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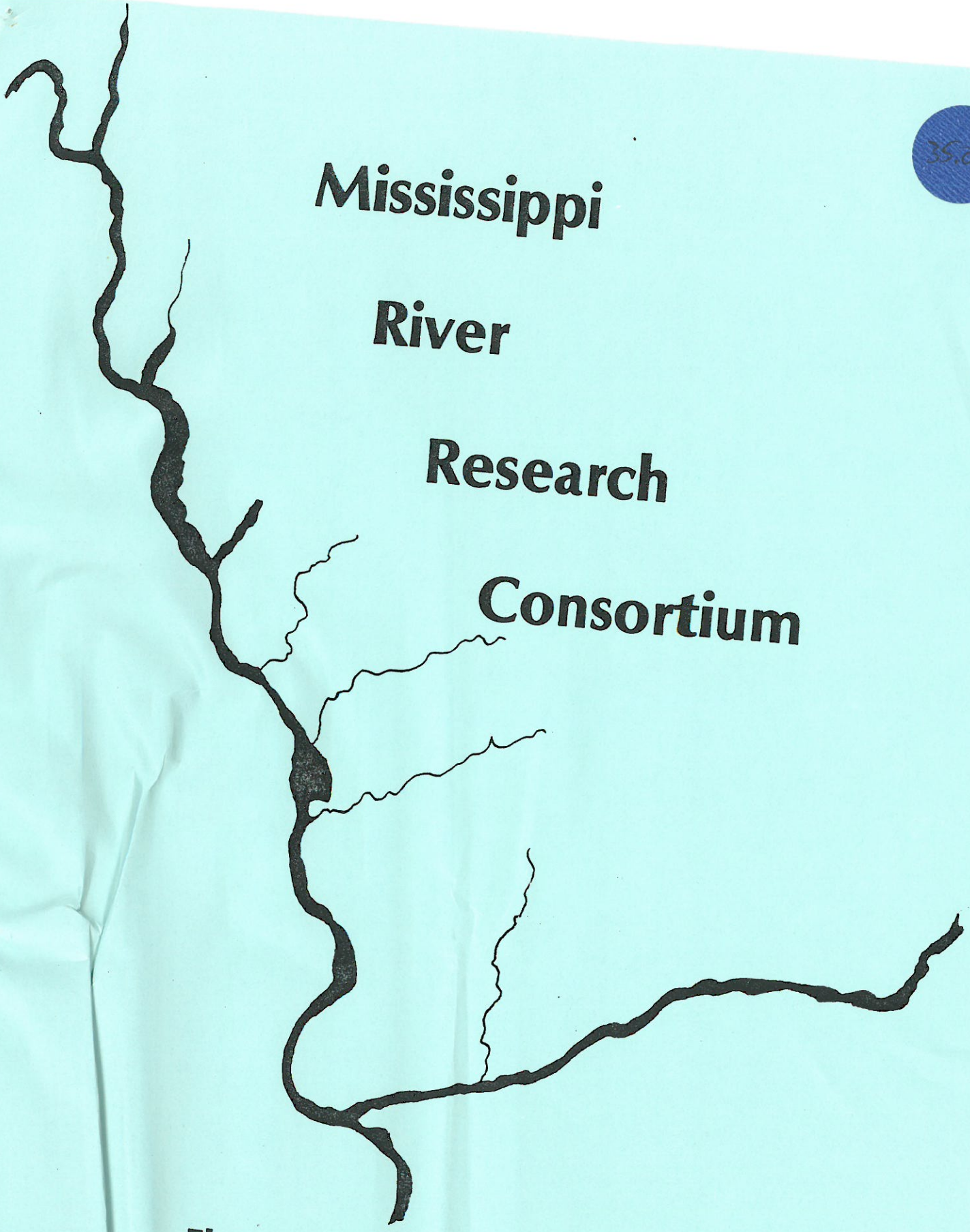
Mississippi River Research Consortium



Eleventh Annual Meeting

ELEVENTH ANNUAL MEETING

OF THE MISSISSIPPI RIVER RESEARCH CONSORTIUM

June 8-10, 1978

University of Wisconsin-La Crosse

La Crosse, Wisconsin

EXECUTIVE COMMITTEE

Ronald G. Rada, Ph.D. - President
Thomas O. Claflin, Ph.D. - Secretary
Dennis Nielsen, Ph.D. - Immediate Past President

SCHEDULE

Thursday

4:00 - 6:00 p.m.	Registration, Cowley Hall of Science
7:30 p.m. - midnight	Smoker, Student Union Cellar

Friday

7:30 a.m.	Continental Breakfast, Cowley Hall of Science
8:00 a.m.	Registration, Cowley Hall of Science
8:30 - 11:40 a.m.	Paper Session, Room 140, Cowley Hall of Science
	Welcome by Dr. W. Carl Wimberly, Vice Chancellor of the University of Wisconsin - La Crosse
1:20 - 4:20 p.m.	Paper Session
Evening	Boat Trip to Steak Fry

Saturday

8:00 a.m.	Continental Breakfast, Cowley Hall of Science
9:00 a.m.	Business Meeting
9:30 a.m.	Symposium entitled "Endangered Species of the Upper Mississippi River"

SPEAKERS SCHEDULE

8:30 a.m.	Vice Chancellor of the University of Wisconsin - La Crosse - Dr. W. Carl Wimberly - Welcome.
8:40	Investigation of Declines in Fingernail Clam (Musculium transversum) Populations in the Illinois River and Pool 19 of the Mississippi River - Michael Sandusky and Richard Sparks.
9:00	Naiad Mollusks of the Mississippi River near La Crosse, Wisconsin - Marian Havlik.
9:20	The Sturgeon Resource of the Mississippi River System - Douglas Carlson.
9:40	Fish Survey of Northeastern Illinois Streams - Samuel Dennison, Carl Carlson, David Zenz, and Cecil Lue-Hing.
10:00	Coffee
10:20	Declines in Populations of Colonial Waterbirds Nesting Within the Floodplain of the Upper Mississippi River - David Thompson.
10:40	Flora of the Upper Mississippi River Floodplain (A Progress Report) - Steven Swanson.
11:00	Information Systems for Use in Studying the Population Status of Threatened and Endangered Plants - Paul Whitson.
11:20	Reproduction in Chrysosplenium iowense - Michael Weber.
11:40	Lunch
1:40 p.m.	Evaluation of Potential Non-Point Sources of Pollution from the Twin Cities Metropolitan Area - Gary Oberts and Marcel Jouseau.
2:00	Investigation into the Distribution of Macroinvertebrates in Lake Pepin - Kathy Trapp.
2:20	Recent Sedimentation Rates in Pool 8, Upper Mississippi River - J. R. McHenry, C. M. Cooper, and J. C. Ritchie.
2:40	Coffee
3:00	Potential Effects of Power Plants on the Upper Mississippi River - Michael Dahlberg.
3:20	Community Metabolism in the Atchafalaya (Louisiana) An Arm of the Lower Mississippi.
3:40	Water Resources Assessment and Alternative Evaluation - R. Charles Solomon, Sue Richardson, Billy Colbert, Larry Canter, William Hansen, and Evan Vlachos.

TECHNICAL PAPERS,

TITLES AND ABSTRACTS

OF PAPERS PRESENTED AT THE MEETING

The Sturgeon Resource of the Mississippi River System

Douglas M. Carlson
Missouri Department of Conservation
110 College Avenue
Columbia, Missouri

Valuable fisheries for sturgeons once existed throughout the Mississippi River and major tributaries, but today they are only a fraction of earlier levels. Also, lake sturgeon, once the most important sturgeon in the Mississippi, have been virtually lost as a fishable resource. The sustained harvests of shovelnose sturgeon still occur in some states but this fish's life history is largely unknown in most of these states. The pallid sturgeon is found only rarely in the Mississippi, Missouri, and Kansas rivers. The lake sturgeon and pallid sturgeons are classified as endangered by many states in the midwest, but their exact status is not well understood. It is unlikely that these fisheries can be restored, but a better understanding of these fish is needed. When understood, these sturgeons (being inhabitants of the main stream of big rivers) could serve as indicators of quality in big river habitat. This paper summarizes the available information on these three sturgeons and describes preliminary findings on a study about the abundance and distribution of sturgeons in Missouri.

Potential Effects of Power Plants on the Upper Mississippi River

Michael D. Dahlberg
U.S. Fish and Wildlife Service
CNFRL, Field Research Unit - La Crosse
La Crosse, Wisconsin 54601

A large number of power plants on the Upper Mississippi River have been studied as required by federal law in regard to effects of water intakes and discharges on the aquatic biota. Entrainment of small fish and impingement of larger fish result from pumping large volumes of water. Discharges introduce excess heat and a great variety of potentially harmful chemicals into the river. This paper describes the status of these perturbations, methods of assessment and interpretation, methods to mitigate impact, and additional research needed to determine effects on fish populations.

Naiad Mollusks of the Mississippi River Near La Crosse, Wisconsin

Marian E. Havlik
Malacological Consultants
La Crosse, Wisconsin

Twenty live and eleven dead species of naiad mollusks were found in Pools 7 and 8 near La Crosse, Wisconsin in 1977-'78. Of importance was the discovery of a juvenile Lampsilis higginsi, an endangered species. Two live Anodonta suborbiculata were found during a preconstruction survey for the city of La Crosse. This species had never been recorded in Wisconsin, nor farther north than Peoria, Illinois.

Juvenile Truncilla donaciformis were found throughout the width of the main channel at R. M. 696 during a pre-dredging survey. Distribution patterns were different from those formerly reported for naiad mollusks.

Seventeen live species, including Tritogonia verrucosa, were taken near Rosebud Island, Lake Onalaska, above La Crosse incidential to the collection of Lampsilis ventricosa, L. radiata luteola, and Fusconaia flava used in silt and sand bioassay studies done under a separate contract with the Corps of Engineers. This large collection was made by hand because of the great quantities of aquatic vegetation in the lake in fall.

A survey of a new bridge site on the Black River, La Crosse, was done for the Wisconsin Department of Transportation by means of a crowfoot survey followed by diver truthing of pier sites. Quadrula quadrula was recorded as fairly common at this site. Toxolasma parvus, a species usually not considered to be a part of the main stem fauna, is being found in an increasing number of main channel and backwater sites, indicating changing substrates. Amblema p. plicata is the most abundant species.

Investigation of Declines in Fingernail Clam (Musculium transversum) Populations in the Illinois River and Pool 19 of the Mississippi River

Michael J. Sandusky and Richard E. Sparks
River Research Laboratory, Illinois Natural History Survey
Havana, Illinois
Anthony A. Paparo
Department of Zoology and School of Medicine
Judith Murphy
Center for Electron Microscopy
Southern Illinois University
Carbondale, Illinois

Between 1955 and 1958 Musculium transversum died out in a 50 to 100 mile sections of the Illinois River. The die-off affected bottom-feeding fish and diving ducks. The clams have never recolonized the area where they were formerly abundant. In 1976-'77 the peak biomass of fingernail clams in Pool 19 of the Mississippi River was only 10 percent of what it had been from 1973 to the spring of 1976. Pool 19 is an important feeding area for migratory waterfowl and commercially important species of fish.

Gill preparations from Musculium transversum are being used to screen a variety of water quality factors for toxic effects. Factors which have detrimental effects on the gill preparations are subsequently tested on intact clams in chronic bioassays. Deletion bioassays are used to measure the effects of removal of certain components from raw Illinois River water on clam survival, growth, and reproduction. The elemental composition of individual techniques, and levels of chlorinated hydrocarbons and heavy metals in whole fingernail clams are being determined by gas chromatography and emission or absorption spectorphotometry.

(This research was supported by: the Illinois Natural History Survey, Southern Illinois University, the U.S. Fish and Wildlife Service, the Illinois Department of Conservation, and by the U.S. Department of the Interior as authorized under the Water Resources Research Act of 1965, P.L. 88-379, Agreement No. USDI 14-31-0001-6072.)

Declines in Populations of Colonial Waterbirds Nesting Within the Floodplain of the Upper Mississippi River

David H. Thompson
University of Wisconsin Center
West Bend, Wisconsin

During spring of 1977, I conducted an aerial survey of breeding populations of the more conspicuous species of colonial birds along the Mississippi River between St. Louis and St. Paul. Surveys and correspondence located 27 active colonies of Great Blue Herons, 18 of which also contained Great Egrets. In addition, we discovered three colonies of Forster's Terns, several colonies of Yellow-crowned Night Herons, two colonies of Double-crested Cormorants, one colony of Black-crowned Night Herons, and one colony of Green Herons.

An examination of population trends at individual colonies for which historical records were available, along with consideration of gaps in distribution which probably indicate extirpation from segments of the river, suggests that populations of Great Blue Herons, Great Egrets, Black-crowned Night Herons, and Double-crested Cormorants have declined. Least Terns have apparently been extirpated from the study area. The decline is especially marked in the southern half of the study area below Clinton, Iowa, where the combined population density of Great Blue Herons and Great Egrets was only one per linear mile of floodplain, compared to twelve per mile north of Clinton. Of the species studied, only Forster's Terns and Yellow-crowned Night Herons appear to be increasing in population.

The smaller populations south of Clinton are associated with greater development and poorer water quality in that area, but no detailed studies of the cause of the decline were undertaken.

An Investigation of the Benthic Macroinvertebrates in Lake Pepin

Kathy Trapp
Department of Biology
University of Wisconsin-La Crosse
La Crosse, Wisconsin

Benthic samples were collected from sites on Lake Pepin in order to characterize the macroinvertebrate community present in this body of water. This data was also compared to the following physical data collected at each site: depth, dissolved oxygen, and the percent of organic material within the sediments. An attempt was made to ascertain the possible influence these physical properties have on the distribution of benthic organisms in Lake Pepin.

Community Metabolism in the Atchafalaya (Louisiana) An Arm of the Lower Mississippi

Jacob Verduin
Southern Illinois University
Carbondale, Illinois

The USEPA studied phytoplankton photosynthesis in the bayous of the Atchafalaya during 1976-'77. Community metabolism was also monitored, both O_2- and CO_2-changes were measured under open-water conditions. Waters were divided into two categories: "Black" and "Silty" on the basis of visual inspection.

Photosynthetic rates were lowest in winter (5 mmol/m^2/hr) and highest in summer-fall (20). They were two-fold higher in "Black" water than in "Silty."

Community respiration rates exceeded photosynthetic rates, O_2-deficits averaged about 3 g/m^3. And were slightly higher in winter (40 mmol/m^2/hr) than in summer (30).

Photosynthetic rates per unit of chlorophyll averaged 1.5 mmo./mg chl-a/hr. These reates are about three-fold higher than means reported for lakes and oceans.

Dominant (volumetrically speaking) phytoplankton genera were Melosira, Stephanodiscus, Cyclotella, Coscinodiscus, Cryptomonas, Chroomonas, Euglena, and Trachelomonas.

SYMPOSIUM-ENDANGERED SPECIES OF THE UPPER MISSISSIPPI RIVER

"Endangered Species Program: The Iowa Experience"

by Dean Roosa, Board Ecologist, Iowa Preserves Board, Des Moines Iowa

"Endangered Species -- Jeopardized Species of Freshwater Mussels in the United States"

by Samuel Fuller, Director, Invertebrate Zoology Section, Department of Limnology, Academy of Natural Sciences, Philadelphia, Pennsylvania

"Endangered Species Program: The Illinois Experience with Plants"

by Charels Sheviak, Coordinator of the Rare and Endangered Species of Illinois, Natural Lands Institute, Rockford, Illinois

"Endangered Fishes of the Upper Mississippi River"

by Bruce Menzel, Associate Professor of Animal Ecology, Iowa State University, Ames, Iowa