New York State College of Agriculture and Life Sciences
a Statutory College of the State University
Cornell University

Department of Natural Resources
Fernow Hall, Ithaca, N. Y. 14853-3001

Fishery Science
Forest Science
Wildlife Science
Natural Resources
Resource Policy
and Planning
Aquatic Science

MEMO TO: NYAFS Executive Committee and Committee Chairs

FROM: Barbara A. Knuth, Chapter President Barbara A. Knuth

RE: **1991 Annual Meeting**

DATE: 12 May 1990

At its April meeting, the NYAFS Executive Committee agreed that the theme for the 1991 annual meeting invited paper session would be "Impacts of human-induced habitat changes on fisheries resources and management". We will strive to integrate both natural and social sciences perspectives into the session. We also would like to attempt to include topics that would be attractive to folks in the marine district. We now need to give Program Committee Chair Bill Gordon some assistance in identifying specific topics and speakers to round out a day's schedule.

Below I have listed some possible topics mentioned at the Executive Committee meeting. Please give some thought to these and other topics or potential speakers you might be able to identify for Bill.

Potential topics and some speaker ideas include:

1. The role of AFS in fostering sound stewardship for fishery habitats. (Larry Nielsen, AFS President)

2. Impacts and recovery of natural resource damages from oil spills. (possibly an attorney and/or scientist from NYS Dept. of Law; biologist from NYDEC and/or New Jersey)

3. Habitat modifications, mitigation strategies and regulatory requirements for hydroelectric facility development. (possibly a DEC or FWS biologist to address effects on fisheries; an environmental consultant or industry biologist to address mitigation strategies; and a representative from FERC to discuss licensing/relicensing requirements)

4. Connecticut River Atlantic Salmon. (a biologist from state or federal government working with salmon recovery team; and an economist who has studied economic values associated with salmon rehabilitation -- Tom Brown of Cornell)

5. Striped bass, and the controversy over regulations based on consideration of recreational fishery, commercial fishery, and human health protection from contaminants.

If you have preferences for or against any of these topics, suggestions for specific speakers for these, or ideas for other topics and speakers, please send your thoughts to Bill Gordon, NYS DEC, P.O. Box 51, Brownville, NY 13615, preferably by the end of June so the Program Committee can begin contacting potential speakers. I would also appreciate receiving a copy of any correspondence with ideas on topics and speakers. The 1991 program agenda will be a topic at our next Executive Committee meeting, sometime in July.

Thanks very much for helping out with your ideas. I look forward to a successful and interesting annual meeting.

Barbara Knuth
President, New York Chapter, American Fisheries Society
Fernow Hall
Cornell University
Ithaca, New York 14853-3001

Dear Barb:

Enclosed is a copy of the letter I sent out to delinquent members in an attempt to get them to pay their dues. I ended up sending the letters first class since that turned out to be the cheapest method. Postal regulations require a minimum of 200 pieces for the bulk rate under our permit. By the time you add up the costs for printing up covers with our mailing permit on them, plus copies of the letter, plus 90 fake letters (mailed to me) it was cheaper to just have my computer generate the letters and mail it first class.

Cordially,

Jack Hasse, Secretary/Treasurer

Dear Member, NY Chapter American Fisheries Society:

We have begun compiling the 1990 membership directory and according to our by-laws, we can only list members who are currently paid up with their dues or who are one year delinquent. A check of the files shows that you have not paid either your 1989 or 1990 dues. If we do not hear from you shortly we must remove your name from the directory.

Please consider the benefits of Chapter membership such as the annual meeting with topics aimed specifically at New York state fisheries issues, workshops, the quarterly newsletter, and the membership directory which keeps you in touch with coworkers. The Chapter looks forward to your continued participation in the organization.

Dues remain at $5 per year for regular membership and $2 per year for students.

Cordially,

Jack Hasse, Secretary/Treasurer
c/o NYSDEC 207 Genesee St. Utica, NY 13501

May 7, 1990

cc: B. Knuth, chapter president

Heede

New York State College of Agriculture and Life Sciences
a Statutory College of the State University
Cornell University

Department of Natural Resources
Fernow Hall, Ithaca, N. Y. 14853-3001

Fishery Science
Forest Science
Wildlife Science
Natural Resources
Resource Policy
and Planning
Aquatic Science

April 10, 1990

MEMORANDUM

TO: NYAFS Executive Committee and Committee Chairs/Guests

FROM: Barbara A. Knuth Barbara A. Knuth
Assistant Professor of Natural
Resource Policy and Management
President, New York Chapter AFS

RE: **NYAFS Executive Committee Meeting**

A meeting of the New York Chapter American Fisheries Society Executive Committee has been scheduled for 27 April, 1990, 12:30-3:30 p.m. in 238B Emerson Hall on Cornell's campus. Emerson is located between Fernow and Bradfield Halls. The preliminary agenda follows. I've listed specific topics I know of, but I'm sure there are others you will want to discuss for your particular committee or responsibility. If you would like to add any agenda items, just bring those ideas to the meeting. If you are responsible for discussing any of the items listed below and cannot make the meeting, please call Kris Marsh at 607-255-5662, and send me a short summary or description about that topic so I may report to the others.

Note that we will begin discussions about the 1991 annual meeting. **Please bring ideas about potential topics for the Friday invited speaker sessions.** I will suggest a theme of "Impacts of Habitat Change on Fisheries Resources and Management", and am eager to discuss this and other ideas with the group.

Thanks very much, and good travelling on the 27th!

Enc.

New York Chapter
American Fisheries Society
Executive Committee Meeting

April 27, 1990
12:30 - 3:30
238B Emerson Hall

AGENDA

1. Convene & Introductions — *Barbara Knuth*

2. Officer's Reports

Secretary/Treasurer — *Jack Hasse*

President — *Barbara Knuth*
- news from the national office
- Chapter overview

President Elect — *Tom Field*
- student unit liaison
- Northeast Fish and Wildlife Conference

3. Committee Reports

Auditing — *Larry Skinner*

Membership — *Hasse/Field*
- membership numbers
- updating form — *(Knuth)*

Environmental Concerns — *Bob Kent*
- High Peaks Citizen Advisory Committee — *(Knuth)*

Resolutions — *Dieter Busch*

Newsletter — *Paul Kotila*
- budget/funding

NEW YORK CHAPTER
AMERICAN FISHERIES SOCIETY
SUMMARY
MEETING LOCATION/FACILITIES EVALUATION

N=45; Attended all 3 sites=31; Treadway Only=5; HI & Treadway=4; Beeches & Treadway=5

During the past four years, the annual meeting of the Chapter has been held in 3 locations: 1987, Beeches in Rome; 1988 and 1989, Holiday Inn in Binghamton; 1990, Treadway Inn in Owego. To assist future program committees in planning and locating annual meetings, we'd appreciate it if you would take a few minutes to complete the following questions and share with us your perceptions about the suitability of each site.

1. Which NYAFS Chapter meetings have you attended in the past 4 years? (check all that apply)

   36 1987: Beeches, Rome, NY
   31 1988: Holiday Inn, Binghamton, NY
   22 1989: Holiday Inn, Binghamton, NY
   45 1990: Treadway Inn, Owego, NY

2. How would you rate the meeting rooms used for the oral presentations at each facility? Consider visibility of speakers and screen, amount of work space, type of seating. Circle one response for each facility, where 0=don't know; 1=poor; 2=fair; 3=adequate; 4=good; 5=excellent.

   n=36 a) Beeches, Rome, NY 0 1 2 3 4 5 $\bar{x}$=2.42
   n=34 b) Holiday Inn, Binghamton, NY 0 1 2 3 4 5 $\bar{x}$=3.62
   n=44 c) Treadway Inn, Owego, NY 0 1 2 3 4 5 $\bar{x}$=4.07

3. How would you rate the social atmosphere provided at each facility? Consider facilities for informal discussion, small group meetings, social gatherings, conversation, after-hours get-togethers. Circle one response for each facility, where 0=don't know; 1=poor; 2=fair; 3= adequate; 4=good; 5=excellent.

   n=34 a) Beeches, Rome, NY 0 1 2 3 4 5 $\bar{x}$=3.41
   n=34 b) Holiday Inn, Binghamton, NY 0 1 2 3 4 5 $\bar{x}$=2.47
   n=43 c) Treadway Inn, Owego, NY 0 1 2 3 4 5 $\bar{x}$= 4.19

4. How would you rate the meals available at each meeting site? Consider food quality, price, accessibility. Circle one response for each facility, where 0=don't know; 1=poor; 2=fair; 3= adequate; 4=good; 5=excellent.

   n=33 a) Beeches, Rome, NY 0 1 2 3 4 5 $\bar{x}$= 3.03
   n=32 b) Holiday Inn, Binghamton, NY 0 1 2 3 4 5 $\bar{x}$= 2.69
   n=42 c) Treadway Inn, Owego, NY 0 1 2 3 4 5 $\bar{x}$= 3.76

5. How would you rate the accommodations at each facility? Consider sleeping arrangements, living comfort, room cleaning service. Circle one response for each facility, where 0=don't know; 1=poor; 2=fair; 3=adequate; 4=good; 5=excellent.

   n=27 a) Beeches, Rome, NY 0 1 2 3 4 5 $\bar{x}$= 2.74
   n=29 b) Holiday Inn, Binghamton, NY 0 1 2 3 4 5 $\bar{x}$= 3.05
   n=32 c) Treadway Inn, Owego, NY 0 1 2 3 4 5 $\bar{x}$= 4.19

(OVER)

Meeting Location/Facilities
Evaluation Comments Received

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1. From 9 People: Great dinner, super meeting, excellent price and service.

2. Noisy fans in meeting room at Treadway.

3. Treadway conference liaisons were excellent.

4. Chairs were arranged poorly in Williamsburg Room.

5. Tables in main meeting room need to be spaced so traffic can travel easily at both ends.

6. Treadway waitress giving backrubs was a great idea.

7. Have location rotate yearly, perhaps between DEC regions.

8. None of recent meeting sites are near major airports; creates hardship for some invited speakers and marine district members.

9. Add Friday evening ping pong, pool, or some light gamesmanship.

Fernwood-Limne, Inc.

77 Route 9
Gansevoort, New York 12831
518/793-1282

Fisheries Management
Consulting
Limnology
Stocking

5/3/90

To: Jack Hasse

From: Tom Field.

DRAFT

MAR 16 1990

1

CODE OF PRACTICES AND ETHICS

Standards for Professional Conduct

of the

American Fisheries Society

PREAMBLE:

Members of the American Fisheries Society have an obligation to perform their duties in an ethical manner. First and foremost, they accept the obligation to serve and manage aquatic resources for the good of the public as specified by the Society's North American Fisheries Policy. They accept responsibility for acting ethically in their pursuits and relationships with the general public and associates. They will strive to preserve the dignity of the fisheries profession, follow the tenets of the Society's Equal Opportunity Policy. All members of the American Fisheries Society must meet standards of professional conduct as herein established.

STANDARDS

Section I: The Dignity and Integrity of the Profession

Members of the American Fisheries Society shall at all times:

1. Uphold the dignity and integrity of the fisheries profession. They shall endeavor to avoid even the suspicion of dishonesty, fraud, deceit, misrepresentation, or unprofessional demeanor.

2. Cooperate in extending the effectiveness of the fisheries profession by exchanging information and experience with other professionals and students, and by contributing to the work of the professional societies, schools and the scientific press.

3. Personally approve only those plans, reports, and other documents for which they had professional responsibility in preparing or supervising and are in agreement with; and

Members of the American Fisheries Society shall at all times:

1. Recognize that contact with the public is a fundamental responsibility, and is required to retain the public's trust. They shall act in an honest manner in dealing with the public.

2. Refrain from expressing publicly an opinion of fisheries subjects unless they are informed as to the facts relating thereto and their training, ability and experience render them professionally qualified to comment on the involved subjects.

3. Express a professional opinion only when it is founded on adequate knowledge and honest conviction when serving as expert witnesses before a court, commission, or other tribunal.

4. Refrain from permitting the publication or communication of biased information, reports, or parts of them in a manner calculated to mislead the public.

(2)

provide credit for professional work to those to whom credit is properly due.

4. Recognize that reviews, criticisms, and debates of technical results and conclusions are best conducted in technical forum, such as in the established fisheries press and meetings of technical societies for peer review, and not in public.

5. Recognize the responsibility to expose scientific misconduct through recognized institutional procedures.

6. Practice ethical and established managerial principles in supervision of employees.

Section II. Relationships with Clients and Employers.

Members of the American Fisheries Society shall at all times:

1. Perform services for each client or employer in a professional manner as a faithful agent or trustee.

2. Refrain from advertising in a self-laudatory manner, beyond statements intended to inform prospective clients/employers of qualifications, or in a manner detrimental to fellow professionals and the fisheries resources.

3. Maintain a confidential professional-client/employer relationship except when specifically authorized by the client/employer or required by due process of law to disclose pertinent information. They shall not use such confidence to their personal advantage or to the advantage of other parties, nor shall they permit personal interests or other client/employer relationships to interfere with their professional judgment.

4. Refuse compensation or rewards intended to influence their professional judgment or advice. They shall not permit a person who recommends or employs them, directly or indirectly, to regulate their professional judgment.

Section III. Relationships with the Public.

ZEBRA MUSSEL RESEARCH AND CONTROL

WHEREAS, the zebra mussel (Dreissena polymorpha) is a recent exotic introduction to the Great Lakes Basin; and

WHEREAS, the expansion of this organism's range is expected to include the major freshwater systems within the Great Lakes Basin; and

WHEREAS, the proliferation of this organism has potential to severely impact the aquatic ecosystems, as we know them, municipal water systems, industrial water use, and power generation; and

WHEREAS, it is imperative that monies be appropriated before the summer of 1990 to monitor zebra mussel reproduction and population expansion.

NOW THEREFORE BE IT RESOLVED, the Northeast Division of the American Fisheries Society, assembled at its 46th Annual Meeting, 10 April, 1990, in Nashua, New Hampshire requests congress support legislation introduced by Representative Henry Nowak and Senator John Glenn to appropriate monies for zebra mussel research and control.

U.S. FISH AND WILDLIFE SERVICE HYDROPOWER PROGRAM

WHEREAS, there are 147 hydropower projects in the Northeastern United States and 335 hydropower projects nationally which will be subject to relicensing in the 1990's with no apparent recognition within the U.S. Fish and Wildlife Service; and

WHEREAS, the 1981 U.S. Fish and Wildlife Service Mitigation Policy has established procedures for categorizing fish and wildlife habitat values and determining mitigation goals; has adopted the mitigative sequence of the President's Council on Environmental Quality; and has reinforced the need for coordination between federal and state agencies pursuant to the Fish and Wildlife Coordination Act; and

WHEREAS, the Electric Consumers Protection Act of 1986 provides the opportunity to protect, restore and enhance fisheries resources in the affected watersheds; and

WHEREAS, the 1988 U.S. Fish and Wildlife Service Hydropower Policy effectively limits mitigation opportunities for fish and wildlife resources in order to meet the Nation's energy demands; and

WHEREAS, the 1988 US Fish and Wildlife Service Hydropower Policy goal of "to maintain existing habitat value" severely limits the opportunities for restoration of fisheries resources at relicensed hydropower projects, particularly for anadromous fish such as Atlantic salmon and American shad; and

WHEREAS, the U.S. Fish and Wildlife Service has requested public comments on the policy and their role in the federal hydropower licensing program.

THEREFORE BE IT RESOLVED THAT, the Northeast Division of the American Fisheries Society at its 46th Annual Meeting in Nashua, New Hampshire 10 April, 1990, requests that the U.S. Fish and Wildlife Service abandon its hydropower policy and continue to employ the 1981 Mitigation Policy in the federal hydropower licensing program.

FURTHER BE IT RESOLVED THAT hydropower licensing be recognized as a high priority program by the U.S. Fish and Wildlife Service and sufficiently funded and staffed to allow for full participation nationwide. Specifically, for the Northeast region, the U.S. Fish and Wildlife Service should immediately seek \$1.2 million from Congress for operations and instream flow research and create 13 additional permanent full-time positions dedicated to the hydropower licensing program.

State University of New York
COLLEGE OF ENVIRONMENTAL SCIENCE AND FORESTRY
Syracuse, New York 13210

American Fisheries Society
Student Chapter c/o Dr. Neil Ringler
Environmental and Forest Biology
SUNY College of Environmental Science and Forestry
Syracuse, New York 13210-2788

As you may already know the formation of a Student Sub-Unit of the New York State Chapter of the American Fisheries Society is underway. The subunit will include the Student Chapter of AFS with approximately 20 active members at S.U.N.Y. College of Environmental Science and Forestry, and a representation of students (undergraduate or graduate) throughout the entire state. The Sub-Unit will provide the opportunity for students across New York to learn about and participate in fisheries related activities. In order to communicate effectively between colleges, ESF will host a quarterly newsletter that will be "jampacked" with information of interest to the biology or fisheries oriented person. This would include information about job opportunities, field trips, speakers, related research, and other campus activities.

Naturally, this newsletter will not function unless there are substantial numbers of students and advisors interested in writing short articles about current research at your school and other local happenings. On the following two pages please find a short questionnaire and an example of the fisheries activities ongoing at ESF. Along with the questionnaire we would appreciate a short paragraph on some of the fisheries activities in progress at your school. This information will be the backbone of our first newsletter. You will receive a copy of each newsletter to duplicate and distribute to interested parties. You can make as many copies as you like to distribute . It would be appreciated if you could get this back to us by April 16. Thank you again for your time and interest.

American Fisheries Society
StudentChapter/ESF

Name of College..
....

Types of Biology/Fisheries programs...
....
....

Would your school be willing to submit articles/letters etc. ....

What would you be interested in reading about in future issues.............
....
....
....

Who to contact at your school (Name, Number, and Address) ....
....
....

Ideas for naming the newsletter........e.g. "Fish Stew", "Hook Line and Sinker"...
....

Paragraph on fisheries and related activities.

New York State Department of Environmental Conservation
Lake Erie Fisheries Unit
178 Point Drive North
Dunkirk, New York 14048

Thomas C. Jorling
Commissioner

February 21, 1990

Mr. Jack Hasse
NYSDEC
State Office Building
207 Genessee Street
Utica, NY 13501

Dear Jack:

I believe the attached bill from Joe Leach wraps up our expenses from the 1990 NYC-AFS meeting. We can probably reimburse Dr. Leach in U.S. currency (if it's easier) at the current rate of exchange ($177 U.S.).

Thanks very much.

Sincerely,

Don

Donald W. Einhouse

DWE/mes

Enclosure

NEW YORK CHAPTER — AMERICAN FISHERIES SOCIETY

To: EXCOM Members
From: Jack Hasse
Subject: Summary of 1990 Annual Meeting
Date: February 7, 1990

The 1990 NYCAFS annual meeting is history. The following is a quick summary of activities along with a comment or two.

Raffle

The students raised $430. From the comments I heard, everyone enjoyed this activity and it sure held people for the evening.

T-Shirts

We ordered 90 shirts. We sold 46 and gave one to the hotel hostess as a thank you for helping us out. We took in $368 selling the shirts at $8.00 each. We need to sell 16 more shirts to cover our costs. The remaining 28 shirts will represent pure profit for the chapter. We sold more blue than yellow shirts.

Attendance

We had 122 people attend the meeting. We normally have 130-150 attendees.

Income

We took in $2,749 at registration.

Expenses

Postage	$ 89.95
Miscellaneous supplies	110.37
Change (cash box)	100.00
Awards	150.00
Past Pres. Cert.	21.50
Speaker Travel	632.00
Treadway Inn	3,825.84
	$4,929.66

Expenses	$4,929.66	
Income	2,749.00	
	$2,180.66	Covered by Chapter

NEW YORK CHAPTER — AMERICAN FISHERIES SOCIETY

EXCOM Members
February 7, 1990
Page 2

This deficit can/will be reduced by the following:

1. Dues rebate from AFS has been earmarked to cover annual meeting expenses. This should be approximately $100.

2. Student raffle money could be used to cover expenses of students at meetings. This should be approximately $400.

Assuming the above, we will have lost approximately $1,680 on the annual meeting.

Don Einhouse has made the suggestion we give the program chairman a budget to work with to aid him in putting the program together. I agree with this idea and offer a figure of $3,000 as a starting point for discussion.

We also should consider the following to reduce costs:

1.	eliminate the band	$150
2.	tighter control of speaker expenses (we paid for several rooms for speakers who did not attend entire meeting)	150
3.	try and have speakers who have travel monies available	150
4.	eliminate the Saturday AM coffee break	150
5.	reduce number of student helpers (suggest 3, not the 5 or 6 we had)	100
	(Total)	$700

<u>Other</u>

Resolutions to be voted on by the membership should be available in a typed handout. There was a fair amount of extra confusion during our discussions because people had trouble remembering the exact wording of the resolution.

Jack

John J. Hasse
Secretary/Treasurer

February 17, 1990

Jack Hasse
NYAFS Secretary/Treasurer
NY Dept. of Environmental Conservation
207 Genesee Street
Utica, New York 13501

Dear Jack:

Please find enclosed a letter from me to Cedar Creek Publishers who donated the prints for this years raffle. I sent them a "thank you" letter a week ago but I mailed it accidentally before I had a chance to obtain a check from you. Please write-out a check for $35.00 to Cedar Creek Publishers from the AFS and reimburse your account from our raffle monies. This payment covers the cost of printing and shipping that Doug Stang and I agreed to pay for.

This publishing company has just sent me another set of prints that we can use next year. Once again they are asking for $35.00; however, I think we will wait to make a decision on sending them the money now or after next years raffle.

Thanks for the help. If you have any questions, please feel free to give me a call at (607) 255-2838.

Sincerely,

Henry K. Van Offelen

Henry K. Van Offelen

check # 137 mailed 2/22/90

RECEIVED

FEB 20 1990

NEW YORK CHAPTER — AMERICAN FISHERIES SOCIETY

February 12, 1990

Dr. Barbara Knuth
Cornell University
Department of Natural Resources
Fernow Hall
Ithaca, NY 14853-0188

Dear Dr. Knuth:

First, I would like to take this opportunity to congratulate you on the birth of your daughter! As you might have heard, my son arrived the second day of the NYC-AFS Annual Meeting. I departed Owego at midnight on Friday and fortunately arrived in plenty of time for the labor and birth. However, my first recommendation for next year is to select a Program Chair who doesn't have such conflicts! Seriously, I enjoyed preparing the 1990 Program and would be glad to offer some assistance next year.

Based on my experience with our 1990 Program, I would like to propose three ideas that may improve the cost efficiency of running our meeting, without impacting its quality.

1.) **Overall Budget** - I believe a budget for running the Annual Meeting needs to be established by the executive committee. A budget would provide a valuable framework for the program committee in such decisions as whether to offer transportation expenses for geographically distant speakers, or simply how many speakers can be reasonably secured.

2.) **Invited Speaker Expenses** - I propose that the executive committee re-assess the guidelines for bearing the expenses of invited speakers who are members of our Chapter of AFS. In the past, I believe invited speakers who belonged to our Chapter defrayed some (or all) of their meeting expenses as a service to our Chapter. I would suggest offering to pay either one night's lodging or the conference fee. I'm sure the 1990 speakers would have been amenable to this, but my understanding is that our current policy is to offer the full package to all speakers.

3.) **Student Participation** - This year, the Chapter paid for five students (lodging and conference fees) to assist with projector and lights at a cost of approximately $300. Frankly, I do not believe there was enough for five students to do this year for the amount that it cost the Chapter. In some cases, either a student was not aware of the agreement upon arrival or, in other cases, I was not aware of who or where the designated students were until the last moment.

I agree that helping defray costs for students is worthwhile, but we can improve upon the efficiency of this pilot year. As an alternative, perhaps assign the student sub-unit to identify no more than four students, at least one month prior to the Annual Meeting, and recommend that these students be appointed to the Program Committee. As such, they could help organize and participate in other elements of the meeting (i.e. registration, selling AFS shirts, set-up and breakdown of posters and projection equipment).

From the Program perspective, I was quite pleased with the Treadway Inn as a new location for our Annual Meeting. Facilities were adequate, costs were quite reasonable, and the Treadway staff were very accommodating to us. Barring any significant dissent indicated by the questionnaires, I believe the Treadway Inn is well suited for hosting our Annual Meetings. Considering that we have now conducted one meeting in their facility, I would expect future meetings to require less effort.

Finally, I have a box of materials for the next program chair, and please feel free to contact me if you have any questions.

Best regards,

Don Einhouse

Donald W. Einhouse
'90 Program Committee Chairman
New York Chapter, AFS

DWE/mes

cc: J. Hasse
J. Winter

NEW YORK CHAPTER — AMERICAN FISHERIES SOCIETY

February 7, 1990

A.L. Aluisio
Levine Lab
Cornell University
Ithaca, New York 14853

Dear Ms. Aluisio:

At the recent New York Chapter American Fisheries Society meeting in Owego, New York, you intended to pay for your registration and membership with a credit card. We are unable to accept that type of payment so you were asked to try and get a cash advance from one of the banks located nearby. You were unsuccessful in this attempt therefore, we allowed you to attend the meeting with the understanding you would send the NYCAFS a check in the amount of $26 immediately.

This letter is to serve as a reminder that as of this date we have not recieved your payment. Please send in your payment as we are trying to close our books for this event. Thank you for your attention to this matter.

Cordially,

John J. Hasse
Secretary/Treasurer NYCAFS

cc. B. Knuth, president NYCAFS

Received payment for #21, dues not included

1990 OFFICERS - NEW YORK CHAPTER

AMERICAN FISHERIES SOCIETY

PRESIDENT

BARBARA KNUTH

PRESIDENT-ELECT

TOM FIELD

SECRETARY-TREASURER

JACK HASSE

Elected at the Annual Meeting of the New York Chapter on January 26, 1990. The Annual Meeting was held at the Treadway Inn, Owego, New York, January 25, 27, 1990.

1990

EXECUTIVE COMMITTEE AND STANDING COMMITTEE CHAIRPERSONS

Executive Committee

President	Barbara Knuth
President-Elect	Tom Field
Secretary	Jack Hasse
Past-President	James Winter

Standing Committee

Audit/Finance	Larry Skinner
Environmental Concerns	Bob Kent
Membership	Tom Field
Nominating	Jim Winter
Program	Bill Gordon
Resolutions	Dieter Busch

Special Committee

Professional Incentives	Paul McKeown
Newsletter	Paul Kotila
Student Subunit	Open

PAST PRESIDENTS

1966	JOHN GOULD
1967	ROBERT ZILLIOX
1968	UDELL STONE
1969	WILLIAM FLICK
1970	PAUL NETH
1971	ROBERT GRIFFITH
1972	HOWARD LOEB
1973	MARTIN PFEIFFER
1974	WILLIAM PEARCE
1975	WILLIAM PEARCE
1976	ROBERT WERNER
1977	C. LAVETT SMITH
1978	BRUCE SHUPP
1979	PHILIP BRIGGS
1980	JOHN GRIM
1981	JOSEPH GORSUCH
1982	STEVEN GLOSS
1983	JAMES HAYNES
1984	LAWRENCE SKINNER
1985	GERALD BARNHART
1986	MICHAEL DUTTWEILER
1987	ROBERT LANGE
1988	FRANK PANEK
1989	JAMES WINTER

MEMBERSHIP LISTING

The names of all members who paid dues for 1989 and/or 1990 through June 28, 1990 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. An "*" indicates honorary membership.

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 improvment, 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

This directory is for the use of New York Chapter members only and is not to be used for mailing lists, commercial solicitation, etc., without written permission from the chapter.

NEW YORK CHAPTER
AMERICAN FISHERIES SOCIETY
MEMBERSHIP DIRECTORY
1990

NAME / AFFILIATION	ADDRESS	TELEPHONE	INTERESTS / YEAR PAID
ALOI, MICHAEL BWEC INC.	219 W. FIRST STREET OSWEGO, NY 13126	315-635-3516 315-343-7081	8 10 16 29 37 89
ALUISIO, A.L. NYSCVM CORNELL	NYSCVM, CORNELL UNIV. ITHAVCA, NY 14853	607-253-3365	18 89S
ALVERAS, RONALD LMS ENGINEERS	82 CARDINAL DRIVE WASHINGTONVILLE,NY 10992	914-496-9619 914-735-8300	8 13 16 21 89
ANDERSON, JON VERMONT FISH & GAME	RD#1 BEDARD ROAD SHELDON, VERMONT 05483	802-862-2043 802-878-1564	89
ANGYAL,ROBERT K. NYSDEC	RD #1, BOX 422 STONE RIDGE, NY 12484	914-687-7821 914-255-5453	8 13 14 16 90
ARNOLD, STEPHEN NOR. DEVINE & TARBEL	NORTHROP, DEVINE &TARBELL 500 WASHINGTON AVE PORTLAND, MAINE 04103	207-775-4495	3,8,10-14,16,21, 29 89
AULTMAN, DANA C. SUNY BRACKPORT	276 N. CREEK CROSSING ROCHESTER, NY 14612	716-225-9470	3,10, 90S
BACKMAN, THOMAS NAT FISH RES LAB	RD#4 BOX 63 WELLSBORO, PA. 16901	717-353-2019 717-724-3322	90
BAGINSKI, KENNETH SUNY ESF	7751 BACK CREEK RD. HAMBURG, NY 14075	716-649-9385	10 90S
BAKER, RUSS SUNY ESF	P.O. BOX 400 HILER BRANCH BUFFALO, NY 14223	716-876-3862	8 89S
BAKER, RUSS SUNY ESF	1037 MADISON ST. SYRACUSE, NY 13210	315-426-8044	8 89S

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BALDIGO, BARRY ALSC	BOX 398D RD#1 LEE CENTER, NY 13363	315-337-1559 315-357-5152	5,21,33,34 89
BARNHART, GERALD NYSDEC	50 WOLF RD ALBANY, NY 12233	518-692-7349 518-457-5691	16 89
BEGLINGER, JANICE KODAK	1727 EXCHANGE ST. ATTICA, NY 14011	716-591-1257 716-588-6483	33 89
BESSEL, KELLY M. SUNY BRACKPORT	152 MONROE AVE. BROCKPORT, NY 14420		 90S
BISHOP, DANIEL NYSDEC	4141 SOUTH STREET MARCELLUS, NY 13108	315-673-1257 607-753-3095	 90
BLAKE, JOHN W NYS POWER AUTHORITY	23 CROSS RIDGE RD. CHAPPAQUA, NY 10514	914-238-5441 914-681-6384	2 3 28 29 37 9 16 21 90
BORKO, MARTIN ORANGE CO. CC	BIOLOGY DEPT. ORANGE CO. COMM COLLEGE MIDDLETOWN, NY 10940	914-342-1684 914-343-1121	3,8,36 90
BOWSER, PAUL R CORNELL VET MED	AVAIN & AQU ANIMAL MED CORNELL UNIVERSITY ITHACA, NY 14853	607-387-6834 607-253-3365	2 18 30 34 36 90
BRADWAY, PHIL NYSDAG+MKTS	NYS DEPT. AG. + MAKTS ALBANY, NY 12235	518-377-8938 518-457-2840	 90
BREED, HELEN RETIRED	R.D. #3 BOX 245B TROY, NY 12180	518-279-3255	19 89
BRENNAN, RANDALL W.	18-8 BRAEMAR DR. LIVERPOOL, NY. 13090	315-424-7918	3 7 16 19 24 34 35 89
BRETT, BETTY LOU UNIV. OF ROCHESTER	BIOLOGY DEPT/ U OF R HUTCHISON HALL ROCHESTER, NY 14627	716-424-4578 716-275-3844	9 10 17 19 30 36 89

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BRIGGS, PHILLIP NYSDEC	NYSDEC SUNY BLDG. 40 STONY BROOK, NY 11794	516-751-7900	5 11 12 16 19 30 35 90
BROTHERS, EDWARD EFS CONSULTANTS	3 SUNSET WEST, R.D. 7 ITHACA, NY 14850	607-347-4203 607-347-4203	10-15, 19 89
BROWN, JERRY EMPIRE FISHERIES	PO BOX 68 BLISS, NY 14024-0068	716-322-7777 716-7863315	2 14 30 34 89
BRUBAKER, HANS CORNELL	CORNELL UNIVERSITY ITHACA, NY 14853	607-253-0615	 90S
BUERGER, ROBERT SUNY CORTLAND	1576 VANDOWSEL RD. CORTLAND, NY 13046	607-835-6524 607-753-4957	16 89
BUNDY, DAVID ONONDAGA C C	185 ROBINEAU ROAD SYRACUSE, NY 13207	315-472-3657 315-469-7741	3 89
BUNNELL, DON CORNELL	CORNELL BIOLOGICAL FIELD 5114 SHACKELTON PT. RD. BRIDGEPORT, NY 13030	315-633-9243 315-633-9243	9,10,14,19,32 89S
BURZ, JUDY SUNY	6725 CHILE RIGA CTR RD. CHURCHVILLE NY 14428	716-293-2593	2,3,34 89S
BUSCH, DIETER US FISH & WILDLIFE	3985 HIGHLAND ROAD CORTLAND, NY 13045	607-753-6263 607-753-1460	1-10 13-16 21-24 33 90
BUTTNER, JOSEPH SUNY BROCKPORT	BIOLOGY DEPARTMENT SUNY BROCKPORT BROCKPORT, NY 14420	716-637-3069 716-395-5750	3,5,10,29,34,36 90
CALLAN, MICHAEL ESF SYRACUSE	RD#1 BOX 227 HILL AVE PINE BUSH, N.Y. 12566	914-744-2917 315-442-6418	2,8,16,28,31,34 89
CARLSON, DOUG NYS DEC	NYS DEC 317 WASHINGTON ST WATERTOWN, NY 13601	 315-785-2262	15 16 36 90

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CASTANEDA, RAOUL NYS DEC	NYS DEC BLDG 40 SUNY STONY BROOK, NY 11794	516-661-3782 516-751-7900 370	2,11,16 89
CHIOTTI, THOMAS NYS DEC	83 MORRIS ROAD FREEVILLE, NY 13068	607-838-3733 607-753-3095	10 13 16 89
CHIPMAN, BRIAN D VERMONT FISH & WILD	111 WEST STREET ESSEX JUNCTION, VT 05452	802-879-6563	10 16 37 89
CHISHOLM, DAVE	5100 HIGHBRIDGE #26E FAYETTEVILLE, NY 13066	315-637-5465	90
CHYTALO KAREN NYSDEC	BLDG. #40 SUNY STONY BROOK NYSDEC STONY BROOK, NY 11794	516 7513723 516 7517900 301	2,21,25,27,28,33 34 89
CLAPSADL, MARK D. NY. ST. RES. FOUND.	7637 CORBY ROAD HONEOYE FALLS, NY 14472	716-624-1470 716-395-5750	90
CLIFTON ALBERT JR. AQ. NIAGRA FALLS	701 WHIRLPOOL ST. NIAGRA FALLS, NY 14301	716-285-5446 716-285-3575	3,8,30 89
CLOCK, JEFFERY A. CENT. HUD. ELEC+GAS	284 SOUTH AVE POUGHKEEPSIE, NY 12601	914-255-6280 914-486-5534	3,8,15,16,21,29 89
COE, TOM SUNY MORRISVILLE	BOX 549 MORRISVILLE, NY 13408	315-684-7076 315-684-6390	2 3 6 8 10 89
COLESANTE, RICHARD NYS DEC	118 MILL STREET CONSTANTIA, NY 13044	315-623-9475 315-623-7311	2 3 15 89
COLQUHOUN, JAMES NYS DEC	56 PAXWOOD ROAD DELMAR, NY 12054	518-439-1231 518-457-6178	3 18 33 34 89
CONNERS, ELIZABETH ICHTHY. ASSOC.	50 LUDLOWVILLE RD LANSING, NY 14882	607-533-8801	21,24,29 90

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CORNETT, SCOTT NYSDEC	128 SOUTH ST OLEAN, NY 14760	716-372-9003 716-372-8676	16 90
COSTANZA, RICHARD ICHTHYOLOGICAL ASSOC	230 LAKE ROAD, APT 4 DRYDEN, NY 13053	607-844-4756 607-533-8801	3 5 10 16 21 24 28 36 89
COUTU, JAMES D NYS DEC	232 WINSLOW STREET WATERTOWN, NY 13601	315-788-3837 315-785-2258	10 89
CREAMER, ALLAN E. CORNELL UNIV.	RR #2 BOX 183 RIPLEY, NY 14775	716-735-4703 607-253-7017	2,13,14,16,17,21 89S
CREECH, CLIFF NYS DEC	648 OLD STAGE ROAD GROTON, NY 13073	607-898-3965 607-753-3095	8 10 13 90
CROSTON, JAMES A. NYSDEC	P.O. BOX 1051. DUNKIRK, NY 14048	716-366-5167 716-366-0228	3 10 13 14-16 19 36 89
CULLIGAN, WILLIAM NYS DEC	RD#1 DELANSON, NY. 12053	518-895-8337 518-45705430	12 16 89
CULP, TERRY R ICHTHYOLOGICAL ASSOC	P.O. BOX 249 STAMFORD, NY 12167	607-652-3408 607-652-3563	21 29 90
CULVER, TODD CORNELL	214 FERNOW HALL CORNELL UNIVERSITY ITHACA, NY 14853	315-364-8083 607-255-5662	16 89S
DALE, GEORGE FORDHAM UNIV.	BIOLOGICAL SCIENCES FORDHAM UNIVERSITY BRONX, NY 10458	914-273-9086 914-579-2562	9 10 11 12 19 90
DANIELS, ROBERT A. NYS MUSEUM	NYS MUSEUM CEC 3132 ALBANY, NY 12230	518-872-2137 518-474-5800	3 10 19 89
DAVIS, ROBERT C.T.MAINNEERING	32 FRANCINE RD. RAYNHAM, MA 02767	508-880-6020 617-859-2560	3 15 16 19 21 28 29 34 89

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DEGISI, JOE CORNELL	5114 SHACKELTON PT. RD BRIDGEPORT, NY 13030		 90S
DEMONG, LEO M BRANDON ENTER.	STAR ROUTE BOX 69 PAUL SMITHS, NY 12970	518-327-3529 518-327-3534	2 13 90
DEXTER, PATRICIA SUNY ESF	318 ILLICK HALL SUNY COLLEGE OF ESF SYRACUSE, NY 13210	315-473-5940 315-470-6743	13,15 90S
DIETZ, JONATHAN VERSAR INC	3426 CARRAGE HILL #102 RANDALLSTOWN MD. 21133	301-655-1857 301-964-9200	34 90
DUNNING, DENNIS NYS POWER AUTHORITY	NYS POWER AUTHORITY 123 MAIN ST WHITE PLAINS, NY 10601	914-724-3486 914-681-6401	2 3 12-16 21 29 31 89
DUTTWEILER, MIKE CORNELL UNIVERSITY	345 CODDINGTON ROAD ITHACA, NY 14850	607-277-0006 607-255-6505	16 36 90
EHLINGER, NEIL NYS DEC RETIRED	6747 WILLIAMS ROAD ROME, NY 13440	315-337-1238	13-18 901
EINHOUSE, DONALD NYS DEC	11344 DENNISON RD. SILVER CREEK, NY 14136	716-965-9799 716-366-0228	14 16 90
ELLIOTT, WAYNE NYS DEC	6 BRUNNSWICK RD NEW PALTZ, NY 12561	914-255-8142 914-255-5453	8 9 10 90
ELROD, JOSEPH USFWS	USFWS 17 LAKE STREET OSWEGO, NY 13126	315-342-2227 315-343-3951	3 10 13 16 30 89
ENGEL, RONALD SUNY OSWEGO	R.D. 3, BROWN DR. OSWEGO, NY 13126	315-343-9678 315-341-3031	3 10 24 27 34 35 90
EVANS, JOSEPH, T. NYSDEC	128 SOUTH ST. OLEAN, NY 14760	 716-372-8676	14,16 89

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EWELL, WILLIAM KODAK	296 CROSS GATES RD. ROCHESTER, NY 14606	716-247-3083 716-588-4528	2,3,18,21,28,30 33,34 89
FALK, ARTHUR NYSDEC	BOX 151A, RD #3 KINGSTON, NY 12401	914-687-0191 914-255-5453	16 89
FARQUHAR, J F III NYS DEC	WATERTOWN SOB 317 WASHINGTON ST. WATERTOWN, NY 13601	315-232-2369 315-785-2262	8,10 89
FARRELL, JOHN SUNY ESF	300 CORWIN RD. ROCHESTER, NY 14610	716-482-4982 315-470-6500	 90S
FIELD, THOMAS FERNWOOD-LIMNE INC.	77 ROUTE 9 GANSEVOORT, NY 12831	518-793-0219 518-793-1282	2 13 16 90
FINKELSTEIN, SAMUEL NYS DEC	8 MADLEY LANE STONY BROOK, NY 11790	516-751-3926 516-751-7900	1 8 11 12 30 31 90
FLACK, FRANK M. NYSDEC	BOX 212 OLD QUEECHY RD. CANAAN, NY 12029	 518-457-1769	3,8,10 90
FORNEY, JOHN L CORNELL UNIVERSITY	R.D. 1 BRIDGEPORT, NY 13030	315-633-2948 315-633-9243	16 D.HON.
GALATI, JOSEPH NYS DEC	93 LAKIN AVE JAMESTOWN, NY 14701	716-483-1368 716-366-0228	3,9,10,16 90
GALL, WAYNE K. BUFFALO MUSEUM SCI.	36 ST. MARY'S STREET LANCASTER, NY 14086	716-681-8238 716-896-5200	3 5 10 34 89
GARTH,STEPHEN+SUSAN HINCHINBROOKE FISH	RFD #1 BOX 1010 CHATEAUGAY, NY. 12920	518-497-6505 SAME	13,18 89
GEORGE, CARL UNION COLLEGE	R.D. 4, WAGNER GLENVILLE, NY 12301	518-393-0629 518-370-6243	3 8 9 10 14 16 18-21 24 90

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GIGLIOTTI, LARRY M. CORNELL	481 SHAFFER ROAD NEWFIELD, NY 14867	607-564-7881 607-255-2829	6,8,29,36 90
GILLESPIE, ROBERT SUNY	56 COTTAGE ST FREDONIA, NY 14063	716-679-4214 716-673-3374	17,21,33 90
GLASE, MADELYN S. ICHTHYOLOGICAL ASSOC	50 LUDLOWVILLE RD. LANSING, NY 14882	607-564-76-92 607-533-8801	3,24,27 90
GLOO, JAMES CORNELL	5 HAMMOND ST MOHAWK, NY 13407	315-866-1827	8,13,23 89S
GLOSS, STEVEN USFWS-U. OF WYOMING	U. OF WYOMING BOX 3067 UNIVERSITY STATION LARAMIE, WYOMING 82071	307-766-2143	3 28 33 34 D. HON
GORDON, WILLIAM NYS DEC	P.O. BOX 51 BROWNVILLE, NY 13615	315-639-3847 315-785-2254	90
GORSUCH, JOSEPH EASTMAN KODAK	132 WYNDHAM ROAD ROCHESTER, NY 14612	716-621-7678 716-588-2140	3 5 27 28 33 34 35 D. HON
GREEN, DAVID CORNELL UNIVERSITY	5114 SHACKLETON PT RD BRIDGEPORT, NY 13030	315-855-0301 315-633-9243	14 16 19 90
GREWE, PETER CORNELL UNIV.	DEPT. NAT. RESOURCES FERNOW HALL, CORNELL UNIV ITHACA, NY 14853	607-272-2774 607-255-2838	2,17 90S
GRIFFIN, PAUL J.	90 FENNEC LANE E. AMHERST, NY 14051	716-688-4090	2 89
GRIM, JOHN NE BIOLOGISTS INC	ONE KERR ROAD RHINEBECK, NY 12572	914-876-4786 914-876-3983	2 3 14 16 17 90
GROSS, A CHRIS L I LIGHTING CO	12 HARBOR RIDGE DRIVE CENTERPORT, NY 11721	516-754-3776 516-420-6097	2 11 21 19 89

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HSU, HUI-MIN NYSCVM, CORNELL	DEPT. AVIAN, AQUATIC MED CORNELL UNIVERSITY ITHACA, NY 14853	607-257-7810 607-253-3374	2,18,30-34,36 90S
HULBERT, PHILIP NYS DEC	R.D. 1, BOX 622 E MEREDITH, NY 13757	607-278-5490 518-457-6937	13 90
HUMMELL, BLAINE L ENV RES MGMT INC	231 RILEYVILLE ROAD HOPEWELL NJ 08525	609-466-2907 215-524-3641	3 13 16 21 28 33 90
HURST, STEPHEN NYSDEC	25 PROSPECT TERR, #1 CORTLAND, NY 13045	607-756-2234 607-753-3095	16 90
ISAACS, JACK M NYS DEC	RD3 BOX 132J KINGSTON, NY 12401	914-331-8174 914-255-5453	13 89
JANOWSKY, WILLIAM SUNY ESF	310 KENSINGTON RD. SYRACUSE, NY 13210	716-773-1579 315-478-4515	8 89S
JIRKA, KURT ICHTHYOLOGICAL ASSOC	50 LUDLOWVILLE RD. LANSING, NY 14882	607-539-6635 607-533-8801	5,10,16,21,29 90
JOHNSON, JIM & EMILY USF+WS	RD# 2 BOX 302 J MIDDLEBURY CENTER PA. 16935	717-376-2335 717-724-3322	1 3 5 10 15 16 90
JOLLIFF, THOMAS NYS DEC	BEDFORD CORNERS ROAD CAPE VINCENT, NY 13618	315-654-3156 315-654-2147	10 89
JOSEPHSON, DANIEL CORNELL	BOX 745 OLD FORGE NY 13420	315-369-2143 315-369-6781	3,9,10,24,30,34 90
KAHN, AMY SUNY SYRACUSE	1723 MEADOWBROOK DR. APT. 5 SYRACUSE, NY. 13224	315-445-9811 315-470-6743	3,16 90
KAHN, JAMES R SUNY BINGHAMTON	ECONOMICS DEPARTMENT SUNY BINGHAMTON BINGHAMTON, NY 13901	607-798-8058 607-7772297	36 89

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KAHNLE, ANDREW NYS DEC	61 YANKEE FOLLY ROAD NEW PALTZ, NY 12561	914-255-6324 914-255-5453	3 12 14 16 31 89
KAZYAK, PAUL VERSAR INC.	628 BARNES AVE. WESTMINSTER, MARYLAND 21157	301-848-0624 301-964-9200	8 16 28 29 31 90
KEELER, SHAWN NYSDEC	748 FEURA BUSH ROAD APT. 3 DELAMAR, NY 12054	518-439-1139 518-457-5420	90
KELEHER, CHRIS CORNELL UNIVERSITY	P.O. BOX 114 THENDARA, NY 13472	315-369-6648 315-369-2210	3,8,30,34,9 90
KELLER, WALT NYSDEC	NYSDEC STAMFORD, NY 12167	607-652-3143	16 89
KELSEY, KEVIN FERNWOOD LIMNE INC.	71 BROWNVILLE RD GANSEVOORT, NY 12831	518-793-1282	90
KENNEN, JONATHAN SUNY ESF	1114 E. COLVIN ST. SYRACUSE, NY 13210	315-478-8933	3 5 10 36 90S
KENT, ROBERT J NY SEA GRANT	39 SOUND AVE RIVERHEAD, NY 11901	516-369-4068 516-727-3910	6 36 90
KERR, ROBERT P. COSPER ENVIR. SERV.	COSPER ENVIR. SERVICES BOX 525 NORTHPORT, NJ 11768	516-862-6909 516-754-4456	2-7 9-14 16 21- 23 25 27-31 33 90
KIRKER, RICHARD	RD #2 BOX 507 RED HOOK, NY 12571	914-758-6017	90
KLINDT, RODGER NYS DEC	RD#2 BOX 873 ADAMS NY 13605	315-232-3454 315-785-2262	8 89
KNUTH, BARBARA CORNELL UNIVERSITY	FERNOW HALL CORNELL UNIVERSITY ITHACA, NY 14853	607-539-6635 607-255-2822	1,23,38 89

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KOSOWSKI, DAVID NYS DEC	P.O. BOX 154 AVON, NY 14414	716-226-2907 716-226-2466	3 8 10 13 14 16 24 90
KOTILA, PAUL M FRANKLIN PIERCE COLL	NATURAL SCIENCE DIVISION FRANKLIN PIERCE COLLEGE RINDGE N. HAMPSHIRE 03461	603-585-6508 603-899-5111 470	? 3 5 64 36 90
KRUEGER, CHARLES CORNELL UNIVERSITY	FERNOW HALL CORNELL UNIVERSITY ITHACA, NY 14853	607-347-4863 607-255-2838	5 10 16 17 36 90
KURTZ, ROBERT J US ARMY CORP OF ENG	27 SMITH STREET VALLEY STREAM, NY 11580	516-561-6429 212-264-3609	8 11 12 16 21 90
KUSS SARAH MARIE SUNY BROCKPORT	361 PILASKI RD. GREENLAWN, NY. 11740		2 89
LA MERE, STEVEN ADIRONDACK ECOL.	5 CLIFF AVE TUPPER LAKE, NY 12986	518-359-9413 518-359-7856	2 89
LA PAN, STEVEN NYSDEC	12 LIMERICK HEIGHTS DEXTER, NY 13634	315-639-4791 315-785-2262	14,15 90
LANC TODD ESF	BOX 122 GROVELAND, NY 14462	315 426-8964	21,24 90S
LANDRE, BETSY CORNELL	604 ALBANY ST. ITHACA, NY. 14850	607-277-7251 607-255-3191	1,3,6,21,23,24, 30,34,36 90S
LANGE, ROBERT NYS DEC	34 GRETEL TERRACE BALLSTON LAKE, NY 12019	518-877-6608 518-457-6937	1,10,16 90
LANTRY, BRIAN SUNY ESF	143 MILES AVE #5 SYRACUSE, NY 13210	315-476-1732	13 90S
LASSOIE, J P CORNELL UNIVERSITY	117 FERNOW HALL CORNELL UNIVERSITY ITHACA, NY 14853	607-564-7258 607-255-2114	37 89

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NAME AFFILIATION	ADDRESS	TELEPHONE	INTERESTS YEAR PAID
LAWRENCE, TRACY SUNY ESF	109 CHINOOK DR. SYRACUSE, NY 13210	315 442 9515	10 90S
LAZERATION, MARK SUNY BUFFALO	982 BASELINE RD GRAND ISLAND, NY 14072	716-773-8430 716-636-2862	2,10,25,28,30,33 34,36 89
LITWA, MICHAEL NYS DEC	460 17TH STREET W. BABYLON, NY 11704	516-957-0983 516-420-7640	2 11 31 89
LONG, JOHN FWMA BOARD	2259 NIAGARA ROAD NIAGARA FALLS, NY 14302	716-731-4002 716-285-8447	2 3 6 8 16 23 10 14 29 90
MAC NEILL, DAVID NY SEA GRANT	NY SEA GRANT EXT. SUNY BROCKPORT BROCKPORT, NY 14464	716-964-7507 716-395-2638	2,3,7,8,10,24,36 90
MACK, ALAN NYS DEC	65 MINER STREET CAMDEN, NY 13316	315-245-3965 315-337-1390	10 13 14 16 17 34 89
MACK, PETER P.E. NYSDEC	NYSDEC ROOM 328 50 WOLF RD. ALBANY, NY 12233	518-485-8409 518-457-3495	34 89
MACKEY, MICHELE SUNY FREDONIA	918 ERIE ST. IRVING, NY 14081	716-934-7149 716-673-3375	90S
MALCHOFF, MARK SEA GRANT	CORNELL LAB SEA GRANT 39 SOUND AVE RIVERHEAD, NY. 11901	516-765-4322 516-727-3910	11,36 90
MALOUF, ROBERT NEW YORK SEA GRANT	NEW YORK SEA GRANT SUNY @ STONY BROOK STONY BROOK, NY 11794	516-689-8074 516-632-6905	2 90
MANCHESTER, ANDREW PAUL SMITHS	576 RIVERSIDE AVE ELMIRA, NY 14904	607-733-9409	8 89S
MANCRONI, WAYNE C HUDSON G & E	C HUDSON G & E 234 SOUTH AVE POUGHKEEPSIE, NY 12601	914-883-5432 914-486-5734	21,29,30 89

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MARSDEN, J ELLEN CORNELL UNIVERSITY	FERNOW HALL CORNELL UNIVERSITY ITHACA, NY 14853	607-277-7310 607-255-2838	9 16 17 90
MARTIN, V. CYNTHIA C.T. MAIN	11 BIRCHWOOD ROAD WILMINGTON, MA 01887	716-684-2739	6 8 19 31 90
MARTINEAU, DANIEL NYSCVM,CORNELL	DEPT. AVIAN,AQUAT.MED. CORNELL UNIVERSITY ITHACA, NY 14853	607-273-4316 607-253-3365	2,18,30-34,36 89S
MATOUSEK, JOHN A L M S ENGINEERS	2 JUNE ROAD CHESTER, NY 10918	914-469-9536 914-735-8300	21 29 89
MATTES, KENNETH FORDHAM UNIV.	37 GOULD AVE. DOBBS FERRY, NY 10522	914-693-1927	3 90
MAYACK, DAVID NYSDEC	58 WINEBERRY LANE BALLSTON SPA, NY 12020	518-899-6410 518-457-1769	24 28 30 35 36 90
MAYNARD, PAUL NYS DEC	SALMON RIVER HATCHERY R.D. 1, BOX 1 ALTMAR, NY 13302	315-298-5351 315-298-5051	1 2 8 89
MC BRIDE, NORMAN NYS DEC	STAR ROUTE BOX 16 STAMFORD, NY 12167	607-652-7914 607-652-7364	3 8 16 89
MC CARTHY, CHARLES SUFFOLK CO COMM COL	SUFFOLK CO COMM COLLEGE RIVERHEAD, NY 11901	516-298-5859 516-765-1011	2 11 27 34 35 36 90
MC CULLOUGH, RUSSELL NYS DEC	STATE OFFICE BLDG 317 WASHINGTON ST WATERTOWN, NY 13601	315-782-8363 315-785-2262	10 16 89
MC DANNELL, GARY GREAT LAKES LAB	2231 BEDELL RD # B GRAND ISLAND, NY 14072	716-773-4962 716-876-5454	3 9 14 26 30 89
MC KEOWN, PAUL E NYS DEC	NYS DEC 128 SOUTH STREET OLEAN, NY 14760	716-372-0312 716-372-8676	3 10 13 14 16 17 19 90

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NAME AFFILIATION	ADDRESS	TELEPHONE	INTERESTS YEAR PAID
MCLAREN, JAMES B. BEAK CONSULTANTS	12072 MAIN RD AKRON, NY 14001	716-631-9975 716-542-5544	3,5-7,9-16,28,29 30-34 90
MERCKEL, CHARLES N SUNY BUFFALO	2340 EAST RIVER ROAD GRAND ISLAND, NY 14072	716-773-6588 716-878-6588	3 5 10 21 24 25 30 89
MICHALOWSKI, DANIEL SENECA PARK ZOO	2222 ST. PAUL STREET ROCHESTER, NY 14621	716-621-3467 716-266-6846	2 3 7 9 10 19 23 89
MIKLAS, DALE SUNY ESF	200 WALNUT PLACE SYRACUSE, NY 13210	315-478-5302	16 89S
MILLER, DAVID FERNWOOD-LIMNE	BOX 77, ROUTE 9 GANSEVOORT, NY 12831	518-793-1282	16 89
MILLER, LAWRENCE N HAMPSHIRE F & G	REG 1 FISHERIES BOX 241 N. LANCASTER NH. 03584	603-636-2615 603-788-3164	16 89
MILLS, EDWARD CORNELL UNIVERSITY	CORNELL FIELD STATION R.D. 1 BRIDGEPORT, NY 13030	315-655-8569 315-633-9243	3 24 89
MONTELEONE, SUSAN SUNY FREDONIA	ENVIR. RES. CENTER SUNY FREDONIA FREDONIA, NY 14063	716-673-3375	3,30 90S
MOORADIAN, STEPHEN NYS DEC	104 PARK STREET OLEAN, NY 14760	716-373-2494 716-372-8676	3 9 13 14 16 89
MOREHOUSE, DAVID NY AQUACULTURE ASSOC	PO BOX 212 AURORA, NY 13026	315-364-8429 315-568-8520	2 90
MUCCIO, NEIL CSH FISH HATCHERY	3129 MORGAN DRIVE WANTAGH, NY 11793	516-731-8774	2,3,8-10,13,14, 89
MURPHY STEVEN P. ICHTH. ASSOC.	P.O. BOX 55 SKANEATELES, NY 13152	315-685-7942 315-428-3493	10-16,34,5 89

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NAME AFFILIATION	ADDRESS	TELEPHONE	INTERESTS YEAR PAID
MURPHY, MARGARET SUNY ESF	242 ILLICK HALL SUNY ESF SYRACUSE, NY 13210	315-474-3944	90S
MURRAY, RIVA KAREN CESF	RD 85 A CANAAN, NY 12029	518-794-8059 315-470-6743	3 10 30 89S
MYERS, ROBERT SOIL CONS SERV	R.D. 2, NEW BOSTON ROAD CHITTENANGO, NY 13037	315-687-9432 315-423-5212	16 90
NACK. STEVE CORNELL	5114 SHACKELTON PT. RD. BRIDGEPORT, NY. 13030	518-828-2276 315-633-9243	10 89S
NEMECEK, RUSSELL O.C.W.Q.M.A.	H-4 SPRUCE TREE CIRCLE LIVERPOOL, NY 13090	315-652-5501 315-425-2616	3,5,11,16,21,24 28,29,34 90
NETH, PAUL NYS DEC RET.	R.D. 5, JUNIPER DRIVE BALLSTON SPA, NY 12020	518-885-7792 518-457-5698	1 13 14 16 89
NETTLES, DAVID C NORTH COUNTRY C.C.	P.O. BOX 184 VISTA DRIVE BLOOMINGDALE, NY 12913	518-891-2110 518-891-2915	10,13,36 90
NEUDERFER, GARY NYS DEC	45 NORMAN DRIVE ROCHESTER, NY 14623	716-424-4926 716-226-2466	3 5 10 13 14 28 33 34 89
NEWELL, ARTHUR NYS DEC	R.D. 1, BOX 71 WESTERLO, NY 12193	518-797-1769 518-458-1769	3 33 34 90
O'BOYLE, ROBERT J EASTMAN KODAK	HAEL/ETS, B-306 KODAK PARK ROCHESTER, NY 14650	716-467-4087 716-588-2151	33 89
O'GORMAN, ROBERT USFWS	USFWS 17 LAKE STREET OSWEGO, NY 13126	315-343-2351 315-343-3951	10 16 89
OLNEY, LOUIS MORRISVILLE AT	ROCKS ROAD, BOX 247 MORRISVILLE, NY 13408	315-684-3448 315-684-6237	2 9 10 13 14 16 19 89

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NAME AFFILIATION	ADDRESS	TELEPHONE	INTERESTS YEAR PAID
OLSOGG, REX SUNY FREDONIA	317 W. MAIN FREDONIA, NY 14063	716-672-8407	90S
OSTERBERG, DONALD SUNY POTSDAM	20 GROVE STREET POTSDAM, NY 13676	315-265-8971 315-267-2261	3 10 30 36 90
OWENS, RANDELL USFWS	17 LAKE ST. OSWEGO, NY 13126	315-343-1401 315-343-3951	3 7 8 13 16 24 30 90
PADILLA, MIGUEL FORDAHAM LAW	15 MARBLE HILL AVE BRONX, NY 10463	212-562-5394	7 8 12 23 31 89
PANEK, FRANK NYS DEC	17 FERN ROAD ROCKY POINT, NY 11778	516-821-0357 516-751-1596	1 16 89
PAPPANTONIOU, ANTON H H LEHMAN COL	BIO SCIENCE LEHMAN COLLEGE BRONX, NY 10468	212-796-1660 212-960-8240	9,10,19 89
PASSE, JONATHAN CORNELL	510 E. SENECA ST. ITHACA, NY 14850	607-277-6404	1,16,30 90S
PEARCE, WILLIAM NYS DEC RET.	BOX 541 CAPE VINCENT, NY 13618	315-654-2833 315-654-2147	3 9 D. HON.
PEARSALL, WEBSTER MAINE DEPT ENV. PRO.	70 ELM ST. GARDINER, MAINE 04345	207-582-6622 207-289-7649	3 8 14 16 21 24 28 90
PERKINS, DAVID CORNELL	FERNOW HALL CORNELL UNIVERSITY ITHACA, NY 14850	607-844-3185 607-255-8231	3,8,9,16,17 90S
PERROTTE, WILLIAM MARIST COLLEGE	BIO. DEPT. MARIST COLLEGE POUGHKEPSIE, NY 12601	914-266-4597 914-471-3240 X 228	3 5 24 89
PETERSON, ALLEN	FORD ROAD, RD#1 OWEGO, NY 13827	607-729-2551 2393	90

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NAME AFFILIATION	ADDRESS	TELEPHONE	INTERESTS YEAR PAID
PETERSON, CLIFFORD CONCORDIA COLLEGE	1 CONCORDIA PLACE BRONXVILLE, NY 10708	914-779-5392 914-337-9300	17 19 36 89
PHILLIPS, ROBERT SUNY ONEONTA	BIO DEPT. SUNY ONEONTA ONEONTA, NY 13820	607-433-2748 607-431-3344	3 9 10 12 15 89
POMEROY, JAMES NYS DEC	R.D. 1, BOX 111 HOUGHTON, NY 14744	716-437-5346 716-372-0645	21 89
PRADDEED, HIRETHOTA SUNY CESF	B-22 SLOCUM HTS. SYRACUSE, NY 13210	315-458-8586	2 10 14 89S
PREALL, RICHARD NYS DEC	NYS DEC 50 WOLF ROAD - RM 518 ALBANY, NY 12233	518-355-0981 518-457-1751	30 89
PREDDICE, TIMOTHY NYS DEC	7235 STEELE AVE EXT GLOVERSVILLE, NY 12078	518-725-7206 518-773-7318	3,8,19,21,28,33 89
PRYE, GARY SUNY ESF	103 DOOLITTLE AVE WATERVILLE, NY 13480	315-841-4659 315-4747741	13 90S
PUCKETT, NORMA SUNY BROCKPORT	114 SIERRA DRIVE ROCHESTER, NY 14616	716-621-4085	3,7,19,24,34,35 90
QUANCE, CARL B NYS DEC	RR #3 BOX 241 ROME, NY 13440	315-339-6363 315-793-2554	28 33 34 90
RACHLIN, JOSEPH LEHMAN COLLEGE	0-85 MORLOT AVENUE FAIRLAWN, NJ 07410	201-791-5165 212-960-8239	3,5,6,10-12,16, 36,37 90
RADLE, EDWARD	721 PLANK ROAD, R.D. 9 CLIFTON PARK, NY 12065	518-371-7519 518-457-6178	2 21 19 90
REITZEL, FLOYD SUNY	3654 EAST MAIN ST RD ATTICA, NY 14011	716-591-2017	2,3, 89S

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NAME AFFILIATION	ADDRESS	TELEPHONE	INTERESTS YEAR PAID
RENYAAN, SAMUEL SUNY	BIOLOGY DEPARTMENT SUNY BROCKPORT BROCKPORT, NY 14420	716-637-6033	2,9,30,36,37 89S
RICHARDSON ALICE ICHTHYOLOGICAL ASSOC	517 WEST MULLIN ST. WATERTOWN, NY 13601	315-785-1956 607-533-8801	90
RICHARDSON, DENISE NYS DEC	225 S CLINTON ST CARTHAGE, NY 13619	315-493-0713 315-785-2262	89
RIFORGIAT, MARK R&S ENVIR. INC.	MATHEWS RD PORTLAND, NY. 14769	716-7924521	21,25,37 90
RINGLER, NEIL SUNY SYRACUSE	19 GETTMAN DRIVE BALDWINSVILLE, NY 13027	315-638-8128 315-470-6770	3 5 9 13 19 36 90
ROBINS, JEFFREY NYS DEC	31 POMEROY STREET CORTLAND, NY 13045	607-756-8137 607-753-3095	16 90
ROUGH, GAYLORD ALFRED UNIVERSITY	88 S MAIN STREET ALFRED, NY 14802	607-587-9161 607-871-2205	3 10 90
SALZ RONALD NYSDEC	MARINE RESOURCES BLDG 40 STONY BROOK NY 11794	516-4744963 516-7517900	16 90
SANFORD, STEPHEN SANFORD'S BAIT FARM	7636 EAST PORT BAY RD WOLCOTT, NY 14590	315-594-8925 SAME	10,34,35 90
SCHARA WILLIAM M.	HC 78 BOX 1154 CASTLE CREEK, NY 13744		90
SCHIAVONE, ALBERT NYS DEC	NYS DEC 317 WASHINGTON STREET WATERTOWN, NY 13601	315-658-2652 315-785-2266	10 14 16 90
SCHLENK, CORNELIA SEA GRANT	SEA GRANT, DUTCHESS HALL SUNY AT STONY BROOK STONY BROOK, NY 11794	516-632-6905	1,16,30 89

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NAME / AFFILIATION	ADDRESS	TELEPHONE	INTERESTS / YEAR PAID
SCHLEYER, RICHARD	88 SOUTHERN DRIVE ROCHESTER, NY 14623	716-385-4864 716-272-0130	7 9 10 13 17 21 22 90
SCHMIDT, ROBERT SIMON'S ROCK COLLEGE	SIMON'S ROCK COLLEGE ALFORD ROAD GRT BARRINGTON MA 01230	518-325-7265 413-528-0771	3 10 12 15 19 30 90
SCHOCH, WILLIAM NYS DEC	BOX 1063 SARANAC LAKE, NY 12983	518-327-3315 518-891-1370	16 21 90
SCHOFIELD, CARL CORNELL UNIVERSITY	CORNELL UNIVERSITY FERNOW HALL ITHACA, NY 14853	607-272-9476 607-255-2001	3 16 34 89
SCHOONMAKER, GARY NIAGARA MOHAWK	NIAGARA MOHAWK POWER CO 300 ERIE BLFD W SYRACUSE, NY 13202	315-673-4652 315-428-6619	21 89
SCOTT, G.ROB NIAGRA MOHAWK	300 ERIE BLVD, WEST SYRACUSE, NY 13202	315-428-6622	1,21,29 89
SEELEY, GEORGE NYS DEC	R.D. 3, BOX 262 DELANSON, NY 12053	518-895-8009 518-457-5430	1 2 89
SHIELDS, THOMAS B CONCORDIA COLL	BOX 510 CONCORDIA COLLEGE BRONXVILLE, NY 10708	914-395-4680	89S
SHUPE, SCOTT D. NIAGRA MOHAWK POW.	4069 RUSTY PINE LANE LIVERPOOL, NY 13090	315-622-0762 315-428-6616	1,7,8,16,23,24 90
SHUPP, BRUCE NYS DEC	278 PINE STREET CHESTERTOWN, NY 12817	518-494-3850 518-457-5420	1 10 16 89
SIMONIN, HOWARD NYS DEC	NYS DEC 8314 FISH HATCHERY ROAD ROME, NY 13440	315-336-3702 315-337-0910	3 24 34 90
SINNOTT, TIMOTHY NYS DEC	62 VICHY DRIVE SARATOGA SPRINGS NY 12866	518-583-0503 518-457-1751	3 16 19 89

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NAME / AFFILIATION	ADDRESS	TELEPHONE	INTERESTS / YEAR PAID
SKINNER, LAWRENCE NYS DEC	40 EDWARDS RD. WYNANTSKILL, NY. 12198	518-283-7661 518-457-1769	25 28 33 89
SMITH, C LAVETT AMER MUSEUM NAT HIST	312 ANDERSON AVENUE CLOSTER, NJ 07624	201-768-2173 212-769-5768	19 90
SMYTHE, A GARRY BIO SONICS, INC	25 LARCHMONT ROAD BUFFALO, NY 14214	716-835-8762 716-833-7888	3 21 29 34 89
SOHACKI, LEONARD SUNY ONEONTA	R.D. 3, BOX 579 COOPERSTOWN, NY 13326	607-547-9424 607-431-3703	24,7,28,36 89
SOULE, NORMAN CSH FISH HATCHERY	P.O. BOX 535 COLD SPRG. HARB, NY 11724	516-692-8731 516-692-6768	2 32 90
SPAGNOLI, JOHN J NYS DEC	115 ELMHURST DRIVE ORCHARD PARK, NY 14127	716-662-0885 716-847-4560	25,28,34 89
SPRINGER, CHRISTINE CORNELL	1026 ELLIS HOLLOW RD. ITHACA, NY 14850	607-273-9205 607-255-3191	33 90S
STANG, DOUGLAS NYSDEC	BOX 5170 FISHER AVE CORTLAND, NY 13045	607-7568430 607-7533095	3,10,16 90
STEWART, DONALD SUNY ESF	256 ILLICK HALL SYRACUSE, NY 13210	315-672-5539 315-470-6924	3 10 13 15 16 19 30 89
STORONSKY, MICHAEL SEAR-BROWN ASSOC.	32 KILMAR STREET ROCHESTER, NY 14621	716-266-1913 716-475-1440	3 10 16 21 22 28 29 34 90
SUTHERLAND, CARY A. SUNY ESF	1435 FENTON ST. LEWISTON, NY 14092	716-754-8503 315-426-8964	2 3 10 16 21 30 32 34 89S
TAORMINA, ANTHONY NYSDEC	108 GLENWOOD LANE PORT JEFFERSON, NY 11777	516-473-1869	21 91

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NAME AFFILIATION	ADDRESS	TELEPHONE	INTERESTS YEAR PAID
THIESING, MARY A. U.S.A. CORPS ENGIN.	8 FRANKLIN AVE APT 4 PEARL RIVER, NY. 10965	914-620-0642 212-579-2562	3,9,10, 90
TREMBATH, WILLIAM SUNY	4104 N. BOSTON RD. EDEN, NY. 14057	716-648-0881 716-673-3375	3 90S
TUTTLE, L RAYMOND NYS ELECTRIC & GAS	STERRY DRIVE, R.D. 1 BOX 281 GREENE, NY 13778	607-656-8702 607-729-2551	10 29 33 34 89
VAAS, C RANDY NYS DEC	NYS DEC 317 WASHINGTON STREET WATERTOWN, NY 13601	315-788-7225 315-785-2246	3,10,16,21 90
VAN DEVALK, TONY CORNELL	5114 SHACKELTON PT. RD. BRIDGEPORT, NY 13030	315-633-5388 315-633-9243	8 89S
VANOFFELEN, HENRY K. CORNELL	1977 DANBY ROAD ITHACA, NY 14853	607-273-5770 607-255-3191	9,13,17 90S
VANVOLKENBURGH,P NYS DEC	NYS DEC SUNY STONY BROOK STONY BROOK, NY 11794	516-567-1738 516-751-7900	1 2 5 11 16 89
VAUGHN, MICHAEL SUNY BROCKPORT	5120 FOX RD RD#2 PALMYRA, NY 14522 315-597-2683		90S
VOILAND, MICHAEL CORNELL	3930 STESSON CIRCLE SYRACUSE, NY. 13215	315-488-6525 607-255-2832	16, 36 89
WARKENTINE, BARBARA LEHMAN COLLEGE	1329 BALCOM AVE. BRONX, NY 10461	212-892-7983 212-960-8239	3 11 12 19 89S
WEDGE, LESLIE NYS DEC	R.D. 1 BOX 543 HOMER, NY 13077	607-749-3292 607-753-3095	3 8-10 13 14 16 90
WELLER, ROBERT SUNY ESF	409 WESTCOTT ST. SYRACUSE, N Y 13210	315-426-8964	89S

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NAME AFFILIATION	ADDRESS	TELEPHONE	INTERESTS YEAR PAID
WERNER, ROBERT SUNY SYRACUSE	R.D. 3, TRACY DRIVE SKANEATELES, NY 13152	315-673-4272 315-470-6804	3 10 14 15 24 89
WIDMER, CARL C NYS DEC	6772 ITALY VALLEY ROAD NAPLES, NY 14512	716-374-5048 716-226-2466	13 16 89
WILKINS, BRUCE CORNELL	FERNOW HALL CORNELL UNIVERSITY ITHACA, NY 14853	607-255-8216 607-255-2162	36 37 89
WILKINSON, MICHAEL NYS DEC	44 PAUL DRIVE AMHERST, NY 14120	 716-847-4550	3 10 13-16 24 89
WINTER, JAMES SUNY FREDONIA	SUNY FREDONIA ENVIRON. RES. CENTER FREDONIA, NY 14063	716-672-2665 716-673-3374	3 16 90
WISNIEWSKI, STEVEN SUNY ESF	116 HOOD AVE.TREET SYRACUSE NY 13208	315-471-1392 315-470-6743	3 7 13 30 90S
WOLFE, MARILYN EXPTL PATHOL LAB	EXPTL PATHOL LAB INC BOX 474 HERNON, VIRGINIA 22070	703-4446579 703-4717060	18 33 90
WOLTMAN, EDWARD NYS DEC	164 ASBURY AVENUE CARLE PLACE, NY 11514	516-869-2102 516-457-9436	4 7 10 14 24 27 34 90
WOOSTER, GREGORY CORNELL UNIVERSITY	AVIAN & AQUA ANIMAL MED CORNELL UNIVERSITY ITHACA, NY 14853	607-272-5274 607-253-3365	2 18 22 30 34 90

ABSTRACTS

CONTRIBUTED PAPERS & POSTERS
1990 Annual Meeting
New York Chapter, American Fisheries Society

EVALUATION OF MONOCLONAL ANTIBODY-BASED ELISA FOR THE DIAGNOSIS OF RENIBACTERIUM SALMONINARUM

Hui-Min Hsu, Paul R. Bowser, and John H. Schachte Jr.
Cornell University, Ithaca

A monoclonal antibody-based ELISA was developed for the diagnosis of bacterial kidney disease (BKD) which can detect a minimum of 0.05 - 0.1 ug/ml of *R. salmoninarum* antigen. During the 1988-89 spawning season, sixty coho salmon (*Oncorhynchus kisutch*), sixty chinook salmon (*O. tshawytscha*) and sixty steelhead trout (*O. mykiss*, Great Lakes rainbow trout) were screened for BKD using the developed ELISA and a direct fluorescent antibody test (FAT). Serum agglutination titers for *R. salmoninarum* were measured to determine any relationship between presence of antigen (*R. salmoninarum* bacterium) and humoral antibody to *R. salmoninarum*. Twelve of the sixty coho salmon, forty-eight of the sixty chinook salmon and six of the sixty steelhead trout were found BKD-positive by ELISA. Only one steelhead trout was found BKD-positive by FAT while none of the coho or chinook salmon were to be BKD-positive. It was concluded that the monoclonal antibody-based ELISA was more sensitive than FAT. Antibody titers of these asymptomatic fish were variable. There was no correlation between the antigen level and the antibody titer.

HIGH EFFICIENCY-LOW COST EGG AND FRY INCUBATION SYSTEMS FOR SMALL EXPERIMENTAL LOTS

Dwight W. Herren, Charles Krueger, and Bernie May
Cornell University, Ithaca

High efficiency-low cost incubations systems were designed for producing small experimental lots of fish. This horizontal design, coupled with tightly fitted egg containers, enhances water flow within each egg chamber which increases oxygenation, cleansing, deployment of egg treatments and ultimately survival.

Egg incubators consist of egg holders and a trough. Holders are constructed from 3" PVC pipe, 3" PVC coupling, and fiberglass window screen. Troughs consist of a section of Plastmo™ round bottom rain gutter with end plates. Twenty 16-unit gutters can be placed in a 4'x8' area. A 16 gutter system can be placed on a wall covering a 7'x8' area, 8" deep. The cost for a 16 gutter system (256 individual treatments) is $325 and requires 30 hours to construct.

Fry incubation system consists of a modified 5 gallon plastic bucket. The drain system uses a 3" PVC standpipe friction fit into a modified PVC toilet flange affixed around a 3.5" hole in the bottom of the bucket. A screened, 4" PVC drain pipe draw tube covers the standpipe. A 20 unit system can be placed in a 4'x8' area. The cost for a 20 circular system is $300 and requires 8 hours to construct.

AN AGGREGATE HISTORICAL COMPARISON OF THE VARIABILITY OF LC_{50} VALUES FOR TWO REFERENCE COMPOUNDS AND EIGHT FRESHWATER SPECIES

W. S. Ewell and R. J. O'Boyle
Eastman Kodak Company, Rochester

The relative merits of Thymol and Sodium Dodecyl ("Lauryl") Sulfate for use as reference compounds (positive controls) in acute aquatic effects testing are evaluated. The LC_{50} values calculated for these two compounds and eight freshwater species as part of an on-going program over a period of seven years are compared through statistical analyses. Routine multispecies exposures to reference compounds are performed in an attempt to monitor changes in inherent sensitivity in each of the aquatic animal colonies maintained for up to a decade within the laboratory. The eight freshwater species exposed as part of this study are: *Pimpephales promelas* (fathead minnow); *Caecidotea intermedia* (pillbug); *Lumbriculus variegatus* (aquatic earthworm); *Dugesia dorotocephala* (flatworm); *Gammarus fasciatus* (sideswimmer); *Planorbella trivolvis* (ramshorn snail); *Daphnia magna*, and *Ceriodaphnia dubia* (both daphnids). The aggregate historical data are examined for shifts in dose-response per species over time, as well as endpoint variability or differences between the two reference compounds within a species.

HABITAT SUITABILITY INDEX CURVES FOR STREAM DWELLING JUVENILE BROOK TROUT IN NORTHERN NEW YORK STATE

Kurt J. Jirka and John Homa, Jr.
Ichthyological Associates, Inc., Lansing

Habitat suitability index curves for juvenile (<100 mm total length) brook trout (*Salvelinus fontinalis*) were developed as part of an instream flow investigation sponsored by Niagara Mohawk Power Corporation at its Beaver River Hydroelectric Project in northern New York State. The habitat variables for which curves were developed include water velocity, water depth, water temperature, and substrate. The curves were developed using the Delphi method, a consensus-generating exercise utilizing a panel of experts on the subject of interest. A literature review on juvenile brook trout habitat use and preference was conducted in conjunction with the Delphi exercise. Information gathered from the literature was compared to the curves generated from the Delphi exercise for points of agreement and disagreement.

In general, the curves developed through the Delphi exercise were in agreement with the literature. Suitable focal velocities for stream-dwelling juvenile brook trout, as defined by the Delphi curves, ranged from 0.00-1.50 ft/s, with an optimal range of 0.20-0.70 ft/s. Suitable water depths ranged from 0.20-3.00 ft, with optimal depths of 0.60-1.33 ft. Water temperature suitable for prolonged juvenile brook trout survival ranged from 0.0-24.0 C. Optimal temperatures were in the 11.0-16.0 C range. Gravel was identified as the most suitable substrate, followed by cobble.

DEVELOPMENT OF HABITAT SUITABILITY INDEX CURVES FOR SELECTED TAXA OF BENTHIC MACROINVERTEBRATES USING THE DELPHI METHOD

Kurt J. Jirka and John Homa, Jr.
Ichthyological Associates, Inc., Lansing

Habitat suitability index curves for six genera of benthic macroinvertebrates and the benthic macroinvertebrate community as a whole were developed as part of an instream flow investigation sponsored by Niagara Mohawk Power Corporation at its Beaver River Hydroelectric Project in northern New York State. The curves for the mayfly genus *Baetis*, the caddisfly genus *Hydropsyche*, and the blackfly genus *Simulium* are presented here. Habitat variables for which curves were developed include water velocity, water depth, and substrate. The curves were developed using the Delphi method, a consensus-generating exercise utilizing a panel of experts on the subject. Curves generated from the Delphi exercise were evaluated by comparison with information in the scientific literature.

In general, the curves developed through the Delphi exercise agreed with information in the literature. Optimum water velocities (within six inches of the substrate) ranged from 1.00-3.50 ft/s for *Baetis*, 1.14-2.45 ft/s for *Hydropsyche*, and 0.80-3.60 ft/s for *Simulium*. Optimum water depths ranged from 0.30-2.00 ft, 0.25-3.00 ft, and 0.2-2.50 ft for *Baetis*, *Hydropsyche*, and *Simulium*, respectively. Cobble was identified as the most suitable substrate for all three genera, followed by boulder. Bedrock was also rated as highly suitable for *Simulium*.

REMEDIAL ACTION PLANNING IN THE GREAT LAKES BASIN: AN OPPORTUNITY FOR FISHERY MANAGEMENT INTERESTS

Betsy Kiernan Landre and Barbara A. Knuth
Cornell University, Ithaca

Remedial Action Planning is a regional approach to planning for the cleanup of the 42 most polluted locations in the Great Lakes Basin. Known as the Areas of Concern, these 42 locations, situated mainly along rivers and in harbors, are recognized for especially poor water quality. Remedial Action Planning is coordinated by the International Joint Commission (IJC), yet the planning is carried out at the local level with the assistance of state, provincial, and, in some cases, local and federal agencies. Two tenets underlie the planning process: an ecosystem approach and broad-based public participation.

Remedial Action Planning stands out among environmental management programs in the Great Lakes Basin as an opportunity for diverse interests to work together in a consensually-based decision-making process to influence remediation of polluted Areas and restore beneficial resource uses of the Lakes. As such, fishery management agencies have a stake in Remedial Action Planning.

A recent survey of Remedial Action Plan (RAP) coordinators in each Area reveals a composite picture of progress to date. Fish communities are highly affected in 86% of the Areas. In 34 cases, efforts have been made to involve fishery groups in the planning process. The ultimate benefits of the involvement of these groups are to the Great Lakes fishery resources.

ICHTHYOLOGY COLLECTION, NEW YORK STATE MUSEUM

Robert A. Daniels
Biological Survey Laboratory, Troy

Museum collections can serve as valuable resources for disciplines as diverse as taxonomy, natural history, toxicology and pathology. The fish collection at the New York State Museum has recently undergone a number of major changes that will, ulitmately, facilitate its use. The entire collection was moved to a new facility with superior storage and laboratory space. Information on the specimens in the collection is currently being transferred to a new data-base-management system, called MUSE. An inventory of the entire collection is finished and the cataloguing process should be completed by early Spring. In this poster, I hope to introduce you to some of the interesting information associated with the collection, some of its strongest features and some of the uses for which the collection can be used. I encourage all of you to familiarize yourself with this collection and make it a part of your research and management programs.

ASPECTS OF THE LIFE HISTORY OF THE COMELY SHINER, *NOTROPIS AMOENUS* (ABBOTT) IN A SOUTHEASTERN NEW YORK STREAM

Mary Anne Thiesing and George Dale
U.S. Army Corps of Engineers
New York District, New York

Data collected on a population of *Notropis amoenus* from the Shawangunk Kill indicate that this species has a number of broad similarities in life history to other *Notropis* species with which it commonly co-occurs. Spawning in *N. amoenus* typically begins later in the season than for other populations of syntopic cyprinids, with recruitment of young of the year fish occurring largely in late August. The post-larval juveniles had a growth coefficient which was not significantly different than 3, indicating isometric growth following recruitment to the population. The overall form of growth for the population, however, is allometric, with $b=2.64 \pm 0.07$, indicating that body form becomes increasingly more slender with age.

Juvenile fish (0+ -1+) select sandy bottomed habitats having a moderately rapid current speed and commonly co-occur with other species. Adults (2+) are more likely to occur in monospecific aggregations in rocky-bottomed riffle habitats. The age of breeding adults was 2+ years; for this population, no older specimens were collected.

Comparisons of feeding habits of groups of *N. amoenus* collected from areas in which this organism is found in association with other species and when it is found alone, indicate that differences in food choice appear to be age related rather than a function of competition. Juveniles feed on a wide variety of prey items, while adults appeared to rely more on benthic items. Seasonal differences in the adult diets, however, indicate that this species is capable of utilizing a wide variety of prey at any age, and that utilization patterns for a given age group vary with season.

CULTURE OF FINGERLING WALLEYE FOR INTRODUCTION INTO LAKE ONTARIO AND POTENTIALLY OTHER APPROPRIATE PUBLIC WATERS

Joseph K. Buttner and David B. MacNeill
SUNY Brockport, Brockport

In 1989 over 85,000 fingerling walleye (Stizostedion vitreum, mainly 35-125 mm TL) were cultured in eastern ponds and introduced into bays and tributaries of Lake Ontario. The walleye enhancement and restoration effort, now in its fourth year, has produced and stocked nearly 190,000 fingerling walleye since 1986. The cooperative effort is possible through the on-going and close collaboration of six angler associations (Black Lake Fish and Game Club, Fairhaven Federation of Sportman's Clubs, Niagara River Angler's Association, Port Bay Improvement Association, Orleans County Federation of Sportman's Club, and Walleyes for Wayne County), the NYS Department of Environmental Conservation, NY Sea Grant, and SUNY Brockport. Members of each angler association provide for the daily maintenance and care of the walleye while they are being cultured in ponds. Four associations followed guidelines closely and experienced survivals >50% of stocked fry. One angler association overstocked their pond and encountered poor water quality due to nutrient runoff into the pond from a nearby dairy farm; survival of stocked fry was <1%. A second angler association failed to eradicate resident fish from ponds before introduction of larval walleye; yields varied between 0% to almost 10% of stocked fry, with best yields from ponds with few or no contaminant fish. The 1989 culture experience demonstrates that novice culturists can culture walleye fingerlings successfully in earthen ponds, that general guidelines developed over the last 3-4 years are effective, and that daily maintenance and good record keeping greatly enhance the likelihood of success. Equally important, preliminary monitoring of stocked bays and tributaries indicates an increased abundance of walleye and anglers are now catching walleye in areas stocked with walleye fingerlings, sites where the fish has been rare or absent for nearly two decades. The project can serve as a template for similar cooperative efforts that target other species and/or other areas.

EXPERIMENTAL TREATMENT OF FURUNCULOSIS WITH THE FLUOROQUINOLONE ENROFLOXACIN (BAYER)

P. R. Bowser, J. H. Schachte, J. G. Babish, and G. A. Wooster
Cornell University, Ithaca

The fluoroquinolones are a relatively new group of manmade antimicrobial compounds that have efficacy against a broad range of both gram negative and gram positive bacterial organisms. Enrofloxacin is a fluoroquinolone manufactured by Bayer that is currently being evaluated for use in a number of animal species, including fish. Pharmacokinetic studies conducted in rainbow trout indicated that the drug was absorbed well after oral administration. Peak concentrations were reached in the serum, liver, kidney, muscle and skin in 6-8 hours. These concentrations were well above mimimum inhibitory concentrations (MIC) measured in the laboratory for a number of bacteria pathogenic to fish. The half-life of the drug was found to be related to water temperature. At 10C the half-life was 47-56 hours, while at 15C it was 39-42 hours. Peak concentrations achieved following administration of a single oral dose were lower at 10C than those measured at 15C.

Field epizootics of furunculosis were identified in which the *Aeromonas salmonicida* isolate was found to be resistant to both Terramycin and Romet-30, the only currently approved compounds for treatment of this disease in fish. Permission was obtained from the U.S. Food and Drug Administration to treat the fish with enrofloxacin. A trial involving Atlantic salmon was unsuccessful. The fish did not feed well, as indicated by observation during the feeding process and from analysis of fish tissues for drug residue. A second trial was conducted in which hybrid brook trout X lake trout were treated. In this case the mortality rate of fish medicated with enrofloxacin did decrease. Tissue concentrations in the medicated fish revealed antimicrobial activity in excess of the MIC's for many fish pathogens.

OPTIMAL PROTOCOLS FOR HYPERTHERMAL AND HYDROSTATIC PRESSURE SHOCK PRODUCTION OF TRIPLOID BROOK AND BROWN TROUT HYBRIDS

Dwight W. Herren, Charles Krueger, and Bernie May
Cornell University, Ithaca

Combinations of two parameters, duration of shock treatment and time of initiation after fertilization, were tested using hydrostatic pressure and hyperthermal shock in the production of intergeneric allo-triploid hybrid trout, (brown trout-*Salmo trutta* X brook trout-*Salvelinus fontinalis*). Reciprocal crosses were made with brook and brown trout as the maternal parent. Ploidy levels were identified using starch gel electrophoresis. Optimal protocols were evaluated on the basis of an efficiency index, (EI).

EI=% survival to hatch x % triploidy conversion x 100.

The optimal protocol for a hydrostatic pressure shock of 7000 psi was a duration of two minutes beginning 20 minutes post-activation for either maternal parent cross. Optimum hyperthermal shock (29°C) for maternal brook trout cross occurred for a duration of ten minutes beginning ten minutes post-activation. For maternal brown trout cross, the optimum hyperthermal shock extended for twenty minutes beginning ten minutes post-activation. The maximum EI value was 91% for a single pair mating with a brown trout female using hyperthermal shock.

Applications to fish management and aquaculture will be discussed.

A COMPARISON OF RECOVERY, GROWTH, MOVEMENT, AND DISTRIBUTION OF YOUNG-OF-YEAR ASSINICA AND TEMISCAMIE STRAIN BROOK TROUT STOCKED IN SMALL STREAMS

Henry K. VanOffelen, Charles C. Krueger, and Carl L. Schofield
Cornell University, Ithaca

Identification and understanding of differences among brook trout strains is needed for effective strain management. In 1989, a study was conducted to compare performance and behavior of Assinica and Temiscamie strain brook trout when stocked in streams. Two short term and one long term field trials were conducted in Laramie Inlet. Two short term field trials were conducted in a Woods Lake tributary. No consistent large differences in recovery or growth were found between the strains at either study area. Consistent larger differences were found in the initial movement and final distribution of the strains in Laramie Inlet. Distribution and movement of trout in Woods Lake Inlet was not evaluated. Approximately, four Temiscamie trout to one Assinica trout moved downstream immediately after stocking Laramie Inlet. Significantly more Assinica trout than Temiscamie trout were found in upstream sections of Laramie Inlet and significantly more Temiscamie trout than Assinica trout were found in the downstream sections of Laramie Inlet. These results emphasize the need for critical comparisons of the performance and behavior of strains in order to implement effective strain management programs.

THE ROLE OF VEGETATION DENSITY AND STRUCTURE IN THE SELECTION OF REFUGIA BY JUVENILE SUNFISH

Amy E. Kahn and Robert G. Werner
SUNY College of Environmental Science & Forestry, Syracuse

Vegetative structure and density were examined experimentally to determine their influence on the distribution of juvenile, 25mm to 70mm, bluegill sunfish (Lepomis macrochirus) searching for refuge from predators. This information will aid fishery managers and lake associations in resolving management conflicts over plant control methods. We looked at percent cover and stem density using artificial ponds and vegetation to eliminate the effect of foraging influences. Preliminary results are in agreement with those published by Savino & Stein (1982) and Gotceitas & Colgan (1987).

In an experiment observing the distribution of juvenile bluegills in vegetation patch densities of 0, 50, 100, 200 stems/m^2, the largest numbers of fish were consistently found in areas of highest plant density. This trend was most significant in the pools containing broad-leafed pondweed, as opposed to eelgrass or coontail. When a predator, largemouth bass (Micropterus salmoides), was added to each pool the bluegills no longer showed any preference for a particular plant density. Rather than hiding in the thickest vegetation, they appeared to use schooling behavior as a defense. This change in behavior is likely due to the lack of adequate protection from the available vegetation. When the experiment was repeated with higher plant densities, bluegills effectively used the 1000 stem/m^2 as a refuge from the bass. An additional experiment entailed varying plant type at a constant stem density to determine whether dense branch structure, measured as percent cover, also influences bluegill choice of refugia.

USING MITOCHONDRIAL DNA FOR STOCK IDENTIFICATION OF LAKE TROUT

Peter M. Grewe, Charles Krueger, Ellen Marsden,
Charles Aquadro, and Bernie May
Cornell University, Ithaca

Mitochondrial DNA was purified from 480 lake trout (*Salvelinus namaycush*) representing six strains of Great Lake's origin (Clearwater, Jenny, Killala, Manitou, Seneca, and Superior) currently being stocked into Lake Ontario. Four restriction enzymes (Ava I, Bam HI, Hinf I, and Taq I) were then used to assess relative mtDNA haplotype frequency differences among these six lake trout strains. The six strains of lake trout were characterized by dramatically different frequencies of their mtDNA haplotypes. Simulated lake trout mixtures were then created using the frequencies of the mtDNA haplotypes observed in the adult populations. The mtDNA haplotype frequencies of the simulated mixtures were then compared to the haplotype frequencies observed in two year classes of naturally produced lake trout fry captured from Stony Island reef in Lake Ontario. The comparisons indicated that the Seneca Lake strain had contributed to >50% of the observed progeny of both year classes. Each fry was also examined for variants at 18 protein encoding loci. The protein data was entered into a program which used the maximum likelihood method and baseline data collected from an earlier study to estimate strain contribution to the two year classes of naturally produced fry. The protein data also indicated that >50% of the progeny of both year classes had arisen from Seneca Lake strain parents. These results indicated that mitochondrial DNA markers have significant potential for the discrimination of lake trout strains.

ANGLERS' ATTITUDES AND BEHAVIORS REGARDING THE NEW YORK STATE FISH CONSUMPTION HEALTH ADVISORY FOR LAKE ONTARIO: A RISK COMMUNICATION PERSPECTIVE IN FISHERY MANAGEMENT

Christine M. Springer and Barbara A. Knuth
Cornell University, Ithaca

Quantifying and evaluating the human aspect of a sportfishery enables a communication strategy responsive to public needs and fishery management objectives to be designed and implemented. One example of the usefulness of collecting sociological data is in the case of the Lake Ontario sportfishery, which has been affected by chemical contaminants for over twenty years, and which currently has a fish consumption health advisory in effect for some species of fish. We created and tested a fishery risk communication planning model in order to develop a risk communication strategy for a fish consumption health advisory designed to meet the needs of Lake Ontario anglers and fishery managers.

Opinion leaders from organized recreational angling groups and charter boat associations, who constitute two segments of active and involved Lake Ontario anglers, were surveyed by mail. A concurrent statewide angler survey allowed comparisons between opinion leaders and a random selection of statewide anglers. The opinion leaders survey assessed the following factors in our risk communication model: motivations for fishing, fishing behavior, fish cleaning and cooking practices, awareness of and attitude toward the health advisory, behavioral changes resulting from awareness of the advisory, socioeconomic status, and communication behavior.

We characterized the Lake Ontario opinion leaders with respect to fishing involvement and attitudes toward the health advisory, and we quantitatively assessed the fisheries communication model.

ANGLER SATISFACTION: DETERMINANTS AND IMPLICATIONS ON ONEIDA LAKE, NEW YORK

Jonathan M. Passe
Ithaca, New York

Effective fishery management programs produce multiple benefits for resource enhancement and angler use and enjoyment. One measure of angler benefits is satisfaction with the fishing experience. Management strategies aimed at enhancing satisfaction should be based on an understanding of the determinants of satisfactions and expectations among anglers. The objectives of this study were: 1) to examine angler reaction to fishing conditions on Oneida Lake, New York and 2) to determine how angler characteristics influenced trip satisfaction. In June and July, 1989, 389 recreational anglers were surveyed at two public boat access sites on Oneida Lake.

Two-thirds of anglers surveyed felt their trip met with their expectations. The majority (73.5%) were either satisfied or very satisfied with their trip; 12% were neutral; and 14.5% were either dissatisfied or very dissatisfied.

Fishing-related factors were the primary determinants of trip satisfaction for 54% of anglers surveyed. Other anglers identified primary determinants of satisfaction as weather conditions (18%); general experience enjoyment (18%); environmental quality (4%); comraderie/company (2%); and mechanical factors (2%).

For anglers catching fish, satisfaction increased with increasing catch. Anglers who did not catch fish were more satisfied than those anglers catching only one fish. The proportion of anglers whose trip expectations were met increased with the number of fish caught. Satisfied and very satisfied anglers fished longer than did dissatisfied and very dissatisfied anglers.

Average satisfaction (between neutral and satisfied) did not vary significantly by age, nor by the year anglers first fished Oneida Lake, with the exception of anglers who first fished the lake prior to 1965 (on average more satisfied) and anglers who first fished Oneida in 1986 (on average less satisfied). The number of anticipated future trips to Oneida varied slightly with current trip satisfaction.

The results of this study suggest certain potential strategies for increasing angler satisfaction in the Oneida Lake fishery. Making more fish available for harvest may serve to increase angler satisfaction. Lower average satisfaction for anglers first fishing Oneida later than 1985 may suggest that these anglers are not using the lake to its full potential as long-time, higher satisfaction anglers are. An education program, discussing how best to use Oneida's resources may be useful in helping to provide these anglers with more satisfying experiences.

SPAWNING ECOLOGY OF THE NORTHERN PIKE (ESOX LUCIUS) AND MUSKELUNGE (ESOX MASQUINONGY) OF THE ST. LAWRENCE RIVER

John Farrell
Rochester, New York

Recent studies of naturally reproducing esocids in the St. Lawrence River emphasize the identification and protection of spawning habitat. Probable muskellunge spawning grounds have been identified through trapnetting during the spring spawning run and monitoring movements through radiotelemetry. The present study was targeted to characterize spawning habitat utilized by both muskellunge and northern pike.

The main objectives for the study were to recover naturally fertilized eggs and determine their viability at the time of collection, to collect information on physical characteristics of egg broadcast areas including depth, temperature regime, dominant vegetative types, and substrate types, and to determine the extent of spatial and temporal overlap between northern pike and muskellunge egg deposition.

Five egg collection methods were used, an improved egg basket proved to be most effective. Egg collection baskets were used in Point Marguerite Marsh, near Alexandria Bay from 19 April to 12 June 1989.

A total of 123 northern pike eggs were collected on fifteen of sixteen fixed sampling stations, and 102 muskellunge eggs were collected on nine of the stations. A partial spatial and temporal overlap in egg deposition of muskellunge and northern pike was demonstrated in Point Marguerite Marsh.

Over all sampling methods and sites sampled 76.8 percent of northern pike eggs, and 71.3 percent of muskellunge eggs were viabile at the time of collection.

RESPONCE OF LAKE TROUT TO LIMING IN AN ADIRONDACK LAKE

Christopher J. Keleher and Carl Schofield
Thendara, New York

The lake trout (Salvelinus namaycush) population of Little Simon Pond, located in the Tupper Lake region of Adirondack State Park, was monitered before, during, and after liming. Previous to liming the pH in Little Simon was low relative to other Adirondack lakes containing lake trout. The population had exhibited poor recruitment with little evidence of natural reproduction. Trapnetting catches were too low to determine population size. Preliming bioassays with juvenile lake trout showed a 90% mortality rate. Following liming recruitment has improved. The catch per unit effort in trapnets has increased. Post liming bioassays showed 100% survival.

ALEWIFE PREDATION, TROPHIC LEVELS AND WATER QUALITY OF CONESUS LAKE

Norma Lee Puckett
Rochester, New York

Conesus Lake has experienced changes within its trophic levels. While walleye continued to decline in the 1970's, an exotic was introduced during the late 1970's. This exotic is *Alosa pseudoharengus*, commonly known as the alewife. The NYSDEC began stocking 3-5 cm walleye fingerlings at a rate of 65,000 per year over the years 1985 through 1988. It was hoped that adding this top level predator would control the alewife population.

I sampled Conesus Lake over a six month period in the spring and summer of 1988. Results of this sampling indicate that the alewife had declined by 41% from 1985 to 1988. This decline is attributed to a decrease in the forage base of the alewife. Zooplankton decreased in weighted mean size from 0.60 mm in 1972-73 (pre-alewife years) to 0.23 mm in 1985 and 0.18 mm in 1988. *Daphnia pulex* has not been sampled since 1983 and *Diaptomus* species were not sampled in 1988. Two littoral species were found within the pelagic waters in 1988. They are *Eucyclops agilis* and *Macrocyclops albidus*. Alewife stomach analyses revealed that *Mesocyclops edax* was consumed 99.25% of the time.

Water quality has not improved in Conesus Lake. Turbidity, chlorophyll *a*, pH and soluble reactive phosphorous increased significantly ($P<0.022$) within the epilimnion when compared to 1985 data.

GENETIC IDENTIFICATION AND COMPARISON OF WILD BROOK TROUT IN NEW YORK STATE

David L. Perkins, Jr., Charles C. Krueger, and Bernie May
Cornell University, Ithaca

The purpose of this study was to genetically identify wild brook trout populations throughout the state of New York. Brook trout (*Salvelinus fontinalis*) collected from 26 lakes and streams within New York State were analyzed electrophoretically for genetic variability at 75-85 enzyme loci. Statistically significant genetic differences were found between all pairwise comparisons of populations. Cluster analysis of genetic distances identified three major groups of brook trout associated with major river drainages. Information on the last glacial retreat in New York explains most of the distribution of genetic variability observed. The results provide information fundamental to the conservation and protection of wild brook trout in New York.

STOCKED LAKE TROUT DEPOSIT EGGS NON-RANDOMLY WITH RESPECT TO SUBSTRATE TYPE

J. Ellen Marsden and Charles C. Krueger
Cornell University, Ithaca

Since 1958, an intensive effort has been underway by the U.S. and Canada to restore depleted and extinct populations of lake trout in the Great Lakes. Stocking of lake trout in combination with lamprey control has established large populations of adults in all of the lakes except Lake Erie. However, evidence of sizeable natural reproduction by stocked fish is still limited. Until recently, efficient techniques for assessing lake trout reproduction have not been available. In addition, most of the historical information on lake trout reproductive behavior comes from observations in small, inland lakes. In the Great Lakes, we do not yet know (1) the extent of available spawning habitat, (2) whether the available spawning habitat is still capable of sustaining egg incubation, or (3) whether stocked fish from various hatchery and wild sources can find, recognize, and deposit eggs on appropriate spawning sites. We used a new technique for capturing lake trout eggs during spawning to assess whether stocked lake trout spawn on historic spawning sites, and whether they deposit eggs randomly with respect to substrate size. Egg traps were deployed on four types of substrate on a historic spawning reef near Stony Island in Lake Ontario. Eggs were captured primarily on a single substrate type, comprised of large rubble with deep interstitial spaces, and associated with steep contour. Observations using SCUBA indicated that eggs located in other areas were subjected to movement by currents, and were vulnerable to predation. Our results suggest that stocked lake trout select spawning substrate on Stony Island reef which can support successful egg incubation. These observations and techniques are being applied elsewhere in the Great Lakes to assess lake trout spawning. Information about the extent of successful spawning by lake trout will provide information to assist the achievement of the rehabilitation goal.

ABSTRACTS

CONTRIBUTED PAPERS & POSTERS
1990 Annual Meeting
New York Chapter, American Fisheries Society

NEW YORK CHAPTER
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AMERICAN FISHERIES SOCIETY

EVALUATION OF MONOCLONAL ANTIBODY-BASED ELISA FOR THE DIAGNOSIS OF RENIBACTERIUM SALMONINARUM

Hui-Min Hsu, Paul R. Bowser, and John H. Schachte Jr.
Cornell University, Ithaca

A monoclonal antibody-based ELISA was developed for the diagnosis of bacterial kidney disease (BKD) which can detect a minimum of 0.05 - 0.1 ug/ml of *R. salmoninarum* antigen. During the 1988-89 spawning season, sixty coho salmon (*Oncorhynchus kisutch*), sixty chinook salmon (*O. tshawytscha*) and sixty steelhead trout (*O. mykiss*, Great Lakes rainbow trout) were screened for BKD using the developed ELISA and a direct fluorescent antibody test (FAT). Serum agglutination titers for *R. salmoninarum* were measured to determine any relationship between presence of antigen (*R. salmoninarum* bacterium) and humoral antibody to *R. salmoninarum*. Twelve of the sixty coho salmon, forty-eight of the sixty chinook salmon and six of the sixty steelhead trout were found BKD-positive by ELISA. Only one steelhead trout was found BKD-positive by FAT while none of the coho or chinook salmon were to be BKD-positive. It was concluded that the monoclonal antibody-based ELISA was more sensitive than FAT. Antibody titers of these asymptomatic fish were variable. There was no correlation between the antigen level and the antibody titer.

HIGH EFFICIENCY-LOW COST EGG AND FRY INCUBATION SYSTEMS FOR SMALL EXPERIMENTAL LOTS

Dwight W. Herren, Charles Krueger, and Bernie May
Cornell University, Ithaca

High efficiency-low cost incubations systems were designed for producing small experimental lots of fish. This horizontal design, coupled with tightly fitted egg containers, enhances water flow within each egg chamber which increases oxygenation, cleansing, deployment of egg treatments and ultimately survival.

Egg incubators consist of egg holders and a trough. Holders are constructed from 3" PVC pipe, 3" PVC coupling, and fiberglass window screen. Troughs consist of a section of Plastmo™ round bottom rain gutter with end plates. Twenty 16-unit gutters can be placed in a 4'x8' area. A 16 gutter system can be placed on a wall covering a 7'x8' area, 8" deep. The cost for a 16 gutter system (256 individual treatments) is $325 and requires 30 hours to construct.

Fry incubation system consists of a modified 5 gallon plastic bucket. The drain system uses a 3" PVC standpipe friction fit into a modified PVC toilet flange affixed around a 3.5" hole in the bottom of the bucket. A screened, 4" PVC drain pipe draw tube covers the standpipe. A 20 unit system can be placed in a 4'x8' area. The cost for a 20 circular system is $300 and requires 8 hours to construct.

AN AGGREGATE HISTORICAL COMPARISON OF THE VARIABILITY OF LC_{50} VALUES FOR TWO REFERENCE COMPOUNDS AND EIGHT FRESHWATER SPECIES

W. S. Ewell and R. J. O'Boyle
Eastman Kodak Company, Rochester

The relative merits of Thymol and Sodium Dodecyl ("Lauryl") Sulfate for use as reference compounds (positive controls) in acute aquatic effects testing are evaluated. The LC_{50} values calculated for these two compounds and eight freshwater species as part of an on-going program over a period of seven years are compared through statistical analyses. Routine multispecies exposures to reference compounds are performed in an attempt to monitor changes in inherent sensitivity in each of the aquatic animal colonies maintained for up to a decade within the laboratory. The eight freshwater species exposed as part of this study are: Pimpephales promelas (fathead minnow); Caecidotea intermedia (pillbug); Lumbriculus variegatus (aquatic earthworm); Dugesia dorotocephala (flatworm); Gammarus fasciatus (sideswimmer); Planorbella trivolvis (ramshorn snail); Daphnia magna, and Ceriodaphnia dubia (both daphnids). The aggregate historical data are examined for shifts in dose-response per species over time, as well as endpoint variability or differences between the two reference compounds within a species.

HABITAT SUITABILITY INDEX CURVES FOR STREAM DWELLING JUVENILE BROOK TROUT IN NORTHERN NEW YORK STATE

Kurt J. Jirka and John Homa, Jr.
Ichthyological Associates, Inc., Lansing

Habitat suitability index curves for juvenile (<100 mm total length) brook trout (Salvelinus fontinalis) were developed as part of an instream flow investigation sponsored by Niagara Mohawk Power Corporation at its Beaver River Hydroelectric Project in northern New York State. The habitat variables for which curves were developed include water velocity, water depth, water temperature, and substrate. The curves were developed using the Delphi method, a consensus-generating exercise utilizing a panel of experts on the subject of interest. A literature review on juvenile brook trout habitat use and preference was conducted in conjunction with the Delphi exercise. Information gathered from the literature was compared to the curves generated from the Delphi exercise for points of agreement and disagreement.

In general, the curves developed through the Delphi exercise were in agreement with the literature. Suitable focal velocities for stream-dwelling juvenile brook trout, as defined by the Delphi curves, ranged from 0.00-1.50 ft/s, with an optimal range of 0.20-0.70 ft/s. Suitable water depths ranged from 0.20-3.00 ft, with optimal depths of 0.60-1.33 ft. Water temperature suitable for prolonged juvenile brook trout survival ranged from 0.0-24.0 C. Optimal temperatures were in the 11.0-16.0 C range. Gravel was identified as the most suitable substrate, followed by cobble.

DEVELOPMENT OF HABITAT SUITABILITY INDEX CURVES FOR SELECTED TAXA OF BENTHIC MACROINVERTEBRATES USING THE DELPHI METHOD

Kurt J. Jirka and John Homa, Jr.
Ichthyological Associates, Inc., Lansing

Habitat suitability index curves for six genera of benthic macroinvertebrates and the benthic macroinvertebrate community as a whole were developed as part of an instream flow investigation sponsored by Niagara Mohawk Power Corporation at its Beaver River Hydroelectric Project in northern New York State. The curves for the mayfly genus *Baetis*, the caddisfly genus *Hydropsyche*, and the blackfly genus *Simulium* are presented here. Habitat variables for which curves were developed include water velocity, water depth, and substrate. The curves were developed using the Delphi method, a consensus-generating exercise utilizing a panel of experts on the subject. Curves generated from the Delphi exercise were evaluated by comparison with information in the scientific literature.

In general, the curves developed through the Delphi exercise agreed with information in the literature. Optimum water velocities (within six inches of the substrate) ranged from 1.00-3.50 ft/s for *Baetis*, 1.14-2.45 ft/s for *Hydropsyche*, and 0.80-3.60 ft/s for *Simulium*. Optimum water depths ranged from 0.30-2.00 ft, 0.25-3.00 ft, and 0.2-2.50 ft for *Baetis*, *Hydropsyche*, and *Simulium*, respectively. Cobble was identified as the most suitable substrate for all three genera, followed by boulder. Bedrock was also rated as highly suitable for *Simulium*.

REMEDIAL ACTION PLANNING IN THE GREAT LAKES BASIN: AN OPPORTUNITY FOR FISHERY MANAGEMENT INTERESTS

Betsy Kiernan Landre and Barbara A. Knuth
Cornell University, Ithaca

Remedial Action Planning is a regional approach to planning for the cleanup of the 42 most polluted locations in the Great Lakes Basin. Known as the Areas of Concern, these 42 locations, situated mainly along rivers and in harbors, are recognized for especially poor water quality. Remedial Action Planning is coordinated by the International Joint Commission (IJC), yet the planning is carried out at the local level with the assistance of state, provincial, and, in some cases, local and federal agencies. Two tenets underlie the planning process: an ecosystem approach and broad-based public participation.

Remedial Action Planning stands out among environmental management programs in the Great Lakes Basin as an opportunity for diverse interests to work together in a consensually-based decision-making process to influence remediation of polluted Areas and restore beneficial resource uses of the Lakes. As such, fishery management agencies have a stake in Remedial Action Planning.

A recent survey of Remedial Action Plan (RAP) coordinators in each Area reveals a composite picture of progress to date. Fish communities are highly affected in 86% of the Areas. In 34 cases, efforts have been made to involve fishery groups in the planning process. The ultimate benefits of the involvement of these groups are to the Great Lakes fishery resources.

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Mary Anne Thiesing and George Dale
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Data collected on a population of *Notropis amoenus* from the Shawangunk Kill indicate that this species has a number of broad similarities in life history to other *Notropis* species with which it commonly co-occurs. Spawning in *N. amoenus* typically begins later in the season than for other populations of syntopic cyprinids, with recruitment of young of the year fish occurring largely in late August. The post-larval juveniles had a growth coefficient which was not significantly different than 3, indicating isometric growth following recruitment to the population. The overall form of growth for the population, however, is allometric, with $b=2.64 \pm 0.07$, indicating that body form becomes increasingly more slender with age.

Juvenile fish (0+ -1+) select sandy bottomed habitats having a moderately rapid current speed and commonly co-occur with other species. Adults (2+) are more likely to occur in monospecific aggregations in rocky-bottomed riffle habitats. The age of breeding adults was 2+ years; for this population, no older specimens were collected.

Comparisons of feeding habits of groups of *N. amoenus* collected from areas in which this organism is found in association with other species and when it is found alone, indicate that differences in food choice appear to be age related rather than a function of competition. Juveniles feed on a wide variety of prey items, while adults appeared to rely more on benthic items. Seasonal differences in the adult diets, however, indicate that this species is capable of utilizing a wide variety of prey at any age, and that utilization patterns for a given age group vary with season.

CULTURE OF FINGERLING WALLEYE FOR INTRODUCTION INTO LAKE ONTARIO AND POTENTIALLY OTHER APPROPRIATE PUBLIC WATERS

Joseph K. Buttner and David B. MacNeill
SUNY Brockport, Brockport

In 1989 over 85,000 fingerling walleye (Stizostedion vitreum, mainly 35-125 mm TL) were cultured in eastern ponds and introduced into bays and tributaries of Lake Ontario. The walleye enhancement and restoration effort, now in its fourth year, has produced and stocked nearly 190,000 fingerling walleye since 1986. The cooperative effort is possible through the on-going and close collaboration of six angler associations (Black Lake Fish and Game Club, Fairhaven Federation of Sportman's Clubs, Niagara River Angler's Association, Port Bay Improvement Association, Orleans County Federation of Sportman's Club, and Walleyes for Wayne County), the NYS Department of Environmental Conservation, NY Sea Grant, and SUNY Brockport. Members of each angler association provide for the daily maintenance and care of the walleye while they are being cultured in ponds. Four associations followed guidelines closely and experienced survivals >50% of stocked fry. One angler association overstocked their pond and encountered poor water quality due to nutrient runoff into the pond from a nearby dairy farm; survival of stocked fry was <1%. A second angler association failed to eradicate resident fish from ponds before introduction of larval walleye; yields varied between 0% to almost 10% of stocked fry, with best yields from ponds with few or no contaminant fish. The 1989 culture experience demonstrates that novice culturists can culture walleye fingerlings successfully in earthen ponds, that general guidelines developed over the last 3-4 years are effective, and that daily maintenance and good record keeping greatly enhance the likelihood of success. Equally important, preliminary monitoring of stocked bays and tributaries indicates an increased abundance of walleye and anglers are now catching walleye in areas stocked with walleye fingerlings, sites where the fish has been rare or absent for nearly two decades. The project can serve as a template for similar cooperative efforts that target other species and/or other areas.

EXPERIMENTAL TREATMENT OF FURUNCULOSIS WITH THE FLUOROQUINOLONE ENROFLOXACIN (BAYER)

P. R. Bowser, J. H. Schachte, J. G. Babish, and G. A. Wooster
Cornell University, Ithaca

The fluoroquinolones are a relatively new group of manmade antimicrobial compounds that have efficacy against a broad range of both gram negative and gram positive bacterial organisms. Enrofloxacin is a fluoroquinolone manufactured by Bayer that is currently being evaluated for use in a number of animal species, including fish. Pharmacokinetic studies conducted in rainbow trout indicated that the drug was absorbed well after oral administration. Peak concentrations were reached in the serum, liver, kidney, muscle and skin in 6-8 hours. These concentrations were well above mimimum inhibitory concentrations (MIC) measured in the laboratory for a number of bacteria pathogenic to fish. The half-life of the drug was found to be related to water temperature. At 10C the half-life was 47-56 hours, while at 15C it was 39-42 hours. Peak concentrations achieved following administration of a single oral dose were lower at 10C than those measured at 15C.

Field epizootics of furunculosis were identified in which the *Aeromonas salmonicida* isolate was found to be resistant to both Terramycin and Romet-30, the only currently approved compounds for treatment of this disease in fish. Permission was obtained from the U.S. Food and Drug Administration to treat the fish with enrofloxacin. A trial involving Atlantic salmon was unsuccessful. The fish did not feed well, as indicated by observation during the feeding process and from analysis of fish tissues for drug residue. A second trial was conducted in which hybrid brook trout X lake trout were treated. In this case the mortality rate of fish medicated with enrofloxacin did decrease. Tissue concentrations in the medicated fish revealed antimicrobial activity in excess of the MIC's for many fish pathogens.

OPTIMAL PROTOCOLS FOR HYPERTHERMAL AND HYDROSTATIC PRESSURE SHOCK PRODUCTION OF TRIPLOID BROOK AND BROWN TROUT HYBRIDS

Dwight W. Herren, Charles Krueger, and Bernie May
Cornell University, Ithaca

Combinations of two parameters, duration of shock treatment and time of initiation after fertilization, were tested using hydrostatic pressure and hyperthermal shock in the production of intergeneric allo-triploid hybrid trout, (brown trout-*Salmo trutta* X brook trout-*Salvelinus fontinalis*). Reciprocal crosses were made with brook and brown trout as the maternal parent. Ploidy levels were identified using starch gel electrophoresis. Optimal protocols were evaluated on the basis of an efficiency index, (EI).

EI=% survival to hatch x % triploidy conversion x 100.

The optimal protocol for a hydrostatic pressure shock of 7000 psi was a duration of two minutes beginning 20 minutes post-activation for either maternal parent cross. Optimum hyperthermal shock (29°C) for maternal brook trout cross occurred for a duration of ten minutes beginning ten minutes post-activation. For maternal brown trout cross, the optimum hyperthermal shock extended for twenty minutes beginning ten minutes post-activation. The maximum EI value was 91% for a single pair mating with a brown trout female using hyperthermal shock.

Applications to fish management and aquaculture will be discussed.

A COMPARISON OF RECOVERY, GROWTH, MOVEMENT, AND DISTRIBUTION OF YOUNG-OF-YEAR ASSINICA AND TEMISCAMIE STRAIN BROOK TROUT STOCKED IN SMALL STREAMS

Henry K. VanOffelen, Charles C. Krueger, and Carl L. Schofield
Cornell University, Ithaca

Identification and understanding of differences among brook trout strains is needed for effective strain management. In 1989, a study was conducted to compare performance and behavior of Assinica and Temiscamie strain brook trout when stocked in streams. Two short term and one long term field trials were conducted in Laramie Inlet. Two short term field trials were conducted in a Woods Lake tributary. No consistent large differences in recovery or growth were found between the strains at either study area. Consistent larger differences were found in the initial movement and final distribution of the strains in Laramie Inlet. Distribution and movement of trout in Woods Lake Inlet was not evaluated. Approximately, four Temiscamie trout to one Assinica trout moved downstream immediately after stocking Laramie Inlet. Significantly more Assinica trout than Temiscamie trout were found in upstream sections of Laramie Inlet and significantly more Temiscamie trout than Assinica trout were found in the downstream sections of Laramie Inlet. These results emphasize the need for critical comparisons of the performance and behavior of strains in order to implement effective strain management programs.

THE ROLE OF VEGETATION DENSITY AND STRUCTURE IN THE SELECTION OF REFUGIA BY JUVENILE SUNFISH

Amy E. Kahn and Robert G. Werner
SUNY College of Environmental Science & Forestry, Syracuse

Vegetative structure and density were examined experimentally to determine their influence on the distribution of juvenile, 25mm to 70mm, bluegill sunfish (*Lepomis macrochirus*) searching for refuge from predators. This information will aid fishery managers and lake associations in resolving management conflicts over plant control methods. We looked at percent cover and stem density using artificial ponds and vegetation to eliminate the effect of foraging influences. Preliminary results are in agreement with those published by Savino & Stein (1982) and Gotceitas & Colgan (1987).

In an experiment observing the distribution of juvenile bluegills in vegetation patch densities of 0, 50, 100, 200 stems/m^2, the largest numbers of fish were consistently found in areas of highest plant density. This trend was most significant in the pools containing broad-leafed pondweed, as opposed to eelgrass or coontail. When a predator, largemouth bass (*Micropterus salmoides*), was added to each pool the bluegills no longer showed any preference for a particular plant density. Rather than hiding in the thickest vegetation, they appeared to use schooling behavior as a defense. This change in behavior is likely due to the lack of adequate protection from the available vegetation. When the experiment was repeated with higher plant densities, bluegills effectively used the 1000 stem/m^2 as a refuge from the bass. An additional experiment entailed varying plant type at a constant stem density to determine whether dense branch structure, measured as percent cover, also influences bluegill choice of refugia.

USING MITOCHONDRIAL DNA FOR STOCK IDENTIFICATION OF LAKE TROUT

Peter M. Grewe, Charles Krueger, Ellen Marsden,
Charles Aquadro, and Bernie May
Cornell University, Ithaca

Mitochondrial DNA was purified from 480 lake trout (*Salvelinus namaycush*) representing six strains of Great Lake's origin (Clearwater, Jenny, Killala, Manitou, Seneca, and Superior) currently being stocked into Lake Ontario. Four restriction enzymes (Ava I, Bam HI, Hinf I, and Taq I) were then used to assess relative mtDNA haplotype frequency differences among these six lake trout strains. The six strains of lake trout were characterized by dramatically different frequencies of their mtDNA haplotypes. Simulated lake trout mixtures were then created using the frequencies of the mtDNA haplotypes observed in the adult populations. The mtDNA haplotype frequencies of the simulated mixtures were then compared to the haplotype frequencies observed in two year classes of naturally produced lake trout fry captured from Stony Island reef in Lake Ontario. The comparisons indicated that the Seneca Lake strain had contributed to >50% of the observed progeny of both year classes. Each fry was also examined for variants at 18 protein encoding loci. The protein data was entered into a program which used the maximum likelihood method and baseline data collected from an earlier study to estimate strain contribution to the two year classes of naturally produced fry. The protein data also indicated that >50% of the progeny of both year classes had arisen from Seneca Lake strain parents. These results indicated that mitochondrial DNA markers have significant potential for the discrimination of lake trout strains.

ANGLERS' ATTITUDES AND BEHAVIORS REGARDING THE NEW YORK STATE FISH CONSUMPTION HEALTH ADVISORY FOR LAKE ONTARIO: A RISK COMMUNICATION PERSPECTIVE IN FISHERY MANAGEMENT

Christine M. Springer and Barbara A. Knuth
Cornell University, Ithaca

Quantifying and evaluating the human aspect of a sportfishery enables a communication strategy responsive to public needs and fishery management objectives to be designed and implemented. One example of the usefulness of collecting sociological data is in the case of the Lake Ontario sportfishery, which has been affected by chemical contaminants for over twenty years, and which currently has a fish consumption health advisory in effect for some species of fish. We created and tested a fishery risk communication planning model in order to develop a risk communication strategy for a fish consumption health advisory designed to meet the needs of Lake Ontario anglers and fishery managers.

Opinion leaders from organized recreational angling groups and charter boat associations, who constitute two segments of active and involved Lake Ontario anglers, were surveyed by mail. A concurrent statewide angler survey allowed comparisons between opinion leaders and a random selection of statewide anglers. The opinion leaders survey assessed the following factors in our risk communication model: motivations for fishing, fishing behavior, fish cleaning and cooking practices, awareness of and attitude toward the health advisory, behavioral changes resulting from awareness of the advisory, socioeconomic status, and communication behavior.

We characterized the Lake Ontario opinion leaders with respect to fishing involvement and attitudes toward the health advisory, and we quantitatively assessed the fisheries communication model.

ANGLER SATISFACTION: DETERMINANTS AND IMPLICATIONS ON ONEIDA LAKE, NEW YORK

Jonathan M. Passe
Ithaca, New York

Effective fishery management programs produce multiple benefits for resource enhancement and angler use and enjoyment. One measure of angler benefits is satisfaction with the fishing experience. Management strategies aimed at enhancing satisfaction should be based on an understanding of the determinants of satisfactions and expectations among anglers. The objectives of this study were: 1) to examine angler reaction to fishing conditions on Oneida Lake, New York and 2) to determine how angler characteristics influenced trip satisfaction. In June and July, 1989, 389 recreational anglers were surveyed at two public boat access sites on Oneida Lake.

Two-thirds of anglers surveyed felt their trip met with their expectations. The majority (73.5%) were either satisfied or very satisfied with their trip; 12% were neutral; and 14.5% were either dissatisfied or very dissatisfied.

Fishing-related factors were the primary determinants of trip satisfaction for 54% of anglers surveyed. Other anglers identified primary determinants of satisfaction as weather conditions (18%); general experience enjoyment (18%); environmental quality (4%); comraderie/company (2%); and mechanical factors (2%).

For anglers catching fish, satisfaction increased with increasing catch. Anglers who did not catch fish were more satisfied than those anglers catching only one fish. The proportion of anglers whose trip expectations were met increased with the number of fish caught. Satisfied and very satisfied anglers fished longer than did dissatisfied and very dissatisfied anglers.

Average satisfaction (between neutral and satisfied) did not vary significantly by age, nor by the year anglers first fished Oneida Lake, with the exception of anglers who first fished the lake prior to 1965 (on average more satisfied) and anglers who first fished Oneida in 1986 (on average less satisfied). The number of anticipated future trips to Oneida varied slightly with current trip satisfaction.

The results of this study suggest certain potential strategies for increasing angler satisfaction in the Oneida Lake fishery. Making more fish available for harvest may serve to increase angler satisfaction. Lower average satisfaction for anglers first fishing Oneida later than 1985 may suggest that these anglers are not using the lake to its full potential as long-time, higher satisfaction anglers are. An education program, discussing how best to use Oneida's resources may be useful in helping to provide these anglers with more satisfying experiences.

SPAWNING ECOLOGY OF THE NORTHERN PIKE (*ESOX LUCIUS*) AND MUSKELUNGE (*ESOX MASQUINONGY*) OF THE ST. LAWRENCE RIVER

John Farrell
Rochester, New York

Recent studies of naturally reproducing esocids in the St. Lawrence River emphasize the identification and protection of spawning habitat. Probable muskellunge spawning grounds have been identified through trapnetting during the spring spawning run and monitoring movements through radiotelemetry. The present study was targeted to characterize spawning habitat utilized by both muskellunge and northern pike.

The main objectives for the study were to recover naturally fertilized eggs and determine their viability at the time of collection, to collect information on physical characteristics of egg broadcast areas including depth, temperature regime, dominant vegetative types, and substrate types, and to determine the extent of spatial and temporal overlap between northern pike and muskellunge egg deposition.

Five egg collection methods were used, an improved egg basket proved to be most effective. Egg collection baskets were used in Point Marguerite Marsh, near Alexandria Bay from 19 April to 12 June 1989.

A total of 123 northern pike eggs were collected on fifteen of sixteen fixed sampling stations, and 102 muskellunge eggs were collected on nine of the stations. A partial spatial and temporal overlap in egg deposition of muskellunge and northern pike was demonstrated in Point Marguerite Marsh.

Over all sampling methods and sites sampled 76.8 percent of northern pike eggs, and 71.3 percent of muskellunge eggs were viabile at the time of collection.

RESPONCE OF LAKE TROUT TO LIMING IN AN ADIRONDACK LAKE

Christopher J. Keleher and Carl Schofield
Thendara, New York

The lake trout (*Salvelinus namaycush*) population of Little Simon Pond, located in the Tupper Lake region of Adirondack State Park, was monitered before, during, and after liming. Previous to liming the pH in Little Simon was low relative to other Adirondack lakes containing lake trout. The population had exhibited poor recruitment with little evidence of natural reproduction. Trapnetting catches were too low to determine population size. Preliming bioassays with juvenile lake trout showed a 90% mortality rate. Following liming recruitment has improved. The catch per unit effort in trapnets has increased. Post liming bioassays showed 100% survival.

ALEWIFE PREDATION, TROPHIC LEVELS AND WATER QUALITY OF CONESUS LAKE

Norma Lee Puckett
Rochester, New York

Conesus Lake has experienced changes within its trophic levels. While walleye continued to decline in the 1970's, an exotic was introduced during the late 1970's. This exotic is *Alosa pseudoharengus*, commonly known as the alewife. The NYSDEC began stocking 3-5 cm walleye fingerlings at a rate of 65,000 per year over the years 1985 through 1988. It was hoped that adding this top level predator would control the alewife population.

I sampled Conesus Lake over a six month period in the spring and summer of 1988. Results of this sampling indicate that the alewife had declined by 41% from 1985 to 1988. This decline is attributed to a decrease in the forage base of the alewife. Zooplankton decreased in weighted mean size from 0.60 mm in 1972-73 (pre-alewife years) to 0.23 mm in 1985 and 0.18 mm in 1988. *Daphnia pulex* has not been sampled since 1983 and *Diaptomus* species were not sampled in 1988. Two littoral species were found within the pelagic waters in 1988. They are *Eucyclops agilis* and *Macrocyclops albidus*. Alewife stomach analyses revealed that *Mesocyclops edax* was consumed 99.25% of the time.

Water quality has not improved in Conesus Lake. Turbidity, chlorophyll *a*, pH and soluble reactive phosphorous increased significantly ($P<0.022$) within the epilimnion when compared to 1985 data.

GENETIC IDENTIFICATION AND COMPARISON OF WILD BROOK TROUT IN NEW YORK STATE

David L. Perkins, Jr., Charles C. Krueger, and Bernie May
Cornell University, Ithaca

The purpose of this study was to genetically identify wild brook trout populations throughout the state of New York. Brook trout (*Salvelinus fontinalis*) collected from 26 lakes and streams within New York State were analyzed electrophoretically for genetic variability at 75-85 enzyme loci. Statistically significant genetic differences were found between all pairwise comparisons of populations. Cluster analysis of genetic distances identified three major groups of brook trout associated with major river drainages. Information on the last glacial retreat in New York explains most of the distribution of genetic variability observed. The results provide information fundamental to the conservation and protection of wild brook trout in New York.

STOCKED LAKE TROUT DEPOSIT EGGS NON-RANDOMLY
WITH RESPECT TO SUBSTRATE TYPE

J. Ellen Marsden and Charles C. Krueger
Cornell University, Ithaca

Since 1958, an intensive effort has been underway by the U.S. and Canada to restore depleted and extinct populations of lake trout in the Great Lakes. Stocking of lake trout in combination with lamprey control has established large populations of adults in all of the lakes except Lake Erie. However, evidence of sizeable natural reproduction by stocked fish is still limited. Until recently, efficient techniques for assessing lake trout reproduction have not been available. In addition, most of the historical information on lake trout reproductive behavior comes from observations in small, inland lakes. In the Great Lakes, we do not yet know (1) the extent of available spawning habitat, (2) whether the available spawning habitat is still capable of sustaining egg incubation, or (3) whether stocked fish from various hatchery and wild sources can find, recognize, and deposit eggs on appropriate spawning sites. We used a new technique for capturing lake trout eggs during spawning to assess whether stocked lake trout spawn on historic spawning sites, and whether they deposit eggs randomly with respect to substrate size. Egg traps were deployed on four types of substrate on a historic spawning reef near Stony Island in Lake Ontario. Eggs were captured primarily on a single substrate type, comprised of large rubble with deep interstitial spaces, and associated with steep contour. Observations using SCUBA indicated that eggs located in other areas were subjected to movement by currents, and were vulnerable to predation. Our results suggest that stocked lake trout select spawning substrate on Stony Island reef which can support successful egg incubation. These observations and techniques are being applied elsewhere in the Great Lakes to assess lake trout spawning. Information about the extent of successful spawning by lake trout will provide information to assist the achievement of the rehabilitation goal.

1990 ANNUAL MEETING PROGRAM
NEW YORK CHAPTER - AMERICAN FISHERIES SOCIETY

January 25 - 27, 1990
The Treadway Inn
Owego, New York

NEW YORK CHAPTER
NYC
AFS
AMERICAN FISHERIES SOCIETY

1990 ANNUAL MEETING PROGRAM
Owego Treadway Inn
Owego, New York

SYNOPSIS OF ACTIVITIES

Thursday, January 25

6:00- 9:00 PM	Registration (Motel Lobby)
7:00- 9:00 PM	Executive Committee Meeting (Admiral Clark Room)
9:00-11:00 PM	Reception for Invited Speakers (Owego Room)

Friday, January 26

	Breakfast (on your own)
8:00- 9:00 AM	Registration (Motel Lobby)
9:00- 9:05 AM	WELCOME - Jim Winter, NYC-AFS President
9:05-12:00 PM	INVITED PAPER SESSION: EXOTIC INVASIONS & RANGE EXPANSIONS
12:00- 1:30 PM	Lunch (Treadway Inn) Student Caucus
1:30- 3:30 PM	INVITED PAPER SESSION: EXOTIC INVASIONS & RANGE EXPANSIONS
3:30- 5:00 PM	Chapter Business Meeting
5:00- 5:30 PM	Poster Viewing - Authors Present at Displays
5:00- 7:30 PM	Social & Buffet (Treadway Inn)

Saturday, January 27

	Breakfast (on your own)
9:00-11:40 AM	Contributed Paper Sessions I and II
11:40-12:00 PM	Closing Ceremonies

TIME	EVENT
Friday, 26 January 1990	
9:00- 9:05 AM	Welcome and Opening Remarks Jim Winter

INVITED PAPER SESSION: EXOTIC INVASIONS & RANGE EXPANSIONS
Williamsburg Room
Moderator - David Mac Neill

9:05- 9:30 AM	**Biological invasions in the Great Lakes: the role of ballast water and general perspectives.** Dr. James Carlton, Williams College
9:30- 9:55 AM	***Bythotrephes cederstroemi* and its role as both a new predator and a new prey in the Great Lakes.** Dr. Edward Mills, Cornell University
9:55-10:20 AM	**Ecological implications of the zebra mussel, (*Dreissena polymorpha*), in the Great Lakes.** Dr. Joseph Leach, Ontario Ministry of Natural Resources
10:20-10:45 AM	Coffee Break and Poster Viewing
10:45-11:10 AM	**The status of the ruffe (*Gymnocephalus cernuus*) in Lake Superior.** Mr. Dennis Pratt, Wisconsin Department of Natural Resources
11:10-11:35 AM	**Lessons from the bitterling (*Rhodeus sericeus*) and status of the rudd (*Scardinius erythrophthalmus*) introductions in North America.** Dr. Robert Schmidt, Simon's Rock College
11:35-12:00 PM	**The sea lamprey (*Petromyzon marinus*), a review of an early invader.** Mr. Thomas Jolliff, New York State Environmental Conservation
12:00- 1:30 PM	Lunch (Owego & New Bedford Rooms) Student Caucus & Lunch (Admiral Clark Room)

TIME	EVENT
FRIDAY AFTERNOON	
	INVITED PAPER SESSION (CONTINUED) **Williamsburg Room** Moderator - Paul McKeown
1:30- 1:55 PM	**Colonization theory and morphological divergence of introduced populations.** Dr. Jay Stauffer, Penn State
1:55- 2:20 PM	**Effects of the brown tide on the Peconic Bay Ecosystem.** Mr. Chris Smith, NYS Sea Grant
2:20- 2:45 PM	**Range Expansion of selected fishes in New York watersheds.** Dr. Robert Daniels, NYS Museum
2:45- 3:10 PM	**Future invasions of the Great Lakes by fish species associated with global warming.** Mr. Nicholas Mandrak, Royal Ontario Museum
3:10- 3:30 PM	Afternoon Break (Owego Room)
3:30- 5:00 PM	**NEW YORK CHAPTER BUSINESS MEETING** **Owego Room** Jim Winter, Chapter President
5:00- 7:30 PM	Social & Buffet & Raffle (Williamsburg Room) Organizer - Douglas Stang
	POSTER SESSION **Williamsburg Room** Organizer - Douglas Carlson
10:00- 5:30 PM	Posters Available for Viewing
10:20-10:45 AM	Authors Present at Posters
5:00- 5:30 PM	

TIME	EVENT
Friday, 26 January 1990	
	POSTER SESSION **Williamsburg Room**
10:00- 5:30 PM	**Evaluation of monoclonal antibody-based ELISA for the diagnosis of *Renibacterium salmoninarum*.** Hsu, H. M., P. R. Bowser, J. H. Schachte Jr.
	High efficiency-low cost egg and fry incubation systems for small experimental lots. Herren, D. W., C. Krueger, and B. May
	An aggregate historical comparison of the variability of LC_{50} values for two reference compounds and eight freshwater species. Ewell, W. S., R. J. O'Boyle, and M. L. Ritter
	Habitat suitability index curves for stream dwelling juvenile brook trout in Northern New York State. Jirka, K. J. and J. Homa Jr.
	Development of habitat suitability index curves for selected taxa of benthic macroinvertebrates using the Delphi Method. Jirka, K. J. and J. Homa Jr.
	Remedial action planning in the Great Lakes Basin: An opportunity for fishery management interests. Landre, B. K. and B. A. Knuth
	Ichthyology Collection, New York State Museum. Daniels, R.

TIME	EVENT
Saturday, 27 January 1990	
9:00-11:40 AM	Contributed Paper Sessions I & II Organizer - Joseph Galati

Contributed Paper Session I - Owego Room
Moderator - Mark Malchoff

9:00- 9:20 AM	**Aspects of the life history of the comely shiner, Notropis amoenum (Abbott) in a southeastern New York stream.** Thiesing, M. A. and G. Dale
9:20- 9:40 AM	**Culture of fingerling walleye for introduction into Lake Ontario and potentially other appropriate public waters.** Buttner, J. K. and D. B. MacNeill
9:40-10:00 AM	**Experimental treatment of Furunculosis with the Fluoroguinolone Enrofloxacin (Bayer).** Bowser, P. R., J. H. Schachte, J. G. Babish, and G. A. Wooster
10:00-10:20 AM	**Optimal protocols for hyperthermal and hydrostatic pressure shock production of triploid brook and brown trout hybrids.** Herrin, D. W., C. Krueger, and B. May
10:20-10:40 AM	Break (New Bedford Room)
10:40-11:00 AM	**A comparison of recovery, growth, movement, and distribution of young-of-year Assinica and Temiscamie strain brook trout stocked in small streams.** VanOffelen, H. K., C. C. Krueger, and C. L. Schofield
11:00-11:20 AM	**The role of vegetation density and structure in the selection of refugia by juvenile sunfish.** Kahn, A. E. and R. G. Werner
11:20-11:40 AM	**Using mitochondrial DNA for stock identification of lake trout.** Grewe, P. M., C. Krueger, E. Marsden, C. Aquadro, and B. May

TIME	EVENT
Saturday, 27 January 1990	
	Contributed Paper Session II - Williamsburg Room Moderator - Philip Hulbert
9:00- 9:20 AM	**Anglers' attitudes and behaviors regarding the New York State fish consumption health advisory for Lake Ontario: A risk communication perspective in fishery management.** Springer, C. M. and B. A. Knuth
9:20- 9:40 AM	**Angler satisfaction: Determinants and implications on Oneida Lake, New York.** Passe, J. M.
9:40-10:00 AM	**Spawning ecology of the Northern Pike (*Esox lucius*) and Muskelunge (*Esox masquinongy*) of the St. Lawrence River.** Farrell, J.
10:00-10:20 AM	**Responce of lake trout to liming in an Adirondack Lake.** Keleher, C. J. and C. Schofield
10:20-10:40 AM	Break (New Bedford Room)
10:40-11:00 AM	**Alewife predation, trophic levels and water quality of Conesus Lake.** Puckett, N. L.
11:00-11:20 AM	**Genetic identification and comparison of wild brook trout in New York State.** Perkins, D. L. Jr., C. C. Krueger and B. May
11:20-11:40 AM	**Stocked lake trout deposit eggs non-randomly with respect to substrate type.** Marsden, J. E. and C. C. Krueger

1990 Program Committee

Don Einhouse - Chairman, Program Committee
Doug Carlson - Poster Session
Joe Galati - Contributed Papers
Tom Heinrich - Photographer, Invited Speaker Transportation
Mark Malchoff - Registration
Paul McKeown - Arrangements
Doug Stang - Social & Raffle

Moderators

Philip Hulbert - Contributed Paper Session II
David MacNeill - Invited Paper Session (AM)
Mark Malchoff - Contributed Paper Session I
Paul McKeown - Invited Paper Session (PM)

Judges

Dieter Busch
Robert Lange
Niel Ringler
Gaylord Rough

NEW YORK CHAPTER

AMERICAN FISHERIES SOCIETY

M E M B E R S H I P

PROFESSIONAL PROGRAMS AND ACTIVITIES

1990

PREFACE

This booklet was produced in conjunction with the 1991 annual meeting. Requests for information accompanied the meeting announcements, and we also sent letters to selected representatives of groups having more than one Chapter Member (1990-91). With follow-up calls, we assembled this list of 165 individuals, of which 109 were current members. Since membership for that period was 272, we missed about 60% of our chapter.

The groups listed on succeeding pages are ordered with largest to smaller, and from public to private employment. Members are designated by bold print, and the number of members per organization is shown in the Table of Contents (in parenthesis).

We thank those who helped in this effort and hope a repeat effort in a coming year will include those members missed.

Doug Carlson and Mark Malchoff

CONTENTS

List of 1990 Projects from DEC REGION 1 STONY BROOK

Administrator of lobster and crab research and management programs within the Bureau of Finfish and Crustaceans.	**P. Briggs**
Conducts summer and winter flounder studies, investigates recreational open boat fisheries and conducts beach seining surveys.	**R. Castaneda**
DEC coordinator for the Long Island Sound Study; reviews issues of chemicals in the marine environment and conducts research on PCB's in Long Island Sound benthos.	**K. Chytalo**
Coordinator of Federal Aid Projects for the Division of Marine Resources and specialist in population dynamics of scup.	**S. Finklestein**
Warmwater fisheries biology, small pond management, habitat management and coordinator of angler diary programs.	**C. Guthrie**
Administrator of Fish & Wildlife and Forestry programs; interests in assessment of habitat degradation on aquatic and coastal diversity and productivity.	**F. Panek**
Analysis of marine commercial and recreational fisheries.	**R. Salz**
Administers shellfish management, stock assessment and sanitation programs for DEC. Interested in developing multi-agency action plans for dealing with problems of exotic species in the marine environment.	**P. VanVolkenburgh**
Management of warmwater fisheries in small waters, aquatic vegetation control and potential uses of sterile grass carp. Administrator of Fisheries Program.	**E. Woltmann**

List of 1990 projects from DEC REGION 3, NEW PALTZ

Review of literature concerning ecological implications of introduction of zebra mussels in Hudson River	**W. Elliot**

Lake-run salmonid fishery in Eastern Lake Ontario tributaries.	**R. McCullough**
Warmwater fish stock assessment in St. Lawrence River. Carry Falls Reservoir fish survey.	**B. Gordon**
Acquisition of public fishing rights and boat access areas.	**J. Coutu**
Largemouth bass radiotelemetry.	**R. Klindt**
Fishing the St. Lawrence River. (A Brochure)	**D. Richardson**
Oswegatchie River fish survey. Evaluation of the fishery in a two-story lake.	**D. Carlson**
St. Lawrence River fishery management and identification of musky spawning and nursery areas.	**S. LaPan**
Updating trout stocking policies in Region 6 streams.	**F. Flack**
Review and coordination of projects affecting waters of DEC Region 6	**R. Vaas**
Recreational fishing	**J. Farquhar**

List of 1990 Projects from DEC REGION 8, AVON

Assess space needs for Region 8 office, Coordination of Natural Resources programs.	**E. Holmes**
Management of fishery resources in Seneca and Keuka Lakes, including sea lamprey control activities in Seneca Lake.	**D. Kosowski**
Acquiring and developing fishing access sites; joint effort with the Town and the State Office of Parks. Coordination of Region 8 Fishery unit program.	**C. Widmer**
Update Region 8 trout streams stocking policies; Seneca River/Barge Canal survey	G. Lane

List of 1990 Projects from DEC ROME FIELD STATION, ROME

Evaluation of DEC liming program. Response of Adirondack streams to episodic acidification.	**H. Simonin**
Toxicity of aquatic herbicides to early life stages of fish. Impacts of blackfly control programs on streams.	E. Paul
Susceptibility of cultured domestic, hybrid & wild brook trout strains to furunculosis (Aeromonas salmonicida). Fish health & condition assessment of salmonids fed a low phosphorus diet under hatchery production conditions.	J. Schachte C. J. Petrie
Growth, food conversion, condition factor of, and settleable solids and phosphorus produced (Hatchery) by salmonids fed a low phosphorus diet and an extruded pellet diet under hatchery production conditions.	**A. Mack**

List of 1990 Projects from DEC ONEIDA HATCHERY, CONSTANTIA

Coolwater fish culture research and development.	R. Colesante

List of 1990 projects from DEC CAPE VINCENT FISH RESEARCH STATION, CAPE VINCENT

Sea Lamprey control evaluation in Lake Ontario, Lake Erie and the Finger Lakes	T. Jolliff

BROCKPORT

State University of New York
College at Brockport
Brockport, New York 14420

List of 1990 projects from SUNY BROCKPORT - DEPARTMENT OF BIOLOGICAL SCIENCES

Sediment dynamics in Lake Ontario	R. Adams

Long term analysis of Great Lakes phytoplankton and zooplankton communities; Biological monitoring for toxic chemicals.	T. Lewis
Watershed analysis and remediation; Acid deposition monitoring; Methods for growing contaminant free fish in the Great Lakes; phytoplankton and zooplankton ecology.	J. Makarewicz
Comparative ecosystem effects of grazing by zebra mussels and daphnids.	E. Malloy-Desormeaux (M.S. cand.)
Cascading trophic dynamics and water clarity in Conesus Lake.	N. Puckett (M.S. cand.)
Aquaculture business development and marketing.	S. Ross
Population and habitat status of cricket frogs in New York.	T. Stewart (M.S. cand.)

Cornell University

List of 1990 Projects from FISHERIES PROGRAM, DEPARTMENT OF NATURAL RESOURCES, CORNELL UNIVERSITY, ITHACA

Economics and human dimensions of recreational fisheries; angler attitudes and behavior.	T. Brown
Ecology and dynamics of fish communities; Oneida Lake ecosystem studies.	J. Forney
Human dimensions of recreational and commercial fisheries; angler attitudes toward catch and release.	L. Gigliotti
Biological and limnological characteristics of Oneida and Canadarago Lakes.	D. Green
Adirondack fishery program.	D. Josephson
Human dimensions of fisheries; angler attitudes and behavior related to health advisories.	B. Knuth
Population genetics; stream ecology; lake trout restoration; heritage trout strains.	C. Krueger

Specific Research Projects:

Investigations of the cause of the early life stage mortality syndrome in landlocked salmon from Cayuga Lake; investigations of the cause(s) of orocutaneous papillomas and liver neoplasms in brown bullheads in waters throughout New York State; investigations of the cause(s) of neoplasms of the lateral line of lake trout in the Finger Lakes

esf
State University of New York
COLLEGE OF ENVIRONMENTAL SCIENCE AND FORESTRY
Syracuse, New York 13210

List of 1990 projects from **SUNY SYRACUSE COLLEGE OF ENVIRONMENTAL SCIENCE AND FORESTRY**

Habitat analysis and restoration in tributaries of Onondaga Lake Onondaga Lake	R. Danehy (Ph.D. cand.)
Social & economic aspects of Lake Ontario fisheries	C. Dawson
Physiological modelling of rainbow smelt bioenergetics	**P. Dexter** (M.S. cand.)
Habitat and spawning requirements of muskellunge in the St. Lawrence River	**J. Farrell** (M.S. cand.)
Age, growth and population dynamics of Onondaga Lake fishes Lake fishes.	C. Gandino
Ecosystem modelling.	C. Hall
Use of bullheads as indicators of contaminant-related stress.	P. Hirethota (Ph.D. cand.)
Role of predation on larval American shad in the Susquehanna drainage.	**J. Johnson** (Ph.D. cand.)
Sunfish behavior and mortality in relation to vegetation morphology and density.	**A. Kahn** (M.S. cand.)
Stock recruitment relationships in Lake Ontario tributaries; aquatic entomology in Great Lakes streams.	**J. Kennen** (Ph.D. cand.)
Modelling of rainbow smelt bioenergetics	**B. Lantry** (M.S. cand.)
Smolt trapping and carcass enumeration in Lake Ontario tributaries	C. Millard

NEW YORK

THE STATE OF LEARNING

List of 1990 Projects from NYS MUSEUM, BIOLOGICAL SURVEY, ALBANY

Changes in fish assemblages over time in the Hudson River. Age-growth in redbreast sunfish, feeding in sculpins. Maintenance of the NYS museum fish collection; material available for loan.	**R. Daniels**

New York Sea Grant

List of 1090 projects from NY SEA GRANT EXTENSION

Administrate NY Sea Grant Extension. Sport fishery development; fish contaminant education; coastal issues.	**M. Voiland** (Ithaca)
Coordinates coastal process, engineering and resource issues and zebra mussel infrastructure impact issues for NY Sea Grant Extension.	C. O'Neill (Brockport)
Coordinates cooperative walleye stocking efforts, salmonid/forage base issues and zebra mussel biology issues for NY Sea Grant Extension.	**D. MacNeill** (Brockport)
Long Island sportfishing industry development, catch-and-release publications.	**M. Malchoff** (Riverhead)
Extension program coordination in marine district, marine education.	**R. Kent** (Riverhead)

List of 1990 projects from NY SEA GRANT INSTITUTE, STONY BROOK

Administer Sea Grant research funding statewide	**C. Schlenk**

Instream flow and fish population estimate field studies, AuSable, Manistee and Muskegon rivers, Michigan. Fish stocking, Catskill Mountain Area.	**T. Culp** (Stamford)
Habitat mapping for instream flow investigations, AuSable, Manistee, and Muskegon rivers Michigan. Field technician for IFIM studies (Michigan) and fisheries investigations (New York and Michigan).	**A. Richardson** (Watertown)
Exhibit E. for hydroelectric relicensing, Beaver and Hoosic rivers. Impoundment water level fluctuations. Wetlands delineation, Boat marina, Catherine Creek.	**R. Costanza** (Groton)
Exhibit E for hydroelectric relicensing, Mohawk and Raquette rivers. Impoundment fisheries investigations, Vermont and Massachusetts HSI curve development.	**M. Glase** (Lansing)
Exhibit E for hydroelectric relicensing, Mohawk and Raquette rivers. Benthic invertebrates and suitability index curves.	**K. Jirka** (Lansing)

Kodak

List of 1990 projects from EASTMAN KODAK COMPANY, ROCHESTER

Determining the efficacy of secondary waste treatment and other technique in altering the acute aquatic toxicity of chemicals.	**R. O'Boyle**
Acute and chronic aquatic effects testing of chemicals; effluent biomonitoring; breeding and rearing of Pimpehales promelas for laboratory testing.	J. Geglinger
Managing environmental fate and effects testing laboratory.	**J. Gorsuch**
Reviewing and commenting on Federal and State surface water issues related to aquatic biomonitoring and water quality criteria.	**W. Ewell**