

*Call for Papers  
Nominations*

# American Fisheries Society



## Minnesota Chapter

SEPTEMBER 1992 **AFT**

2868 CHESTNUT CIRCLE NE  
BRAINERD, MN 56401

FIRST CLASS



**CALL FOR PAPERS**  
**26<sup>th</sup> Annual Meeting**  
**Minnesota Chapter of the American Fisheries Society**  
**January 27-29, 1993**

The 26th Annual Meeting of the Minnesota Chapter of the American Fisheries Society will be held jointly with the Minnesota Chapter of The Wildlife Society. This meeting will be held at Cragun's Conference Center in Brainerd, beginning with an evening social on Wednesday, January 27 and continuing through Friday, January 29.

The meeting will include a **Special Session: Toward Sustainable Management of Land, Water and Living Resources: New Roles for Fisheries and Wildlife Professionals.**

This is the first time these two societies have met jointly. This warrants a special session to address such new and important topics as integrated resource management. This session will consist of invited speakers from a number of resource management agencies and will feature invited keynote speaker Dr. James Karr from the University of Washington. This session will be held during one half of the first day (Thursday, January 28) and there will be no concurrent meetings. This session will also culminate in a facilitated panel discussion.

Contributed papers and posters on general fisheries and wildlife resource subjects will be presented during concurrent sessions held throughout the balance of the meeting. Specific, additional themes for concurrent sessions have not been set at this date, but one session will probably include aquatic issues involving both fisheries and wildlife. We therefore encourage members working on such subjects to submit abstracts for talks. AFS chapter members who wish to make an oral or poster presentation should submit abstracts to Don Pereira, Program Chair.

Oral presentations will be allotted a total time of twenty minutes -- 15 minutes for the presentation and 5 minutes for questions. Only 35 mm slides will be allowed for oral presentations.

Poster layouts should be arranged in a 4' high by 8' long area. Additional guidelines will be sent to those participants using poster format.

**Special Note to Instructors/Professors:** We encourage presentations in the sessions by

undergraduate and graduate students. Please notify and encourage your students to participate in this meeting.

**Abstract Deadline: December 18, 1992**

Please send to: Don Pereira, Minnesota DNR  
1200 Warner Road, St. Paul, MN 55106  
work: (612) 772-7962 home: (612) 645-7652

**ADDITIONAL MEETING INFORMATION**

This meeting will be held at Cragun's Conference Center in Brainerd. Cragun's is a full-service resort offering a variety of recreational activities (see the attached information). Site selection for this meeting was a bit challenging given the anticipated large attendance. Accommodations (room and board) are available on site. Enclosed you will find a detailed reservation form. Individuals must reserve their own room and board plans directly with Cragun's. **Please note the Preferred Lodging Deadline on December 27, 1992.** While expenses may appear on the high side, advanced planning can reduce one's costs. Triple and quad occupancy are an economical way to go, but you should coordinate with potential room mates ASAP to insure availability of conference rates and other amenities such as roll away beds. Also, please note that the annual banquet will be held on Thursday evening, and the cost for this is included in the lodging/meals package plans. Students taking advantage of the student nightly rate can also purchase some meals including the banquet separately. A complimentary social gathering will be held Wednesday evening. We anticipate a very full conference schedule that will probably get underway first thing Thursday morning and adjourn by mid-afternoon on Friday. Chapter business meetings will be held at the end of regular sessions on Thursday. Final meeting details will be in the December newsletter.

**TO ALL MN AFS CHAPTER MEMBERS:  
NOMINATIONS FOR 1992 MN AFS CHAPTER OFFICERS**

Please complete the following form and return it to me by mail to nominate candidates for 1993 Chapter Officers. Nominations must be received by December 30, 1992. You may also contact me by telephone at (218)335-8662.

Chantel Cook, Nominating Committee Chair  
Chippewa National Forest  
Route 3, Box 244  
Cass Lake, MN 56633

**PRESIDENT-ELECT:** This year preference will be given to candidates from the open category (representing private or tribal fisheries or hatcheries, utilities, etc.).

1. \_\_\_\_\_  
Affiliation \_\_\_\_\_  
Telephone \_\_\_\_\_

2. \_\_\_\_\_  
Affiliation \_\_\_\_\_  
Telephone \_\_\_\_\_

**SECRETARY-TREASURER:**

1. \_\_\_\_\_  
Affiliation \_\_\_\_\_  
Telephone \_\_\_\_\_

**EXECUTIVE COMMITTEE MEMBERS-AT-LARGE:** Nominate one or more candidates from each of the four affiliation groups: Academic, Federal, MN DNR, and Open.

1. \_\_\_\_\_  
Affiliation \_\_\_\_\_  
Telephone \_\_\_\_\_

2. \_\_\_\_\_  
Affiliation \_\_\_\_\_  
Telephone \_\_\_\_\_

3. \_\_\_\_\_  
Affiliation \_\_\_\_\_  
Telephone \_\_\_\_\_

4. \_\_\_\_\_  
Affiliation \_\_\_\_\_  
Telephone \_\_\_\_\_

5. \_\_\_\_\_  
Affiliation \_\_\_\_\_  
Telephone \_\_\_\_\_

6. \_\_\_\_\_  
Affiliation \_\_\_\_\_  
Telephone \_\_\_\_\_

7. \_\_\_\_\_  
Affiliation \_\_\_\_\_  
Telephone \_\_\_\_\_

8. \_\_\_\_\_  
Affiliation \_\_\_\_\_  
Telephone \_\_\_\_\_

STAMP

CHANTEL COOK, NOMINATING COMMITTEE CHAIR  
CHIPPEWA NATIONAL FOREST  
ROUTE 3, BOX 244  
CASS LAKE, MN 56633

**FISHERIES/WILDLIFE SOCIETIES  
JANUARY 27-29, 1993 (WED-FRI)**

**PER PERSON PACKAGE INCLUDES:**

- Assorted recreation use listed on reverse
- MN sales tax & service charge
- Lodging and meals according to package
- PLEASE ✓ YOUR PACKAGE/OCCUPANCY:

Please note: Triple, quad and student rates may mean sharing double beds.

▼ **Two Night - 6 Meal Plan**

- Lodging Wednesday and Thursday, six meals (supper Wednesday through lunch Friday)
- \$183.71 Sgl Occ
  - \$124.92 Tpl Occ
  - \$142.07 Dbl Occ
  - \$102.88 Quad Occ

▼ **Two Night - 5 Meal Plan**

- Lodging Wednesday and Thursday, five meals (breakfast Thursday through lunch Friday)
- \$167.18 Sgl Occ
  - \$108.40 Tpl Occ
  - \$125.54 Dbl Occ
  - \$ 86.35 Quad Occ

▼ **Thursday Only - 4 Meal Plan**

- Lodging Thursday, and four meals (lunch Thursday through lunch Friday).
- \$101.05 Sgl Occ
  - \$71.65 Tpl Occ
  - \$ 80.23 Dbl Occ
  - \$60.63 Quad Occ

▼ **Student Rate - No Meals**

Nightly rate \$19.70 based on multi occupancy. Reserve meals under MEALS. Some cottage rooms have cooking facilities. Request this on the **Special Request** line in the **REGISTRATION** section. Please select which night(s) to reserve:

- Wednesday
- Thursday

**MEETINGS ONLY/NO LODGING**

I will require no lodging, but will attend meetings on the following days at \$6.00 per day:

- Thursday
- Friday

**Entire prepayment must accompany form.**

**ROOMMATES**

Indicate the name of your roommate below. (Each person must complete a separate reservation form).

If you wish to be assigned a roommate, or the person(s) listed above does not reserve and you would then like an assigned roommate, please indicate your preference:

- Smoker
- Non-Smoker
- Either
- Neither. I will pay for a single room.

**Single Occ. charged if we are unable to assign a roommate**

**LODGING**

Lodging is run of house at Cragun's option. Rooms assigned on a first come, first served basis. However, you may select your preference below:

- Fireplace:** Large room with two double beds, fireplace, refrigerator, TV and VCR. Faces the lake.
- Poolside:** Large rooms with two double beds, TV, VCR and refrigerator. Patio or balcony level.
- Cottage Room:** Private room in complex outside lodge. Each room has its own outside entrance.

**MEALS**

If you are attending without being on a meal plan (student rate or day participant) and would like to participate in the meals below, please ✓ those you wish to reserve. (Reservations necessary to assure availability). Tax and service charge included.

- breakfast Thursday . . . . . \$ 7.35
- lunch Thursday . . . . . \$ 9.19
- banquet Thursday . . . . . \$13.78
- breakfast Friday . . . . . \$ 7.35
- lunch Friday . . . . . \$ 9.19

**Complete 1 Form Per Person Or Couple.  
Make A Copy Of This Form For Your Records.**

**REGISTRATION/INFORMATION.**

**PREFERRED LODGING HELD UNTIL**

**DECEMBER 27, 1992.**

If short of space after this date, we will notify you of alternate lodging upon receipt of your form.

**DEPOSIT OF \$60 PER PERSON REQUIRED**

Mr./Mrs./Ms. \_\_\_\_\_

Street \_\_\_\_\_

City \_\_\_\_\_ ST \_\_\_\_\_ Zip \_\_\_\_\_

Day Phone (\_\_\_\_) \_\_\_\_\_

Arrive/Depart Dates: \_\_\_\_\_ / \_\_\_\_\_ to \_\_\_\_\_ / \_\_\_\_\_ #Nights \_\_\_\_\_

**Special Requests:** (i.e. Room Accessibility, Dietary, etc.) Explain: \_\_\_\_\_

**One of the Following Required for Reservation:**

- Voucher/Purchase order (Send with form)
- Check (Send with form)
- Credit Card (Card Charged Upon Receipt of Form)

Visa, Mastercard, American Express Accepted

Card # \_\_\_\_\_ Exp. ✓ / \_\_\_\_\_

Cardholder's name: \_\_\_\_\_

**MAIL OR FAX ENTIRE FORM (DO NOT CUT) TO:**

Cragun's Conference Center  
2001 Pine Beach Road, Brainerd, MN 56401  
Fax Number: 218-829-9188

**QUESTIONS? Call 218-829-3591.**

**PHONE RESERVATIONS NOT ACCEPTED.**

**NO PETS ALLOWED ON PROPERTY.**

**Cancellation/Refund Policy:** No refunds on reservations cancelled less than 30 days prior to arrival. Deposits on reservations cancelled 30 days or more prior to arrival will be refunded less a \$20 per person processing fee. Upon receipt of your reservation, you will be held responsible for the dates reserved.

6067 ZRG 2 892

**LARVAL FISH WORKSHOP**  
*Identification and field sampling of freshwater fish larvae,  
with an emphasis on Great Lakes species  
instructed by Dr. Nancy A. Auer  
Michigan Technological University*

The Minnesota Chapter of the American Fisheries Society is hosting a continuing education workshop on larval fish identification. This workshop will provide the basic techniques needed to sample and identify freshwater larval fish. The course is designed for the student who has little or no experience with larval fish, and will focus on identification of Great Lakes area fishes only. Preserved samples will be provided for laboratory instruction, but students are encouraged to bring fresh (1-3 years old) larval fish samples with them. The workshop will provide a mix of lecture with hands-on experience.

Lodging and meals will be provided by the Lake Itasca Biological Station located near Lake George, MN. Sleeping quarters will be in several of the station cabins. The Biological Station is located in Itasca State Park on the shores of Itasca Lake, so bring fishing gear if your schedule allows extra time.

**Tentative Workshop Schedule and Syllabus**

**June 9 - Afternoon**

- Introduction and discussion of gear types and use.
- Field sampling with several gear types.
- Preserve samples, begin sorting and clearing.
- Evening
- Set light traps and drift nets, night seine.

**June 10 - Morning**

- Collect light and drift net samples.
- Larval fish taxonomy and identification.
- Examine samples, sort samples, examine specimens.
- Afternoon
- Continue laboratory work, clear and stain.
- Lecture about larval fish research.

**June 11 - Morning**

- Larval fish ecology and habitat use.
- Continued laboratory work.
- Otoliths.

\*\*\*\*\*

**When:** 9 June, 1:00 p.m. - 11 June, 12:00 a.m., 1993  
**Where:** Univ. of MN, Lake Itasca Biological Station.  
**How many:** 25 maximum  
**Cost:** \$55 - Instruction fee, text, AFS continuing education registration  
\$100 - Activities, meals & lodging at the biological station

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**ADVANCED REGISTRATION IS REQUIRED.** Space is limited, so the workshop will be filled on a first-come first-serve basis. Please register early. Workshop participants will be provided with more detailed information during early May 1993.

**NON-PARAMETRIC STATISTICS WORKSHOP**  
*instructed by Dr. David Bowden*  
**Colorado State University**

The Minnesota Chapter of the American Fisheries Society will be hosting a continuing education workshop on non-parametric statistics. Dr. Dave Bowden has agreed to return to Minnesota to present this workshop. For those of you who have not heard Dr. Bowden teach, he presents statistics in a very understandable fashion, with many fisheries examples. The workshop will emphasize the application of non-parametric methods to real data collected during fisheries management and research.

As of this newsletter, the exact dates were not confirmed with Dr. Bowden, but this workshop will take place either in June or August 1993.

**Tentative Workshop Schedule and Syllabus**

- I. Review of basic statistical concepts: Frequency distributions, measures of variation, discrete and continuous random variables, mathematical probability distributions, point and interval estimation, and type I and type II errors.
- II. One Sample Procedures: Rank and order statistics, confidence intervals for median and other quantiles, tolerance intervals, confidence bands.
- III. Two Sample Procedures (paired and unpaired samples): Sign, Wilcoxon signed rank, Man-Whitney, Wilcoxon sum rank, Kolmogorov-Smirnov tests; Siegel-Tukey test of equal variance; confidence intervals for the additive treatment effects or differences in population medians.
- IV. Contingency tables and Chi square tests: Test of independence and equality of proportions in 2x2 tables, test of equality of several proportions, r x c contingency tables, median tests, Chi square goodness of fit test, Cochran's Q test.
- V. Measures of association: Spearman rank-correlation coefficient, Kendall's Tau, tests for trend.
- VI. K sample procedures: Kruskal-Wallis test, multiple confidence interval procedures for the Kruskal-Wallis test, Friedman test, and multiple confidence procedures.

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When: Four days in June or early August 1993  
Where: Yet to be determined.  
How many: 25 maximum  
Cost: Approximately \$250.00 per student.

\*\*\*\*\*

**LARVAL FISH WORKSHOP REGISTRATION FORM**

Please register me for the "Larval Fish Workshop".

Name \_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_

Phone (Work) \_\_\_\_\_ (Home) \_\_\_\_\_

Organization \_\_\_\_\_

Do you have a species or family of particular interest that you would like to see presented in more detail (if so, please list here)? \_\_\_\_\_

Larval workshop fee and text - \$55 \_\_\_\_\_  
Meals & lodging at the biological station - \$100 \_\_\_\_\_

Total cost \_\_\_\_\_

**REGISTRATION DEADLINE IS APRIL 10, 1993**

Send registration form and payment (checks payable to MN-AFS) to:

Mark Cook, MN-AFS Continuing Education Chairman  
Area Fisheries Headquarters  
2114 Bemidji Ave  
Bemidji, MN 56601

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**NON-PARAMETRICS WORKSHOP REGISTRATION FORM**

The final arrangements for the workshop should be completed soon, formal registration forms will appear in the next newsletter. However, registration will be accepted on a tentative basis for the time being (please complete the following form). When the final arrangements are complete, you will be mailed (before the next newsletter) a formal registration form and all the details. Please register me for the "Non-parametric Workshop".

Name \_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_

Phone (Work) \_\_\_\_\_ (Home) \_\_\_\_\_

Organization \_\_\_\_\_

Send registration form to:

Mark Cook, MN-AFS Continuing Education Chairman  
Area Fisheries Headquarters  
2114 Bemidji Ave  
Bemidji, MN 56601

## AN ESSAY: FISHING IN MINNESOTA by Steve Quinn

From my office window, I look out on Highway 371 as it runs from Brainerd to Bemidji and beyond. The procession of fishing boats heading north on Friday afternoon suggests that this sport also is a big-time business in our state. Putting proof to this perception often has been difficult but two recent publications are excellent references for anyone involved with managing sport fisheries or monitoring the environment that supports these fisheries.

National License Study: A State By State Analysis Of The Factors That Affect Sport Fishing License Sales, a report done by Tony Fedler and Noel Sweezy for the U.S. Fish and Wildlife Service, reveals much about the economics of the licensing process. It also has data on angler contributions to state economies that go beyond license purchases or Wallop-Breaux funds. They highlight the sales tax and income tax revenues generated from angler expenditures and the economic output of the sport fishing industry.

Nationally, sport fishing expenditures amounted to \$27.15 billion and these generated over \$1.3 billion in sales tax and \$400 million in income taxes during 1985. In Minnesota, angling expenditures of \$816.7 million generated sales tax of \$56.6 million and income tax of

19.6 million. Sportfishing in Minnesota also generated 26,782 jobs and \$362.555 in income. Minnesota's estimated population of 1,793,000 anglers (including non-residents) fished 28,368,000 days in 1985. Angling generated \$1.99 in state sales tax on the average and \$.69 in income tax each time a person went fishing.

Sport Fishing Institute's Compendium of Sport Fishing Statistics has another 74 pages of statistics on sport fishing and its economic aspects. Among the 50 states, Minnesota ranked 24th in daily spending by anglers, at \$28.79. Alaska and Michigan were #1 and #2 (\$50.86 and \$50.72, respectively). In total angling expenditures, Minnesota ranked 11th (Florida and California on top); and it ranked 9th in jobs generated by sport fishing. The message is clear, to help our beleaguered economy, go fishing!

I'm chagrined to note that Minnesota anglers splurged \$36 million on beer, wine and liquor while parting with only \$1.9 million for highly educational fishing magazines. Perhaps we'll have to consider some form of liquid reward for new subscribers. And finally, my suspicions were confirmed. Minnesota ranked 3rd nationally in number of registered watercraft in 1987, but we're number one in boats per capita.

## FIELD REPORT: DNR FISHERIES MANAGEMENT by Taylor "And One Muffin" Polomis

A Portent of Things to Come? Metro Fisheries personnel, including me, were assembled on the morning of 16 September to discuss potential research projects in the 7-county area. DNR Research Biologist and Minnesota Chapter AFS President-Elect **Don Pereira** organized and led the meeting. After 3 hours of intently listening to the suggested ideas of Area and Regional staff, Don summarized our needs by ignoring the offerings and proposed a project he had "in the can" for months as the top research priority. (It is, however, a good research idea).

During the month of August, 6 Area offices mobilized to conduct a source-to-mouth fish population assessment of the Minnesota River, led by **Chris Kavanaugh** and **Kevin Stauffer** of the Hutchinson office. A variety of gear and sampling methods, from electrofishers to seines to trotlines, was used to sample the piscatorial fauna. The ability to use different techniques "added more information" and made for a "learning experience", according to **Brad Carlson** and **Lee Sundmark** of the Spicer station.

Thanks to the efforts of the Information and Education Bureau, our river experiences were captured on videotape and in print. The exposure included the Spicer crew appearing on Alexandria TV (Ch. 7/12) and having newspaper reporters show up 3 days in a row at worksites, the Metro West crew making it to the airwaves courtesy of KMSP-TV and **Christie Nixon** (Waterville Area Office Assistant Manager) posing for the Mankato paper with a 28-pound (12.7 kg) flathead catfish.

Bemidji moves south? Congratulations to **Roy Johannes** and **Henry Drewes**, who both were recently promoted to Fisheries Program Coordinator positions at the St. Paul Central Office. Roy was the Area Manager and Henry was the Regional Project Coordinator in Bemidji. Add to these advancements several old, but still noteworthy, moves, including: **Chris Kavanaugh**, **Roger Hugill** and **Tim Schlagenhaf**, new Area Managers at Hutchinson, Hinckley, and Lake City, respectively; and **Dave Coahran** and **Paul Eiler**, Assistant Area Managers at International Falls and Grand Marais. Best of luck to all.

**FIELD REPORT: OTHER FISHERIES**  
*by Steve Quinn, EXCOM Member*

On June 6, the U.S. Fish & Wildlife Service, Bureau of Indian Affairs (BIA), and Minnesota Tribes held their first Federal Fishing Day at Minnesota Valley Wildlife Refuge in the Twin Cities. The purpose of the event was to introduce inner-city youth to the joys of fishing. An educational approach was used, and youth learned about the different types of fish species and habitats found in Minnesota waters, and how to locate and catch these fish. There also were demonstrations of fishery assessment techniques used by resource agencies, a fishing contest, and a Red Lake walleye fry served by Minnesota Vikings cheerleaders. Portions of the In-Fisherman's successful Pathways to Fishing program were incorporated into the event. All participants received rod and reel combos, and numerous prizes donated by Minnesota sports teams were given away. The delight in the eyes of the youth participants guarantees that this will become an annual event.

Minnesota Tribes, in conjunction with the BIA, operated a booth at the Minnesota State Fair for the third consecutive year. Themes of this year's booth included treaties, resource management, and traditional values. Tribal and BIA employees took turns staffing the booth, and numerous educational materials and posters were distributed.

The Great Lakes Region of the Native American

Fish and Wildlife Society, in conjunction with the BIA and midwest Tribes, held its 6th annual fish and wildlife conference September 21-25 in Baraga, Michigan. The conference was hosted by the Keweenaw Bay Tribe. Agenda items included the Tribal Aquaculture Network, Great Lakes Sturgeon Program, a lake management panel, waterfowl and waterfowl impoundments, prairie and wetland restoration, and biological control of purple loosestrife.

The Red Lake Fisheries Assessment Unit and the University of Minnesota are conducting a growth and recruitment study of freshwater drum. Interest in this species is high because the commercial harvest at Red Lakes has exceeded one million pounds per year since 1979, while market values have been consistently low. Some things discovered since the investigation started include the freshwater drum in the Red Lakes grow slowly and recruitment appears periodic. Interestingly, the commercial harvest of freshwater drum has been dominated by one year class (1970) since at least 1987 (the year Red Lake established a fisheries program), and probably since 1979. A 100 year growth history of freshwater drum from the Red Lakes has been constructed using otoliths, and we are also examining mechanisms related to periodic recruitment, as recent evidence suggests that freshwater drum do reproduce in most years.

**FIELD REPORT: DNR FISHERIES RESEARCH**  
*by Brad Parsons*

The four previously vacant Assistant Research Biologist positions have been filled. **Henry Van Offelen**, who was with fish management in Hinckley, has moved to Detroit Lakes. Henry replaces **Paul Cunningham**, whom we lost to the Wisconsin DNR in Madison. Last I heard, Paul has his hands full with a proposed carp processing plant on Lake Petenwell.

**Paul Radomski** has moved to Brainerd. Paul was previously with fish management for several years in International Falls and had a brief stint as the Regional Project Coordinator in New Ulm. Paul R. replaces **Paul Spencer**, who has left to pursue a PhD in either Alaska or Rhode Island, depending on where his major professor ends up. (Lots of Paul's in this column!)

We welcome **Kevin McKeag** to Waterville from Ball State in Indiana. Kevin replaces **Christie Nixon**, who moved across the hall to assistant area manager in Waterville. Also welcome to **Melissa Drake** as the

inaugural assistant biologist in the Metro Area. Melissa comes to Minnesota from Michigan State where she worked with Bill Taylor.

Many research studies have been completed recently, and Investigational Reports are available. The most recent include: An ecological classification of Minnesota lakes with associated fish communities; Fish community responses to manipulation of northern pike and yellow perch densities in a Minnesota Centrarchid lake; Macrophyte removal to enhance bluegill, largemouth bass, and northern pike populations; Evaluation of bioenergetics modeling in the study of predator-prey dynamics in Lake Superior.

These publications and a complete list of all publications in the series are available from: MN DNR, Section of Fisheries, Box 12, 500 Lafayette Road, St. Paul, MN 55155-4012. Also coming in the near future are two reports on muskie, two on smallmouth, one on lake trout, and one on walleye.

**FIELD REPORT: FEDERAL FISHERIES**  
**by Jeff Denny, EXCOM Member**

One of the most enjoyable aspects of AFS membership is learning about the work of member scientists through informal means. A tremendous variety of seemingly unrelated projects all tie in to the common goal of protection and enhancement of aquatic resources. Though the EPA Environmental Research Laboratory in Duluth is not a traditional fisheries organization, many EPA employees are MN AFS members. Here are some of the projects they are working on:

**Dick Siefert** is chief of the Ecosystem Response Branch, which includes the laboratory's ecological risk assessment and biotechnology research programs. His group has developed and refined a littoral enclosure system for testing the ecological effects of pesticides. A series of eighteen, 40 cubic meter littoral mesocosms in a local Duluth pond are dosed with varying concentrations of pesticides. Biological responses are measured at the species and community levels, and distribution and persistence of pesticides are monitored.

**Dan Tanner** is also involved in these littoral enclosure studies, specifically in studying the effects of pesticide induced food web changes on bluegill survival, growth, and reproduction. The pesticides esfenvalerate, azinphos-methyl, and diflubenzuron have been studied thus far. The testing protocols are being developed for use in the pesticide registration process.

Chapter president **Virginia Snarski** is developing new ways to test effects of microbial pest control agents on non target organisms. To evaluate the new methods, **Bti** (*Bacillus thuringensis israeliensis*), used for control of mosquitoes and blackflies, has been tested against rainbow trout, fathead minnows, **Gammarus**, stoneflies, and caddisflies. A containment lab is currently under construction to allow testing of more virulent microorganisms to verify the efficacy of the test methods.

**Ron Carlson** is working on a new project to determine the impact of agrichemicals on aquatic life. The focus is on the western corn belt ecoregion, using the Walnut Creek watershed near Ames, Iowa as a model ecosystem. The goal is to develop ecotoxicological cause and effect information on typical classes of farm chemicals. The data will be used to assess ecosystem restoration techniques and alternative farm management systems.

**J. Howard McCormick** is analyzing the diets of young of the year fish from Saginaw Bay of Lake Michigan, in a study designed to document changes in fish diets due

to the invasion of zebra mussels. Stomach content analyses are being performed on alewife, spottail shiner, rainbow smelt, and trout perch in a cooperative effort with the Michigan Department of Natural Resources.

**Vince Mattson** is on the sediment research team, developing methods for testing sediments from contaminated sites from around the United States. The primary test species are the amphipod *Hyaella azteca*, the midge *Chironomus tentans*, and the oligochaete, *Lumbriculus variegatus*. Vince is currently developing a database on water only (no sediment) exposures, to assist in interpreting results from sediment toxicity tests.

**Larry Herman** is currently designing and building a new test system for studying the effects of dioxin on aquatic life. The system will be able to accommodate seven or eight different fish and invertebrate species, with brook trout being the first species tested. Reassessment of dioxin's ecological effects is one of EPA's top priorities.

**Bob Spehar** is involved in updating existing water quality criteria and developing criteria for new chemicals. These criteria are based on laboratory toxicity testing, and are used by states to develop their own water quality standards. The criteria for tributyltin are soon to be released, and current development efforts are being focused on aniline, parathion, hexachlorobenzene and numerous others.

**Steve Broderius** is chief of the Regulatory Ecotoxicology Branch, which develops and evaluates methods for identifying hazardous chemicals in surface waters, industrial and municipal effluents, and aquatic sediments. Steve's branch has recently completed a major development of methods for characterizing, identifying, and reducing toxicity in industrial and municipal effluents, and is now taking the lead in developing methodology for deriving sediment quality criteria. Branch staff are also involved in research on the ecological risk characterization of dioxin, and developing the medaka and zebrafish as models for the study of carcinogenesis in fish.

These are the activities of MN AFS members at the Environmental Research Laboratory-Duluth. This is only a small sampling of our federal membership in MN AFS. I hope in future newsletters to report on activities of our colleagues in the US Fish and Wildlife Service, National Park Service, the Forest Service, and other federal agencies.

## COMMITTEE REPORTS

**MEMBERSHIP:** By Tim Goeman. The Chapter Mailing list presently numbers 323 after deleting about 75 delinquent members and those who received a one-year complimentary mailing of the newsletter in 1991, but opted not to become members.

All Chapter members are encouraged to consider certification as a Fisheries Scientist or Associate Fisheries Scientist through the Parent Society of AFS. Certification is widely practiced by many professions as one means for setting standards and guidelines for professional recognition. It serves to upgrade the professional image and is a mark of accomplishment. Certification is also a mechanism to demonstrate responsible peer evaluation. The specific objectives of certification are as follows: 1) to provide governmental agencies, private firms, courts, and the general public with a definitive minimum standard of experience and education for fisheries scientists; and 2) to foster broader recognition of fisheries scientists as well-educated and experienced professionals acting in the best interest of the public. Anyone interested in certification can contact the membership chairman for application material and further information.

**PUBLIC AWARENESS:** By Steve Quinn. The committee has been reviewing and commenting on possible Public Service Announcements (PSA's) to run as 20 or 30 second messages on TV stations. Brian Murphy, President of the AFS Education Section

asked Steve Quinn to serve on the AFS Video Committee, which is charged with preparing a video of approximately 10 minutes about the value of fisheries, the diversity and challenges of the profession, and how AFS provides a unifying force in this field. It is intended to recruit students to the fisheries profession and inform the public at sports shows and meetings. During August, Chairman Richard Frie of the University of Wisconsin-Stevens Point (and former MN-AFS member), Paul Pajak of USFWS at Fort Snelling, and Quinn drafted a script which was submitted to the national EXCOM at the annual meeting in Rapid City. This video will be useful for AFS chapters and excerpts from it could be made into PSA's.

**AWARDS:** By Steve Colvin. The Awards committee would like anyone who thinks they will be a 25-year member this year to contact Steve. Also, contact if you know of someone who has reached this milestone.

**NOMINATIONS:** By Chantel Cook. Please take advantage of the form provided in this newsletter to nominate people for Chapter officer positions.

**CONTINUING EDUCATION:** By Mark Cook. The workshops are set for next summer. Please carefully read the workshop descriptions and send in your form as soon as possible.

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## NEWS ITEMS

**FISHING LICENSE STATISTICS:** A summary of comparisons between 1986 and 1991 by state and region of the ratio of license holders to population prepared by the American Fishing Tackle Manufacturers Association crossed my desk recently. Of nearby states, (IA, KS, MN, MO, NE, ND, SD, WI) Minnesota was the only state where the number of license holders did not decrease. Minnesota sold 4.2% more licenses in 1991 than in 1986. North Dakota dropped 22.5%, Iowa 12.5%, Nebraska 10.0%, South Dakota 8.5%, Wisconsin 4.3%, Kansas 2.5%, and Missouri 2.4%. Nationwide, Minnesota's increase ranked 22nd of the 27 states which showed increases. The other 23 states declined.

Minnesota still ranks fifth in the nation (behind Alaska, Wyoming, Montana, and Idaho) in percent of residents who hold a fishing license. We did, however, move into fourth, past Wisconsin, in number of license holders. California still has the most, despite an

18.1% drop in license sales. Texas and Michigan are still second and third.

Remember to take a kid fishing. They are our future anglers and license buyers!

**POSITION ANNOUNCEMENT:** Wetlands specialist, Red Lake Band of Chippewa Indians. Initial term of 18 months, with good possibility of continuation. Duties: Assist with development of a wetlands conservation program. Conduct wetlands delineation, inventory, assessment, and enhancement activities. Qualifications: MS degree in wetlands ecology or related field plus two years experience in a wetlands position, or, BS degree plus three years experience. Starting salary range \$22,000-26,000 plus benefits. To apply send resume along with letter of interest to Lawrence Bedeau, Director, Red Lake Department of Natural Resources, PO Box 279, Red Lake, MN 56671 Open until filled. For additional details contact Dave Connor at (218)679-3959.