

**REQUEST FOR PROPOSALS
AND
NOTICE OF PRIORITIES FOR RESEARCH
FUNDED BY THE MICHIGAN DEPARTMENT OF NATURAL RESOURCES,
FISHERIES DIVISION**

**Fiscal year 2010
(Oct 1, 2009 – Sept 30, 2010)**

Proposal submissions due: February 9, 2009

Michigan Department of Natural Resources (DNR), Fisheries Division formally issues this Request for Proposals and Research Priorities Notice for fiscal year 2010. This purpose of this notice is to solicit proposals from partner agencies and universities that address the priority research themes and information needs of Fisheries Division.

Funding for this work will come from Federal Aid to Sport Fish Restoration, State of Michigan Game and Fish Fund dollars, or a combination of both. Fisheries Division typically funds one to four new projects annually with costs ranging from \$30,000 to \$60,000 per year. The number and total dollar amount of studies funded varies from year to year, depending on Division budgets and overall priority of proposed research. Studies successfully funded under this Notice will begin October 1, 2009. Funding levels for fiscal year 2010 are unknown at the time of this posting.

Fisheries Division formulates and undertakes a research program to provide a scientific basis for Division strategic programs, to address questions posed by fisheries managers, to develop new technology and management tools, and to conduct complex assessments.

Priority research areas are described by theme to communicate the Division's research agenda to both internal staff and external partners. The Division maintains a strong commitment to shared management on the Great Lakes through the Council of Lake Committees and the 2000 Consent Decree and to ecosystem management within Michigan through Department ecoregional planning. Thus, the development of research priorities are conducted in accordance with the goals of partner state, regional, federal, and tribal resource management agencies.

This Priorities Notice is disseminated to the Division's State of Michigan agency and university partners via both email and posting on the Research Section's web site http://www.michigan.gov/dnr/0,1607,7-153-10364_10951---,00.html.

RESEARCH THEME AREAS

The Division's research themes are aligned with aquatic ecosystems (rivers, inland lakes and wetlands, Great lakes pelagic, etc.) and the Fish Production Program. The intent is to emphasize the understanding and management of ecosystems, their linkages to each other, and their fundamental processes that support the aquatic life and human uses we value. Through a collaborative Division process, high priority research areas were identified within each theme. The full text for the Theme Area documents can be found at the web addresses shown below. The Division themes and resulting priority areas are:

Inland lakes and depressional wetlands

http://www.michigan.gov/documents/Inland_Lakes_Depressional_wetlands_146800_7.pdf.

- Impacts of human activities on lake ecosystems including lakeshore development on lake habitat and vegetation management.
- Evaluation of lake management practices including: evaluation of fisheries regulations, evaluation of stocking, evaluation of vegetation and vegetation management.
- Classification of lakes and wetlands.

Rivers, streams, and floodplain wetlands

http://www.michigan.gov/documents/Rivers_Streams_Floodplain_wetlands_146793_7.pdf.

- Stream channel management: diagnosis tools, management techniques, and evaluation of existing protection and management schemes. Topic areas include: sediment/bedload movement, treatment options/recommendations, expected results, description of geomorphic processes and their influence on stream beds and banks, quantification of rates of change in channels for different types of Michigan streams, determination of when and where human intervention in geomorphic processes (e.g., sand traps, bank stabilization, etc.) is needed, evaluation of the influence of riparian, floodplain, and watershed conditions, and stream hydrology on channels, BMP (buffer strips, etc) evaluation and recommendations, habitat improvement recommendations, evaluation of habitat improvement activities such as bank stabilization, whole tree addition, fish structure addition, and Integration of study findings with GIS river reach classifications.
- The interface and interrelationships between lotic and lentic systems, both Great Lakes and inland. Topic areas may include: movement between and use of lake, river, estuary, and floodplain habitats by all life stages of fish, the Influence of spatial arrangement, connectivity, size, and other attributes of rivers and lakes on physical and ecological processes (e.g., sediment and LWD transport; temperature, water quality, and nutrient conditions; fish recruitment and population dynamics), biological interactions between lake and river fishes (e.g., Great Lakes fish, ANS in the Great Lakes, and resident river fishes), the influence of dams on all of the above, the use of passage activities to mitigate physical and ecological effects of fragmentation, including potential effects of ANS introduction.
- Development of decision support tools based upon Status and Trends Program data and other statewide databases. Useful tools may include: species-based habitat suitability models, valley-segment based, data analysis tools for use with data from individual fish and habitat surveys (e.g., Status and Trends Program random surveys), models for guiding appropriate placement of sediment traps, GIS-based delivery of population trend data from Status and Trends Program fixed (index) sites, relationships between land use (and land use changes) and biotic integrity metrics for stream fish communities, risk assessment models that predict the likely path of ANS colonization of inland waters and potential for establishment of significant ANS populations based on key river habitat parameters (e.g., temperature, gradient, size, etc.).

Great Lakes nearshore zones, including coastal wetlands

http://www.michigan.gov/documents/Great_Lakes_Nearshore_Zones_coastal_wetlands_146797_7.pdf.

- Evaluation of dynamics of depressed or recovering species and populations such as yellow perch, smallmouth bass, lake herring, lake sturgeon.

- Linkages between zones. For example the open water fish community effects on nearshore zone fish and visa versa, and the effects of changing benthic community on midwater zone.
- Evaluation of management practices such as stocking and cormorant management.

Great Lakes deepwater zones

http://www.michigan.gov/documents/Great_Lakes_Deepwater_Zones_146795_7.pdf.

- Population dynamics of deepwater fish species in the context of essential habitat, community and ecosystem processes.
- Improved field assessment of exploited deepwater species.
- Better data syntheses and model predictions for achieving management goals.

Great Lakes pelagic zones

http://www.michigan.gov/documents/Great_Lakes_Pelagic_Zones_146798_7.pdf.

- Evaluation of Chinook salmon natural reproduction and ecosystem response including: identification of biotic and abiotic factors determining Chinook reproduction success, development of a recruitment (wild and hatchery) index for Chinook salmon, determination of contributions of naturalized fish to lakewide predator abundances, production, and forage demand.
- Understanding predator/prey dynamics, for example: pelagic interactions of perch and alewives, salmonid responses to low alewife abundance, updating bioenergetic models to reflect new energy pathways, alewife recruitment dynamics, abiotic effects on recruitment of alewives and other species.
- Evaluation of linkages (emphasis on nutrient/resource cycling) between: the pelagic zone and benthic community, pelagic and nearshore zone, pelagic and deepwater zone, the effects of newly invasive species on these linkages.

Fish culture

http://www.michigan.gov/documents/Fish_Culture_Fish_Health_146801_7.pdf.

- Definition of a "Quality" hatchery product and achieving quality standards in fish production output.
- Post-stocking evaluations including: efficacy of stocking in largely self-regulating systems, evaluation of stocking practices and conduct experimental stockings of ecosystems altered by ANS, identification of new opportunities to biomanipulate ANS-altered systems using stocked fish.
- Improve cost effectiveness of fish culture, including culture of nontraditional species. For example: development of less costly feed formulation for starting diet and rearing of age-0 lake sturgeon, development of cost-effective means of lake sturgeon gamete collections, and evaluation of stocking prescriptions in systems recently altered by ANS to avoid wasteful stockings where stocking opportunities have been diminished.

Human dimensions of aquatic systems and their fisheries

http://www.michigan.gov/documents/Human_Dimensions_of_Aquatics_Fisheries_Management_146799_7.pdf.

- Improve our understanding of anglers and angler activities by: developing identifying and applying high quality methods for assessing the composition, behavior, attitudes, and preferences of Michigan anglers; describing and explaining relationships between management actions, angler behavior, and environmental changes; continuing and improving surveys of angler effort and catch and their uses; and understanding how anglers are recruited and retained.

- Improve our understanding of decision-making processes, metrics and tools for using human dimensions data by: research that evaluates processes for stakeholder involvement in decision-making; economic valuation and trade-offs of aquatic resource uses; and development of management information system to incorporate HD information into management decisions.
- Improve our understanding of the general public's understanding, values and behavior toward aquatic resources by: identifying knowledge, attitudes and preferences of general public in regard ecosystems; understanding how the general public responds to management actions; understanding how communication influences knowledge and responses of the general public.

Fish Health

- Studies of distribution, virulence, and susceptibility of Michigan aquatic species of viral hemorrhagic septicemia (VHS), including: analyses of key species for their susceptibility to this virus, to include lake trout, brook trout, lake whitefish, lake herring, Pacific salmon, brown trout, rainbow/steelhead trout, and alewives; analysis of surveillance fish samples to determine trends in virulence to, susceptibility to, and rate of distributional changes of, VHS in Michigan fish populations; epidemiological analyses of the likely risks and affects of VHS on fish populations in Michigan waters; and development of methods for non-lethal sampling of fish for VHS monitoring.
- Agents of transmission of VHS. Examples of specific research needs include: determination of the survival time of VHS in water and ballast water, understanding the transmission mechanisms from water body to water body (ballast water, fish or other animal vectors), transmission mechanisms from fish to fish (vertical and horizontal), determination of methods of disinfection (operational procedures) to make possible low-risk transportation of eggs from VHS-positive egg sources of feral cool-water species (i.e. walleyes) to state fish hatcheries, development of efficient, low risk methods (i.e. operational procedures) for disinfection of water and equipment used to transport potentially VHS positive fish or fish products; determination of prevalence and intensity of VHS infections in bait-fish species collected or transported through Michigan by the bait industry; and determination of prevalence and intensity of VHS infections in commercial fish species collected in, or transported through, Michigan by the commercial live fish industry.
- Establish the relationship between fish health parameters and the quality of hatchery products, as measured by post-stocking performance of the products and cost effectiveness of their culture.

PROPOSAL SUBMISSION PROCESS, SCHEDULE, AND RANKING CRITERIA

Proposal Submission Process

Study proposals must be submitted using the Fisheries Division template (http://www.michigan.gov/documents/NewProposalTemplate_146928_7.pdf). New proposals should include documentation of the strategic value of the proposed research to the Division's management programs. Strategic arguments might come from the Research Theme Assessments, the Department's Comprehensive Wildlife Conservation Plans, the Great Lakes Council of Lake Committees (CLC) Research Priorities, CLC Environmental Goals, CLC Lake Area Management Plans, or similar documents. A completed budget sheet for each year of the study (http://www.michigan.gov/documents/dnr/Annual_Budget_Template_1_243907_7.xls) is also required upon proposal submission.

Additionally, a written endorsement of either a basin team or a Division management team member is strongly encouraged to help demonstrate priority and need within the Division. The Division also encourages inclusion of a written science content review by an outside expert in the area of study.

An example proposal can be viewed at:

http://www.michigan.gov/documents/Example_Proposal_146933_7.pdf .

Deadline for Proposal Submission

Research Study Proposals must be submitted using the Division template via fax or electronically by email to: T. J. Newcomb, Research Program Manager, newcombt@michigan.gov, (517)373-0381 **by February 9, 2009.**

The Fisheries Division Management Team will annually review all research study proposals in March to select those that will receive Division support (as funding permits). Proposals will be evaluated and ranked according to 1) appropriateness of proposal in addressing a high priority information need; 2) level of support provided within the Division and by other partners; and 3) cost-benefit and partner cost-sharing (although no match is required).

For questions regarding the proposal request and submission process, please contact Tammy Newcomb, (517)373-3960 or at newcombt@michigan.gov.

PREVIOUSLY FUNDED RESEARCH

Many examples of completion reports for previously funded research can be found at:

http://www.michigan.gov/dnr/0,1607,7-153-10364_10951_19056---,00.html.