoughtfully supplied to the Central Office. Send questions or requests for one of a limited number of copies to Barton Rogers, Secretary/Treasurer, LA Chapter AFS, 245 Parker Ag Coliseum, LSU, Baton Rouge, LA 70803.

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The AFS Diary

VOL 10 No. 20

A WEEKLY REPORT TO THE EXECUTIVE COMMITTEE
FROM THE OFFICE OF THE DIRECTOR

May 18, 1984

APRIL RECRUITS TOTALLED 76 compared to 51 a year ago. This puts us 52 ahead of last year's pace. Passage of D-J Expansion should give our recruitment a shot in the arm, so let's all stay alert for new-member opportunities.

FIVE YEAR MEMBERSHIP RECRUITMENT AND LOSS CHART

	1980	1981	1982	1983	1984
January	141	135	119	117	114
February	181	135	88	97	97
March	167	118	108	73	103
April	62	74	83	51	76
May	66	80	58	64	
June	66	74	63	62	
July	43	47	51	45	
August	83	53	59	73	
September	119	54	104	48	
October	93	72	63	57	
November	69	68	58	72	
December	98	85	94	82	
Total New Members	1,188	995	948	841	
Delinquent	906	895	898	919	
NET GAIN	282	100	50	(78)	

PROTECTION AND ENHANCEMENT OF EAST COAST STRIPED BASS STOCKS is the goal of House bill H.R. 5492 sponsored by Congressman Gerry Studds of MA. AFS has supported this bill as an appropriate compromise between no action at all and a 3-year, no-catch moratorium as advocated by Congresswoman Schneider of RI. The AFS position was developed by members who know the issues and who believe that coastal states can solve the problem if they will adopt the Atlantic States Marine Fisheries Commission management plan.

THE CENTRAL OFFICE WAS REPRESENTED AT THE RECENT NORTHEAST DIVISION MEETING by President Janice Hughes, NAJFM Editor, Mercer Patriarche, Mrs. Sally Kendall and me. The Ocean City, MD meeting went well, but was sparsely attended. Sally Kendall made an important contribution by organizing and "manning" a comprehensive display of AFS publications. The Division's Past President Luncheon was a particularly pleasant event which I felt fortunate to attend.

PRESIDENT JANICE GOT HER FIRST LOOK AT AFS OFFICES on May 16 on her way back to Louisiana from the Northeast Division meeting. She found opportunity to visit with each staff person about her or his job and was also given a tour of the facilities of our upstairs neighbors, The Wildlife Society.

A \$2,000 PERMANENT HOME FUND CONTRIBUTION was approved by the Northeast Division Excom at their Ocean City meeting with the check immediately drafted and handed to me to bring back to the office. Our subunits have really responded, including the Potomac Chapter which we failed to list in the recent FISHERIES story. Incidentally, the Division also approved the purchase of an aluminum canoe to offer as a Permanent Home Fund raffle prize at the Cornell University annual meeting.

THE FLORIDA CHAPTER HAS WRITTEN ALL STATE LEGISLATORS to point out the enormous value of Florida's fisheries resources and to try to convince them to devote more state dollars to fisheries resource protection, enhancement and research. It's an effective letter which might well be emulated by other Chapters. Write Chapter President, Vince Williams, 1324 Meadowbrook Street, Kissimmee, Florida 32743 for more details.

A RESERVOIR FISHERIES RESEARCH WHITE PAPER is getting closer to reality according to our consultant, Gordon Hall, former TVA chief fisheries scientist. Last spring AFS organized an Ad Hoc Reservoir Research Priorities Committee with representatives from 9 Federal agencies and several fisheries organizations. We are funding the effort with "bits and pieces" from a variety of sources and we plan a final report for late summer. Hopefully, it will lead to a new reservoir research initiative with a new organizational structure and new funding source(s). We are leaving no stone unturned in soliciting comments and views of fisheries scientists throughout North America.

GULF OIL CONSERVATION AWARDS, WON BY 3 AFS MEMBERS were presented at May 10 ceremonies here in Washington. Dr. Dick Anderson of Missouri won for his continuing leadership in the field of fisheries management. Gordon Fredine was recognized for his seemingly unlimited conservation services after retirement (Gordon heads up the AFS Volunteer Advisory Staff) and I was similarly honored for work with AFS on a variety of conservation issues. The award is a very handsome, personalized wall plaque plus a \$500.00 tax-free prize.

THE DAY-LONG, MAY 18 POTOMAC CHAPTER MEETING was devoted to acid rain and striped bass issues. Proceedings will be published this summer. I was pleased to participate in the meeting held at Coolfont Retreat near Berkeley Springs, WV.

The AFS Diary

VCL 10 No. 21

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The AFS Diary

VOL 10 No.22

A WEEKLY REPORT TO THE EXECUTIVE COMMITTEE
FROM THE OFFICE OF THE DIRECTOR

June 1, 1984

MAY NEW MEMBER RECRUITS totalled 69, an increase of five over last year. The first-5-month total of 459 is higher than the same period in 1982 and 1983.

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Delinquent	906	895	898	919	
NET GAIN	282	100	50	(78)	

AUSTRALIAN FISHERIES SCIENTIST, Ross Winstanley who visited AFS last month writes, "The whole experience exceeded my expectations professionally and was most enjoyable. I have written to Dr. David Pollard, President of the Australian Society of Fish Biology and to Dr. Joe Baker, President of the Australian Marine Science Association, passing on your invitation to make contact with you with a view to improving communication between people involved with fisheries science in the two countries."

THE RESPONSE TO OUR PROPOSED TIDEWATER CHAPTER QUESTIONNAIRE HAS BEEN POSITIVE, and we plan to support interested VA, NC and perhaps MD members in chartering such a chapter and getting it underway. One response came from Terry Grimes of Williamsburg, VA, who said he was relocating to D.C. Terry, an attorney/fisheries biologist, also volunteered to contribute legal services to the Society once he is settled. We, of course, have followed-up on his offer.

A COPY OF THE NORTH CENTRAL DIVISION NEWSLETTER arrived recently. It is a handsome, newsy product, and Editor Spencer Turner is to be commended. Also to be congratulated is Verl Stevens, Editor of the Fish Culture Section's informative and nicely printed newsletter. While on the subject, we also commend John Rohovec who edits the excellent Fish Health Section quarterly newsletter. His Volume 12, Number 2 was recently mailed and features a tribute to Dr. Stan Snieszko who died on January 12.

A S.F. SNIESZKO COMMEMORATIVE FISH DISEASE WORKSHOP will be held July 10-12, 1984 in Little Rock, Arkansas. Sponsored jointly by the AFS Fish Health Section and the Mideast Fish Disease Group, the workshop is being coordinated by Dr. G.L. Hoffman, Fish Farming Experiment Station, USFWS, P.O. Box 860, Stuttgart, Arkansas 72160.

PREPARATIONS FOR THE AUGUST 12-16 ANNUAL AFS MEETING at Cornell University are in high gear with prospects good for the biggest, best, most enjoyable annual meeting ever. The EXCOM will meet on Saturday and Sunday, August 11 and 12, with a Keynote Session, a Plenary Session and 15 Special Sessions scheduled from August 13-16. Over 200 scientific papers will be presented, a full fare of evening social outings are planned and the total price is quite modest. Every AFS member has been sent a packet of information including registration materials. For more information contact this office or the Steering Committee at Room 518, 50 Wolf Road, Albany, New York 12233. Chairman Bruce Shupp and his able crew are doing a great job.

THE AFS STAFF WAS PLEASED WITH THE RECENT OFFICE VISIT BY PRESIDENT JANICE HUGHES and made proud by her subsequent letter which said in part, "I was very impressed by the operation of the office. I have known for years the quality and quantity of work you produce, but it is exciting to see how well the office functions. Each one of you have an important part to perform and do it well. I wish all AFS members could visit the office and see what is involved in your part of the Society."

The AFS Diary

VOL 10 No. 23

A WEEKLY REPORT TO THE EXECUTIVE COMMITTEE
FROM THE OFFICE OF THE DIRECTOR

June 8, 1984

****D-J FLASH**** On June 7, House and Senate Conferees reached agreement on the details of the D-J Expansion language. This is an important step and virtually assures that the measure will become law. The compromise language adopted by the Conferees would:

1. Make the effective date October 1, 1984.
2. Leave the point of taxation with the manufacturer, but with a special provision to provide for double taxation where foreign manufactured goods are sold at less than a "constructive" price.
3. Tax tackle boxes at 10%, the same as all other tackle items.
4. Impose a 3% tax on specific types of electronic fish finders, with a \$30.00 maximum per unit.

Attached is an important memo aimed at preventing D-J funds from being "consumed" by existing efforts rather than used for necessary new initiatives. Your awareness and support of this effort are extremely important.

DIRECTORS OF FEDERAL NATURAL RESOURCE RELATED AGENCIES have been sent a copy of the 1984 AFS annual meeting program. It is most impressive, with more than 200 technical presentations scheduled on 15 important fisheries resource subjects. A cover letter asks each Director to carefully consider the depth and breadth of the fisheries science being discussed before making the decision on which and how many staff scientists will be permitted to participate.

A SUBSTANTIAL INCREASE IN FISHERIES SALARIES is the goal of a concerted campaign by the AFS Florida Chapter. The recent salary survey done by the AFS Central Office substantiates the woefully inadequate Florida pay schedule. The Chapter is using the survey in their effort. Chapter President, Vince Williams, is orchestrating the work.

A SYMPOSIUM ON SMALL HYDROPOWER AND FISHERIES is scheduled for May 1-3, 1985 in Denver, Colorado under sponsorship of the AFS Bio-Engineering Section and Western Division. The Chairman is Dr. Bob White of Montana State University, (406) 994-3491, and the funding contact is John Peters, (303) 234-2050. It is a topical subject sure to attract wide attention.

A NEW UPPER MISSOURI RIVER CHAPTER CONTRIBUTION of \$500.00 to the AFS Permanent Home Fund brings the Chapter's total PHF support to \$1200. Thanks guys and gals.

EFFORTS TO PROTECT AND INCREASE APPROPRIATIONS TO THE NATIONAL MARINE FISHERIES SERVICE seem to be paying off. Concerned conservation groups, including AFS, have played a vital role in convincing the House Appropriations Committee to not only overturn the Administration's request for a 40% cut in NMFS funding, but to add an additional 21.7 million dollars. The 1984 allocation was \$162.5 million and the Administration requested \$99.2 million for FY 1985. The House Appropriations Committee added \$85 million to the Administration's request and much is expected to "stick" when considered by the Senate Finance Committee.

TVA'S WATER RESOURCES STRATEGY FOR THE 1980s was unveiled to conservation groups during a May 30 luncheon briefing in Washington. I attended, armed with a Southern Division analysis of the Valley Authority's water strategy document. Our major concern was absence of a fisheries thrust, but we were advised that a TVA Fisheries Strategy for the 1980s will be announced very soon.

THE SOCIETY'S PERMANENT HOME FUND continues to require substantial staff attention, but with only \$40,000 to go, the end is in sight. We won't quit short of success, so you will continue hearing about our campaign for as long as it takes. With your help, it will be completed this year.

BY THE TIME YOU READ THIS, the 36-member, AFS People to People delegation will be well along on its 3-week, round-the-world trip to Finland, Russia and China. The group includes President Janice Hughes, plus Past Presidents Ed Cooper, Reeve Bailey and Chuck Campbell. Fisheries oriented visits, discussions and social events are scheduled for Finland, two cities in Russia and four in China. We should return with many "fish" stories.

A supply of AFS US-Mint-struck Centennial Medallions is being taken along for formal presentation to fisheries delegation leaders in each city we visit. Delegation members are paying all costs. The group departed NY on June 9 and will return to San Francisco on June 30.

The AFS Diary

VOL 10 No. 24

A WEEKLY REPORT TO THE EXECUTIVE COMMITTEE
FROM THE OFFICE OF THE DIRECTOR

June 15, 1984

A REVIEW AND EVALUATION OF THE USFWS FISHERY RESOURCES PROGRAM was recently given by a team of AFS members (R. Johnson, R. Rosen, N. Carter, L. Hutchens and C. Sullivan) during a candid interview with a team of Fish and Wildlife Service staff. The Committee's principal concerns were what we perceive to be a lack of Service support for professionalism and our fears that the fisheries resources program is being systematically dismantled. Immediately prior to this meeting our group met with another USFWS team on the subject of Executive Direction Evaluation. Both meetings had been requested by the Service, and we were given excellent opportunity to make our views known.

MEMBER L.A.J. AL HASSAN from Iraq has wired that he wishes very much to present a paper at the upcoming annual meeting. Chairman Dave McDaniel said it is possible, though listing in the final program is out. We wired that information to Al Hassan.

COMMON STRATEGIES OF ANADROMOUS AND CATADROMOUS FISHES is the title of a Northeastern Division conference set for March 16-21, 1986 at the Park Plaza Hotel in Boston, MA. It is a reasonable assumption that the semi-annual AFS Executive Committee meeting will be held in association with the conference. Four sessions have already been established and convenors appointed. For information, contact M.J. Dadswell, Chairman. St. Andrews Biological Station, St. Andrews, NB E0G 2X0 Canada.

A NEW AFS SECTION TENTATIVELY CALLED "COMPUTER USER GROUP SECTION" is being organized by Don Chase, colleagues and interested members. A petition for the new section is being circulated along with draft bylaws. Interested members are asked to contact Don at the Fish Management Division, Washington Department of Game, 600 N. Capitol Way, Olympia, WA 98504 or call (206) 753-5713 (work) (206) 943-0330 (home).

FISHERIES ADMINISTRATORS SECTION PRESIDENT, Kim Erickson, has forwarded detailed minutes of the Section's May 9-11 Tulsa, OK meeting, plus copies of their resolution calling upon state governments to use new D-J funds for new sport fishing initiatives.

A SUGGESTED PLAN FOR REORGANIZATION OF THE FEDERAL ADMINISTRATION OF FISHERIES SCIENCE/MANAGEMENT is the goal of an AFS committee to be announced soon by President Janice Hughes. Dr. John Harville, retiring Executive Director of the Pacific Marine Fisheries Commission will chair the effort. The committee will include AFS members who are national leaders in their fisheries discipline. The goal of the committee is a plan which can be approved by our Society and forwarded for Congressional consideration early in the next Congress.

DR. DICK WYDOSKI, VOLUNTEER SCIENCE EDITOR FOR FISHERIES for the past eight-plus years, visited the office recently to help with the transition to his successor, Dr. Tom Wissing of Miami University in Ohio. Wydoski has made a tremendous scientific contribution to FISHERIES and the Society, having recruited and orchestrated technical peer reviews by more than 250 colleagues from throughout the Society and the profession. He received the AFS Distinguished Service Award for his services in 1981, but his efforts have continued unabated.

DR. RAY JOHNSON REPRESENTED AFS AT THE JUNE 8 NRCA MEETING WITH SECRETARY OF INTERIOR CLARK. AFS, a member of NRCA (Natural Resources Council of America), submitted questions which were incorporated into the meeting agenda. About 25 organizational members of NRCA participated in the wide-ranging natural resource issue meeting.

WRITING MY EDITORIAL FOR FISHERIES doesn't always come easy, and the strain often shows through. It is an important bimonthly project worthy of more time than can sometimes be committed; at least that's my excuse when and if one turns "sour."

THE NATIONAL WORKSHOP ON COMPUTER USES IN FISH AND WILDLIFE PROGRAMS PROCEEDINGS are available for \$12.50 per copy, which covers the cost of copying and mailing. If you would like a copy, they can be ordered through the Department of Fisheries and Wildlife Sciences, Virginia Polytechnic Institute and State University, Blacksburg, VA 24061. Checks should be made payable to Donald Brown Center for Continuing Education.

AFS HAS COMMENTED IN DETAIL ON THE LATEST COE SECTION 404 PROPOSALS, thus continuing our 2½ year effort of monitoring COE efforts to change and streamline its Section 404 (CWA) permit review system. This effort, coordinated by Bob Schueler of our Volunteer Advisory Staff (VAS), has been carried out in concert with many conservation-oriented groups and state fish and wildlife agencies. The thrust of the AFS effort has been to support justifiable reform while opposing changes that would remove hard-won habitat protection. As part of this long-term involvement, AFS and IAFWA filed a "friend of the court" brief supporting the basic National Wildlife Federation et al lawsuit.

This brought significant changes in the original COE proposals and resulted in an out-of-court settlement. The latest AFS comments acknowledged the positive changes, but hit hard on points still threatening aquatic habitats. Our major recommendation was that the drawn-out COE process of Section 404 "reform" be redone with full recognition of the many adverse reactions. Hopefully, this would be a single, complete, and consolidated "last best COE offer" - published in the Federal register as a draft for review or comment. It would address concerns of the entire conservation community, the States and EPA. A detailed and constructive response could be formulated to such a document, something not possible under the confused conditions now existing.

A 3-PAGE POSITION STATEMENT ON THE GARRISON DIVERSION PROJECT has been sent to all 100 U.S. senators. The statement was quite similar to the one mailed a year ago, except that this year we urged a concerted search for an alternative solution to the problem. The National Audubon Society provided valuable assistance in the production and distribution of the letters. A copy of our letter is available upon request.

The Diary

VOL 10 No 26

A WEEKLY REPORT TO THE EXECUTIVE COMMITTEE
FROM THE OFFICE OF THE DIRECTOR

June 29, 1984

D-J EXPANSION A REALITY AT LAST!

DINGELL-JOHNSON EXPANSION IS A REALITY having received final Congressional approval on June 29 and sure to receive the Presidential signature as soon as the bill reaches his desk. The new bill will generate more than a billion dollars for fisheries and fisheries science over the next 10 years with the annual funding expected to keep on growing. I repeat what I've said before - this is the most important fisheries legislation ever enacted by the U.S. Congress. Every AFS member who joined in leading the 7-year campaign has reason to be proud, for there will be a great many far-reaching and constructive implications.

THE AFS PEOPLE TO PEOPLE ROUND THE WORLD DELEGATION was enormously successful with 8 fisheries science counterpart exchanges in 7 cities. The 36-member, self-financed delegation, toured fisheries science facilities, met with fisheries scientists and hosted them at dinner parties in Helsinki, Finland; Leningrad and Moscow, U.S.S.R.; and Beijing, Wuhan, Wuxi, and Shanghai, China. The group also found time to tour the palaces of Peter the Great, visit Red Square and the Kremlin, climb the Great Wall of China, explore the Forbidden City, take boat rides around the Shanghai harbor and the unbelievable Grand Canal, visit a fish/rice oriented commune, be entertained by a Chinese kindergarten class, ride trains through the China and Russia countryside, shop at farmers vegetable markets plus much, much, more in a 3-week, action-packed adventure of a lifetime. Both President Janice Hughes (who participated actively) and I felt that the scientific exchange with members of the Chinese Fisheries Society was particularly significant. Their members were warm, inquisitive, and oh so anxious to establish a formal and continuing relationship with AFS. Our exchanges with Russian scientists were very constructive and could not have been more cordial (especially during the pre-banquet vodka toasts) but the U.S.S.R. made every member of our delegation more proud and grateful to be an American. AFS Centennial mint-struck medallions, left over from our 1970 anniversary, were presented as gifts to our foreign colleagues and were very well received. FISHERIES will carry photo coverage of the trip in a future issue and there will likely be other developments resulting from the exchange.

I WAS PLEASED TO ACCEPT A WHITE HOUSE INVITATION to attend a Rose Garden ceremony acknowledging and lauding the 50th anniversary of the National Duck Stamp program. During the brief program the President praised the joint public/private effort to save the Nation's wetlands and reviewed the many accomplishments to date.

ANNUAL BALLOTS ARE OUT and we are all anxiously awaiting the results of our 2nd Vice Presidential election as well as the name change referendum. My own views on the name change have changed somewhat over the last year and have certainly been influenced by the recently acquired knowledge that there is a Fisheries Society of China with as many members as we have. They are government oriented and dependent and they pay no dues, but nevertheless they exist and they coordinate fisheries science efforts in the Peoples Republic of China.

NEW MEMBER RECRUITMENT IN JUNE WAS DISAPPOINTINGLY LOW and suggests an urgent need to revitalize our efforts. One of our first steps in this direction, coming immediately on the heels of D-J Expansion success is a campaign to increase membership from state fisheries agencies. Within the past few weeks we have requested and received fisheries science employee lists from more than 40 state fisheries agencies. We have checked each list for AFS members and sent recruitment letters to all others. No fisheries biologist can legitimately say "what can or will AFS for me" so I call on each of you to help in this recruitment by discussing the matter with colleagues. We have some states where every biologist is a member, but others where less than 25% have felt inclined to join. Please lend a hand in this effort and tell candidates that with 1984 half over they can join now for half the annual dues.

	1980	1981	1982	1983	1984
January	141	135	119	117	114
February	181	135	88	97	97
March	167	118	108	73	103
April	62	74	83	51	76
May	66	80	58	64	69
June	66	74	63	62	42
July	43	47	51	45	
August	83	53	59	73	
September	119	54	104	48	
October	93	72	63	57	
November	69	68	58	72	
December	98	85	94	82	
Total New					
Members	1,188	995	948	841	
Delinquent	906	895	898	919	
NET GAIN	282	100	50	(78)	



New York Presenting The 1984 AFS Annual Meeting

Cornell University, Ithaca, New York

The Program for the 1984 AFS Meeting August 13-16, 1984 has "Something for Everyone." The meeting will serve as a forum for all facets of the profession to compare notes and look to the future needs of managing the fisheries resources of North America.

THEME: Fisheries Management 1984: Philosophy, Science, Economics, and Politics.

The theme encompasses all aspects of the management spectrum. It denotes a need to document the current state of the arts and sciences associated with fisheries management. The emphasis, however, is not limited to the present. In fact, it places great significance on the profession's unrelenting responsibility to provide for the future well being of our resources.

KEYNOTE SESSION: Fishery Scientist—Between Two Worlds

The Keynote Session will be chaired by one of the Society's most respected philosopher/scientists, Dr. William F. Royce. The session will address the theme through a comprehensive look into the future world of fishery scientists as we become increasingly involved in the world of government, business, and the affairs of people.

Other distinguished participants in this session will be Mr. John Glude, Dr. John Harville, and Dr. Henry Regier.

A Plenary Session—

The Role of Fish Culture in Fishery Management: Present Policies and Future Directions will follow the Keynote Panel. Featured will be top professionals from government, conservation organizations, private industry, and societies, taking an in-depth look at this controversial subject. This Session is a must for all fisheries managers in North America!

Fifteen special sessions appear on the program including: Application of Hydroacoustic Technology; Bio-Engineering; Striped Bass; Competitive Fishing; American Fishing Institute; Riverine and Estuarine Systems; Economics of Commercial Fisheries Management; Introduced Exotic Organisms; Acid Rain; Marine Fisheries Management; Larval Fishes; Angler Data for Management; Technical Writing and Walleye Fishery Rehabilitation. Contributed papers and a poster session will round out the program. A complete listing of the final program will appear in the May-June issue of "Fisheries".

Lodging and Meals

We encourage all registrants to take advantage of cost savings offered by dormitory housing which is located conveniently for cafeteria dining and social events. An excellent meal plan offers good food, a varied menu and "all you can eat." For price, convenience and quality, we highly recommend this package.

AFS Spouse Guest Program

A Hospitality Room in the West Lounge, Statler Inn will be open daily, 9 AM-5 PM, Monday, August 13 through Wednesday, August 15. Registered spouses and guests will receive complimentary continental breakfast daily. Information on recreation, dining, shopping, athletic facilities and points of interest will be available.

Spouse/guest tours have been arranged for your pleasure.

On Monday, August 13th, a guided tour of Cornell University will feature: The Cornell Plantations and Arboretum, Johnson Museum of Art, Laboratory of Ornithology, the College of Veterinary Medicine and a catered luncheon at a scenic country inn (\$10/person).

Tuesday, August 14th, tour the world famous Corning Glass Center where exhibits range from prehistoric glass objects to delicate Steuben crystal and Tiffany glass pieces. After lunch on historic Market Street in Corning, New York, continue on to the Rockwell Museum known for the largest collection of Western American art and artifacts in the East ranging from Navajo rugs and beadwork to Pueblo pottery (\$12/person).

Wednesday, August 15th, one of the most spectacular wonders of the East Watkins Glen State Park was formed centuries ago when glaciers chiseled this magnificent gorge from hillside rock. The park visit will be followed by a tour of Wagner Wines vineyard and winery complete with wine-tasting and luncheon (\$12/person).

Continued on Reverse Side



Fly to the Meetings for Less on USAir

1. USAir guarantees a 25% reduction in standard coach fares for travel to Ithaca by identifying yourself as an AFS member, and citing the USAir discount number YE 914H, August 8 to 20 inclusive.
2. There are no advance purchase requirements, but if travel plans are firm, early purchase is recommended. If travel to Binghamton, Syracuse, or Rochester is more convenient for you, the 25% discount is available to these destinations as well, and the discount is available for ticketing via New York City (for those who may wish to stop over there) as well as via Pittsburgh.
3. The only restrictions are that the traveler is identified with AFS and that the travel is in conjunction with AFS Meetings.
4. Even larger savings may be available to those who purchase tickets seven or more days in advance and stay over Saturday night. USAir also has a "liberty fare" that permits unlimited travel on its system for 21 days.

How Do You Obtain These Savings?

1. Call USAir directly at 800-428-4322. (Your travel agent can call in your behalf, but the convention rate is available only through the USAir reservation).

Convenient Service to Ithaca

The USAir system connects Ithaca conveniently with approximately 60 other cities, including Baltimore, MD; Birmingham, AL; Burlington, VT; Chicago, IL; Cleveland, OH; Denver, CO; Detroit, MI; Greensboro, NC; Houston, TX; Indianapolis, IN; Kansas City, MO; Knoxville, TN; Lexington, KY; Los Angeles, CA; Minneapolis-ST. Paul, MN; Nashville, TN; New York, NY; New Orleans, LA; Philadelphia, PA; Pittsburgh, PA; Raleigh, NC; Richmond, VA; St. Louis, MO; San Francisco, CA; Tucson and Phoenix, AZ; and Washington, DC. The USAir agent will be pleased, of course, to provide information about travel to Ithaca from any location.

**American Fisheries Society
114th Annual Meeting
August 13-16, 1984
Cornell University, Ithaca, N. Y.**



REGISTRATION FORM

Please indicate your preference for the following activities and the proper registration fee. Completion and early mailing of this form will aid meeting preparations, allow reservation confirmation and mailing of appropriate maps and directions. Pre-registration deadline is July 23, 1984.

Name: _____
 Address: _____
 City/State/Zip Code: _____
 Telephone: Business: _____ Home: _____
 Spouse/guest attending: ☐ Yes ☐ No Name: _____ Children (No.) _____
 Affiliation: _____
 Arrival/Departure dates (circle): August 10 11 12 13 14 15 16

Registration* (indicate number in space provided:

AFS member @ \$50 _____; Non-AFS member @ \$60 _____;
 Student AFS member with University ID @ \$25 _____;
 Student non-AFS member with University ID @ \$35 _____;
 Spouse/Guest @ \$25 _____.

*Registration at meeting is \$20 additional.

Total
Amount
\$ _____

Lodging/meals

- Double room @ \$17/day/person. Rooms in suites of four with shared bath.
Roommate preference _____
- Single room @ \$22/day. Room in suites of four with shared bath.
- MEAL PLAN @ \$68; Includes ALL meals from breakfast Monday August 13 thru breakfast Thursday August 16 plus Deluxe cookout and chicken barbecue (see below), entertainment, unlimited beer and wine.
- Dinner, Sunday, August 12 (by pre-registration only), price \$6

Special Events:

No. of Persons

Deluxe cookout with "Steamship round," live entertainment, unlimited beer and wine; at Taughannock State Park, busing provided, Monday, August 13-included in meal package, if separate, \$15/person.

Chicken barbecue with live entertainment, unlimited beer and wine, Wednesday, August 15-included in meal package, if separate, \$13/person.

Total Amount

Tours:

Corning Glass Center/Rockwell Museum-Tuesday, August 14, \$12/person.

Cornell Plantations and Arboretum, Johnson Art Museum, Laboratory of Ornithology, College of Veterinary Medicine, catered luncheon, Monday, August 13, \$10/person.

Watkins Glen State Park/Wagner Winery, wine tasting and luncheon, Wednesday, August 15, \$12/person.

Total Amount (US) \$ _____

DEPOSIT REMITTED (\$25 US minimum): \$ _____

Balance is payable at registration. No refunds after July 31; all refunds assessed \$5 service charge.

Make checks/money orders payable to: **1984 AFS Annual Meeting.**

Send payment to:

1984 AFS Annual Meeting
 Cornell University Conference Services
 Robert Purcell Union, Box 3
 Ithaca, New York 14853



NEW YORK CHAPTER - AMERICAN FISHERIES SOCIETY

NEWSLETTER

AUGUST

THE BEGINNING OF A NEW ERA...
THE WALLOT-BREAUX FUND

1984

Have you ever heard of the Wallop-Breaux Fund? While you probably haven't till now, you certainly will in the future. Formerly known as the Dingell-Johnson Fund, the W-B Fund marks the beginning of a new era under the Federal Aid in Sport Fish Restoration Act.

On June 21, 1984 the Senate and House of Representatives accepted HR 4170 which created the fund. The fund was named in honor of its chief proponents, Senator Malcolm Wallop of Wyoming and Congressman John Breaux of Louisiana.

The battle to amend the Federal Aid in Sport Fish Restoration Act was a long up-hill battle initiated by Senator Jennings Randolph of West Virginia in August of 1979. After several revisions, the amendment became part of HR 4170, The Tax Reform Act of 1984.

The major provisions of the new Boating Safety and Sport Fish Restoration Act include:

- * An Aquatic Resources Trust Fund to be called the Wallop-Breaux Fund. This fund will consist of the Sport Fish Restoration Fund and the Boat Safety Account.
- * Revenues for Sport Fish Restoration will be derived from 1) manufacturer's excise tax on fishing tackle and accessories, 2) import duties on fishing tackle, yachts and pleasure craft, and 3) excess over the first \$46M from the 9¢/gallon motor boat fuel tax.
- * Revenues for the Boat Safety Account will include the first \$45M from fuel taxes.
- * The Act requires coastal states to equitably allocate Sport Fish Restoration monies between freshwater and marine fishery programs. Apportionment will continue to be based upon the previous D-J formula. Only new monies in the W-B Fund are to be shared between marine and freshwater projects.
- * Reduces from 8% to 6% the administrative monies available to the Secretary of the Interior.
- * Requires each state to allocate 10% of its apportionment to provide 75% funding for acquisition, development, renovation or improvement of public access facilities.
- * Permits states to spend up to 10% of its apportionment to provide 75% funding for aquatic resource education.

Monies from the W-B Fund will be available after October 1, 1985. The fund is expected to grow from \$35M to over \$110M.

Coastal states which do not license marine anglers must begin looking for a stable source of matching monies. Is it time to consider licensing marine recreation fishermen in the northeast?

---PARENT SOCIETY NEWS---

New Editor for FISHERIES

Dr. Tom Wissing of Miami University in Ohio has volunteered to serve as editor of Fisheries. Dr. Wissing succeeds Dr. Dick Wydoski who has edited the magazine for the past 8 years.

Theme for NE Conference Set

Common Strategies of Anadromous and Catadromous Fishes is the title of the 1986 NE Division Conference to be held in Boston. Four sessions have already been established and convenors appointed. Contact M.J. Dadswell, St. Andrews Biol. Station, St. Andrews, NB EOG 2X0, CANADA for information.

Computer User Group Formed

A petition for a new section along with draft bylaws is being circulated for comment by Don Chase. If interested, contact him at Fish Management Division, Washington Dept. of Game, 600 N. Capitol Way, Olympia, WA 98504.

---NEW PUBLICATIONS---

Wetlands of the United States: Current Status and Recent Trends.

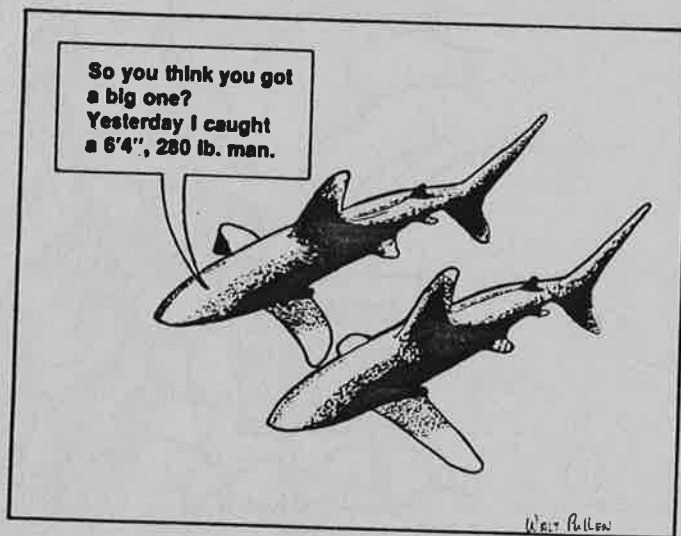
Written by Ralph Timer, Jr. of the USFWS this report details the status of our nation's wetlands. Available for \$3 from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 (SN 024-010-00656-1).

Key Papers on Fish Populations

Edited by D.H. Cushing this book brings together some of the classic works in fishery population biology. Papers by Beverton and Holt, Russell, Shaefer, Ricker and Cushing are brought together under one cover. Order from IRL Press, Suite 907, 1911 Jefferson Davis Hwy., Arlington, VA 22202 (price: \$42.00).

National Workshop on Computer Uses in Fish & Wildlife Programs

Copies are available at \$12.50 each from the Dept. Fisheries & Wildlife Science, VPI & SU, Blacksburg, VA 24061. Make checks payable to Donald Brown Center for Continuing Education.



Alfred NY 14602



NEW YORK CHAPTER - AMERICAN FISHERIES SOCIETY

NEWSLETTER

MARCH 1984

MESSAGE FROM THE PAST PRESIDENT TO NY CHAPTER MEMBERS

Dear NY Chapter Members:

It has been an honor and gratifying experience to serve as your President for the past year. The Chapter has accomplished much thanks to the activities of Committee Chairmen and members. An outstanding professionally and economically successful Warmwater Workshop, chaired by Pat Festa and Al Schiavone, received praise from around the nation and has produced a \$4000 surplus that will be invested to support future workshops and serve the best interests of the Chapter. Ray Tuttle and a hardworking Program Committee put on a fine Annual Meeting in February, highlighted by a stimulating "Status of NY's Marine Fisheries" session, a spirited best student paper competition and two outstandingly photographed movies on acid precipitation and endangered species. Through an active letter writing campaign, the Chapter also assisted restoration of the USFWS Cooperative Fish and Wildlife program, the National Sea Grant College program and passage of Dingell-Johnson Expansion in the House of Representatives. We have also donated \$1100 of cash and prizes to the AFS Permanent Home Fund and \$500 to the 1984 AFS Annual Meeting Steering Committee.

Despite our accomplishments, much remains to be done. D-J Expansion remains hostage to a larger budget bill in the Senate. Please write to Senators D'Amato and Moynihan immediately and ask them to support speedy passage of D-J Expansion (see my letter later in this Newsletter for details and a model). Write as a constituent, not an AFS member.

Another important issue is renewal of the Clean Water Act by the House of Representatives. Your Environmental

Concerns Chairman, Art Newell has done an absolutely first rate job of preparing a Chapter position letter on the CWA. A summary of the Chapter's CWA positions is included later in this Newsletter. Please write to the appropriate Congressmen immediately to support maintaining and improving CWA.

The NY Chapter has been and is one of the most dynamic of all AFS subunits; however, two major problems loom on the horizon: declining membership and lack of fresh leadership. Membership appears to have dropped by about 100 in 1983. If you have not renewed for 1984, please do so now to be included in the 1984 Membership Directory. Also, try to recruit a colleague or student to join NYCAFS. A membership form is enclosed in this Newsletter. Effective leadership is the key to success in any organization. From 1974-78, many fisheries scientists entered employment in New York and the Chapter grew to its present size and activity levels. For the most part, however, the 1974-78 "year classes" have passed through the Chapter leadership cycle. To remain vital, the Chapter needs continuous inputs of new ideas and energy. If you have ideas and energy, contact President Larry Skinner and get involved. The Chapter needs you!

Finally, the American Fisheries Society is holding its 114th Annual Meeting at Cornell August 12-16, 1984. Bruce Shupp and the Steering Committee are planning the best Annual meeting ever, as DEC and the Chapter work to put on the meeting. Contact Bruce if you want to help and be sure to attend the meeting. It will be a blast! Hope to see you in Ithaca!

With best regards,

James M. Haynes

bill mark-up; and from New York, Henry Nowak, Geraldine Ferraro, Edolphus Towns, and Guy Molinari. The address for all is:

The Honorable _____
U.S. House of Representatives
Washington, D.C. 20515

Copies of the full Chapter letter are available from James M. Haynes, Department of Biological Sciences, SUNY, Brockport, NY 14420.

HELP NEEDED FOR NOMINATIONS:

Chapter Bylaws require that the Nominations Committee be chaired by the immediate Past-President. At this time, I am requesting help on three matters:

- 1) Chapter members desiring to serve on the Nominating Committee (this is not a difficult job and can be handled by mail and phone).
- 2) Suggestions for nominees for President-Elect for 1985.
- 3) Suggestions for honorary member nominees.

Please contact me with your suggestions or to volunteer:

James M. Haynes
Department of Biological Sciences
SUNY College at Brockport
Brockport, NY 14420

(716) 395-2729

NY CHAPTER T-SHIRTS AND CAPS:

Adult and children T-shirts and caps are still available. A limited number of light blue and an ample number of gold adult T-shirts are available in: small, medium, large, and X-large sizes. The cost is \$6.50 for the shirt, postage, and handling. Children T-shirts (gold only) are available in: small (6-8), medium (10-12), and large (14-16) sizes. The cost for children T-shirts is \$5.75, including postage and handling.

Caps, which come in regular (children) and large (adult) sizes, are available for \$5.00, including postage and handling. The colors include gold-white-gold, lt. blue-white-lt. blue, royal blue-white-royal blue, orange-white-orange, red-white-red, and all gold. The front panel of the cap has the Chapter logo printed on it.

Golf shirts (50% cotton - 50% synthetic) can be ordered in white or light blue. The Chapter logo is printed on the left side where a pocket would be located. The cost is \$12.50, including postage and handling. These orders take 6-8 weeks.

Send your orders, indicating the color and size, and a check made payable to the NY Chapter, AFS, to:

Gaylord Rough
Box 456
Alfred, New York 14802

- CAREER OPPORTUNITIES IN FISHERIES -

EMPLOYMENT OPPORTUNITY:

Biological Oceanographer, Fisheries Management. The Department of Oceanography at Old Dominion University invites applications for a state-supported, tenure track faculty position which begins August, 1984. A doctorate in fisheries or related discipline and a background in marine science, mathematics, and statistics are required. Experience in automated data

processing, mathematical modelling, and interpretation of fisheries statistics is highly desirable. The successful candidate will continue and enlarge a high quality, externally funded research and biological and physical oceanography programs. Interactions with commercial marine fisheries regulators and biological and physical oceanography programs are essential. Salary and

professional resources available to state fishery agencies by taxing only users of aquatic resources - boaters and anglers. Thus, as a boater and angler I was delighted when the Dingell-Johnson Sport Fishing and Boating Enhancement Bill (HR 2163) passed the House in July.

Currently the decision to expand D-J rests in the U.S. Senate as part of the Omnibus Reconciliation Bill of 1983 (S 2062). I believe preserving and enhancing our nation's aquatic resources are very important for our nation's future. Water that is good for aquatic life and fishing serves people in many other important ways, too. Not only do our freshwaters provide important recreation opportunities for all Americans, but healthy waters are also necessary for agricultural, municipal, and industrial uses. In addition and

for the first time, D-J Expansion will provide funds to further develop and enhance marine fishery and aquatic resources. Expansion is critical to New York.

To help improve our aquatic resources, I urge you and your colleagues to support the Sport Fishing and Boating Enhancement provisions of the Omnibus Reconciliation Bill of 1983. If possible, would you also initiate and support prompt, separate consideration of these provisions by the Senate and a speedy resolution of differences by a Senate/House Conference Committee?

Respectfully,

Your Name _____

- NEW YORK STATE NEWS -

A REPORT ON THE CONSERVATION FUND: "RETURN A GIFT TO WILDLIFE" :

New York State Senator William Steinfeldt, a member of the Senate Committee on Conservation and Recreation, stated the following in his December, 1983 Legislative Report:

First of all, it was successful. More than 350,000 persons contributed more than \$1,700,000.

Second, the money is being used for the purposes intended. In using the appropriated money, three criteria must be met:

1. Fish, wildlife, and public interest must benefit.
2. The funds may not displace previously used state revenue sources. If funds are used for existing programs, the funds must be used only for expansion or enrichment of those programs.
3. Funded projects must be visible, have tangible products and services and, where possible, a definite end point.

Now what are some of the uses?

*Endangered Species Program:	\$147,000
*Agriculture Crop Damage Control:	\$24,000
*Complete Bird Breeding Atlas:	\$7,000
*Assistance to the Marine Mammal/Sea Turtle Program:	\$5,000
*Training for Rehabilitation:	\$7,000
*Poster Series on Wildlife:	\$45,000
*Fish and Wildlife Event Brochure:	\$15,000
*Revise and Revive Film Library:	\$20,000
*Public Service Announcements:	\$10,000
*Landowner Relations & Assist.:	\$20,000
*Biological Surveys of Streams and Lakes:	\$75,000
*Habitat Data Bank:	\$20,000
*Contaminant Analysis in Fish and Wildlife:	\$60,000
*Basha Kill Wildlife Area:	\$55,000
*Improvements to Wildlife Areas:	\$20,000
*Nature Trails Parking Lots, and Observation Towers:	\$50,000
*New York City Office:	\$110,000
*Increased Promotion Of "Return a Gift to Wildlife"	\$100,000

The balance, \$900,000, was deposited directly into the Conservation Fund.

- AN EDITORIAL -

A DECADE START ON NEW YORK
CHAPTER, AFS ACTIVITIES

I bring something new to this publication, an editorial. I have pondered the words and the topic for 3 months. I have generally felt editorials only address controversial issues. However, Webster's Dictionary defines "editorial" as "a newspaper or magazine article that gives the opinions of the editors or publishers; also: an expression of opinion that resembles such an article." In 1983 this editor brought you fisheries-related news; I will conclude my editor responsibilities with this issue. During the next few moments I will take you through the NY Chapter's past decade of activity and a glance at tomorrow's, as I have perceived it.

I joined the NY Chapter in October, 1974, after leaving a research position with Purdue University for a position at Kodak. I attended the 1975 Annual Meeting held at the Hotel Syracuse, finding to my dismay relatively few members (25) present. I made a comparative statement to the then Vice-President, Dr. Bob Werner, that the Indiana Chapter of AFS, of which I had been a member, was twice as large and much more active than the NY Chapter. Like any alert Executive Committee member, Bob asked me to serve on the Membership Committee. As I do with all assignments, I gave it my best effort. The 1976 Annual Meeting found the Chapter meeting at Bergamo/East (our meeting location for six Annual Meetings). The attendance at the 1976 meeting was 85; the Chapter membership reached 109. The Chapter membership continued to increase, as did the treasury from the sale of some 64 or 65 "Aquatic Ecologist" films (produced in 1974). My involvement took me to the Program Committee, Secretary-treasurer office (2 years), Water Quality Committee, President-Elect, President, Past President, Workshop Committees, Editor of the Newsletter, the design and

promotion of T-shirts, getting signs for the Chapter, as well as, duplication services, and other committee activities. I look back with satisfaction at the growth of the Chapter, knowing that I have made a contribution. I say "a contribution", for many other members have worked hard, spending many hours on Chapter activities, often spending their own money to travel to meetings. During the 1974-1983 decade, various Chapter accomplishments include: nine well attended Annual Meetings; six Annual Membership Directories; five Annual Student Paper Awards; four workshops; a Chapter Brochure; sale of Chapter T-shirts, caps and bumper stickers; strong participation in, as well as financial gifts to, the Parent Society activities, including cosponsoring the upcoming 114th AFS Annual Meeting; active participation in writing our congressmen on issues such as the D-J Expansion Bill and the Clean Water Act; and many other committee activities. The New York Chapter has become one the most active and visible subunits of the American Fisheries Society.

The success of the NY Chapter, as with any organization, depends on the strength and commitment of its members. An individual is more likely to join an active organization than one that is fighting to hold its own. The NY Chapter has experienced tremendous growth in the past decade, with annual membership increasing from 75 members to a high of about 350 in 1982. However, this past year membership declined to about 220 members. Is this a trend, or just an oversight by nonrenewing members? The Executive Committee is hoping the latter is true. During this time of increased activity, very few new members, or even some of the charter members, have gotten involved in Chapter activities. I can understand why few flock to participate on committees, it takes time, numerous hours in some cases. Personally, there have been

- MEETING ANNOUNCEMENTS -

SETAC:

The newly incorporated Northeastern/ North America Chapter of the Society of the Environmental Toxicology and Chemistry (SETAC) is planning a meeting on Saturday, May 19, 1984. This meeting will be held at the Shackelton Point Research Station (Oneida Lake) near Syracuse, New York and hosted by Cornell University.

The meeting will be on Topics of Joint Canadian and U.S. concern. Keynote speakers, contributed papers, and special sessions are being planned. Tentative topics include:

ATMOSPHERIC DEPOSITION OF
ORGANIC TOXICANTS

LAB VS FIELD STUDIES

REHABILITATION OF DAMAGED ECOSYSTEMS

ST. LAWRENCE RIVER CONTAMINATION

For further details contact:

James W. Gillett
Cornell University
Dept. of Natural Sciences
114 Fernow Hall
Ithaca, New York 14853

(607) 256-2163

AAAS MEETING:

Judith S. Weis asked that the following two sessions of 10 papers be announced:

"The New York Bight and Its Estuarine Ecosystems: State of Health" presented at 2:30 P.M. Sat. May 26, 1984 in the NY Hilton, Sutton S.

"Pollution Tolerance: Who, What, Where, When, and How" presented at 9:00 A.M. Tues. May 29, 1984 in the NY Hilton, Murray Hill B

For more information contact:

Judith S. Weis
Professor of Zoology
Rutgers University
Newark, N.J. 07102

NALMS:

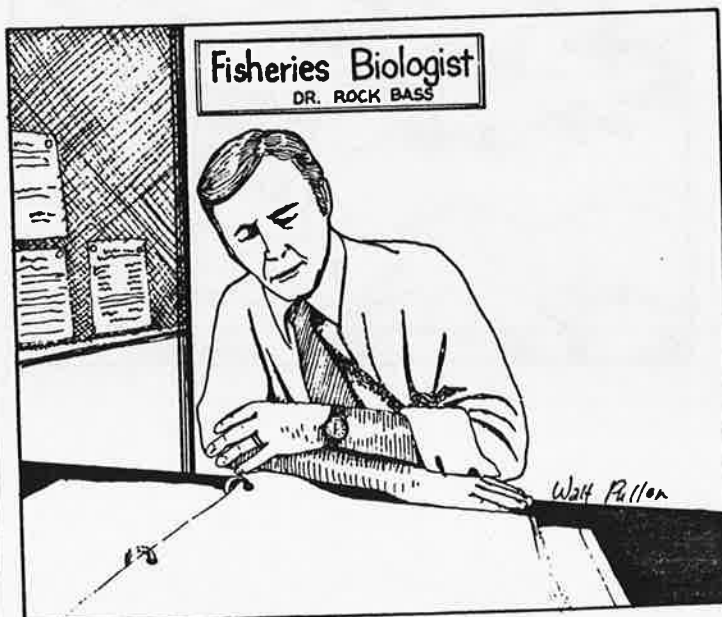
The North American Lake Management Society is hosting the "International Symposium on Lake and Watershed Management: Local Involvement" October 16-19, 1984 in McAfee, New Jersey

Contact: NALMS
P.O. Box 217
Merrifield, VA 22116

(202) 833-3382



Boy, does my dad have a neat job!



I wish there was time for fishing!



NEW YORK CHAPTER — AMERICAN FISHERIES SOCIETY

NEWSLETTER

MAY

MESSAGE FROM THE PRESIDENT

1984

Dear Chapter Members:

The year 1983 under the guidance of Past-President Jim Haynes was an active and rewarding one for the New York Chapter. However, we can not allow the initiatives begun under the previous administration to languish in neglect. We must continue those deeds which will benefit the profession of fisheries and the quality of our environment. To that end, this administration shall move to help accomplish the following major projects:

1. Obtain passage of the D-J Expansion package. Dingell-Johnson funds have supported fisheries research and applied management, provided access for the public and limited education and capital construction associated with D-J projects. While D-J funds have historically been directed to the freshwater resource, the new legislation would allow benefits to be accrued by marine fisheries resources as well. This new funding source will help fill some critical fisheries needs.
2. Monitor the progress of the Clean Water Act and provide support for strengthening the Act where appropriate. We shall rely heavily on Art Newell and the Environmental Concerns Committee to continue the fine efforts of last year.
3. Begin monitoring the Clean Air Act, particularly provisions for emissions control of sulfur oxides at primary sources, as it relates to acid precipitation. Proposals to amend the Act are continually being made but no well defined position appears to be developing at this time. We shall make statements to our representatives when appropriate.

4. Participate in the planning and conduct of the 114th Annual Meeting of the American Fisheries Society. The meeting this year is being cosponsored by our Chapter and the Department of Environmental Conservation. The event is being held at Cornell University August 13-16, 1984. You will soon be receiving publicity and pre-registration materials for the meeting. Please plan on attending for you will have no finer opportunity for meeting the leaders of our profession as well as have an enjoyable time. If you wish to assist us in the conduct of the meeting, please contact Bruce Shupp, the Steering Committee Chairman.
5. Plan the fifth Chapter workshop to be tentatively held in June 1985. The tentative title and topic will be "The Role of Natural Resource Managers in Environmental Negotiations." This topic has immediate and daily applications to situations affecting the quality and quantity of our resources. It promises to be a highly beneficial topic for every natural resource manager.
6. Continue the tradition of providing informative Chapter meetings and which provide for comfortable information exchange and a social atmosphere.

We can not accomplish these deeds alone. The Chapter gains its strength through its membership. Without you as a active participant, we gain nothing. Our strength in the past has come not only numbers of members, but the ideas and ideals of each one of you. Our strength also comes from

N.A. LAKE MANAGEMENT SOCIETY

The 1984 Annual Meeting will be held October 16-19 at the American Great Gorge Resort in McAfee, N.J. Contact Judith Taggart, P.O. Box 217, Merifield, VA 22116 for details.

TROUT STREAM HABITAT IMPROVEMENT

A Trout Stream Habitat Improvement Workshop will be hosted at Humboldt State University, October 10-12, 1984. Sponsored by the U.S. Forest Service, USFWS, and the Humboldt Chapter of AFS, the tentative agenda calls for a one day presentation of current practices followed by a second day of biological, economical and physical habitat evaluations. For details contact the California Cooperative Fishery Research Unit, Humboldt State Univ., Arcata, CA. 95521

SETAC ANNUAL MEETING

The Fifth Annual Meeting of the Society of Environmental Toxicology and Chemistry will be held Nov. 4-7, 1984 at the Hyatt Regency Crystal City Hotel, Arlington, VA. The theme of the meeting will be "The interface of laboratory and field data: Predicting and understanding environmental effects." For details contact SETAC, P.O. Box 352, Rockville, MD 20850.

WILD TROUT III

The Federation of Fly Fishers and Trout Unlimited are cosponsoring with the USDA and Interior a Wild Trout Symposium. The purpose of the meeting is to review the state of the art for continued preservation of wild trout populations. The meeting will be held at scenic Yellowstone National Park at Mammoth, Wyoming Sept. 24-25, 1984

NEW PUBLICATIONS

ANTIGENS OF FISH PATHOGENS

Edited by D.P. Anderson, M. Dorson and Ph. Dubourget, this new publication covers the state-of-the-art on fish disease agents, antigens, immunology and disease diagnosis. The 274 page text is available from Foundation Marcel Merieux, 17 rue Bourgelat, 69002, Lyon FRANCE.

NUTRIENT REQUIREMENTS OF WARMWATER FISHES AND SHELLFISHES

This updated version provides nutritional data for over 100 of the most common fish feed components and mineral supplements. New feeding data for channel catfish, carp, and shellfish are included. The 112 page text is available from National Academy Press, 2101 Constitution Ave., NW, Washington, D.C. 20418

LIMNOLOGY

Written by Charles Goldman and Alex Horne, this introductory limnology text presents a balanced comprehensive and contemporary view of limnology. The book is published by McGraw-Hill, N.Y., N.Y.

CAREER OPPORTUNITIES

FISHERIES BIOLOGIST

The Oklahoma Department of Wildlife Conservation is looking for a Fisheries Biologist to assist in the development of both long and short range fisheries research and management projects in North Oklahoma. No previous experience is required. Salary \$15,392 per year. Apply to: Personnel Office, DWC, 1801 North Lincoln, P.O. Box 53465, Oklahoma City, OK 73152

ADDENDUM NO. 2, MEMBERSHIP DIRECTORY ADDITIONS, CORRECTIONS, CHANGES
N.Y. CHAPTER, AMERICAN FISHERIES SOCIETY. SEPT. 25, 1984

Arnold, Stephen LMS Engrs.	Lawler, Matusky, Skelly Engrs. One Blue Hill Plaza Pearl River, NY 10965	914-496-8233 914-735-8300	3,6,8,10-14 16,21,29,30 31
Buchanan, Gary Princeton Aqua Sci.	21 Pine St. West Orange, NJ 07052	201-736-2729 201-846-8800	3,11,12,15
Buttner, Joseph K SUNY Brockport	Biology Dept.,SUNY Brockport, NY 14420	716-395-2729	1,2,3,5,14 29
Del Vicario, Mario US Army Engrs.	175 Norfeld Blvd. Elmont, NY 11003	516-352-5869 212-264-4662	3,5,10,9,11- 14,16,21,24, 29,34
Edson, Richard B. LMS Engineers	Route 9-W Milton, NY 12547	914-795-2457 914-735-8300	8-13,21,29, 34
Fairchild, Robert P. U.S. Army	P.O.Box 455 Ft. Monroe, VA 23651	804-727-3451	6,22,24
Galati, Joseph NYS-DEC	93 Lakin Ave. Jamestown, NY 14701	716-483-1368 716-366-0228	9,16,3,10 13,14
Goodwin, Bryan R. NYS Ed. Dept.	403 Glen St. Glens Falls, NY 12801	518-798-4946 518-677-8245	3,5,8,9,10 13,16
Johnson, Jim & Emily Oregon Dept. F/WL	4548 SW Fairvale Court Portland, OR 97221	503-245-5426 503-229-5413	37,1,5,6, 13,15,16
Koeppicus, Richard NYS-DEC	Box 51, Cedar Grove Rd. Feura Bush, NY 12067	518-768-2954 518-457-6179	3
Mack, Alan D. NYS-DEC	RR 1, Box 459 Lee Center, NY 13363	315-942-4556 315-337-1390	2,3,4,13,34 16,17,18,30
Marcellus, Kenneth	P.O. Box 323 Windsor, NJ 08561	212-460-6059	1,16,23,29 31,34
Martin, G. Thomas Niagara Co.Comm.Col.	916 Oneida St. Lewiston, NY 14092	716-754-4165 716-731-3271	5,28
Neuderfer, Gary N. NYS-DEC	45 Norman Rd. Rochester, NY 14623	716-424-4926 716-226-2466	3,5,10,13,14 28,33,34
Padilla, Miguel	15 Marble Hill Ave. Bronx, NY 10463		

MEMBERSHIP DIRECTORY -- CORRECTIONS and ADDITIONS as of 6-12-84

Bao, Isaac Y. Osborn Labs of Mar. Sci.	362 State St. Brooklyn, NY 11217	212-624-7752 212-226-8500	
Biddinger, Greg Illinois EPA	1032 W. Iles Ave. Springfield, IL 62704		
Black, Warren D. USEPA	255 Ziska Ave., Apt. B-7 Jericho, NY 11753	212-264-5170	21
Brown, Jerry Brown Trout Hatchery	Route 362 Bliss, NY 14024	716-322-7322 716-322-7322	1,2,3,8,9,10, 13,14,16,17, 34
Busch, Dieter US F & WL	3985 Highland Rd. Cortland, NY 13045	607-753-6263 607-753-1460	8,16,21,34
Cahn, Phyllis H. Long Island Univ.	Dept. Biology, Long Island Univ, Greenvale, NY 11548	516-427-5399 516-299-2443 2481	1,2,6,8,9,11, 12,15-18,21- 23,25,26,28- 31,33,34
Caryk, Rostyslaw Beak-Eco Consult.	4 St. James Cheektowaga, NY 14225	716-895-1363 716-542-5545	3,8,15,16,21, 22,29
Clifton, Jr. Albert Y.	Aquarium of Niagara Falls Niagara Falls, NY 14301	716-692-2665	
Coughlan, Davis Duke Power	4921-6 Central Ave. Charlotte, NC 28205		
DuBois, Robert	Box 125 Brule, WI 54820		
Flack, Frank M NYS-DEC	432 Westcott St. Syracuse, NY 13210	315-475-2838 315-337-0910	3,8,10,13,16
Godfrey, John	215 Manor Dr. Syracuse, NY 13214		
Haje, Roy L. Env. Consultants, Inc.	33 Tulip Hill Lane S. Setauket, NY 11733	516-732-6501 516 283-6360	11
Haskell, David	P.O. Box 65 Stony Creek, NY 12878	518-696-2608	2,13
Houston, Len Army Corps of Engrs.	238 79th St. Brooklyn, NY 11209	212-238-0279 212-264-4662	10-14,16,21
Kazan, Henrietta	Bio Dept. -Brooklyn College Brooklyn, NY 11210	212-889-6175 212-780-5727	10,17,30
Kazyak, Paul	Fernwood Trout Hatchery R.D. 1 Gansevoort, NY 12831	518-793-1282	2,6,8,16,21, 28,29

January 19, 1984

NYS AFS Ex Comm:

Attached is a proposed position letter on the House CWA amendments. Since our letter to the Senate, the House has developed this more complex bill. There has been talk of other bills or a markup of HR3282 but so far none of these has surfaced. I recommend we send a position on HR 3282 before this term of chapter officers runs out. I hope the two houses come up with a joint bill and perhaps the next term of officers can track that action.

I recommend sending a position letter to at least Representative. Howard and Roe and the NYS members of their committee. I've included the list of other NY Representative as other possible recipients. You could also send it to any other Congressmen you like.

Note that the letter is in draft form with comments of mine in brackets. Please let Jim Haynes know ASAP whether you approve of the letter as is or only certain sections. I've also included in brackets some alternative wording depending on who it is going to.

I'm leaving for a two week vacation tomorrow, so I hope I've answered all the important questions. Unfortunately, I won't be at the annual meeting because if I'm going to get any vacation this year, I've got to go before my wife gets too far along in her pregnancy.



Art Newell

Supervising Aquatic Biologist

Attachment
AJN:rd

January 19, 1984

The Honorable [Blank]
U.S. House of Representative
Washington, D.C. 20515

Dear Congress [man/woman]:

The New York State Chapter of the American Fisheries Society has reviewed the House Water Quality Renewal Act, HR 3282 introduced by you [or "Rep. Howard"] which reauthorizes and amends the Clean Water Act (CWA). Generally, the chapter supports the bill, which we believe is the critical first step towards ensuring that a reauthorized CWA will remain a significant instrument towards attaining the goals of the Act. If you have not already done so we urge you to co-sponsor this bill. [Ex Com:: This sentence should be deleted in the letter to Rep. Howard
AJN]

The New York Chapter of the AFS is an organization of over 350 resource professionals committed to conservation and environmental quality in New York State and the nation. In the following paragraphs we articulate our more detailed positions on certain provisions of HR 3282, suggest changes or additions to the CWA which we urge you to introduce, and argue against weakening of the CWA as has or may be proposed in other bills.

- ° We support amendments to Section 301(h) that prohibits effluent limitation waivers for effluents that discharge to estuaries. Added protection for our highly productive estuaries can provide benefits to our commercial and recreational fisheries.
[Ex Com: On principle this amendment is worthy of support, but a number of biologists in the marine district can live with the existing law which would allow a waiver if it can be demonstrated that WQ standards are met. I'm worried that only conventional pollutants are looked at to determine compliance while toxics pour out. Some may argue that pretreatment should handle toxics, but there will still be the runoff source of toxics. I'm ambivalent on this one. AJN]

- ° We strongly support proposed amendments to Section 404 which require that there be a determination made that there is "no practicable alternative which will have less adverse affect on the environment" before a dredge or fill permit is issued. This amendment properly sets our priorities for the protection of wetlands. We also strongly support the incorporation into law some of the important steps in the permit review process. This will ensure thorough evaluations of proposed actions in wetlands.

The Chapter suggests strengthening the CWA by making the following amendments which we urge you to introduce:

- ° We recommend two additions to Section 516. 1) Add a section which would require EPA to study the effects and methods of control of non-point sources of pollution. We believe non-point pollution to be a serious stumbling block in our goal to eliminate water pollution in New York and the Nation. The proposal should be strengthened by requiring EPA to identify waters that suffer from severe non-point pollution. EPA should also implement the appropriate controls recommended in the Section 516 studies. Finally, Congress should appropriate funds to conduct 516 reports and implement controls. 2) The currently proposed amendment, adding Section 516 (f), is worthy of support, but could be strengthened by incorporation of concerns for the effects of the quantity of waters attributable to the impoundment and discharge of water by dams. [Ex Com: the current proposal only calls for a study of the effects on quality of water discharged. AJN]

The chapter urges you to oppose any of the following types of amendments that will weaken the CWA to the detriment of our nation's water quality:

- ° Oppose reduced funding of the CWA. The work that is still required to achieve our national water quality goals cannot be accomplished on reduced funds.

ANNUAL BUSINESS MEETING, NEW YORK CHAPTER, AMERICAN FISHERIES SOCIETY,
February 3, 1984.

Opening remarks, Pres. James Haynes. Pres. Haynes commented on the successful and busy year for the Chapter. Numerous letters were written to members of Congress in support of the D-J Expansion Bill, Cooperative Fishery and Wildlife Research Units, the National Seagrass Program, letters protesting national fish hatchery closings, and reactions to proposed amendments to the Clean Waters Act. Jim emphasized the importance and effectiveness of individual letters from the membership. In relation to memberships, he noted that the number of individual paid memberships is down somewhat, therefore current members should encourage those in attendance to complete and return the questionnaire distributed with the registration materials, regarding the newsletter. A questionnaire on the Annual Meeting will be included with the next newsletter. Finally, Pres. Haynes extended thanks to the Chapter for the opportunity to serve the Chapter and for the cooperation that he enjoyed.

1. Minutes of the 1983 Annual Meeting. There were no corrections or additions. It was moved (Tuttle) and seconded (Duttweiler) that the minutes be accepted as presented. The motion carried.

2. Treasurer's Report. G. Rough. Attention was called to the details as presented in copies of the report as distributed. Special note was made of the receipts from the 1983 Workshop which was an outstanding success. A motion to approve the report was seconded and was carried.

Auditor Ned Holmes was unable to be present but reported via Pres. Haynes that the books were in good order.

Old Business

3. Chapter Committee Reports.

a. New Initiatives. G. Smythe (by J. Haynes). Several types of activities were discussed during the year, among them a proposal to provide information assistance to elected officials and citizens re. fishery related topics. The idea will be pursued further during the coming year.

b. 1983 Workshop. A. Schiavone. The workshop was not only successful financially but also in attendance (166) and enthusiasm. Pat Festa served with Al as co-chairman. Other committee members were listed. Special thanks was extended to Steve Gloss for meeting arrangements at Cornell and to Bernie Schonhoff for the hands-on workshop materials and planning.

c. Program. R. Tuttle. Members of the program committee were listed and thanked. Ray noted that attendance was down somewhat, attributing it to travel restrictions and the fact that the National meeting will be in New York (Cornell) this year.

d. Bylaws. D. Osterberg (by Haynes).

- (1) The parent society ruled that the Chapter may not elect Associate and Sustaining members, a prerogative only of the parent society.
- (2) Certain conditions for obtaining tax-exempt status are being met. Approval is anticipated within the next few months.

e. Environmental Concerns. A. Newell (by Haynes). Considerable attention has been paid to amendments to the Clean Water Act. A multi-page draft was distributed by the EXCOM for later consideration.

f. Newsletter, J. Gorsuch. Three newsletters, 6-8 pages each, were prepared and distributed to the membership. Another is planned following the meeting. Members were advised to assure the correctness of their listing in the directory to avoid loss of mailings. Members were urged to complete and return the newsletter questionnaire. Comments and recommendations were invited.

g. Publicity. G. Barnhart. Gerry reported that news items regarding chapter activities, including the 1983 Workshop, have appeared in Fisheries.

h. Nominations. S. Gloss (by Haynes). The Nominations Comm. consisted of Gloss and the EXCOM. Biographical sketches of nominees were distributed to the membership. Candidates of the office of President-Elect were Gerry Barnhart and Dennis Dunning. G. Rough agreed to serve as Secretary-Treasurer for another term. No additional nominations were made from the floor. It was moved (Shupp) and seconded (Flick) that nominations be closed. The motion was carried. Each of the candidates were asked to make a brief statement regarding their intentions and objectives, if elected. A motion was made to cast one ballot for the office of Sec.-Treas. (Mason, Colquhoun). The motion was carried. While ballots for the election of President-Elect were distributed and counted the floor was open to discussion. In response to a question re. the D-J Expansion Bill status, Bruce Shupp explained that the bill is associated with the Senate Omnibus Finance Bill with which it is "tied up." It is hoped that the D-J part can be removed as a separate bill. This move is supported by Senator Baker and others. There is still optimism for passage. Pres. Haynes urged members to write to their Senators to urge support for separation and passage. A note regarding the issue will appear in the next Newsletter.

There were no additional questions or comments about the Committee reports. A motion was made to accept the committee reports (Colquhoun) and seconded (Foley). It carried.

New Business

1. Parent Society and Division activities. J. Haynes.

a. New York Chapter has been actively involved in parent society activities. Fifteen to eighteen Chapter members attended the National Meeting in Milwaukee. Though our requests for Bylaws changes were rejected, it was felt that the Chapter's viewpoints were adequately presented. Six to eight papers or posters were also given by Chapter members. In addition, significant contributions were made to the Permanent Home Fund. The Chapter donated a Grumman canoe, an Ithaca shotgun, and an original fish print. The shotgun and canoe were special incentive prizes that resulted in yielding \$6600 in the raffle. It was reported that "...an absolutely inspired talk about the importance of carp in N. American fisheries..." was presented by Bruce Shupp.

b. The 1984 Annual Meeting at Cornell. Bruce Shupp indicated that the meeting in New York was actively sought. Co-hosts will be NYS-DEC and NY-AFS. This will be the last meeting separate from the International Association, and probably the last inexpensive meeting at a University. Other members of the planning committee are B. Flick, finance chmn.; S. Gloss, arrangements; L. Skinner, support and communications; G. Barnhart, entertainment; J. Haynes, career center chmn. (to be continued as Fisheries Educator Section); Dave McDaniel, appointed by AFS, program chairman. It is anticipated that the meeting will be "the best ever in the history of AFS." The theme is "Fish Management 1984--Science, Economics, Sociology, and Politics." Several of the special events and features were described. About 94 papers and 16 special sessions will result in about 210 total papers plus 6-8 panel discussions. Keynote speaker will be Bill Royce,

formerly of Cornell. No financial support will come directly from DEC. Fixed costs for the meeting total about \$52,000. Between \$12,000 and \$27,000 will need to be raised to run the meeting. It is hoped that 800 to 1,000 people will attend.

2. Resolutions. R. Nemecek (by Haynes). Copies of two motions were distributed during registration. (Copies attached).

a. Cooperative effort re. study of acid rain in NY State waters. A motion was made (Eustance) and seconded (Shupp). The motion carried.

b. Support for efforts of DEC and members of the professional fisheries community to increase knowledge of non-game and endangered fish species in NY State. The motion to accept (Duttweiler) was seconded (Tuttle) and was carried.

3. Proposed 1985 Workshop. L. Skinner. The general topic tentatively selected is "Negotiations" from the perspective of both the public and private sectors. Doug Sheppard will be co-chairman for the public sector. Selection of the co-chairman for the private sector is pending. A motion was made (Gloss) to support the workshop, and seconded (Field). The motion passed. G. Barnhart suggested that the chairmen poll the other AFS chapters and divisions re. reception and support of the topic.

4. Chapter Finances. Because of the currently favorable financial position of the Chapter discussion by the Chapter EXCOM resulted in the following three proposals:

a. Establishment of a "seed-money" fund for development of workshops by setting aside \$4,000 for support. In addition, it was proposed that an ad-hoc committee be appointed to plan optimal financial strategies and uses of the funds.

b. In support of the Home Fund Drive, in addition to considerable support of the fund drive in the past, it was proposed that the Chapter donate \$500 as an incentive challenge. If ten or more other sub-units of AFS donate \$500 or more by Aug. 1, the Chapter will donate an additional \$500.

c. Donate \$500 to the 1984 Annual Meeting Steering Committee as direct support for the meeting as co-host.

In the discussion it was pointed out that if all three proposals are supported the total expenditure would be \$5,500, leaving liquid assets of \$800, adequate for maintaining routine chapter activities.

G. Barnhart moved acceptance of proposal "a." It was seconded (Mason) and carried.

J. Gorsuch moved proposal "b." Following seconding by Mason, the motion was carried.

R. Tuttle moved acceptance of proposal "c." Following seconding by Guthrie, the motion was carried.

5. Installation of Officers. Pres. Haynes announced the election of Gerry Barnhart as President-Elect. Gerry was escorted to the podium by Joe Gorsuch and Bruce Shupp where he was duly installed.

6. Transfer of Presidential responsibilities from Jim Haynes to Larry Skinner. Following an expression of appreciation to Jim and a greeting to his fellow officers, the 1984 Annual Business Meeting of the NY Chapter of AFS was adjourned.

Gaylord E. Rough, Secretary-Treasurer

NEW YORK CHAPTER AMERICAN FISHERIES SOCIETY, TREASURER'S REPORT FOR FISCAL YEAR 1983

CHAPTER ACCOUNTS

	<u>CHECKING ACCOUNT</u>	<u>SAVINGS ACCOUNT</u>	<u>CERTIFICATE OF DEPOSIT</u>	<u>KEY ADV. ACCOUNT</u>	<u>TOTALS</u>
Balance Feb. 1, 1983	\$186.84	\$1,257.24	\$3,784.09	-	\$5,228.17
<u>Receipts and Transfers:</u>					
Interest received		40.55	239.56	-	
1983 Meeting receipts	1,408.07				
Account trfr. fr. Albany acc't.	100.00				
Saving's account transfer	1,256.70				
Dues, following meeting	449.00				
Donations, workshop	350.00				
Receipts 1982 Workshop Proceed.sale	686.44				
Receipts 1983 Workshop Proceed.sale	128.54				
Seed Money for 1983 Workshop	4,000.00				
Proceeds, Certif. Deposit Trfr.	4,007.78				
Promotion receipts	159.13				
1983 Workshop Proceeds	7,313.51				
Bank Credit memo.	.50				
Subtotal receipts:	\$19,859.67	\$40.55	\$239.56	-	\$20,139.78
<u>Expenses and Transfers:</u>					
Checks	5.45				
Mailing permit (3'rd. class)	120.00				
Stamps, mailing--except workshop	363.02				
Supplies	50.00				
Printing, Annual Meeting	447.30				
Annual Meeting expenses	518.92				
Promotion	730.80				
Refund of overpayment (dues)	30.00				
Donation to AFS	281.25				
Savings Account transfer		\$1,000.00			
Certificate of Deposit transfer			\$4,000.00		
Key Advantage acc't. transfer				\$2,500	
Repayment of workshop Seed Money	4,000.00				
1983 Workshop printing	241.91				
Workshop mailing	230.48				
Workshop travel expenses	2,637.00				
Subtotal expenses:	\$9,556.13	\$1,000.00	\$4,000.00	\$2,500	\$17,056.13
BALANCE: Feb. 1, 1984	\$2,803.54	\$1,040.55	\$4,239.56	\$2,500	\$10,583.65

Annual Business Meeting
New York Chapter
American Fisheries Society

February 3, 1984

AGENDA

Opening Remarks

1. Minutes of the 1983 Annual Meeting.
2. Treasurer's Report (G. Rough) and Audit Committee (N. Holmes)

Old Business

3. Chapter Committee Reports
 - a. Membership - L. Skinner
 - b. New Initiatives - G. Smythe
 - c. 1983 Workshop - P. Festa
 - d. Program - R. Tuttle
 - e. Bylaws - D. Osterberg
 - f. Environmental Concerns - A. Newell
 - g. Nominations - S. Gloss (President-Elect candidate introductions;
Election of Officers)
 - h. Newsletter - J. Gorsuch
 - i. Publicity - G. Barnhart
4. Other Old Business

New Business

5. Parent Society and Division Activities
 - a. NY activities at 1983 AFS Annual Meeting - J. Haynes
 - b. 1984 AFS Annual Meeting - B. Shupp
 - c. Other
6. Honorary Membership Nominations - S. Gloss
7. Resolutions - R. Nemecek
8. Other
9. Installation of Officers

Adjournment

RESOLUTIONS

I.

Whereas the New York State Department of Environmental Conservation (NYSDEC) and the Empire State Electric Energy Research Corporation (ESEERCO) will finance a study investigating the impact of acid rain upon the water quality and fish life in the Adirondacks.

Be it resolved that the New York Chapter of the American Fisheries Society assembled at its annual meeting, February 3 and 4, 1984, in Rome, New York recognizes and supports this cooperative effort among the New York State utilities and state government to address the acid rain problem in New York State waters.

II.

Whereas, non-game and endangered fish species are of importance and value to the overall health and stability of our aquatic environment.

Whereas, the New York State Department of Environmental Conservation (NYSDEC), through its endangered species programs, newly proposed biological survey work, and other potential uses of the revenues generated by the state income tax refund contribution to wildlife, provides a primary source of technical expertise and funds for endangered and non-game species studies.

Now, therefore, be it resolved that the New York State Chapter of the American Fisheries Society, assembled at its annual meeting, February 3 and 4, 1984, in Rome, New York, supports the efforts of the NYSDEC and other members of the professional fisheries community to increase our knowledge and understanding of endangered and non-game fish species in New York State.



NEW YORK CHAPTER — AMERICAN FISHERIES SOCIETY

1984 ANNUAL MEETING

RESERVATIONS AND REGISTRATION

Enclosed is a post card to be used in making your reservations for the 1984 meeting to be held at the Beeches' Paul Revere Lodge, 7900 Turin Road, Rt. 26N, Rome, New York, February 3 and 4, 1984. (Please see reverse for map to the Beeches').

Lodging and meals are included in a single charge as follows:

<u>No. of people per room</u>	<u>Cost per person</u>	
	<u>One night Feb. 3</u>	<u>Two nights Feb 2 & 3</u>
2 (double)	\$49.55	\$67.55
1 (single)	57.55	83.55
3	45.30	57.05
4	43.05	54.80

*Meals included are buffet style hot lunch on Friday, evening meal on Friday and buffet style breakfast on Saturday. Other meals for those arriving Thursday or staying over Saturday are available from the menu. Commuters may purchase meal tickets or select from the menu.

PLEASE NOTE: Each room reservation must be accompanied by a \$20.00 deposit (balance due at registration). Please specify your roommate preference(s) by name.

All reservations must be received ten days prior to the meeting.

All attendees will pay a \$6.00 Registration Fee which will cover conference expenses such as meeting room charges, speaker and social hour expenses.

For Information Contact:

L. Ray Tuttle, Jr. (607-729-2551,
ext. 4310)
New York State Electric & Gas
4500 Vestal Parkway East
Binghamton, NY 13903-1082

The Beeches (Meeting): 315-336-1700

Paul Revere (Lodging): 315-336-1776

1984 ANNUAL MEETING PROGRAM
NEW YORK CHAPTER - AMERICAN FISHERIES SOCIETY

February 2-4, 1984
The Beeches'
Rome, New York



2:20 - 2:25 p.m. Introduction of Remaining Papers, Mike Duttweiler

2:25 - 2:45 p.m. "Status of Major Finfish Populations", Dr. David Conover, Marine Sciences Research Center, SUNY/Stony Brook, Paper written with J.L. McHugh, Marine Sciences Research Center

2:45 - 3:05 p.m. "Status of New York's Shellfisheries", Robert Malouf, Marine Sciences Research Center, SUNY/Stony Brook

3:05 - 3:25 p.m. "Management and Research Needs from a State Perspective", John Mason, New York State Department of Environmental Conservation, Stony Brook

3:25 - 3:45 p.m. Questions, Answers and Wrapup

3:50 - 5:15 p.m. Business Meeting

5:30 - 6:30 p.m. Social Hour

6:30 - 7:30 p.m. Dinner

8:00 - 9:30 p.m. Movies

1) "A Second Chance" - EPRI

Saturday, February 4

8:00 - 9:00 a.m. Breakfast

Contributed Paper Session II

A. Garry Smythe, Beak Consultants, Inc., Chairman

9:00 - 9:20 a.m. "Wetlands As Fish Spawning and Nursery Areas: Succession of Forage Species", Robert G. Werner, Steven R. LaPan, Michael S. Kruse

9:20 - 9:40 a.m. "Composition of Fish Populations and Energy Flow in Sewage-Impacted and Non-Impacted Lake Champlain Wetlands", Lloyd R. Wilson and Gerhard K. Gruendling

9:40 - 10:00 a.m. "Genetic Identification of Sea Lamprey (Petromyzon marinus) Populations from the Lake Superior Basin", Charles C. Krueger and G.R. Spangler

10:00 - 10:20 a.m. Coffee Break

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NEW YORK CHAPTER AMERICAN FISHERIES SOCIETY, TREASURER'S REPORT FOR FISCAL YEAR 1983-84

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The Beeches'
Rome, New York



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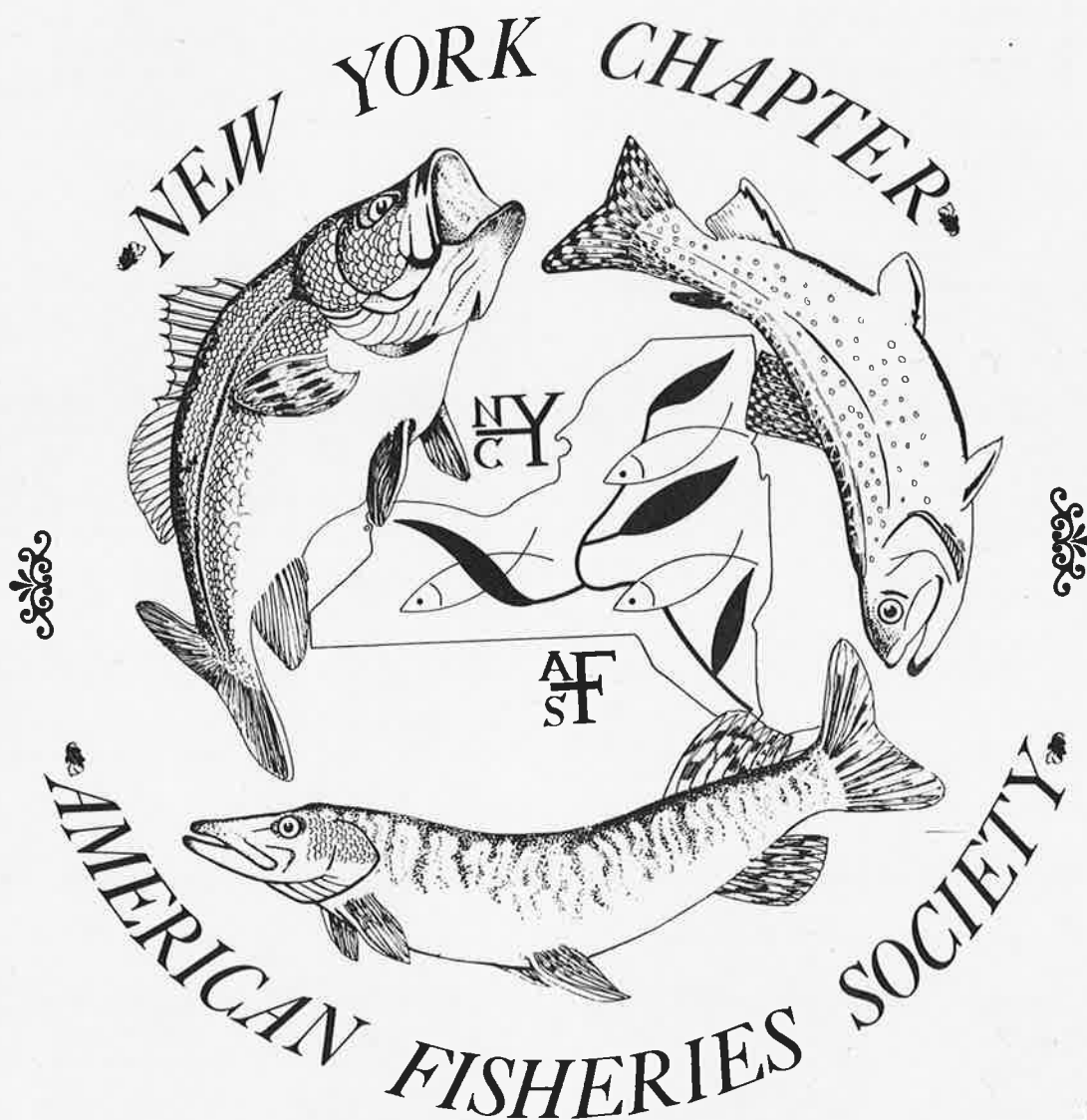
Saturday, February 4
8:00 - 9:00 a.m. Breakfast

Contributed Paper Session II
A. Garry Smythe, Beak Consultants, Inc., Chairman

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11:00 - 11:20 a.m.	To Be Announced



NEW YORK CHAPTER - AMERICAN FISHERIES SOCIETY



MEMBERSHIP DIRECTORY 1983 - 1984

EFFECTIVE APRIL 15, 1984

1984 OFFICERS - NEW YORK CHAPTER

AMERICAN FISHERIES SOCIETY

PRESIDENT

LAWRENCE C. SKINNER

PRESIDENT-ELECT

GERALD A. BARNHART

SECRETARY-TREASURER

GAYLORD ROUGH

Elected at the Annual Meeting of the New York Chapter on February 3, 1984. The annual meeting was held at The Beeches Conference Center, Rome, New York, February 3-4, 1984.

1984

EXECUTIVE COMMITTEE AND STANDING COMMITTEE CHAIRPERSONS

Executive Committee

President	Lawrence C. Skinner
President-Elect	Gerald A. Barnhart
Secretary-Treasurer	Gaylord Rough
Past-President	James M. Haynes

Standing Committees

Audit	David C. Nettles
Environmental Concerns	Arthur J. Newell
Membership	Gerald A. Barnhart
Nominating	James M. Haynes
Program	Robert E. Lange
Professional Standards	Inactive
Resolutions	Richard H. Sugatt

Special Committees

New Initiatives	A. Garry Smythe
Newsletter/Publicity	Frank M. Panek
1985 Workshop	Charles C. Krueger,
	J. Douglas Sheppard
Place	Jack Hasse
Finance	Thomas C. Field
NE Division Reps.	
Resolutions	J. Douglas Sheppard
Membership	Gerald A. Barnhart

Abraham, William J. NYS DEC	8913 Strutt Street Wayland, NY 14572	716-728-5067 16 716-226-2466
Adams, Lynn	ERC-SUNY Fredonia Fredonia, NY 14063	716-672-7757 3,10,33 716-673-3375
Aloi, Michael CESF -SUNY (S)	157 Cambridge Street Syracuse, NY 13210	315-474-1160
Aleveras, Ronald LMS Engineers	21 Grand Street Tappan, NY 10985	914-359-9147 16,33,34,8 914-735-8300 13,21,29
Anderson, Jon Vermont Fish & Game	Gauthier Drive Swanton, VT 05488	802-524-9539 802-879-6563
Bader, Andrew P. SUNY ESF	Dept. Forest Biol. SUNY-CESF Syracuse, NY 13210	315-476-7113 3,5,24 315-478-9392
Bakst, Larry	182 East 3rd Street Brooklyn, NY 11223	2,14,16,31
Barnhart, G.A. NYS DEC	R.D. □1, Box 142 Schaghticoke, NY 12154	518-692-7349 13 518-457-5698
Bartella, Mark C.	99 Roland Street Buffalo, NY 14212	716-892-5860 10,16
Becker, Ted SUNY ESF	157 Cambridge Ave. Syracuse, NY 13210	315-474-1160 16
Beebe, C. Allen Texas Instruments	75 St. James Street Kingston, NY 12401	914-338-5684 3,10 914-741-4500 Ext. 225
Beeman, Jeffrey NYS DEC	RD □1, P.O. Box 131-D Constantia, NY 13044	315-623-7156 2,16 315-298-5051
Bergstedt, Roger USFWS	RD 3, Box 375A Oswego, NY 13126	315-343-6628 16 315-343-3951 Ext. 243
Best, Mary Cornell Univ. (S)	1018 Bradfield Hall Ithaca, NY 14853	607-273-4027 3,5,21,24,34 607-256-4494
Biddinger, Greg Cornell Univ.	118 Fernow Hall Ithaca, NY 14850	607-257-7549 33 607-256-2001
Blake, John W. NYS Power Authority	23 Cross Ridge Road Chappaqua, NY 10514	914-238-5441 3,28 212-397-2941
Blake, Leigh NYS DEC	P.O. Box 122 Felts Mills, NY 13638	315-773-5811 315-782-0100 Ext. 262

Chang, Chang-Hwa CUNY-City College (S)	84-49, 168 St. Apt. 1-L Jamaica, NY 11432	212-658-6331 3 212-873-1300
Chipman, Brian D. VA Polytech & S.U.	Dept. Fish & W/L, Blacksburg, VA 24061	703-382-4103 10,16 703-961-5320
Cianci, John M. NYS DEC	50 Wolf Road Albany, NY 12233	518-459-4606 11,33,34 518-457-5915
Colesante, Richard NYS DEC	118 Mill Street Constantia, NY 13044	315-623-9475 2,3,10 315-623-7311
Colquhoun, James NYS DEC	33 Pillmore Drive Rome, NY 13440	315-336-0234 3,18,33, 315-337-0910 34
Colvin, Gordon NYS DEC	110 Hawthorne St. Port Jefferson, NY 11777	516-331-9125 1,2,9,11,12, 516-751-7900 16,21,22,23, 31,35
Coonradt, Stephen NYS Power Authority	Blenheim Gilboa P.O. Box F Grand Gorge, NY 12434	518-827-5526 607-588-6061
Coughlan, David Cornell Univ.(S)	118 Fernow Hall Ithaca, NY 14853	607-256-2151 33
Coutu, D. James NYS DEC	232 Winslow Street Watertown, NY 13601	315-788-3837 10 315-782-0100 Ext. 262
Creech, Cliff NYS DEC	648 Old Stage Road Groton, NY 13073	607-898-3965 10 607-753-3095
Cull, Catherine Conestoga-Rovers & Associates	7 Glenbourne Ct Williamsville, NY 14221	716-632-9337 519-884-0510
Culligan, William NYS DEC	510 Peru Road Groton, NY 13073	607-898-3331 16 607-753-3095
Culp, Terry R. Ichthyological Asso.	P.O. Box 2 Stamford, NY 12167	607-652-3408 21,29 607-652-3563
Dale, George Fordham Univ.	47 Whipoorwill Road Armonk, NY 10504	914-273-9086 3,9 212-933-2233 Ext. 687
Daniels, Robert A. NYS Museum	NYS Museum CEC 3132 Albany, NY 12230	518-872-2137 3 518-474-5800
Davis, Debra C.W. Post Coll.(S)	11233 Lake St. Cleveland, NY 13042	9,26,30

Ewell, William S. Eastman Kodak Co.	296 Cross Gates Rd. Rochester, NY 14606	716-247-3086 716-588-4528	33,34
Fairchild, Robert P.	P.O. Box 455 Ft. Monroe, VA 23651		6,16,21,22, 24,27,30,34, 36
Fenlon, Mark W. Jefferson Comm. Col	Jefferson Comm. College Watertown, NY 13601	315-583-5828 315-782-5250	3,5,10,17, 24,27,29, 34,35,36
Festa, Patrick J. NYS DEC	4 Birchwood Drive Clifton Park, NY 12065	518-371-4566 518-457-6937	16
Field, Thomas C. Self, Fernwood Hatchery	R.D. 1 Gansevoort, NY 12831	518-793-1282 518-793-1282	2,16
Finkelstein, Samuel NYS DEC	8 Madeley Lane Stony Brook, NY 11790	516-751-3926 516-751-7900	11,12,16, 31
Flick, William Cornell University	Paul Smith's, NY 12970	518-327-3529 518-327-3534	13,16
Flynn, George B. SUNY ESF	195 Chinook Drive Syracuse, NY 13210	315-423-9376 315-423-9376	3,24,28
Foley, Robert E. NYS DEC	3 Frasier Avenue Johnstown, NY 12095	518-762-1114 518-773-7318	33,26
Forney, John L. Cornell Univ.	R.D. 1 Bridgeport, NY 13030	315-633-2948 315-633-9243	3,16
Fox, Richard NYS DEC	59 N. Morris Ave. Farmingdale, NY 11738	516-698-3452 516-721-7900	11,16,20
Fraser, Douglas Siena College	Dept. Biology Loudonville, NY 12211	518-873-2457 518-782-2024	9,10
Fredge, Richard W. SUNY ESF	Box 102 Helena, NY 13649	315-769-3308	
Gala, William R. Fordham Univ. (S)	27 Melborne Lane Old Bethpage, NY 11804	516-249-6873	
Galati, Joseph SUNY-ERC Fredonia	93 Lakin Ave. Jamestown, NY 14701	716-483-1368 716-673-3374	9,16
Gall, Wayne K.	336 Bellevue Ave. DePew, NY 14043	716-681-8238 716-846-7472	3,5,34
Garrell, Martin Adelphi Univ.	R.R. 1, Box 105B Mattituck, NY 11952	516-298-5095 516-294-8700 Ext. 7373	16,24,28

Guzewich, John LMS Engineers	8 Fairview Ave. Kingston, NY 12401	914-331-3566	3
Hansen, Judith Ann Kingston Water Dept.	169 Pine St. Kingston, NY 12401	914-331-6924 914-679-2216	3,34
Hasse, Jack NYS DEC	207 Genesee Street Utica, NY 13501	315-845-8494 315-793-2554	9,16
Haynes, James M. SUNY-Brockport	43 Spring St. Brockport, NY 14420	716-637-6376 716-395-2729	9,13,16 19,21,30, 32,36 3,9,11,19,36
Heiser, J.B. Cornell Univ.	Stimson Hall Ithaca, NY 14853	607-256-3717	
Heitzenrater, W. Beak Consultants	7055 Ridge Rd. Lockport, NY 14094	716-434-9387 716-542-5544	3,4,5,8 21,26,29, 30,34
Hjorth, Doug C.T. Main Inc.	R.D. □3, Box 54 Pelham, NH 03076	603-635-3227 617-256-5200	10,3,5,8, 9,11,12,14, 15,16,19, 21,27,28,29, 30,31
Ho, Kay Cornell Univ. (S)	Fernow Hall Ithaca, NY 14853	607-273-5265 607-256-2151	33
Holden, Timothy E. Ichthyological Assoc., Inc.	P.O. Box 187 Townsend, DE 19734	302-378-4536 302-378-9881	3,12,15, 33
Holmes, Edward D. NYS DEC	High Acres Hemlock, NY 14466	716-346-5761 716-226-2466	16
Holsapple, John NY Power Pool	P.O. Box 146 New Baltimore, NY 12124	518-756-9783 518-381-2122	33, 34
Horn, Edward NYS DEC	R.D. 1, Box 308 West View Road Voorheesville, NY 12186	518-765-4271 518-457-6178	1,3,34, 28
Huggins, Thomas	284 South Ave. Poughkeepsie, NY 12602	914-229-9048 914-452-2000	3,16,24, 29,34
Hughes, Steven USF & W/L	28 Gracie Road Cortland, NY 13045	607-273-7915 607-753-9391	2,7,26, 31

LaBar, George Univ. Vermont	W/L & Fisheries Biology, Univ. Vermont Burlington, VT 05405	802-482-3054 3 802-656-4057
Lane, Steve NYS DEC	337 West Ave. Canandaigua, NY 14424	
Lange, Cameron Beak Consultants	146 Kenville Rd. Buffalo, NY 14215	716-837-5648 3,10,15,21 716-542-5544
Lange, Robert NYS DEC	7 Parkway Silver Creek, NY 14136	716-934-4461 10,16 716-366-0228
Lantiegne, Ernest NYS DEC	P.O. Box 9 Lake Clear, NY 12945	518-891-5870 16 518-891-1370
LaPan, Steven R. SUNY CES&F	Box 84 Saranac Lake, NY 12983	518-891-3923 30 315-470-4805
Lawler, John Jr. SUNY ESF	RD 3 Clark St. Rd. Auburn, NY 13021	10-14
Leach, James F. SUNY-Potsdam (S)	133 Evandale Road Rochester, NY 14618	716-244-3653
Lindberg, Mark A. Beak Consultants	12492 Smith Road Medina, NY 14103	716-798-1341 3,8,10,12, 716-452-5544 21,29,33
Locicero, Felix US EPA	21-09A 46 Street Astoria, NY 11105	212-728-5482 10,19 212-264-9876
Loeb, Howard NYS DEC (retired)	184 Georgetown Voorheesville, NY 12186	518-765-4935 10 518-765-4935
Long John F&WL Mgmt. Board	Box 56 Niagara Falls, NY 14305	716-731-4002 1,6 716-285-7313
Lugthort, John ERC-Fredonia	ERC, SUNY Fredonia, NY 14063	716-366-2105 5 716-673-3375
Lundgren, Julie USFWS	216 Fall Street Seneca Falls, NY 13148	315-568-8680 3,34,36 315-568-5987
Mack, Alan, D. NYS DEC	P.O. Box 805 Livingston Manor, NY 12758	914-439-4868 2,3,13,16, 914-439-4328 17,30,34
MacNeill, David B. SUNY-ESF (S)	Plymouth Apt. □7 Grampian Road Liverpool, NY	315-457-3491 3,7,10, 15,16
Makarewicz, Joseph SUNY Brockport	205 Darla Drive Brockport, NY 14420	716-637-9542 3,13,21,24, 716-395-2476 27,33,34
Malanchuk, John SUNY	Cntr Earth & Env. Sci. Plattsburg, NY 12901	518-564-2098

Monahan, William C.W. Post Center	145 Patterson Ave. Hempstead, NY 11550	8,10-14,19
Murphy, Robert SUNY Potsdam (S)	10 A Kings St. Camillus, NY 13031	315-487-0027
Myers, Julian M. Beak/Eco Research	43 Holland Ave. Lancaster, NY 14086	716-683-1479 3,9,10,13, 16,20,21, 29,30
Myers, Robert E. Soil Cons. Serv.	R.D. □2, New Boston Rd Chittenango, NY 13037	315-687-9432 16 315-423-5494
Neff, Connie SUNY Fredonia	ERS-SUNY Fredonia, NY 14063	716-672-7772 5 716-673-3375
Nemecek, Russell Terrestrial Env. Spec. Inc.	414 Spruce Tree Circle Liverpool, NY 13088	315-635-3684 3,11 315-695-7228
Neth, Paul C. NYS DEC	RD 5, Juniper Drive Ballston Spa, NY 12020	518-885-7792 1,13,14,16 518-457-5698
Nettles, David	116 Woodruff St. Watertown, NY 13601	315-782-5670 3
Neuderfer, Gary N. NYS DEC	45 Norman Rd. Rochester, NY 14623	716-424-4926 3,33,34 716-624-3350 Ext. 14
Newell, Arthur J. NYS DEC	RD 1, Box 71 Westerlo, NY 12193	518-797-3299 10,16,33 518-457-1769
O'Gorman, Robert USFWS	161 West 8th Oswego, NY 13126	315-343-2351 16 315-393-3951
O'Grady, Dean P. Syracuse Research	105 Smith Lane Apt 13 Syracuse, NY 13210	315-476-2532 3 315-425-5100
Olney, Louis G. Morrisville Ag.Tech	Rocks Road, Box 152A Morrisville, NY 13408	315-684-3448 3,10 315-684-7987
Olson, Robert A. SUNY-Fredonia (S)	Jewett Hall, ERC Fredonia, NY 14063	716-673-2135 3 716-673-3375
Osterberg, Donald, M SUNY-Potsdam	20 Grove Street Potsdam, NY 13676	315-265-8971 3,10,30,36 315-267-2261
Paloumpis, Andraes A. Onondaga Comm Coll.	4859 Pembridge Circle Syracuse, NY 13215	315-488-8231 315-469-7741

Popp, Walter Cornell Univ. (S)	619 Utica St. Ithaca, NY 14850	607-272-4218 3 607-256-4863
Preddice, Timothy NYS DEC	7235 Steele Ave. Ext. Gloversville, NY 12078	518-725-7206 3,5,10, 518-773-7318 28,33
Prill, John RGE	23-F Bobrich Drive Rochester, NY 14610	716-482-0829 2 716-546-2700 Ext. 2325
Quance, Carl Empire State Coll.	947 Gloyd Ave. Apt. 1 Rome, NY 13440	315-337-9343 10,11,16 315-337-5877
Raney, Edward C. Ichthyological Assoc. Inc.	301 Forest Drive Ithaca, NY 14850	607-257-7121 3 607-257-7121
Ringler, Neil H. SUNY-Syracuse	18 Getman Drive Baldwinsville, NY 13027	315-638-8128 3 315-470-6770
Robotti, Janet M. SUNY ESF	242 Illick Hall Syracuse, NY 13210	315-476-5884 1,3,5,6, 8,10-14,16 21,23,28, 29,34
Rough, Gaylord G. Alfred Univ.	88 South Main St. Alfred, NY 14802	607-587-9161 3,10 607-871-2205
Russell, Michael	P.O. Box 293 E. State Rd Seneca, PA 16346	814-676-5981 2,3,24
Sarbello, William NYS DEC	933 Pine Hill Drive E. Schenectady, NY 12303	518-356-4257 21,29 518-457-6178
Savercool, Daniel SUNY Oswego (S)	18 Frederick Drive Apalachin, NY 13732	607-625-3171 2,3,8,9,11, 13,16,19, 24,25,30
Schachte, John Jr. NYS DEC	706 Floyd Avenue Rome, NY 13440	315-339-2518 18 315-337-0910
Schiavone, Albert Jr. NYS DEC	RD 4, Box 159 Watertown, NY 13601	315-658-2652 10,14,16 315-782-0100
Schmidt, Robert E. Hudsonia Ltd.	RD 3, Box 168 Branchville, NJ 07826	201-948-4253 15,19,30 914-758-1881

Smith, David B. NYS DEC	19 Slater Ave. Saranac Lake, NY 12983	518-891-0287 3 518-891-1370	
Smith, Henry	P.O. Box 5302 Babylon, NY 11707		3,9,16,21
Smith, Martin Jr. NYS DEC	Cedars Avenue Scottsville, NY 14546	716-538-6388 2 716-538-6300	
Smythe, A. Garry	25 Larchmont Rd.	716-835-8762	21,29,34,3
ECO Research Inc.	Buffalo, NY 14214	716-542-5544	
Sobczak, Michael TAMS	c/o TAMS, 655 Third Ave. New York, NY 10017	212-275-9838 8-16 212-867-1777	
Sohacki, Leonard SUNY Oneonta	R.D. 3, Box 579 Cooperstown, NY 13326	607-547-9254 3,27,28,24 607-431-3703	
Somerville, Mark SUNY-Fredonia (S)	18 1/2 Forest Pl. Fredonia, NY 14063	716-673-3375	3,4,10, 16,21
Soule, Norman NYS DEC	RD 25A, Box 535 Cold Spring Harbor, NY 11724	516-692-8731 2,32 516-692-6768	
Spencer, Selden J. SUNY-New Paltz	55 DuBois Road New Paltz, NY 12561	914-255-5077 3,24,36 914-257-2541	
Spitzbergen, Jan M. Cornell Univ.	116 Oak Ave. Ithaca, NY 14850	607-272-1651 33 607-273-8102	
Spotila, James SUNY Buffalo	Dept. Biol., SUNY 1300 Elmwood Ave. Buffalo, NY 14222	716-836-3059 3,8,9,10, 716-878-6409 14,16,26, 28,30,33,36	
Spooner, John Jr. SUNY Brockport (S)	2 Whittier Drive Greenlawn, NY 11740	516-757-5879	8,11,16,20
Stark, Suad Fordham Univ.	395 Riverside Dr. (14B) New York, NY 10025	212-864-4428	
Stillman, Loretta CUNY/AMNH (S)	101 Perry St. New York, NY 10014	212-242-1486 3,19 212-873-1300	
Storansky, Michael Acres Amer. Inc.	6 Tolland Bore E. Aurora, NY 14052	518-458-1626 29 518-457-6179	
Strait, Lawrence NYS DEC	56-1/2 Sentinel Road Lake Placid, NY 12946	518-523-9225 10 518-891-1370	

Wenger, Mark	1011 Friendly Ln. Anchorage, AK 99504	907-334-0621 9,16 907-274-7583
Werner, Robert G. SUNY-Syracuse	RD 3, Tracy Drive Skaneateles, NY 13152	315-673-4272 10,15 315-470-6804
Wich, Kenneth NYS DEC	22 Washington Ave. Coxsacki, NY 12051	
Widmer, Carl C. NYS DEC	RD 2 Naples, NY 14512	716-374-5048 13,16 716-226-2466
Wilson, Douglas NYS DEC	61 E. Church St. Adams, NY 13605	315-232-2176 315-782-0100 Ext. 271
Wilson, Lloyd R. NYS Dept. Health	14 Woodlawn Ave. Albany, NY 12208	518-438-8294 3,33 518-473-3629
Winter, Jim SUNY-Fredonia	Env. Res. Cen. SUC Fredonia, NY 14063	716-672-2665 3,16 716-673-3374
Wise, William NY Sea Grant	37 Elk St. Albany, NY 12246	518-436-1701
Wishner, Frederick Aqualife Farms, Inc.	60 E. 42nd St. New York, NY 10165	212-025-2513 1,2,11,13, 212-697-1984 22,29,31, 32,38
Wooster, Gregory A. Auburn Univ. (S)	F&AA, Swingle Hall Auburn Univ. Auburn, AL 36849	205-821-1343 2,7,18, 205-826-4786 22,30,28,34
Young, Byron H. NYS DEC	RT 1, Box 3J Middle Island, NY 11953	516-924-4608 31 516-751-7900
Young, Kevin Acres American Inc.	1000 Liberty Bldg. 424 Main St. Buffalo, NY 14202-3592	416-354-9744 3,16,21, 23,29
Ziolkowski, Bud SUNY-Syracuse (S)	5827 Thompson Rd. Dewitt, NY 13214	315-446-2041 6,16
Zuckerman, Laurence Colorado St. Univ. (S)	Dept. Fish/Wildl. Biol. Fort Collins, CO 80523	303-221-4167 3,7,10, 303-491-7410 19,23,31

Section 4 - Officers

The officers of the Chapter shall consist of a President, President-Elect, Secretary-Treasurer and Secretary-Treasurer-Elect.

The President-Elect and the Secretary-Treasurer-Elect shall be elected at the annual meeting. The Secretary-Treasurer shall hold office for two years, but the term of the other officers shall be one year. The Secretary-Treasurer-Elect shall be elected in alternate years. In case of a vacated position, the Executive Committee shall appoint a qualified replacement to fill an unexpired term. The Incumbent (not newly elected) President-Elect and Secretary-Treasurer-Elect shall succeed to the office of President and Secretary-Treasurer, respectively at the expiration of the terms of those officers.

In the event of a cancellation of an annual meeting at which election of officers was scheduled, the officers and the members of any committee shall continue to serve until the next scheduled meeting.

Section 5 - Duties of Officers

The President of the Chapter shall preside at all meetings, serve as Chairperson at the Executive Committee, represent the Chapter on the Northeast Division Executive Committee and in the American Fisheries Society, make appointments and perform other duties and functions as are authorized and necessary. The Chapter shall reimburse the President of the Chapter, or an alternate designated by the President, for registration fees and housing expenses at the annual meeting of the American Fisheries Society.

The President-Elect shall be Chairperson of the Membership Committee and member of the Program Committee, and shall assume the duties of the President if the latter is unable to act.

The Secretary-Treasurer shall keep the official records of the Chapter, submit a copy of the minutes of the annual business meeting to the Executive Director of the Society and the Secretary-Treasurer of the Northeastern Division within 30 days after said meeting; and collect and be custodian of Chapter funds, disburse funds as authorized by the Executive Committee or membership, submit a record of receipts and disbursements at the annual meeting, and perform such duties as may be requested by the Executive Director of the American Fisheries Society and officers of the Northeastern Division.

The Secretary-Treasurer-Elect shall aid the Secretary-Treasurer in his/her duties and act at the direction of the Secretary-Treasurer and the President.

Section 10 - Amendments of the Bylaws

The Bylaws of the Chapter may be amended in accordance with Section 8 of these Bylaws, provided that prior notice of at least 30 days be given to the membership of the proposed change(s). Said change(s) must be approved by the Executive Committee of the Society before taking effect.

(Revisions of the New York Chapter Bylaws received Executive Committee, American Fisheries Society, approval in September, 1982, and approval by the Chapter membership at the annual business meeting of February 4, 1983.)

