AFS - New York Chapter Newsletter -- April, 1999

Editor's Note

I hope you enjoy this Spring Edition of the NY Chapter Newsletter. As your editor, I continue to look for interesting material for print. During the recent annual meeting in Saratoga Springs, the idea of presenting member's professional papers within a "Recent Publications" subheading, was proposed as a forum to share research being completed by our Chapter membership. To participate please submit bibliographic information, a condensed version of the abstract, and a reprint of your professional paper or report. The deadline for information to be included in the Summer 1999 edition is July 31. I have included abstracts from presenters from the annual meeting at Saratoga Springs as this edition's feature.

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President's Corner

After several years of reading other people's President's Columns, it is finally time to write one of my own. I'd like to thank you all for your vote of confidence-every time I take my kids on another action-filled fishing trip, it reminds me of how much I owe you all. We went ice fishing last Saturday. There's nothing quite like watching a gang of kids whooping and hollering as they pull in a 22" pickerel, all full of teeth, out through a tiny hole in the ice.

Anyway, enough fishing. **Dick McDonald**, **John Homa** and **Tim Sinnott** deserve some recognition and thanks. Dick did an outstanding job as Program Chair for our annual meeting. I thank Tim for his work on the local arrangements in Saratoga for our annual meeting, and John for the unexciting but all-important job of Treasurer. My thanks also go to **Margaret Murphy** for her good work as president. I would like to thank all EXCOMM members for their outstanding service to the Chapter. **Lars Rudstam** has agreed to take over for Tom Field at Audit and **Web Pearsall** now fills the formerly vacant slot at Professional Incentives.

The Chapter will be looking at several issues this year. President-elect **Don Stewart** will chair a committee to review our financial plan and suggest any changes to our financial goals, including our cash reserve. I've asked Dave Bryson to review a proposed International Joint Commission study on Lake Ontario water level regulation to see if a chapter resolution of support is appropriate. On the matter of our annual meeting, we are working towards a three-way meeting with The Wildlife Society and the Society of American Foresters, perhaps in Syracuse. Stay tuned for the details. One topic I do not plan on pushing is the Lake Ontario cormorant issue. After discussions with some members, it is clear that Chapter members are heavily involved in the issue, and further involvement at the Chapter level is not a high priority right now.

We have a large and active Chapter and I look forward to being of service to you this year. Please do not hesitate to contact me if you have any questions, comments, concerns or ideas. You can reach me at:

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Budget

See the attached sheet for 1998 NY Chapter Final Budget Report.

Chapter News

Wildlife Conservation Bill Reintroduced in Congress

Washington, DC. - Legislation was reintroduced in the Senate on 1/19/99 containing major funding for state wildlife conservation, recreation, and education. The Conservation and Reinvestment Act of 1999 (S 25 and HR 701) dedicates a percentage of federal offshore oil and gas revenues to states for wildlife programs under its Title III section. Both bills were first introduced in October 1998. The Senate Bill dedicates 7% (about $321 million) and the House Bill dedicates 10% (about $459 million) for annual wildlife conservation, recreation and education allocations to the states. It is hoped that the Senate bill will be increased to match the House bill. Over 3,000 organizations and businesses are responsible for bringing the goals of a national initiative "Teaming with Wildlife" to the attention of Congress.

AFS Fisheries Management Section Comes to NED Meeting

The Fisheries Management Section (FMS), the largest section within the society, will be holding a get together for its members at the upcoming Northeast Division (NED) meeting in April in Manchester, New Hampshire. While the FMS's main business meeting is held during the AFS national conference each year, **Tim Hess** (Vermont) as the President-elect, **Rob Neumann** (Connecticut) as the Secretary-Treasurer, and **Doug Stang** (New York) as the NED representative, would like to use the NED meeting to brief the NED membership about the status of FMS-supported undertakings and receive input regarding future potential directions for the Section especially in regard to issues in this region. Please look for it when a detailed agenda is distributed for this important spring meeting.

Walleye Management Plan

The New York Chapter received a request from **Les Monostory** of the Onondaga County Federation of Sportsmen to write a walleye management plan for Otisco Lake and Jamesville Reservoir. The New York Chapter agreed to fund a student to write the plan with oversight from numerous chapter members. **Patty Thompson**, a junior at SUNY-ESF, has agreed to research and write the walleye management plan. The final product will be a written management plan for walleye in Otisco Lake and Jamesville Reservoir. Otisco Lake has been stocked with walleye by the New York State Department of Environmental Conservation during the past five years. Due to limited numbers available for stocking, lakes are stocked on a rotating five year basis. As such, Otisco Lake will not be stocked in 1999. The Sportsmen's Federation is concerned about increasing numbers of prey fish in the absence of walleye stocking. Following is a summary of the expectations for this project: review current NYSDEC policy and management strategy for walleye in the state, review walleye stocking needs throughout Onondaga County, evaluate hatchery capacity for walleye rearing (Carpenter's Brook Fish Hatchery, Oneida Lake Hatchery), evaluate past and present population status in both lakes, evaluate feasibility of improving boat access to each lake for anglers, review success of previous walleye stocking in both lakes, list recommendations regarding walleye stocking in each lake (include the feasibility of stocking), and list objectives for walleye management in each lake. **John Farrell** (SUNY-ESF) and **Mark Olson** (Cornell) will be responsible for review of the document upon completion. It is expected the final plan will be completed by August 27, 1999. A summary of the management plan will be included in a future issue of the newsletter.

President Clinton Signs Executive Order Concerning Invasive Species Control

On February 3, 1999, President Clinton signed an executive order on invasive species, "to prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health impacts that invasive species cause." The order requires establishment of an Invasive Species Council of members including the Secretaries of State, Treasury, Interior, Agriculture, Commerce, Transportation, and the Administrator of the Environmental Protection Agency. The Council is charged with development of a *National Invasive Species Management Plan* within 18 months. The plan will detail and recommend performance-oriented goals and objectives and specific measures of success for Federal Agency efforts concerning endangered species. The plan will be updated biennially and the first edition will "review existing and prospective approaches and authorities for preventing the introduction and spread of invasive species, including those for identifying pathways by which invasive species are introduced and for minimizing the risk of introductions via those pathways, and shall identify research needs and recommend measures to minimize the risk that introductions will occur." Federal agencies whose actions may affect the status of invasive species will be required to identify such action, and not support actions likely to cause or promote their spread or introduction. In addition, agencies will use relevant programs to prevent introduction, detect and monitor introduced species, research effects of introductions and technologies for control, restore native species and habitats affected, and promote public education regarding invasive species.

Annual Meeting Awards

At the Annual meeting in Saratoga the following awards were distributed by the NY Chapter: **Jim Haynes** of SUNY Brockport was awarded the Professional Service Award, **Brian Lantry** won the Best Professional Paper Award, **Heather Barker** took home the Best Student Paper Award, and **Kurt J. Jirka** won the Best Poster Award. **Owen Baird**, last year's Best Student Paper Award Winner in accompanying Chapter President **Allen Peterson** to the Northeast Division Meeting in April.

Upcoming events

Northeast Division Annual Meeting and Northeast Fish and Wildlife Annual Conference. April 11-14, 1999. Center of New Hampshire Holiday Inn, Manchester, New Hampshire. Contact Judy Stokes, (603) 271-3211;

info@wildlife.state.nh.us.

6th Annual St. Lawrence River Ecosystem Conference. Conference Theme: Sharing Knowledge, Linking Sciences: Transitions in the St. Lawrence River. April 26-28, 1999. Conference and Training Centre, Cornwall, Ontario.

For information contact: Christina Collard, Conference Coordinator, St. Lawrence Institute of Environmental Sciences, 1111 Montreal Rd., Suite 144 Cornwall, Ontario, K6H 1E1
Phone: (613) 936-6620 Fax: (613) 936-1803
Email: slries@glen-net.ca
Web site:www.glen-net.ca/slries/

129th American Fisheries Society Annual Meeting, "Integrating Fisheries Principles from Mountain to Marine Habitats." August 29-September 2, 1999. Adams Mark Hotel, Charlotte, North Carolina. Contact Betsy Fritz, (310) 897-8616, ext. 212; bfritz@fisheries.org

Wanted

Financial Review Committee Members

Past Presidents and Past Treasurers are needed to serve on an adhoc Financial Review Committee. If you are interested, please contact Allen Peterson at (607) 762-7072; ampeterson@nyseg.com, or President-elect Don Stewart at (315) 470-6924; Djstewart@mailbox.syr.edu

Web Page Designer

Anyone interested in volunteering their computing abilities to set up a web page for the NY Chapter? If you have ideas, comments, or are willing to help, please contact John Farrell - Email: jmfarrel@mailbox.syr.edu
Phone: (315)470-6990.

Workshop Chairperson

The NY Chapter is seeking someone interested in organizing a workshop on aquatic plant identification. If you are interested please, contact Dave Lemon at (607) 753-3095; Dklemon@gw.dec.state.ny.us and John Farrell at (315) 470-6990; jmfarrel@mailbox.syr.edu

Recent Theses

The wave-zone benthic communities of Onondaga Lake: A highly disturbed aquatic system in Central New York

by Bruce A. Wagner

Major Professor: Neil Ringler

State University of New York
College of Environmental Science and Forestry
Department of Environmental and Forest Biology
Syracuse, NY 13210

The wave-zone benthic macroinvertebrate community of the littoral zone of Onondaga Lake was characterized based on samples taken in the summer of 1989. Onondaga Lake is an industrially polluted, hypereutrophic lake in metropolitan Syracuse, NY. The littoral zone is highly impacted by industrial deposits and has a limited population of macrophytes. The macroinvertebrate community of the lake is characterized by unusually low species (taxon) diversity. The chironomid community is particularly depauperate. The macroinvertebrate community of the lake, and the chironomid assemblage in particular, is comprised of forms known to be tolerant of pollution. The community is dominated by chironomids; other significant components include oligochaetes and the amphipod (*Gammarus fasciatus*), forms tolerant of unnaturally high salinity. Overall population densities are similar to those in other lakes. The degraded condition of this community reflects the combined effects of the polluted condition of the water column and the alterations to the near-shore sediments caused by earlier industrial discharges.

Feature Articles

ABSTRACTS FROM NY CHAPTER ANNUAL MEETING AT SARATOGA

Abstracts of Invited Speakers

Symposium: Cold Fish in Hot Water: Dealing with Controversy in Fisheries Management

Listed in order of Presentation

Getting Science to the "Community"

Linda E. Bireley,
Northeast Utilities, PO Box 270,

Hartford, CT 06141-0270

Five activities will be described that demonstrate ways in which individual scientists can become involved in their community and effect decision making. The first activity involves recruiting and educating a group of citizen monitors to assess the effectiveness of a low head fish ladder. The second activity is participation in an advisory group to the state Department of Environmental Protection. The third activity is working within a land trust to provide an educational forum for residents to learn and discuss development issues. The fourth activity is facilitating the organization of a balanced discussion of different energy options in a era when electricity is deregulated. The last activity is presenting relevant information to internal (to the utility) management community on sustainable development and environmental management systems. All these examples demonstrate the extent to which an individual scientist can educate her neighbors and community with facts about natural resource and potentially controversial issues. This type of informal information sharing is the first step in having an informed community making rational decisions.

Damaged Fishery vs. Recovery Needs and Conflicts

Thomas E. Brown
NYSDEC (Retired)
P. O. Box 37, Cape Vincent, NY 13618

In 1952, the International Joint Commission issued an Order of Approval for the applications from the governments of Canada and the United States to construct hydropower facilities in the international reach of the St. Lawrence River, which extends from Lake Ontario to Cornwall, Ontario, and Massena, New York. This great construction project was developed in order to provide deep-draft navigation throughout the St. Lawrence-Lake Ontario system, provide hydroelectric power generation, reduce the levels range for riparians and provide improved Montreal Harbor levels. Unfortunately, the environmental effects of this construction predated the era of greater environmental awareness with the designers of the project overlooking the damaging environmental consequences. The task now before Fishery Biologists is how to abate and/or minimize the damages to the ecosystem. This undertaking presents a multitude of challenges requiring good science, conflict resolution and skillful communication efforts. The fishery values at stake are too great for fishery professionals not to rise to this need and challenge.

Cormorants, Fish, and People: The Lake Ontario Experience

Clif Schneider
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Cape Vincent, NY 13618

Double-crested cormorants began to re-populate eastern Lake Ontario during the late 1970s on Little Galloo Island. Through the 1980s cormorant numbers exploded, reaching over 15,000 birds at Little Galloo Island by 1990. By the early 1990s cormorants became a problem with the public demanding cormorant control to eliminate predation by cormorants on stocked trout and salmon. By 1993, NYSDEC mitigated public concerns by preventing any new cormorant colonization in eastern Lake Ontario and by initiating offshore stocking by barge. At the same time USGS-BRD inaugurated cormorant diet studies to estimate fish consumption in eastern Lake Ontario. Results from these early diet studies and the general success of barge stocking suggested cormorants did not adversely affect gamefish populations in eastern Lake Ontario. By the mid-1990s, however, fish managers and the public re-focused attention on smallmouth bass. A NYSDEC monitoring program demonstrated that smallmouth bass relative abundance was at a 20 year low, USGS-BRD studies also showed that 620,000 bass were consumed annually by cormorants, and anglers complained that their fishery had never been poorer. By the fall of 1997, the public again demanded that agencies control cormorants in eastern Lake Ontario; this time, however, the issue was smallmouth bass. In 1998, NYSDEC and USGS-BRD undertook a series of comprehensive studies to determine if cormorants were responsible for the demise of the smallmouth bass population and fishery. Public controversy reached a peak in July 1998, with the mass slaughter of 850 cormorants, which drew national attention and public condemnation. Results of the 1998 studies showed that: 1) the smallmouth bass population remained low, 2) bass consumed by cormorants averaged 8-10 inches and averaged 3.3 to 4.4 years, 3) cormorants consumed 1.3 million bass in eastern Lake Ontario, 4) walleye were not a major predator of bass, 5) ecological changes (nutrients, alewives, and Dreissenid mussels) were not a major factor limiting the smallmouth bass population, and 6) the relative mortality of smallmouth bass was directly related the to expansion of cormorant numbers. On December 18, 1998 NYSDEC Commissioner Cahill announced some type of cormorant control was warranted and hoped a management plan would be in place by spring 1999.

Double-crested Cormorant Outreach

Fred Caslick
US Fish and Wild Service, Cortland Field Office
3817 Luker Rd. Cortland, NY 13045

This presentation will review outreach completed and underway in response to recent issues associated with the

population increase of Double-Crested Cormorants in the Great Lakes Basin.

The Dickens County Conservation Field Days: When a Public Agency Becomes Caught in the Middle

Stephen C. Brown, Alicia Kelley, and Sarah Vonhof
Department of Natural Resources, Fernow Hall
Cornell University, Ithaca, NY 14853

This presentation will highlight a true case study conducted in a New York County (fictitious place names, people and organizations are used) and will illustrate how a publicly funded agency can become "caught in the middle" if not properly prepared when two sharply diverging viewpoints collide. In the fall of 1994, People for Better Environmental Education (PBEE) began demanding that Cornell Cooperative Extension of Dickens County (CCE) provide a "balanced" viewpoint to their Conservation Education Field Days. For example, if a presentation on sportfisheries management was given, then PBEE believed it should be balanced with a presentation on vegetarianism or other non-consumptive use of the resource. Because one of the event's sponsors was the Federated Sportsmen's Clubs of Dickens County, there was contentious opposition to this idea. CCE of Dickens County's attempts to reach consensus between these two groups resulted in CCE being viewed very negatively when CCE was trying to fulfill its legal obligations as a tax funded agency.

Abstracts of Contributed Papers

Listed in order of Presentation

The History of the Intersector Committee on Aquaculture

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The Intersector Committee on Aquaculture is an informal group of aquaculturists, regulators, researchers, and extension specialists who gathered together in the mid-1980's to discuss issues on aquaculture in New York State. The group formed at a time when commercial aquaculture was presumed to be "the wave of the future" promising the initiation of numerous commercial ventures requiring research support, extension services, and regulatory activities. Practitioners within these disconnected sectors of the broad aquaculture community recognized that the isolation of their individual operations and responsibilities would lead to conflicts and misunderstandings, which in turn could result in wasted efforts or ineffectual regulations. A query of individuals involved with various aspects of New York State aquaculture found many in agreement that a forum fostering mutual understanding among stakeholders would be beneficial. As a result, approximately 15 individuals from commercial finfish operations, commercial shellfish operations, the NYS Department of Environmental Conservation, the NYS Department of Agriculture and Markets, various universities and extension services met in Albany in 1986. The initial meeting was sufficiently successful to plan another six months later, and semi-annual forums comprised of six to nineteen individuals have continued on a meeting-to-meeting basis for twelve years. This presentation describes the evolution of the forum, its limitations and successes, and some of the topics addressed over the years.

Presentation (Professional)

Investigation of Walleye Spawning in the Vicinity of the Upper Raquette River Hydroelectric Project and Carry Falls Project in Northern New York.

Kurt J. Jirka and John Homa, Jr.
Ichthyological Associates, Inc.
50 Ludlowville Road, Lansing, NY 14882

Niagara Mohawk Power Corporation (Niagara Mohawk) sponsored an investigation of walleye spawning in the vicinity of its Upper Raquette River Hydroelectric Project and Carry Falls Project located on the Raquette River in northern New York. The objective of the study was to determine the timing, duration, and location of walleye spawning in this reach of the Raquette River. The results of this investigation were used in negotiating a license settlement agreement for Niagara Mohawk's hydroelectric projects on the Raquette River. The investigation began March 8, 1996 with the installation of continuous water temperature recorders. Fisheries sampling included use of spotlights, a boat electrofisher, and rod and reel. Sampling was concentrated in the bypass reaches, tailraces and major tributaries of the projects, since these areas were most likely to contain walleye spawning habitat. Fisheries sampling occurred from April 12 through May 22, 1996. A total of 422 observations or captures of walleye were made during the study. Based on Numbers of fish observed, reproductive condition of walleye captured, and water temperature data, the majority of walleye spawning in this reach of the Raquette River occurred at water temperatures ranging from approximately 5.3 to 8.6 ^{o}C during April 25 through May 8, 1996. Much of the walleye spawning activity in this reach of the Raquette River occurs in or adjacent to bypass reaches associated

with the hydroelectric developments. Spawning within the bypass reaches is dependent of the release of water at an upstream dam which inundates suitable spawning substrates and provides the necessary flows that keep spawning areas clean of silt and debris.

Presentation (Professional)

The Relationship Between the Abundance of Smallmouth Bass and Double-crested Cormorants in the Eastern Basin of Lake Ontario.

B.F. Lantry[1], T.H. Eckert[1], C.P. Schneider[1], A. Schiavone[2], R.D. McCullough[2], and J.H. Johnson[3]
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Tunison Laboratory, Cortland, New York 13045

The smallmouth bass (*Micropterus dolomieu*) fishery of the eastern basin of Lake Ontario was one of the premier warmwater fisheries in New York State (Brown 1975; Krester and Klatt 1981). In recent years anglers and business owners have complained that the quality of smallmouth bass fishing in the eastern basin has deteriorated to the point that it no longer supports a viable fishery. Recent creel surveys corroborated the declines in fishing quality (Eckert 1998a; McCullough and Einhouse 1999). Chrisman and Eckert (1998), using index gillnet data, also documented that during the 1990s eastern basin smallmouth bass population declined to the lowest level recorded in over two decades. At the same time the smallmouth bass population was declining, the double-crested cormorant (*Phalacocorax auritus*) population on Little Galloo Island was increasing exponentially (Weseloh and Collier 1995). From 1993-97, United States Geological Survey biologists reported that double-crested cormorants were consuming between 200,000 to 1.25 million smallmouth bass annually from eastern Lake Ontario (Ross and Johnson 1995; in press). Recently, two studies have shown that cormorants consume age-2 to 5 bass in the eastern basin of Lake Ontario (Adams et al. 1998; Schneider and Adams 1998). With this new information the link between cormorant predation and bass mortality could be examined. The objectives of this study were to establish whether or not double-crested cormorant predation significantly increased mortality of smallmouth bass in the eastern basin of Lake Ontario and if this mortality could cause the declines recorded in bass population and fishery.

Presentation (Professional)

Decline of Slimy Sculpins in Southeastern Lake Ontario: A Consequence of Dreissenid Colonization and Nutrient Abatement.

R. W. Owens[1], R. Ruby[2], and R. O'Gorman[1]
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Slimy sculpins were abundant in southeastern Lake Ontario for decades as evidenced by consistently large catches in bottom trawls in 1964, 1972, and 1980-1991. However, abundance declined sharply in 1991-1992, and within three years the numbers caught dropped by over 90%. Diminished food resources appear responsible for the decline as emaciated slimy sculpins, dead and alive, were present in autumn, 1992. In contrast, in south central and southwestern Lake Ontario, where slimy sculpin density was lower than in the southeast, numbers of sculpins did not decline. Several other observations support the notion that the slimy sculpin decline in the southeastern Lake Ontario was due to reductions in food production: slimy sculpins in the southeast ate fewer food items, were shorter, had lower lipid concentrations, and were less fecund than sculpins in other areas of southern Lake Ontario.
We believe that colonization of the Lower Great Lakes by dreissenids accelerated ongoing reductions in productivity set in motion by nutrient abatement, lowering food production in the profundal zone of southeastern Lake Ontario below that needed to sustain the dense population of slimy sculpins. The dense population, particularly at depths >70 m, built up mainly because endemic fishes that preyed on, or competed with slimy sculpins, were either eliminated or greatly reduced by the 1960's. Slimy sculpins will not return to their former level of abundance in southeaster Lake Ontario and furthermore, they most likely will decline lakewide – piscivorus fishes are increasing and moving into the profundal zone; round goby, potential competitors and predators, are invading; Diporeia, historically a major food item, have collapsed; and dreissenids continue to expand.

Presentation (Professional)

**Comparison of Growth, Movement, and Catch of Stocked Brook Trout,
Rainbow Trout, and Brown Trout in an Adirondack River**

Owen E. Baird, Charles C. Krueger, and Daniel C. Josephson

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Performance after stocking was compared among hatchery brook (*Salvelinus fontinalis*), rainbow (*Oncorhynchus mykiss*), and brown trout (*Salmo trutta*) in an episodically acidified Adirondack river that during the summer approaches lethal maximum temperatures. Effect of species, size, and stocking date on angler catch were also determined. Brook and rainbow trout were stocked in late May and early June of 1996 and 1997, while brown trout were stocked only in 1997. Stocked fish were age 1 and age 2, and marked with visible implant tags. Stocked fish were captured in the summer (May – October) after stocking. Both years, brook and rainbow trout had negative mean weight change (mean instantaneous growth rate (G) per day ± SE; brook -0.0019 ± 0.00011, rainbow -0.00180 ± 00051). The growth rate for brown trout was near zero (0.00021 ± 0.00063). The few fish that had positive growth rates were the smallest fish (< 275 mm). Most fish were captured near their point of release, within 1 km. Brook trout had mean upstream movement in both years (0.7 ± 0.14 km). Rainbow trout had a mean upstream movement in the first year (0.7 ± 0.31 km) and a mean downstream movement the second year (-1.3 ± 0.44 km). Brown trout did not show directionality different from zero (-0.318 ± 0.62 km). Brook and brown trout stocked in early June were always caught more frequently than fish stocked in late May. Larger (> 300 mm) rainbow trout were caught at a higher rate than smaller (< 260 mm) fish. Volunteer reports by anglers indicated catch of 63 % of the brook trout stocked, 46 % of the rainbow trout stocked, and 17 % of the brown trout stocked. These results suggest that brook trout and large rainbow trout provided the greatest return to anglers and that most stocked trout showed little growth in the months after stocking.

Presentation (Student)

Rheotactic Response of Four Wild Strains of Brook Trout

Heather M. Barker and Charles C. Krueger
Department of Natural Resources, Fernow Hall
Cornell University, Ithaca, NY 14853

Direction that juvenile fish choose to move from spawning locations to find rearing lakes is often triggered by water current (a rheotactic response) and is influenced by a suite of genetic and environmental variables. Brook trout (*Salvelinus fontinalis*) may spawn in inlets, outlets, or on lake shoals. Some evidence suggests that different rheotactic responses may exist among brook trout strains. The objective of this study is to compare the rheotactic response of Assinica, Temiscamie, Horn Lake, and Little Tupper strains of brook trout fry. Four strains of brook trout were used: an outlet spawner (Assinica-Canada), an inlet spawner (Temiscamie-Canada), and shoal spawners (Horn Lake and Little Tupper Lake from the Adirondack region of New York). Little Tupper Lake strain fish may also use inlets or outlets. Brook trout fry 12-18 weeks after emergence were stocked in a stream section with traps at each end. Traps were checked at dawn and dusk daily for five days after stocking. More Assinica strain fish moved upstream (94.4%, $P<0.001$) than downstream while more Temiscamie brook trout moved downstream (66.5%, $P<0.001$) than upstream. Similarly, more Little Tupper Lake strain brook trout moved upstream (65.7 %, $P=0.008$) than downstream. Horn Lake trout movement showed a slight upstream tendency but was not different between upstream and downstream directions ($P=0.07$). Brook trout strains may be pre-adapted to different types of waters. These adaptations could include use of different areas for spawning (inlets, outlets, or shoals) and require genetically encoded upstream or downstream movement of the fry to reach the rearing habitat. Matching the traits of a particular strain used for stocking to specific spawning and juvenile rearing environments could enhance survival and reproduction, and speed population restoration.

Presentation (Student)

Implications of Young-of-Year Alewife Grazing on the Zooplankton Community of Irondequoit Bay, New York; a Comparison of Consumption Estimates Using Three Possible Bioenergetics Models.

Robert A. Klumb, Lars G. Rudstam, and Edward L. Mills
Cornell Biological Field Station
900 Shackelton Point Road
Bridgeport. New York 13030

Predation on zooplankton communities by young-of-year (YOY) fishes can be great since YOY increase their weight up to four orders of magnitude in their first year of life. One method to study trophic interactions of zooplanktivorous fishes and their prey is with bioenergetics models. Bioenergetics models are based on a mass or energy balance where individual fish consumption equals the sum of all metabolic costs, waste losses, and growth. To study interactions between YOY alewife and zooplankton in Irondequoit Bay, a Lake Ontario embayment, I compared three alternative bioenergetics models for YOY alewife: 1) the adult alewife model (extrapolated model), 2) a YOY Atlantic herring *Clupea harengus* model based on empirical swimming speed data, and 3) a new larval model I created using parameters from the adult alewife model, the herring model, and a review of the larval clupeid literature. Estimated consumption from the extrapolated model was

22 – 47% higher than the larval herring or new larval models. Larval alewife consumption estimated with any model never exceeded zooplankton production in Irondequoit Bay. Densities of larval alewives observed throughout the summer of 1998 were low (0 – 1.5 fish/1000 m^3). However, our larval fish densities may be underestimated due to size selectivity of the nets; fish longer than 20 mm were rarely caught. Implications of underestimating larval fish density in this study and comparisons with higher historic larval alewife densities observed in Lake Ontario are discussed.

Presentation (Student)

Emigration of Adult Landlocked Atlantic Salmon from Selected New York Lakes:
Potential Effects on Population Structure, Reproductive Success,
and the Establishment of a Recreational Fishery.

Matt Nemeth[1], Charles Krueger[1], Dan Josephson[1], Al Schiavone[2], and Bill Gordon[2]
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[2]NYSDEC (Region 6) 317 Washington St. Watertown, NY 13601

The emigration of adult landlocked Atlantic salmon (*Salmo salar*) from six small (52 - 270 ha) New York lakes was estimated during the 1998 spawning run. Emigration was highest in Little Moose Lake (51%) and Bay Pond (48%), lower in First Bisby Lake (19%), and nonexistent in Sixberry, Lake of the Woods, and Millsite lakes. Emigrant salmon had not spawned and did not return to the lake, suggesting that these fish do not successfully spawn before being lost from the fishery. Emigrant salmon were also within the age range reported for salmon at first maturity, indicating that these fish may be lost from the system upon reaching legal size for harvesting. Substantial emigration of salmon may thus hamper population establishment and reduce the number of adult fish available to the recreational fishery. If the migration of adult salmon has a genetic influence, strains with less extensive spawning migrations may be more suitable for stocking in New York.

Presentation (Student)

A Comparison of White Sucker Growth Chronologies Between Two New York Lakes.

Nathan G. Smith and Charles C. Krueger
Department of Natural Resources, Fernow Hall, Cornell University, Ithaca, NY 14853

A record of the individual growth history of a fish is contained in the increments between annuli found on the calcified structures of that fish. Growth chronologies created from these structures allow managers to study fish growth over many years without maintaining long-term data collection. For example, a 20+ year growth chronology can be created from a sample collected in one year. The objective of this study was to create growth chronologies for white suckers (*Catostomus commersoni*) in two New York lakes, Little Moose Lake and Oneida Lake, and to relate changes in annual growth to abiotic and biotic factors operating on and in the lakes. White suckers were chosen because they are common in both lakes, are relatively long-lived, and since they are not a game fish, angling should minimally effect abundance levels. Growth chronologies for suckers from both lakes were created using the Weisberg model, an ANOVA model that separates growth into age and environmental effects. Little Moose Lake white suckers grow more rapidly and reach larger sizes than Oneida Lake suckers. This increased growth is likely a factor of increased interspecific competition within Oneida Lake, which contains many more species. Comparing these chronologies to past events within the lakes can give managers an index for predicting the effect on fish growth of future changes in ecosystem structure or function.

Presentation (Student)

Response of the Otsego Lake Pelagic Food-web to Alewife (*Alosa pseudoharengus*) Introduction

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Alewives were introduced to Otsego Lake, NY. in 1986. Decreased secchi transparency and increased total phosphorus and chlorophyll a have been observed following this introduction. To examine impacts of this introduction on the lake, acoustic surveys were conducted to estimate alewife abundance in 1996 and 1997. Seasonal limnological and zooplankton data from 1970, 1996 and 1997 were compared. Alewife density ranged from 1,007 fish/ha on 5/23/97 to 7,008 fish/ha on 6/15/97 with a mean of 3, 865 fish/ha. Alewife density was negatively correlated with the volume filtered by zooplankton ($r=-0.84$, $p<0.01$), but was not correlated with chlorophyll a ($p>0.05$). Chlorophyll a was not correlated with zooplankton biomass ($p>0.05$) or P regeneration. Zooplankton regenerate more P than alewives by an order of magnitude. Transparency was correlated with percent of

the epilimnion filtered ($r=0.76$, $p<0.0003$), but not with chlorophyll a ($p>0.05$). Maximum chlorophyll a values in 1997 occurred in the metalimnion, with cyanophytes more abundant than in the 1970's. Zooplankton filtering and P assimilation decreased greatly from 1970 levels. Current conditions indicate bottom-up (nutrient) control of the algal community resulting in smaller algal cells that are better competitors for nutrients and contribute more to decreased transparency.

Presentation (Student)

Abstracts of Posters

Listed in alphabetical order by author

Tails of Two Lampreys

Douglas M. Carlson
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Brook Lampreys draw our interest because of their strange appearance, scarcity and because of their protected classifications by some states. New York has three brook lamprey species, and the Mountain brook lamprey is currently recommended to be classified as Special Concern. Catch records for all five (or six) of our native lamprey species are few, and more study is encouraged. Catching these fish is not uncommon with electrofishing, but identification is difficult unless they are adults. The tail shapes provide key characteristics. This exhibit will display two live adult lampreys (non-parasitic) and some historic art pieces.

Poster (Professional)

Access to Pictures of Fishes of New York

Jason Hutton, Doug Carlson, Steve Brown, and Ella Elman
NYS Department of Environmental Conservation (Region 6), 317 Washington St, Watertown, NY 13601

Good color pictures of fish help us get others to understand and to be interested in our work. When we want to borrow pictures from books, we are often confronted with copyrights or we simply can't find them. The art works of the New York Biological Survey, in the 1930's, has been available since their creation by Ellen Edmonson and Hugh Crisp, but not at our fingertips. Now they are easy to reach on the Web Page for the New York Sport Fishing and Aquatic Resources Education Program (SAREP). This exhibit has a poster created from some of those pictures.

Poster (Professional)

Jason Hutton is currently a student at Indian River High School near Watertown, NY.

Density and Spawning of the Asian Freshwater Clam in the Roanoke River Delta, North Carolina

John E. Cooper
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The Asian freshwater clam (*Corbicula fluminea*) expanded its range from the west coast of the US to the Roanoke River in North Carolina in less than 50 years. This study compares the distribution and density of Asian clams from surveys done in 1978 and 1992-1993. Spawning occurs primarily in spring and summer but there is evidence that spawning may occur throughout the year. Most spawning occurs in the upper part of the Roanoke River delta. Density of clams was greater at stations with depths of 3 meters or greater and density decreased at stations in the lower delta and western Albemarle Sound. Density was negatively correlated with silt in the substrate. Clams at the lower delta and sound stations had significantly lower body condition. The majority of clams in the sampled population increased from 10mm or less in 1978 to 25 - 29mm in 1992-1993, reflecting the maturation of the population.

Poster (Student)

Habitat Suitability Index Criteria for Walleye, *Stizostedion vitreum*, Egg Incubation.

Kurt J. Jirka and John Homa, Jr.
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This investigation was funded by Niagara Mohawk Power Corporation (Niagara Mohawk) in order to develop habitat suitability index (SI) criteria for incubation of walleye (*Stizostedion vitreum*). These criteria were needed as supporting information for evaluating instream flow needs at Niagara Mohawk's hydroelectric projects on the Raquette River in northern New York State. The habitat variables for which SI criteria were developed were water velocity, water depth, water temperature, and substrate. The criteria were developed using the Delphi technique, a consensus-generating exercise utilizing a panel of experts on the subject of interest. A comprehensive literature review was conducted in conjunction with the Delphi exercise. Information gathered in the literature search was compared to the criteria generated from the Delphi exercise for points of agreement and disagreement. In

general, the criteria developed through the Delphi exercise were in agreement with the information obtained from the literature. Suitable current velocities for incubation of walleye eggs, as defined by the SI criteria, range from 0.0-9.8 ft/s, with an optimal range of 0.3-3.5 ft/s. Suitable water depths ranged from 0.2-20.0 ft, with optimal depths ranging from 1.0-5.0 ft. Water temperature suitable for incubation of walleye eggs ranged from 2.5-21.0 ^{o}C. Optimal temperatures were in the 10.0-15.5 ^{o}C range. Cobble was identified as the most suitable substrate followed by gravel. Substrates finer than gravel (sand, silt, mud, dead organic matter) and bedrock had very low suitability for walleye egg incubation.

Poster (Professional)

PIXE Analysis of Otolith Elemental Composition: New and Rapid Insights into Fish Life History.

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Particle induced x-ray emission analysis (PIXE) is a relatively new microbeam technique that uses a nuclear particle (proton) beam for x-ray spectroscopy. Because of the protons' relatively high energy, PIXE analysis not only quantifies elements in the specimen, but does so with very little "bremsstrahlung" or "braking" radiation, a serious source of background noise in electron microprobes. This allows for rapid, high resolution elemental analysis at very small scales (ca. 1-30 mm), suitable for otolith microanalysis. We have applied this technique to investigations of diadromous and marine fishes from a number of systems. Although otolith strontium is the most useful trace element in terms of revealing migration, other detectable trace elements of interest in otoliths include zinc, magnesium, iron, phosphorus, and bromine. Using this technique, we present evidence of unusual migrations of American shad (*Alosa sapidissima*) and brown trout (*Salmo trutta*), and show temperature histories recorded in 5,000 year old codfish (*Gadus morhua*) otoliths.

Poster (Professional)

An enclosure experiment evaluating the effects of *Acentria ephemerella* larvae on the growth of Eurasian watermilfoil (*Myriophyllum spicatum*)

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Eurasian watermilfoil (*Myriophyllum spicatum* L.) is the predominant submersed aquatic plant nuisance in North America. Dense milfoil beds impede movement of pelagic fishes, select for an over abundance of juvenile and forage fishes, and alter feeding behavior. The aquatic moth *Acentria ephemerella* Denis & Schiffermuller (= *Acentria nivea* Olivier), a milfoil herbivore, is found throughout the northern United States, southern Canada, Europe, and Asia. Declines of Eurasian watermilfoil populations accompanied by reestablishment of native macrophyte communities are associated with this moth. We conducted an enclosure experiment within Dryden Lake, NY to evaluate the effects of various densities of *Acentria* on watermilfoil growth. Minimum densities required to limit watermilfoil were determined for use in future *Acentria* augmentations. *Acentria* larvae significantly reduced Eurasian watermilfoil elongation at all treatment levels ($p<0.05$). *Acentria* interrupt watermilfoil elongation by feeding on and cutting the apical meristem (growing tip). *Acentria* larvae significantly reduced milfoil biomass at four of the five treatment levels ($p<0.05$). One treatment of another milfoil herbivore, the aquatic weevil *Euhrychiopsis lecontei* Dietz, was incorporated into this experiment to measure its effect on watermilfoil growth. No significant reduction in stem length or biomass ($p<0.05$) occurred in the weevil treatment. Our results suggest that the augmentation of *Acentria* populations can be a valuable tool for managing Eurasian watermilfoil.

Poster (Student)