

UNITED STATES
DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Northeast Region
State, Federal & Constituent Programs Division



COMPLETION REPORT

Grantee: GREAT LAKES COMMISSION

Project No: 3-IJ-69

Grant No: NA26FI0306

Project Title: A PARTNERSHIP APPROACH FOR CONTROLLING NONINDIGENOUS
AQUATIC NUISANCE SPECIES

Period Covered: 09/01/94 - 02/29/96

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Approved by: MICHAEL J. DONAHUE, PH.D.

Date: MAY 31, 1996

Statutory Funding Authority: Anadromous Fish Conservation Act
(P.L. 89-304)

- ☐ Chesapeake Bay Studies
- ☐ Endangered Species Act
- ☒ Interjurisdictional Fisheries
Act (Title III of P.L. 99-659)
- ☐ Magnuson Act
- ☐ Oyster Disease Research
- ☐ Saltonstall-Kennedy
- ☐ Unallied Industry Projects
- ☐ Unallied Science Projects
- ☐ ACFCMA

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Final Report (September 1, 1995 - February 29, 1996)

Great Lakes Panel on Aquatic Nuisance Species

**NOAA/Interjurisdictional Fisheries Program
Grant # NA26FI0306-3**

*A Partnership Approach for Controlling Nonindigenous Aquatic Nuisance Species
in the Great Lakes*

Introduction

The following final report (September 1, 1995 - February 29, 1996) is being submitted by the Great Lakes Commission to the National Oceanic and Atmospheric Administration under the terms of the Interjurisdictional Fisheries Act grant, *A Partnership Approach for Controlling Nonindigenous Aquatic Nuisance Species in the Great Lakes* (Grant No. NA26FI0306-3).

Section 1203 of the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 (P.L. 101-646) calls upon the Great Lakes Commission to establish the Great Lakes Panel and to assist the Panel in coordinating research, monitoring, control and information/education activities that will minimize ecological and economic impacts of aquatic nuisance species, with high priority given to the zebra mussel.

This grant lends support to the operation of the Great Lakes Panel convened under P.L. 101-646 to address problems caused by the zebra mussel in the Great Lakes. The following activities have been completed under this grant over the last six months.

A) Development and execution of a regional survey to assess the economic costs of zebra mussel infestation among municipalities, industry and other Great Lakes water users

The Great Lakes Panel provided input to Ohio Sea Grant on the development of a survey to document zebra mussel monitoring and control costs. The survey was distributed in May 1995. Additional follow-up by Ohio Sea took place to ensure a strong response and meaningful findings relative to costs of zebra mussel impacts to Great Lakes water users. Ohio Sea Grant received an additional 185 responses bringing the total number of responses to 585, a response rate of 50%.

Based on survey responses, Sea Grant researchers projected that Great Lakes facilities using surface water incurred total costs of \$120.4 million for prevention and control during the five-year period of 1989-1994.

The Great Lakes Panel assisted Ohio Sea Grant in publicizing the results of the survey by featuring an article in the Panel's newsletter insert, *ANS UPDATE*. The *ANS UPDATE* was then circulated to more than 25 newsletters in the Great Lakes Basin and beyond. Many of these newsletters carried the story, including, among others, the Great Lakes Commission bimonthly *ADVISOR* (circulation of 3,000), *ANS DIGEST*, a national newsletter (circulation 13,000), and the Great Lakes Sport Fishing Council's newsletter, (circulation 800).

B) Ensure that a consistent message among the states is being delivered to the public with regard to control methods for zebra mussels

The Great Lakes Panel identified the need for agencies and organizations in the Great Lakes region to be consistent in the message sent to boaters regarding prevention and control. The Panel's goal is to identify areas of inconsistency and develop standard language that is clear, effective and likely to be followed.

The Panel's Information/Education Committee reviewed zebra mussel information/education materials from the five states and provinces (Minnesota, Wisconsin, Ohio, New Hampshire, Ontario) who responded to a survey regarding the message sent to boaters to prevent the spread of zebra mussels. Three major areas of inconsistency were revealed that related to drying time for boats, types of cleaning agents and when to take the precautions. Draft standard language to prevent the spread of zebra mussels by boaters has been prepared and was presented at September 21, 1995 Panel meeting. Panel members concurred that there was a need to keep the message simple, accurate, reasonable, and positive. Final Panel approval of the standard language is pending. The draft standard language was used in the 1995 production of the Minnesota's *Field Guide to Aquatic Exotic Plants and Animals* brochure and the 1995 Ontario Ministry of Natural Resources ANS brochure.

Preliminary drawings/concepts have been completed for an ANS logo/insignia. This task will be pursued in the FY1997.

C) Enhanced Data Base to Advance Coordination of Research Monitoring and Control Efforts.

The Research Coordination Committee, with administrative support provided by NOAA, was successful in moving forward on its two primary objectives in FY 1995/96: 1) enhancing inter-regional communication and coordination; and 2) developing, analyzing and presenting an ANS research inventory. The following is a summary of committee activities.

Inter-regional communication and coordination: A presentation titled *Great Lakes Panel on Aquatic Nuisance Species: Managing Prevention and Control* was made by Great Lakes Commission staff at the 57th Midwest Fish and Wildlife Conference held December 3-6 in Detroit, Michigan. An overview of the Nonindigenous Aquatic Nuisance Prevention and Control Act (P.L. 101-646) was offered; Panel goals and objectives were presented; and current Panel activities, policy and products were reviewed. The session was well received by the 80 or more individuals in attendance.

Develop, analyze and present an ANS research inventory: At the September 1995 Panel meeting, Research Coordination Committee members reviewed the ANS component of the Great Lakes Basin Research Inventory (compiled by the International Joint Commission's (IJC) Council of Great Lakes Research Managers (CGLRM)), and concluded that a more concerted effort is needed before a meaningful analysis can be conducted to determine current research emphasis, gaps and future directions. Committee members also concluded that integration with the IJC's larger research inventory effort, where possible, was desirable. (A copy of the meeting minutes is attached).

In designing the ANS survey form, several conference calls of the Research Coordination Committee were convened to discuss the content and layout. Committee members agreed to classify the research by six research categories originally defined by an ad-hoc ANS committee that preceded the establishment of the Great Lakes Panel. Currently being used by the International Joint Commission (IJC) and the National Sea Grant Program, these categories are titled: Biology and Life History; Control and Mitigation; Ecosystem Effects; Prevention of Introduction; Socioeconomic Considerations; and Analysis and Spread of Established ANS Populations.

The Committee decided to target the survey form (attached) at researchers, administrators, and managers involved in, conducting or sponsoring basic or applied ANS research. This includes all ANS research relevant to the Great Lakes Basin irrespective of where the research was conducted. Information on recently completed (within the last three years), ongoing, and upcoming research projects was requested.

Committee members were instrumental in targeting the survey mailing by providing key researcher names and address as well as distributing the survey at various conferences including the Sixth Annual Zebra Mussel and Other Aquatic Nuisance Species Conference (March 5-7, 1996 in Detroit, Michigan) and the Goby Conference (February 22-23, 1996 in Chicago, Illinois).

In developing the survey form and database, the Committee kept in constant communication with CGLRM to ensure that the Panel's survey form and database would be compatible with the IJC's larger research inventory effort. Final input was sought on the draft form from both Committee members and CGLRM co-chairs on November 22, 1995.

Through conference calls, Committee members assisted in the planning of an ANS Research Symposium titled *Aquatic Nuisance Species Research Relevant to the Great Lakes Basin: Enhancing Prevention and Control*. Committee members were helpful in developing meeting format and speaker suggestions for this event, held April 17, 1996 in Ann Arbor, Michigan.

Note: Funding for the conduct of the Research Symposium, preparation of background material and printing of the inventory was provided through the U.S. Fish and Wildlife Service.

Great Lakes Panel on Aquatic Nuisance Species
Survey of Aquatic Nuisance Species Research Relevant to the Great Lakes Basin

IMPORTANT!

If you are a researcher, administrator, or manager involved in, or sponsor, basic or applied aquatic nuisance species (ANS) research, please take a few minutes to complete and return the attached form. We need your help in identifying and highlighting current research, and ensuring that new and emerging research priorities are addressed.

Survey Sponsor:

The survey is being conducted by the Great Lakes Panel on Aquatic Nuisance Species, a binational public/private sector partnership established under P.L. 101-646, the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990. Among others, the Panel is charged with providing the U.S. federal government with advice on research needs to promote prevention and control of aquatic nuisance species.

Purpose:

Survey results will be used to compile an inventory of ANS research relevant to the Great Lakes Basin. The inventory will be analyzed to identify research gaps and funding priorities for the next three years. Research relevant to the Great Lakes includes research taking place in other regions which may have useful application in the Great Lakes Basin.

Focus:

The survey form should be completed for any basic or applied research that focuses on, or is otherwise relevant to, aquatic nuisance species in the Great Lakes drainage basin, including inland waters. Recently completed (within the last three years), ongoing, and upcoming research projects should be included. Please classify your research projects into one of the six research areas: biology and life history, control and mitigation, ecosystem effects, prevention of introduction, socio-economic considerations and analysis, and spread of established ANS populations.

Products:

A descriptive inventory, analysis and set of recommendations for future funding will be prepared by the Great Lakes Panel. Also, all entries will go online via the Internet-based Great Lakes Information Network (GLIN), and an e-mail group will be established to enhance interaction among researchers. All survey contributors will have access to these products.

DIRECTIONS:

Please complete the attached one-page survey form for each relevant project. Online web and gopher versions are available via GLIN at:

web: <http://www.great-lakes.net/partners/glc/projects/panel/ansform.html>

gopher: <gopher.great-lakes.net>, port 2200, /partners/GLC/projects/panel/research/survey

Mail, fax or e-mail to the Great Lakes Commission at the address/number provided on the survey form. If you have any questions, please contact Lori Reynolds at 313-665-9135.

RESPONSE DEADLINE: March 18, 1996

Survey of Aquatic Nuisance Species Research Relevant to the Great Lakes Basin

Great Lakes Panel on Aquatic Nuisance Species

Form completed by:

Date Submitted:

Name: _____

Phone: _____

Agency: _____

Fax: _____

Address: _____

Email: _____

RESPONSE FORM FOR PROJECT DESCRIPTIONS

1. Project Title:

2. Project Overview-state objectives, geographic area (be as specific as possible, including, for example, lake or river name and nearest city):

3. Project Classification (choose one- eg. 1.1 for Life History)

1. Biology and Life History

- 1.1 Life History
- 1.2 Population Dynamics
- 1.3 Environmental Requirements/Tolerance
- 1.4 Parasites and Diseases
- 1.5 Genetics
- 1.6 Biomanipulation
- 1.7 Physiology and Behavior

2. Control and Mitigation

- 2.1 Habitat Manipulation
- 2.2 Biological Interactions - Predator/Prey, Parasites/Diseases
- 2.3 Physical Measures
- 2.4 Chemical Measures
- 2.5 Consequences of Control
- 2.6 Integrated Control Strategy

3. Ecosystem Effects

- 3.1 Community Structure
- 3.2 Habitat (physical/chemical)
- 3.3 Nutrient/Contaminant Cycles
- 3.4 Food Web Structure
- 3.5 Predator/Prey Interactions

4. Prevention of Introduction

- 4.1 Identification of Potential Invaders
- 4.2 Definition of Vectors of Introduction - Shipping, Bait, Aquaria, Canals, Biological Vectors
- 4.3 Determination of Preventive Measures
- 4.4 Establishment of International Protocols

5. Socio-economic Consideration and Analysis

- 5.1 Human Health Aspects
- 5.2 Recreation/Tourism Impacts
- 5.3 Shipping and Navigation
- 5.4 Water Use-Agricultural, Industrial, Municipal
- 5.5 Policy and Law Determinants
- 5.6 Resource Management Issues

6. Spread of Established ANS Populations

- 6.1 Improvement of Initial Detection
- 6.2 Mechanisms of Spread
- 6.3 Rate of Spread
- 6.4 Range of Spread
- 6.5 Natural Barriers
- 6.6 Predictive Models

4. Published (Y/N):	Journal name:		
5. PROJECT FUNDING			
5a. Total Cost \$ _____ U.S. ☐ CAN. ☐			
Source (agency): _____			
Start Date: _____			
End Date: _____			
Does funding include salaries (Y/N): _____			
5b. If more than one funding source, please complete the table below (please indicate all sources of funding for project (public and private))			
Source	Start Date	End Date	Amount of Funding
			\$ _____ U.S. ☐ CAN. ☐ Does funding include salaries (Y/N): _____
			\$ _____ U.S. ☐ CAN. ☐ Does funding include salaries (Y/N): _____
			\$ _____ U.S. ☐ CAN. ☐ Does funding include salaries (Y/N): _____
6. Principal investigator(s) and affiliation(s) (name, address, phone, E-mail): 			
7. Keywords for searching (e.g., organism, location of study): 			
<i>Please submit this form to:</i> Great Lakes Commission, 400 Fourth St., Ann Arbor, MI 48103, FAX: 313-665-4370, Phone: 313-665-9135, E-mail lreynold@glc.org			
<i>DUE: March 18, 1996</i>			

GREAT LAKES PANEL ON AQUATIC NUISANCE SPECIES

Duluth, Minnesota

Thursday September 21, 1995

1:00 p.m. - 5:00 p.m.

Friday September 22, 1995

8:30 a.m.-12:00 noon

MEETING MINUTES

Day 1- Friday September 21

The meeting was convened at 1:00 p.m. by the chair of the Great Lakes Panel, Jay Rendall, Minnesota Department of Natural Resources. Rendall began the meeting by welcoming everyone and noting the two new changes to Panel membership: Tom Busiahn is the new U.S. Fish and Wildlife Service member replacing Hannibal Bolton and Rhae Giacoma is the new U.S. Coast Guard alternate replacing Katherine Weathers. A list of all Panel members in attendance is attached (Attachment 1).

ACTION: Donahue requested Panel members to review the May 2, 1995 meeting minutes (mailed July 8, 1995) and submit any revision to Lori Reynolds by **October 6, 1995**.

Michael Donahue, Executive Director of the Great Lakes Commission, provided background on the Panel's new committees: Information/Education (I/E), Research Coordination, and Policy and Legislation. Donahue explained that committee workplans were developed using the activities within the approved Information/Education Strategy, relevant to each of the three committees, and from the priority discussion from the May 2, 1995 Panel meeting.

The tasks outlined in the 1996 I/E Committee workplan include (among others) preparing the *ANS Update*, developing a Great Lakes aquatic nuisance species (ANS) I/E material inventory and establishing an electronic ANS clearinghouse. The Research Coordination Committee tasks include enhancing inter-regional communication and preparing and analyzing a Great Lakes ANS research inventory. The Policy and Legislation Committee will develop and implement Panel policy positions, and promote the implementation of state management plans. All the activities will be undertaken under the umbrella of the full Panel.

Approximately \$160,000 over two years is available to implement these activities. The funding sources include Indiana's portion of NOAA's interjurisdictional Fisheries Act, U.S. Fish and Wildlife Service and Minnesota Department of Natural Resources (MnDNR).

UPDATE ON FEDERAL ANS ISSUES

Update on National Task Force Activities

Jay Troxel, national ANS Task Force coordinator, U.S. Fish and Wildlife Service, reported that the Task Force recently met on August 31, 1995 in Washington D.C. Key items discussed included a recommendation by the Minnesota Sea Grant to the Task Force to designate the round goby as an aquatic nuisance species, reauthorization of the Nonindigenous Aquatic Nuisance Prevention and Control Act (P.L. 101-646) (NANPCA) and ANS Task Force committee reports. Discussion also focused on the capture of three ruffe by U.S. Fish and Wildlife personnel from Alpena Bay, Lake Huron in August. Concern was expressed on how this would impact the *Ruffe Control Program* since the goal of the program is *to prevent or delay the spread of ruffe through the Great Lakes and inland waters by*

containing the species to western Lake Superior. Troxel reported that revisions to the goal, strategies, and objectives of the *Ruffe Control Program* will be discussed at the November 9, 1995 Ruffe Control Committee meeting in Detroit, Michigan

Troxel provided a brief update on committee activities:

- 1) *Ballast Water Program*- a national shipping study that examines the extent to which shipping is a major pathway for aquatic nuisance species and the need for controls for vessel ballast water is complete. Copies of the study are available from National Technical Information Service, Springfield, Virginia, 1-800-553-6847. Please reference the following:

Shipping Study

Accession # AD-A294809

Report # CG-D-11-95

The Marine Board study which identifies new ballast technologies that could be retrofitted/designed into ships to prevent additional introduction of aquatic nuisance species should be completed early 1996.

- 2) *Biological studies*-This was originally envisioned as a nationwide study but, due to funding limitations, the Task Force decided to pursue three case studies, one in south Florida, one in San Francisco Bay estuary and one in Chesapeake Bay. Each study has two components:

Phase One - conduct a literature review on nonindigenous species problems and economic impacts

Phase Two - convene a Panel of experts to review the report and produce a report to Congress.

Phase One for the south Florida study and the San Francisco Bay estuary study is near completion and should be initiating phase two shortly. The Chesapeake Bay study should complete phase one in six-eight months.

Troxel reported that Representative Dick Chrysler has introduced a bill that calls for the dismantling of the Department of Commerce (H.R. 1756). The bill would affect NOAA programs including the termination of financial assistance for fisheries grants under the Interjurisdictional Fisheries Act through which the Panel is partly funded (via Indiana's portion of the Act).

Troxel reported that the Task Force has adopted the ANS Program, although copies of the program have not yet been widely distributed.

ACTION: Commission staff will draft a letter on behalf of the Panel to the co-chairs of the ANS Task Force requesting copies of the final ANS Program.

U.S. Legislative and Appropriations Update

Allegra Cangelosi, Northeast-Midwest Institute, provided an overview of the bills introduced in Congress that requested amendments to the NANPCA.

- i) *Chesapeake Bay Ballast Water Management Act of 1995:* The bill (S.938) was introduced on June 16, 1995 by Senator Sarbanes (D, MD) and calls for mandatory voluntary guidelines to prevent the introduction and spread of aquatic nuisance species (ANS) into U.S. waters that result from the release of ballast water (currently, into the Great Lakes through the exchange of ballast water prior to entering those waters). The bill mandates: (1) periodic revisions to regulations to ensure the prevention of the introduction and spread of ANS into the Hudson River; (2) multilingual education

and technical assistance measures to encourage guideline compliance; (3) studies, regarding the Chesapeake Bay and other U.S. waters, on trends in ballast water releases and the attributes and patterns of ANS invasions from ballast water releases; and (4) a ballast water management program for the seagoing fleet of the Navy to limit ANS invasion risk.

- ii) *Lake Champlain Zebra Mussel Control Act of 1995*. The bill was introduced on July 28, 1995 by Senator Leahy (D, VT) (S. 1089). The bill (1) requires the ANS Task Force to study whether aquatic nuisance species threaten the ecological characteristics and economic uses of Lake Champlain; (2) requires the designated chairpersons to invite representatives of the Lake Champlain Basin Program to participate as ex-officio members of the Task Force; and (3) includes Lake Champlain among the waters with respect to which the aquatic nuisance species and zebra mussel demonstration programs apply.

The bill further requires, within one year: (1) the Task Force to develop and submit, to the Secretary of the department in which the Coast Guard is operating, voluntary guidelines for controlling the spread of the zebra mussel through recreational activities, including boating and fishing; and (2) the Secretary to issue voluntary guidelines that incorporate the guidelines developed by the Task Force.

The bill further revises the Act to provide for the preparation and submission of a comprehensive state management plan and a public facility management plan by the Governor of each State (as under current law) or the appropriate official of a watershed organization. It defines "watershed organization" to mean an entity with jurisdiction over the management of a watershed pursuant to applicable federal and state law.

The bill also amends the National Sea Grant College Program Act to direct the Secretary to designate the University of Vermont in Burlington, Vermont, as a Sea Grant College under the Act.

Cangelosi indicated that draft language for the reauthorization of NANPCA has been prepared. Some modifications to the original act include:

1. Expansion of the prevention program beyond the Great Lakes by including language that calls upon the U.S. Coast Guard to issue national voluntary guidelines for ballast management by commercial vessels and incorporates assessment of compliance by commercial vessels with the voluntary guidelines;
2. Expanded information base by requiring the conduct of ecological and ballast discharge surveys for the Chesapeake Bay, the San Francisco Bay and the Honolulu Harbor, and other waters that the Task Force determines necessary;
3. Establishment of a navel ballast water program;
4. Requirement for the Task Force to develop voluntary guidelines for controlling the spread of the zebra mussel through recreational activities, including boating and fishing;
5. Support for the development and use of regional panels and other similar entities in regions other than the Great Lakes; and
6. Allow ANS management plans to be developed on a watershed basis.

FY 1996 Appropriations

Cangelosi reported the following developments on appropriations for FY 1996:

- The U.S. F&WS budget was decreased by \$300,000 (level funding with FY 1994)
- The National Biological Service's ANS research program is in jeopardy, as conferees consider closing the research agency completely and transferring only selected items to other parts of the Department of Interior
- Funding for Sea Grant and NOAA's -Great Lakes Environmental Research Lab ANS research may be curtailed by cuts in the Department of Commerce budget. Senate and House proposals will be reconciled later this fall.

Cangelosi reported that next year's funding cycle will be much more difficult than this year's was.

Canadian Federal Funding Update

John Cooley, Department of Fisheries and Oceans, provided an update on federal funding cuts for ANS research. Cooley reported that every federal department has undergone a program review with the intent to reduce the federal budget. The Department of Fisheries and Oceans (DFO) was the most affected department; fishery resources were cut by 80%.

Due to major spending cuts, DFO has decided to eliminate its role in freshwater fisheries management. Discussions are underway with various federal departments, including Environment Canada and Canadian Coast Guard, on who would assume freshwater responsibilities. In addition, discussions are underway with the province of Ontario to transfer sea lamprey control responsibilities.

Cooley noted that studies are underway in Canada to determine if regulation of ballast water discharge is required. Currently, Canada operates under voluntary guidelines. Compliance with the voluntary program is very high due, in part, to the close cooperation with the United States.

Alan Dextrase, Ministry of Natural Resources, explained that the treatment of NOBOB vessels (no ballast on board) to prevent the movement of species within the Great Lakes is extremely important and investments need to be made now.

Exotic Species Expansion and Impacts on the Great Lakes

Ruffe Control Activities: Tom Busiahn provided a brief update on the status of ruffe, the *Ruffe Control Program* and the implementation of the control program.

- 1) **Ruffe Range Expansion:** In early August, three ruffe were found outside of western Lake Superior in the Thunder Bay River, Alpena Bay in Lake Huron. Also, a ruffe was caught by Minnesota DNR in Two Harbors, Minnesota. Ruffe continued to be found in Michigan waters of Lake Superior (in the Black River and Ontonagan River).

Alpena has been identified by the shipping industry as a high risk site for ruffe because of the ship traffic between Alpena and Duluth. Alpena is an active cement shipping port and it is believed that the ruffe was transported from Duluth to Alpena in the ships ballast. Of the three ruffe caught, one was young of the year (56mm) and the other two were two years plus (5+ inches in length). Because the ruffe were spawned after the voluntary ballast water program was initiated in 1993, the program has not been 100% effective in preventing the spread of ruffe.

Alpena and the surrounding Thunder Bay area of Michigan is a major bait harvesting area for the Great Lakes and therefore increases the potential for further range expansion of the ruffe. Mark Coscarelli, Michigan DNR, stated that Lake Huron is the source of about 60% of the bait harvest for

Michigan. Preliminary studies indicate that little is exported out of the state of Michigan. Coscarelli noted that the waters of Lake Superior and its tributaries for 1/2 mile above their mouth have been closed to the taking of minnows. As of April 1, 1995 it is illegal to take, attempt to take, possess, or transport ruffe in Michigan.

- 2) Population investigations: The 1994 year class was the largest ever. In 1995 the ruffe sampling program was reduced to three cycles per year. In the spring, 87% of the total catch in Duluth Harbor was ruffe. Mid-summer sampling revealed that 47% of the catch was ruffe. The decrease is thought to be attributed to warmer water temperatures, due to the weather, allowing for greater dispersal out of the harbor. The results from the fall sampling have not been completed.
- 3) Status of the Ruffe Control Program: The discovery of ruffe beyond the western end of Lake Superior renders the goal of the *Ruffe Control Program* obsolete as stated (to prevent or delay the spread of ruffe through the Great Lakes and inland waters by containing the species of western Lake Superior). Revisions to the goal, strategies, and objectives of the *Ruffe Control Program* will be discussed at the November 9, 1995 Ruffe Control Committee meeting in Detroit, Michigan.
- 4) Status of implementation: Busiahn provided a handout summarizing the activities under the *Ruffe Control Program* (Attachment 2). This was provided to the national Task Force at their August 31 meeting in Washington, D.C. All the components of the program have some action underway with the exemption of range reduction - chemical treatment

Busiahn noted that the November meeting of the Ruffe Control Committee should include some form of evaluation of the voluntary ballast water program and the concurrence from the shipping industry to continue the program. There may be some pressure to drop the voluntary program.

Busiahn reported that there is a study underway to look at the growth of ruffe in Lake Huron versus the growth of ruffe in Lake Superior. Preliminary results indicate that areas where there are large populations of ruffe, the ruffe are smaller in size compared to those in less populated areas.

Round Goby: David Jude, Research Scientist, University of Michigan, was unable to attend the meeting. Doug Jenson, Minnesota Sea Grant, volunteered to provide a brief overview of the goby.

The round goby originates from the Caspian sea. There has been some displacement of other bottom-dwelling native species as a result of the goby including logperch, darters, and mottled sculpins. Gobies thrive because they are aggressive, voracious feeders, which can forage in total darkness and because they take over prime spawning sites traditionally used by native species. They can survive in degraded water conditions, and spawn more often and over a longer period than native fishes. They have shown a rapid range expansion to every Great Lake, except Ontario.

There have been three new sightings of the round Goby in the Great Lakes this summer, Duluth-Superior Harbor, Lake Superior; Ashtabula River, Lake Erie; and Port Colborne, Lake Erie. The largest specimen found in the Great Lakes was seven inches. Reports from Europe indicate that the goby can reach up to 10-12 inches. The Minnesota Sea Grant formally requested that the Task Force declare the round goby as an aquatic nuisance species and requested that a control plan be developed.

Ellen Marsden, Illinois National History Survey, and David Jude are collaborating with Ohio, Michigan and Illinois-Indiana Sea Grants to product a fact sheet on the goby. A research consortium on the goby will be held in February 1996.

Zebra Mussels in the Mississippi River: Jay Rendall reported that Minnesota has completed a study on the Mississippi River near Lake Peppen, looking at the populations of native mussels. The Mississippi River has a very diverse mussel population. Results of the study indicate substantial declines in the native mussel densities with an increase in zebra mussel populations. Ron Martin, Wisconsin DNR, noted that most of public facilities on the Wisconsin side of the Mississippi river are now treating for zebra mussels, whereas at this time last year, none of them were treating for zebra mussels.

Others: Bill Hornes, Wisconsin DNR, reported that they have a ruffe study underway in the Iron and Sand Rivers to determine the locations of the ruffe and if there is a time that they would be most vulnerable to treatment. This study is being done in cooperation with the National Biological Service and the results should be available in November for presentation at the Council of Lake Committee and Ruffe Control meetings.

ACTION: Panel members are to contact Jay Troxel with any information regarding sightings of zebra mussels in the Missouri River. Researchers are puzzled why they have not become established in the Missouri River.

Allegra Cangelosi asked if the Panel should request the Task Force to include a representative and/or experts from the Upper Mississippi watershed on the national Task Force's ruffe control effort. Busiahn responded that the goby is already in Lake Michigan and is more of an eminent concern for the Upper-Mississippi basin.

PANEL COMMITTEE BREAK OUT SESSIONS

The three Panel implementation committees, Information/Education, Research Coordination, and Policy and Legislation were convened to further discuss their 1996 workplan.

OPTIONAL EXCURSION - TRAWLING FOR RUFFE

The U.S. Fish and Wildlife Service and the National Biological Service graciously provided their vessels to demonstrate the trawling for ruffe in the Duluth Harbor. Two separate excursion were made, with both successfully demonstrating the abundance of ruffe in the Duluth Harbor.

Day 2 - Friday September 22

REPORTING OUT OF PANEL COMMITTEES

Information/Education Committee

Jay Rendall, chair of the Information/Education Committee, presented overheads summarizing the breakout group discussions. A list of attendees is attached (Attachment 3). Presentations were made on the Great Lakes Panel Survey: Recommendations to Boaters for Prevention of ANS Dispersal, Mn. Sea Grant's Three Site Exotic Species Boater Survey, and the U.S. Coast Guard Ballast Exchange Education Program. The remaining part of the session dealt with the implementation of the committee workplan including preparation and assessment of the Great Lakes Panel newsletter insert, *ANS UPDATE*, and the preparation of an ANS information/education materials inventory. A copy of the agenda (Attachment 4) and the overheads summarizing the discussion (Attachment 5) are attached.

Research Coordination Committee

Commander Eric Reeves, U.S. Coast Guard, chair of the Research Coordination Committee, presented a summary of the Research Coordination Committee break-out session. A list of attendees is attached

(Attachment 3). Reeves reported that the Research Coordination Committee is responsible for two tasks: enhancing inter-regional communication and coordination, and developing, analyzing and presenting an ANS research inventory.

- *Task 1: Enhancing inter-regional communication and coordination:* Reeves reported that the goal of the committee is to widen contacts both geographically and tactically in terms of the types of research activities ongoing nationally and internationally. The first part of the session was devoted to identifying organizations that are involved with ANS research. These organizations were organized into three categories: public agencies, professional organizations, and resource user groups. A copy of the list is attached (Attachment 6). It was noted that industry is another category that needs to be added.

ACTION: Panel members are to review the list and provide any additional organizations involved in ANS research to Lori Reynolds.

Over the next two months, the committee will be developing a survey to send out to this list requesting information on the types of research they are doing (related to the Panel's six research priorities), the species they are working with, and if they are interested in attending a Panel sponsored Great Lakes research symposium in March 1996.

- *Task 2: Development, analysis and presentation of a research inventory:* The latter part of the break out session focused on the development of a research inventory. Key issues discussed were the lack of information on new threats, evaluation of vectors, choke points, prevention technologies and research on exotic species other than the zebra mussel.

Committee members discussed the status of the current Great Lakes research inventory prepared by the Council of Great Lakes Research Managers. A quick analysis of the inventory revealed that it is not a complete representation of ANS research in the Great Lakes. The committee would like to use it as a starting point to build a more comprehensive database for aquatic nuisance species.

Policy and Legislation Committee

Ron Martin presented a summary of the Policy and Legislation Committee breakout session. The key topics discussed during the session were the draft model state management plan and the draft language for the reauthorization of NANPCA. A copy of the agenda (Attachment 7) and a summary of the general and specific comments are attached (Attachment 8).

ACTION: Panel members are to submit concerns relative to the specific comments presented by the Policy and Legislation Committee on the Draft Model or any other comments by **September 30, 1995**. If the comments are substantial, the model will be distributed for a final review. If not, then the document will be finalized and broadly distributed.

ACTION: Panel members should provide additional comments on the draft reauthorization language for NANPCA to Lori Reynolds by September 27. All comments will be incorporated in a letter (on Panel letterhead) and transmitted to Allegra Cangelosi.

Additional comments resulting from general Panel discussion on the draft reauthorization language are summarized below. No formal attempt was made to achieve consensus on the following comments.

- Add a provision that directs the Task Force to identify potential species of concern from international ports where there is a high probability that these species may thrive in the Great Lakes system.

- Add a provision that directs the Task Force to identify ANS species (plants and animals) that are problematic within each state and identify other locations where they could survive in the U.S.
- Add a provision that directs the U.S. Coast Guard, in cooperation with the eight Great Lakes states, to develop model legislation that prevents the spread of aquatic nuisance species within the country (the recreational boating safety program could be used as a model).
- Amend the U.S. Coast Guard's recreational boating safety program to include requirements for boaters to undertake in order to prevent the spread of aquatic nuisance species.
- Include a provision that prevents the spread of aquatic nuisance species (as determined by the federal list of aquatic nuisance species) between states.

PRESENTATION AND DISCUSSION OF MODEL ANS STATE MANAGEMENT PLAN

Kathe Glassner-Shwayder, Great Lakes Commission provided an overview of the content and approach used to develop the draft model. Glassner-Shwayder stated that the two main goals of the model are to develop a step-by-step framework to assist the states in the preparation of state management plans as mandated under Section 1204 of the NANPCA, and to bring together state coastal management and ANS officials in addressing ANS prevention and control.

A project oversight committee, comprised of both ANS and coastal management officials, was formed to assist in defining the format and content of a regional workshop. Articles in the Great Lakes Commission's *ADVISOR* and the Panel's *ANS UPDATE* were used to advertise the May 2-3 workshop in Ann Arbor, Michigan. Almost 60 ANS and coastal management program officials from state and federal agencies, as well as tribal authorities and researchers attended.

The two day workshop included a plenary session that provided background information on ANS and coastal management programs as well as updates on ANS issues pertinent to the state management plans and break-out sessions. The break-out sessions provided an opportunity for workshop participants to discuss and critique a draft model state management plan. Consensus was reached by workshop participants to structure the plan around three goals: Preventing future introductions of aquatic nuisance species into waters of the state; controlling the spread of existing aquatic nuisance species into uninfested waters of the state; abating harmful ecological, economic, social and public health impacts resulting from aquatic nuisance species infestation. For each goal, each state is to identify the problem, strategic actions and the tasks required to implement the strategic action.

The draft model provides a sample of each of the plan components including an executive summary, ANS background, policy background, management actions, implementation schedule and timeline, plan evaluation, glossary and appendices.

Glassner-Shwayder indicated that the model has been distributed for Panel review and encouraged those who have not yet commented on the model to please send in their comments by **September 30**.

She also noted that Commission staff will be available to assist the states in using the model to develop their state management plan.

The following are additional comments resulting from general Panel discussion:

- Several members stated that they were very pleased with the product and felt that it will be very beneficial in guiding states through their plan development.
- The implementation chart should identify what is being implemented with federal and state dollars.
- On page 17, Donahue noted that the Lake Carriers' Association requested that the reference to intra-lake be deleted from the sample table.

ACTION: Donahue will follow up with the Lake Carriers' Association to determine their reasoning behind this request.

- Include as part of the appendices, a one page summary of federal legislative concerns, i.e. bills that affect non-indigenous species (e.g., Lacey Act, Noxious Weeds Act).

ELECTION OF PANEL OFFICERS

Donahue reported the election results for the Panel's chair and vice-chair positions. Mark Coscarelli, Michigan DNR will be the new chair and Jay Rendall, Minnesota DNR will be the vice-chair. The new terms of office will begin January 1, 1996.

Donahue also announced the chairs of the Panel committees to be Jay Rendall, Information/Education Committee; Commander Eric Reeves, U.S. Coast Guard, Research Coordination Committee; and, Michael Donahue, Policy and Legislation Committee.

Donahue thanked Rendall for the considerable time and talent he has invested in Panel activities over the last two years and welcomed Coscarelli to the new position. Donahue also thanked David Yount for his services as vice-chair and for his commitment to the Panel.

David Yount, U.S. Environmental Protection Agency, invited Panel members to tour the U.S. EPA research Laboratory in Duluth during their open house from 12:00 noon - 7:30 p.m.

GREAT LAKES INFORMATION NETWORK (GLIN) DEMONSTRATION: Potential Applications for GLIN

Approximately 22 computers were made available for Panel members to explore and gain hands on experience with the Great Lakes Information Network (GLIN). Lori Reynolds and Paula McIntyre, Great Lakes Commission, provided a brief tour of interesting exotic species sites on GLIN and discussed several potential ways the Panel can become more active online including:

- the development of a group e-mail list - public and/or private
- the establishment of common space online for members to transfer files back and forth
- to continue/enhance the use of electronic media to inform the public on ANS issues.

The remaining portion of the GLIN session was free time for Panel members to explore various GLIN sites and ask any questions of the technical staff present.

REPORT FROM PANEL MEMBERS

Michigan

Mark Coscarelli, Michigan DNR, reported that Michigan DNR-Fishery Division will be examining Michigan's bait fishing industry to determine import/exports numbers and costs, determine the types of species harvested and how much, and examine the water quality of holding ponds (among others). Michigan's Aquatic Nuisance Species State Management Plan is scheduled for submission to Governor John Engler on November 20, 1995.

Minnesota

Jay Rendall commented on the zebra mussel sampling methods. Researchers on the Mississippi have indicated that the standard sampling plates have few mussels, but the anchor blocks may be covered with zebra mussels. Minnesota is proceeding with rules to prohibit bait harvest in infested waters. They are also cooperating on a video for grade school students about aquatic exotics for a traveling trunk project. The video is called *Strangers in our Waterways* and is available from Oregon State University at a cost of \$30.00.

Ohio

Gary Isbell, Ohio Department of Natural Resources, reported that a meeting to discuss Ohio's ANS State Management Plan has been scheduled for October 19, 1995. The purpose of the meeting is to begin drafting the Ohio plan using the model ANS plan as a guide.

Wisconsin

Ron Martin commented on a new video from New Dimension media in Oregon titled *Invaders-Introduced Species*. The video discusses all exotic species (not just aquatics). Wisconsin purchased seven copies, one for each field office and one for the central office.

National Parks Service

Richard Klukas, National Parks Service, discussed the 1995 zebra mussel response plan for the St. Croix River. Klukas indicated that there is some concern that boat cleaning and storage facilities along the St. Croix would receive private boats that have zebra mussels adhered to them.

U.S. Environmental Protection Agency (EPA)

David Yount, U.S. EPA, provided a handout summarizing U.S. EPA funded ANS research projects. A copy of the handout is attached (Attachment 9).

Minnesota Sea Grant

Doug Jenson, Mn Sea Grant, distributed their newest publication "Glossary of the Great Lakes". For copies please contact Doug at 218-726-8712.

ADJOURN

The meeting was adjourned at 1:00 p.m.

Great Lakes Panel on Aquatic Nuisance Species

May 2, 1995

Ann Arbor, Michigan

1:00 p.m. - 4:45 p.m.

Attendance Summary

Members/alt.

Tom Busiahn (alt)	- U.S. Fish and Wildlife Service	(715)682-6185
Richard Klukas	- National Parks Service	(402)221-3603
David Yount	- U.S. Environmental Protection Agency	(218)720-5752
Eric Reeves	- U.S. Coast Guard	(216)522-3994
Rhae Giacomia	- U.S. Coast Guard	(216)522-3994
Bruce Vondracek	- National Biological Service	(612)624-8748
James Wojcik(alt)	- Great Lakes Indian Fish and Wildlife Commission	(715)862-6619
John Cooley	- Department of Fisheries and Oceans, Canada	(905)336-4568
Mark Coscarelli	- Michigan Department of Natural Resources	(517)373-3588
Jay Rendall	- Minnesota Department of Natural Resources	(612)297-1464
Gary Isbell	- Ohio Department of Natural Resources	(614)265-6345
Ron Martin	- Wisconsin Department of Natural Resources	(608)266-9270
Alan Dextrase	- Ontario Ministry of Environment and Energy	(705)740-1532
Doug Jenson(alt)	- MN Sea Grant	(218)726-8712
Jeff Gunderson	- MN Sea Grant	(218) 726-8715
Dan Thomas	- Great Lakes Sport Fishing Council	(708)941-1351
Mike Donahue	- Great Lakes Commission	(313)665-9135
Lori Reynolds	- Great Lakes Commission	
Kathe Glassner-Shwayder	- Great Lakes Commission	

Interested Parties

Allegra Cangelosi	- Northeast-Midwest Institute	(202)544-5200
Jay Troxel	- U.S. Fish and Wildlife Service	(703)358-1718
Sandra Keppner	- U.S. Fish and Wildlife Service	(716)691-5456

Guest

Leonid Rythkov	- University of Petzotavodsk-Russia	
Jerry McClain	- U.S. Fish and Wildlife Service-Alpena	(517) 356-3052
Bill Hornes	- Wisconsin Department of Natural Resources	



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Fishery Resources Office
2800 Lake Shore Drive East
Ashland, Wisconsin 54806-2427
715-682-6185
FAX 715-682-8899



MEMORANDUM

TO: Aquatic Nuisance Species Task Force

FROM: Tom Busiahn, Chairman, Ruffe Control Committee

DATE: August 31, 1995

RE: Ruffe Control Committee report

The Ruffe Control Program was completed and sent to the Aquatic Nuisance Species Task Force on July 3, 1995, after completion of an environmental assessment, cost-benefit analysis, and public comment. However, the goal of the Program -- to prevent or delay the spread of ruffe through the Great Lakes and inland waters by containing the species to western Lake Superior -- appears to be obsolete. Three ruffe were collected by the Fish and Wildlife Service in Lake Huron on August 2-3, 1995.

MEETINGS AND CONFERENCE CALLS

The Ruffe Control Committee met on April 11, 1995 in Marquette, Michigan, and conducted a conference call on June 22. The next meeting will likely be scheduled in conjunction with a special meeting of the Great Lakes Fishery Commission's Council of Lake Committees in Detroit in October or November. The agenda will be to re-examine the control program in light of the Lake Huron finding.

The remainder of this report lists activity highlights under each of the components of the Ruffe Control Program.

RANGE REDUCTION

- A multi-agency tactical planning group chaired by the National Biological Service (NBS) developed a plan to chemically treat 5 sites in Wisconsin and Michigan in 1995, but the plan was not completed or implemented due to a lack of agreement among participants.
- The Ruffe Control Committee, at the suggestion of state agency members, identified the state agencies as being responsible for deciding on piscicide treatments for ruffe within their jurisdictions.
- NBS tested effects of TFM on ruffe and yellow perch during a sea lamprey treatment in the Amnicon River, Wisconsin. Fish and Wildlife Service (FWS) measured effects on ruffe of a TFM lamprey treatment in the Middle River, Wisconsin.
- FWS, with cooperation from the Great Lakes Fishery Commission, purchased a supply of

TFM for use in ruffe control treatments.

- NBS has been funded by FWS to develop classical avoidance data for ruffe during exposure to the piscicides TFM, Bayluscide, powdered and emulsifiable rotenone, and antimycin, and to conduct studies on the efficacy on ruffe of new Bayluscide and antimycin bottom release formulations.

BALLAST WATER MANAGEMENT

- The Great Lakes maritime industry continued the voluntary ballast water management plan to prevent the spread of ruffe during the 1995 shipping season, its third year of operation.
- The U.S. and Canadian Coast Guards informed shippers about the program and checked ballast logs to monitor compliance with the voluntary plan.

POPULATION INVESTIGATIONS

- NBS continued studies of ruffe in Duluth Harbor, on a reduced sampling schedule. Ruffe abundance remains very high.
- NBS initiated monitoring of 10 Lake Superior bays and river mouths to determine temporal changes in ruffe populations and native fish species.
- Wisconsin Department of Natural Resources is conducting a study of seasonal movements and distribution of ruffe in the Iron and Sand Rivers, Wisconsin, with assistance by FWS and NBS.
- Sea Grant approved funding for major studies on ruffe genetics and ecological effects.

SURVEILLANCE

- FWS conducted surveillance sampling in all five Great Lakes. Ruffe were detected in Lake Huron for the first time in August 1995. The capture site in Alpena was previously identified to be at high risk of ballast water transport of ruffe from Duluth.
- Ontario Ministry of Natural Resources (OMNR) conducted surveillance sampling in Lake Superior around Thunder Bay, Ontario, where ruffe had been found in 1991 and 1994.
- FWS and OMNR mailed several hundred information packets to people who may encounter ruffe (fish managers, commercial fishermen, etc.). Follow-up questionnaires will be mailed in the fall.

PREDATOR EVALUATION

- The Minnesota and Wisconsin Departments of Natural Resources (DNR) have completed a 5-year predator enhancement project in Duluth Harbor.
- NBS and the Great Lakes Indian Fish and Wildlife Commission have completed field work to measure predation on ruffe in Duluth Harbor.
- A University of Minnesota-Duluth graduate student will complete an evaluation of the project through bioenergetics analysis as a masters thesis late in 1995.

EDUCATION

- FWS conducted five public meetings on ruffe control throughout the Great Lakes basin to inform the public about the program, and to solicit comments and recommendations.
- Minnesota Sea Grant reprinted the *Ruffe Watch* identification card and distributed it to participating agencies. This printing of 150,000 brought the total distribution to 300,000,

resulting in increased awareness and numerous citizen reports of ruffe.

- The Sea Grant Network revised and reprinted a ruffe fact sheet, with financial assistance from Brunswick Marine. This printing of 10,000 brought the total distribution to 20,000.
- Sea Grant Network newsletters throughout the Great Lakes featured several articles on ruffe control and research.
- Minnesota DNR reprinted its *Field Guide to Aquatic Exotic Plants and Animals*, with contributions from Sea Grant, FWS, Corps of Engineers, and the University of Minnesota Bell Museum of Natural History. This printing of 572,000 copies brought the total distributed to more than one million.
- FWS and Sea Grant produced several news releases on issues related to ruffe, and followed up with dozens of news media contacts.
- Wisconsin Sea Grant produced a series of public service announcements on ruffe that were distributed to 40 radio stations.
- The Great Lakes Panel on Aquatic Nuisance Species will feature ruffe in its next *ANS Update* newsletter insert.
- Minnesota Sea Grant is organizing an international ruffe symposium, tentatively scheduled for fall, 1996. A steering committee is currently being recruited. The proceedings will be published, and scientific articles on ruffe will be translated from Russian into English for the symposium.

RESEARCH ON CONTROL METHODS

- The University of Minnesota, the Fond du Lac Band of Chippewa, and NBS initiated a project on pheromones as potential attractants or repellants for ruffe. Initial field testing found no evidence for attraction or repellence in traps baited with ruffe.

Panel Committees
September 21-22 Break out session

Attendance List

INFORMATION/EDUCATION

Jay Rendall - Mn DNR (committee chair)
Kathe Glassner Shwayder-Great Lake Commission
Doug Jenson - Mn Sea Grant
Leonid Rythkov - University of Petzotavodsk-Russia
Sandra Keppner - U.S. F&WS
Jeff Gunderson - Mn Sea Grant
Tom Busiahn - U.S. F&WS
Rhae Giacoma - U.S. Coast Guard
Alan Dextrase - Ontario MNR

RESEARCH COORDINATION

Eric Reeves - U.S. Coast Guard (committee chair)
Lori Reynolds - Great Lakes Commission
Gary Isbell - Ohio DNR
Bruce Vondracek - National Biological Service
David Yount - U.S. EPA
Jerry Mclean - U.S. F&WS (interested party)
Richard Klukas -U.S. Parks Service

POLICY AND LEGISLATION COMMITTEE

Michael J. Donahue - Great Lakes Commission (committee chair)
Ron Martin -Wisconsin DNR
Allegra Cangelosi - Northeast Midwest Institute
Jay Troxel - U.S. F&WS
John Cooley - Dept. of Fisheries and Oceans, Canada
James Wojcik - Great Lakes Indian Fish and Wildlife Commission
Mark Coscarelli - Michigan DNR
Dan Thomas - Great Lakes Sport Fishing Council
Bill Hornes - Wisconsin DNR

Zebra Mussels Cost Great Lakes Water Users an Estimated \$120 Million

The zebra mussel infestation has imposed large costs on facilities that draw water from the Great Lakes: electric generating plants, municipal water systems and industrial water users. For example, the largest fossil-fueled plant in the world, Detroit Edison's power plant in Monroe, Michigan, had to shut down in 1989 because zebra mussels literally plugged up the water system. Since that time, this rapidly reproducing mollusk has spread throughout the Great Lakes, its tributaries, and many major rivers and inland lakes. The zebra mussel has reportedly infested hundreds of facilities that use raw water, such as municipal drinking water facilities, industries and power generating plants. Despite these widespread damages, there has been little systematic information to identify the infested facilities, the costs of monitoring, cleaning and controlling the infestations, and whether the best methods are being used to minimize the costs.

Research to determine surface water user expenditures on zebra mussel monitoring and control in the Great Lakes region was conducted by Ohio Sea Grant (1994-1995). In May 1995, a survey to document zebra mussel control costs was sent to 1,400 facilities on the Great Lakes, Great Lakes tributaries, and selected facilities on nearby streams and lakes. The population base was reduced to 1,164 based on a follow-up sample of non-respondents where 30 percent could not be contacted.

In total, 585 facilities responded, for a response rate of 50 percent; 165 used well water or purchased water. Of the 420 surface water facilities, 160 respondents reported the detection of zebra mussels at their facilities, of which 140 reported zebra mussel monitoring and control expenses of \$60.2 million. Researchers projected, based on a survey re-

sponse of 50 percent, that Great Lakes facilities using surface water incurred total costs of \$120.4 million during the five-year period 1989-1994.

Survey results suggest that zebra mussel infestation has resulted in substantial economic impacts to surface water users in the Great Lakes region. Facilities reporting monitoring and control costs spent an average of \$430,000 during 1989-1994, private utilities spent \$869,000; public utilities: \$383,000; municipal water: \$318,000 and industry: \$339,000. Great Lakes facilities reported average cumulative expenditures of \$538,000 compared to about \$200,000 for those on tributaries or not connected to a Great Lake. In a typical year, small facilities (less than 5 million gallons per day (mgpd)) can expect costs of under \$20,000 and large facilities (greater than 300 mgpd) can expect costs of about \$350,000.

Survey results provide a benchmark on which to assess zebra mussel costs in the Great Lakes Basin and also can be used to project costs in other parts of the country where the zebra mussel is spreading, such as the lower Mississippi River Basin and many inland lakes and rivers.

The survey was the first rigorous effort to quantify the economic impacts of zebra mussel infestation. Earlier "back of the envelope" estimates were higher and, while the lack of earlier empirical data precludes meaningful comparison, the important role of prevention and control initiatives through research and outreach should be acknowledged.

Research and outreach programs must be maintained and enhanced if the spread of the zebra mussel to inland waters of the Great Lakes region and other parts of the country is to be prevented or controlled. These programs also will be pivotal in transferring the lessons learned from

zebra mussel infestation to the prevention and control of other nonindigenous aquatic nuisance species, such as the ruffe, goby, spiny water flea, Eurasian watermilfoil and many others, including potential future introductions. Contact: Dr. Leroy Hushak, Ohio Sea Grant, 614-292-3548.

Great Lakes Panel Update

The newly elected chair of the Great Lakes Panel is Mark Coscarelli, Michigan Department of Environmental Quality. The co-chair is Jay Rendall, Minnesota Department of Natural Resources. Their one-year terms began in January 1996.

The next meeting of the Panel is April 16, 1996, and will be followed by the ANS Research Symposium on April 17. Both events will be held at the Campus Inn in Ann Arbor, MI. Phone 313-769-2200.

The Panel meeting will focus on the work plan for FY1997, update on national ANS Task Force activities, U.S. and Canadian legislative and appropriations updates, a presentation on the Michigan bait harvest industry, and reports from Panel members. The purpose of the research symposium is to review results of an ANS research survey, and reach consensus on research gaps and funding priorities. A survey form has been distributed to more than 1,500 researchers and also can be found online via the Great Lakes Information Network at <http://www.glc.org/projects/ans/ansform.html>. The requested response date is March 18, 1996 but responses are also welcome at any time thereafter. Contact: Lori Reynolds, Great Lakes Commission, 313-665-9135.

Proceedings of the workshop, *Aquatic Nuisance Species and Coastal Manage-*

ment Plans: Toward A Regional Strategy in the Great Lakes Basin, held May 2-3, 1995, was completed and disseminated in January 1996. Included in the proceedings is *A Model Comprehensive State Management Plan*, approved by the Great Lakes Panel. The model is offered as guidance to the Great Lakes states to assist in the development of their management plans. Contact: Katherine Glassner-Shwayder, Great Lakes Commission, 313-665-9135.

Washington Watch

- ◆ Reauthorization language for the *Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 (NANPCA)* has been circulated for comment.
- ◆ A national forum on *Alien Species Invasions of U.S. Waters* is scheduled for March 22, 1996, in Washington D.C. Senator Glenn and other reauthorization bill sponsors will announce introduction of the legislation, and scientists will describe impacts and risks of unintentionally introduced exotic species.
- ◆ The Northeast-Midwest Institute and the Lake Carriers' Association are leading a project to test technologies for preventing unintentional introductions via ballast water transport. The project will identify technical options to speed progress under the federal ballast technology demonstration project, currently proposed in *NANPCA* reauthorization. Contact: Allegra Cangelosi, Northeast-Midwest Institute, 202-544-5200.

News From Around The Basin

INDIANA: Evaluation of beetle releases to control purple loosestrife will be conducted at five release sites in northern Indiana. More than a dozen public inland lakes are being monitored to determine the dispersion of zebra mussels in northern Indiana. New administrative rules are being promulgated to clarify the permit system for importation or production of live fish for sale or release. A new DNR position, aquatic resource education coordinator, is being established to instruct public school teachers. Contact: Randy Lang, IN DNR, 317-233-0936.

MICHIGAN: Governor John Engler submitted a document titled *Nonindigenous Aquatic Nuisance Species State Management Plan: A Strategy to Confront Their Spread in Michigan* to the national ANS Task Force on January 18. The plan requests funding of \$466,700 over a three-year period to carry out the strategy, which incorporates the goals identified in the Panel's model plan.

Contact: Mark Coscarelli, MI DEQ, 517-335-4056.

MINNESOTA: The DNR has proposed new state statutes to prohibit transportation of aquatic plants on public roads, an effort to minimize the spread of Eurasian watermilfoil, curly leaf pondweed and zebra mussels. The bill has thus far passed the necessary legislative committees. A state management plan is being drafted to prevent ANS spread, and respond to potential inland water infestations of species, such as the ruffe, round goby and other nonindigenous fishes. Contact: Jay Rendall, MN DNR, 612-297-1464.

NEW YORK: A monitoring program has been conducted to measure the effects of zebra mussels on various water quality parameters in colonized and uncolonized waters of the Finger Lakes. A report will soon be available. Research also is being conducted on the bioaccumulation of toxins in zebra mussels by analyzing samples of the goldeneye duck, which is known to feed on zebra mussels. Contact: Timothy Sinnott, NYS DEC, 518-457-0758.

OHIO: A draft *Ohio Aquatic Nuisance Species Management Plan* will be available for review in March. The plan follows the Panel's model state management plan, but incorporates necessary changes to reflect specific needs of Ohio. The plan, assembled by a team of aquatic resource professionals, will be used to guide Ohio activities related to ANS issues and provide direction for development of annual work plans for submission to the national ANS Task Force. Contact: Gary Isbell, OH DNR, 614-265-6343.

ONTARIO: A partnership program, involving the *Invading Species Hotline* and the *Zebra Mussel Boatwash*, has successfully been conducted for the past four years by the Ontario Ministry of Natural Resources, Ontario Federation of Anglers and Hunters and the Canadian Coast Guard. New aquaculture regulations and policies are being implemented to allow for the diversification of the industry, while protecting aquatic ecosystems from ANS introductions. Contact: Al Dextrase, OMNR, 705-740-1532.

PENNSYLVANIA: The Department of Environmental Protection continues to coordinate a statewide zebra mussel monitoring program. Contact: Kevin Kelly, PA DEP, 717-783-3638.

WISCONSIN: The DNR is working with state legislators on statutory language to prohibit the transport of zebra mussels into the St. Croix River via trailers or boats. An internal policy regarding the unintentional introduction of

nonindigenous species will be key in developing the state implementation plan. Contact: Ron Martin, WDNR, 608-266-9270.

National ANS Task Force

The national ANS Task Force will meet April 25 in Arlington, VA. Tentative topics include: exotic weeds; Chicago Ship and Sanitary Canal, and the need for an ANS dispersal barrier; approval of the Ruffe Control Plan; ANS Digest funding; Great Lakes Panel; National Park Service ANS activities; and the Ballast Water Escort Study conducted by the Smithsonian Environmental Research Center. Contact: Jay Troxel, U.S. FWS, 703-358-1718.

Upcoming Events

- ◆ A national forum on *Alien Species Invasions of U.S. Waters*. March 22, 1996. Washington, D.C. Contact: Allegra Cangelosi, Northeast-Midwest Institute, 202-544-5200.
- ◆ *Great Lakes Panel on Aquatic Nuisance Species*, April 16, 1996. Campus Inn, Ann Arbor, MI. Contact: Lori Reynolds, Great Lakes Commission, 313-665-9135.
- ◆ *ANS Research Symposium*, April 17, 1996. Campus Inn, Ann Arbor, MI. Contact: Lori Reynolds, Great Lakes Commission, 313-665-9135.
- ◆ *National ANS Task Force Meeting*. April 25, 1996. Arlington, VA. Contact: Jay Troxel, U.S. FWS, 703-358-1718.
- ◆ *39th Annual Conference on Great Lakes Research*, May 26-30, 1996 (includes session on biological impacts of ANS). Erindale College, Mississauga, Ontario. Contact: Gary Sprules, conference chair, 905-828-3987.

On The Bookshelf

- ◆ *Ecologically Harmful Exotic Aquatic Plant and Wild Animal Species In Minnesota: Annual Report for 1995*. Exotic Species Program, Minnesota DNR. Contact: Deb Hunt, 612-296-2835.
- ◆ *Workshop Proceedings: Aquatic Nuisance Species and Coastal Management Programs: Toward a Regional Strategy in the Great Lakes Basin*. Contact: Katherine Glassner-Shwayder, Great Lakes Commission, 313-665-9135.
- ◆ *A Model Comprehensive State Management Plan for the Prevention and Control of Nonindigenous Aquatic Nuisance Species*. Contact: Katherine Glassner Shwayder, Great Lakes Commission, 313-665-9135.

INFORMATION/EDUCATION SUBCOMMITTEE
AGENDA

Duluth, Minnesota
September 21, 1995
3:15 p.m. - 5:00 p.m.

- 1) Overview of session objectives: **Kathe Glassner-Shwayder, Great Lakes Commission**
- 2) Introductions
- 3) Brief history of the development of the *Great Lakes Panel's Information/Education Strategy on the Prevention and Control of Aquatic Nuisance Species*: **Jay Rendall, MN DNR**
- 4) Great Lakes Panel Survey: Recommendations to Boaters for Prevention of ANS Dispersal: **Jay Rendall**
 - Discussion on survey results: areas of consensus and areas needing further discussion
- 5) Three State Exotic Species Boater Survey: **Jeff Gunderson, MN Sea Grant**
 - Presentation of results
- 6) Ballast Exchange Education Program: **Rhae Giacoma, U.S. Coast Guard**
 - Overview of Program
- 7) Great Lakes Panel *ANS UPDATE*: **Kathe Glassner-Shwayder**
 - Progress to date on *ANS UPDATE*.
 - Existing format for insert -- Does it work?
 - Strategy/Theme for feature articles.
 - How to market newsletter?
 - Monitor present use of newsletter.
 - Marketing strategy -- How to increase readership?
 - Role of *ANS Digest* in the use of the *ANS UPDATE*.

8) Assessment of Great Lakes information/education material on ANS prevention and control: **Kathe Glassner-Shwayder**

- Brief overview on the purpose of this task and how the project will help support the I/E strategy.
- Discuss the basic design of project:
 - How to most efficiently access data on existing I/E materials.
 - Identification of the target audience
- Analysis of findings:
 - How to categorize I/E materials.
 - Criteria to evaluate the materials (i.e. who would be best served by the I/E materials; how would the materials be most effectively used?)
 - Identify unmet needs and inconsistencies between the states in the messages being delivered.
- Marketing strategy for final product - i.e. distribution list.

9) Discussion on the *Model Comprehensive State Management Plan For the Prevention and Control of Aquatic Nuisance Species*: **Kathe Glassner-Shwayder**

- How to market as part of the I/E Strategy
- Input on how to adapt model for use on a national scale

10) Implementation and Updating of the I/E Strategy

11) Adjourn

**I/E Committee Breakout Session Summary
Duluth -- Sept. 21, 1995**

General Comments

1. I/E Strategy - Need for evaluation of
 - individual products
 - overall strategy
2. How to ensure that message of Great Lakes Panel gets out to states
 - establish responsibilities of Panel members (e.g., participation in the preparation of the Panel's annual report to the national Task Force and participation/dissemination of the Panel's newsletter insert, *ANS UPDATE*)
3. Need to show accomplishments of I/E products

Recommendations for boaters- Panel I/E subcommittee

Issue

- Need for consistent messages within the region & collaboration
- Keep simple
- Accurate
- Reasonable
- Positive
- Balance action w/risk

Status and future activities

- Did a survey of I & E members and others to determine the various messages currently in place
- prepared recommended language (see Attachment X)
 - examined areas of agreement & areas of disagreement
 - it was decided to leave areas of disagreement out of regional publications and leave up to state or province
- have not received Panel approval of standard language
- Standardizing messages for region may fit into Sen. Leahy's bill on recreational guidelines
- Need to develop an ANS logo (i.e. recycling or catch & release)

Three State Boater Survey Results--MN Sea Grant

- 1) Most effective sources of Information are:
 - Newspaper
 - TV (Media)
 - Boat Launch Signs
- 2) Factors Influencing Respondents
 - Sense of Personal Responsibility
 - "don't want it in my lake" attitude
- 3) In Minnesota, after I/E efforts, there was increased awareness of ANS issues and increased willingness to participate in prevention strategies.
- 4) In all three states, the primary reasons for people not taking precautions were a) individuals did not know what to do
 - b) they were not planning on traveling to infested water

5) Conclusions of the survey:

- a) Boater education changes behavior regarding ANS in a beneficial way
- b) Boaters will recognize importance of preventing spread of ANS
- c) Important Information Sources
 - Media
 - Access signs
 - Brochures
 - Fishing/boater pamphlets
- d) Boaters present risk to spread ANS through Inter-lake (inland) activity
- e) Education is needed and must continue

6) Radio is a potential new outreach method and recent initiative in Minnesota

U.S.Coast Guards I & E program

- Information notebook sent to shipping agents/vessels. The notebook includes a video
- This was the first action in the Panel's I & E Strategy
- Discussed continuing problem of the NOBOB/sediment
- Great Lakes Panel needs to address intra-lake (GL) ballast exchange

Panel Newsletter insert, *ANS UPDATE*

- Keep *ANS UPDATE* short & sweet
- Use *ANS UPDATE* as insert to *ANS Digest*
- *Digest* needs state updates on regional scale including provinces.
- Topics for future feature articles for *ANS UPDATE*
 - Goby
 - Ballast water management on intra-lake & inter-lake
 - ANS spread from Lake Michigan--Illinois River, Mississippi River
 - Reauthorization status
- Assess use of *ANS UPDATE* to improve dissemination & general use
- Marketing - what additional distribution is suggested
 - Target newspapers
 - Advertise on GLIN
 - Environmental staffers
 - Magazines: Boating, Outdoor, Angler
 - Other regional panels

I & E Inventory of ANS prevention and control materials

- Need to inventory and evaluate I & E products in the Great Lakes region
- Categorize products: audience, purpose, etc.
- Evaluate products on:
 - local, state, regional use
 - current
 - completeness
- Identify costs and sources
- Find gaps--especially for control information of "other" ANS
- Market the Panel's I/E inventory on:
 - GLIN, Zebra Mussel Clearinghouse, Sea Grant, ANS Task Force, ANS Digest, Agencies, Other regions

RESEARCH - Contact List

**** When adding to the list, please include contact person, mailing address and email (if possible)****

Public Agencies

a) Federal Agencies (regional offices)

1. National Biological Service
2. NOAA-Sea Grant
3. Corps of Engineers
4. U.S. Coast Guard
5. U.S.EPA
6. U.S. Parks Service
7. Tennessee Valley Authority
8. U.S. Forest Service
9. U.S. Parks Service
10. U.S. Geological Society

b) Interstate Agencies

1. Mississippi Interstate-Cooperative Resource Association (MICRA)
2. Chesapeake Bay Commission
3. Upper-Mississippi Basin States Association
4. Ohio River Basin Commission
5. Delaware River Basin Commission
6. Ohio River Sanitation Commission (Alan Vicary)

Professional Associations Organizations

1. American Fisheries Society (Fish Section President -Denny R. Lassuyz)
 - *Western Pacific U.S.*,
 - *North Central U.S. /Great Lakes*
 - *Northeastern U.S.*
 - *Southern U.S.*
2. American Water Works Association
3. Electric Power Research Institute (EPRI)
4. International Association of Fish and Wildlife Agencies
5. North American Lake Management Society
6. Society of hepatologist
7. Ecological Society of America
8. North American Benthological Society
9. Mississippi River Research Association

10. Upper Mississippi River Research Consortium
11. National Association of Conservation Districts
12. American Institute of Biological Science
12. Wildlife Society Ecological Society of America

Resource User Groups

1. Bass American Sportsman Society (BASS)
2. Ontario Association of Hunters and Anglers
3. National Wildlife Federation
4. Ducks Unlimited
5. Outdoor Writers Association of America
6. American Sport Fishing Association
7. Issak-Walton League
8. Trout Unlimited

Industry

Policy and Legislation Committee Agenda
September 21-22, 1995
Duluth, MN
St. Louis River Room
3:15 p.m.- 5:00 p.m.

AGENDA

- | | | |
|----|---|--|
| 1. | Introduction | Michael J. Donahue |
| 2. | Role of the Policy and Legislation Committee | |
| 3. | Review of committee workplan (attached) | |
| 4. | Review of model state management plan (attached) | |
| 5. | Review of draft language for the Reauthorization of the Nonindigenous Aquatic Nuisance and Prevention Act (P.L. 101-646) (attached) | Allegra Cangelosi, Northeast Midwest Institute,
Jay Troxel, National Task Force Coordinator |
| 6. | Other Business | |
| 7. | Adjourn | |

Policy and Legislation Committee -Breakout Session Summary
Duluth -- Sept. 21, 1995

Key Discussion/Action Items

- Committee role/workplan
- Comments on draft model state management plan
- Review/comment on draft ANS Act reauthorization language (using 1/30/95 Panel policy position for guidance)

Comments on Draft Model State Management Plan

General Comments

- Format and overall approach is sound; prevention section would benefit from additional strategic actions
- After submittal to NOAA to fulfill grant requirements, should be edited to make it generic: should be applicable to efforts in all states, as well as useful for provinces
- Use ANS Digest (Freshwater Foundation) as one means to disseminate/publicize the model
- Giving model national applicability/publicity will help generate broader support for ANS legislation/implementation

Specific Comments

- Goal one/related components should be strengthened to place additional emphasis on prevention
- Add a strategic action or task that calls upon each state (in cooperation with others) to develop a list of potential invaders
- Add a strategic action or task that explicitly identifies ballast water as a primary vector
- Add a strategic action or task calling upon each state to identify all potential vectors
- Goal 1, Strategic Action 2: Need additional step specifying that there should be state-specific as well as regional lists of ANS species
- Impacts of climate change need to be acknowledged in prevention program (many additional ANS will find suitable habitat under climate change scenarios)

Draft ANS Reauthorization Language

General Comments

- Proposed amendments are acceptable: they should strengthen the overall ANS program
- the broader, national focus is critical in generating Congressional support for legislation/appropriations
- The draft language reflects most of the Panel's recommendations, as articulated in the 1/30/95 policy position statement

Specific comments

To ensure that Panel policy position is fully addressed:

- The committee supports primary focus on unintentional introductions. However, Section 1207 language (re: intentional introductions) can remain (If deleted or amended it could actually prompt additional focus on intention introductions)
- Incorporate Panel position #3 to enhance task force capability to recommend to U.S. FWS/NOAA that emergency actions should be taken
- Incorporate Panel position #6 to add references, as appropriate, to tribal authority role
- Incorporate Panel position #9 into the drafting process to ensure that NANPCA complements other federal ANS legislation

Further Comments

- Committee recognizes that seeking enhanced authorization levels for funding NANPCA elements is desirable. However, given current climate in Congress, this should not be pursued. Same comment pertains to funding for preparation of state management plans

Actions

- Panel comments submitted by Sept 27
- Panel/other organizations should pursue advisory/advocacy efforts with Congress
- The broader, national focus is critical in generating Congressional support for legislation/appropriations
- The draft language reflects most of the Panel's recommendations, as articulated in the 1/30/95 policy position statement

Misc. information about EPA's Introduced Species Program

When did the program begin? FY90

How much money has been spent? Nearly \$7million, total

How did the funds vary, by year?

FY90 - \$50,000

FY91 - 250,000

FY92 - 1,757,000

FY93 - 1,972,000

FY94 - 2,100,000

FY95 - 793,000

FY96 - ? (program transferred to competitive grants program, in HQ)

How was the money spent? Through a combination of competitive cooperative agreements, interagency agreements, and in-house support contracts. The largest single block was spent on cooperative agreements with colleges and universities.

How were the results reported? Most of the projects are still ongoing. Those that have been completed, and those that are in progress, will be reported through peer-reviewed journal articles.

When will the ongoing projects be completed? All projects will be completed by October, 1996.

Will EPA support any introduced species research after Oct. 1996? Yes, if researchers apply to the competitive grants program (National Center for Extramural Research) and if projects pass review. In-house, projects will continue as part of research team projects, if appropriate.

INTRODUCED SPECIES PROJECTS conducted and/or funded by U.S.EPA #
National Health and Environmental Effects Research Laboratory
Mid-Continent Ecology Division, Duluth, Minnesota (* = ongoing)

*Biology & Ecology of Non-indigenous Aquatic Species With
Emphasis on the Zebra Mussel, Cooperative Agreement, Russian
Acad. Sci. Borok, Russia, (Smirnov)

Genetics of Zebra Mussels: Critical Data for Ecological Studies
and Development of Effective Long-term Control Strategies,
Cooperative Agreement, Univ. of Illinois, Champaign, IL
(Marsden)

Zebra Mussel-Fish Relations and their Effects on Nutrient/Energy
and Contaminant Dynamics, Cooperative Agreement, Ohio State
University, Columbus, OH (Dabrowski)

Accumulation and transfer of xenobiotics by Zebra Mussels,
Cooperative Agreement, Ohio State University, Columbus, OH
(Fisher)

Ecological relationships of zebra mussels and diatoms, Large
Lakes and Rivers Research Station, MED, Grosse Ile, MI
(Kreis)

*Contaminant cycling and dynamics of the zebra mussel, Large
Lakes and Rivers Research Station, MED, Grosse Ile, MI
(Kreis)

*Microbial pathogens of zebra mussels, as potential biological
control agents, Cooperative Agreement, Western Illinois
Univ., Macomb, IL (Singer)

Abundance, distribution, biology, and community impacts of
invading Eurasian Ruffe, Interagency Agreement, Nat. Biol.
Survey, Ashland, WI (Selgeby)

*Field experimental analysis of factors regulating the potential
distribution, abundance, and community impact of zebra
mussels in large rivers, Cooperative Agreement, Univ. of
Louisville, KY (Thorp)

*The potential influence of the zebra mussel on the biodiversity,
population structure and physiology of native mussels,
Cooperative Agreement, Macalester College, St. Paul, MN
(Hornbach)

*Invasion, impact, and interactions of zebra mussels and rusty
crayfish in St. Joseph River, IN/MI and northern WI/MI,
Cooperative Agreement, Notre Dame Univ., South Bend, IN -
with field site near Land O'Lakes/Boulder Junction, WI
(Lamberti & Lodge)

- *Factors influencing distribution of zebra mussels in the upper Mississippi River, Interagency Agreement, Corps of Engineers, Vicksburg MS and LaCross, WI (Miller & Barko)
- *Bioenergetics model for zebra mussel in rivers, Cooperative Agreement, Ill. Nat. History Survey, Havana, IL (Sparks)
- *Prediction of invasibility by alien species, Cooperative Agreement, Univ. of Maryland, College Park, MD (Poff)
- *Ecological and behavioral characteristics of three exotic fish species (Round and Tubenose Gobies and Ruffe) and their potential impact on ecosystems in the tributaries and connecting channels of the Great Lakes, Cooperative Agreement, University of Michigan, Ann Arbor, MI (Jude)
- *Potential effects of climate change in thermal complexity and biotic integrity of streams: Seasonal intrusion of non-native fishes, Cooperative Agreement, Oregon State Univ., Corvallis, OR (Liss)
- *Potential establishment of red shiner minnows and consequences to native fish faunas in upland streams of eastern N. America as related to climate change, Cooperative Agreement, University of Oklahoma, Biological Field Station, Kingston, OK (Matthews)
- *Experimental analog and sensitivity modeling studies predicting influences of global climate change on introduced species, Cooperative Agreement, University of Louisville, KY (Thorp)
- *Effects of Zebra Mussels on the Invertebrate communities of Saginaw Bay, Michigan Wetlands, Cooperative Agreement, Michigan State Univ., E. Lansing, MI (Burton)
- Ballast Water Exchange Study, Interagency Agreement, NOAA, Great Lakes Environmental Research Lab, Ann Arbor, MI (Beeton & Carlton)
- *Ecosystem Modeling of the Impact of Zebra Mussels on Nutrient/Plankton Dynamics, Cooperative Agreement, University of Buffalo, NY (DePinto) and Limno-Tech, Inc. (Bierman)