

## J. Current Hatch and McIntire-Stennis Projects

PI	No./Program	Title	Objectives
Dinsmore, S.	IOW05438	POPULATION ECOLOGY AND CONSERVATION OF VERTEBRATE AND INVERTEBRATE ORGANISMS	1. Measure wildlife demographic responses and link them to the distribution, abundance, and richness of wildlife populations.2. Understand wildlife-habitat relationships and how they relate to wildlife management actions and strategies to conserve species.
Blanchong, J.	IOW0543 Hatch	IDENTIFYING FACTORS RESPONSIBLE FOR THE OCCURRENCE, DISTRIBUTION, AND IMPACTS OF DISEASE IN WILDLIFE POPULATIONS	The goal of this project is to conduct research that will address current management-relevant questions about wildlife disease. Objectives: Investigate factors that affect the distribution and impact of disease in wildlife populations Investigate ecological and genetic correlates of wildlife health
Schulte-Moore, L.	IOW05423 Hatch	PRAIRIE STRIPS AS AN INNOVATIVE AGROECOSYSTEM PRACTICE TO ENHANCE ECOSYSTEM SERVICES FROM FARMERS' FIELDS	Our project will determine the extent to which strips of prairie vegetation sown amid crops garner ecosystem services in the fields of commercial farmers. Results from the multi-year STRIPS project ( <a href="http://www.prairiestrips.org">www.prairiestrips.org</a> ), which is conducted in 0.5-3.2 ha experimental watersheds, indicate that prairie strips produce high levels of ecosystem services with minimal impact on crop production. We will determine whether these promising results accrue at the broader scale of commercial farm fields. We hypothesize that strategic placement of prairie strips on farm fields will produce ecosystem services at levels disproportionate to their areal extent. We will quantify the impacts of prairie strips on provisioning (crop production), regulating (water infiltration, pollution control), and supporting (soil quality, biodiversity preservation, pollination, pest regulation) services. We will also assess these outcomes economically using market and non-market valuation techniques.
Blodgett, S.	IOW00363 M-S	MCINTIRE-STENNIS ADMINISTRATION PROJECT	Provide support for planning, direction, coordination and administration of the Iowa McIntire-Stennis program.
Roe, K.	IOW05399 Hatch	CONSERVATION GENETICS OF AQUATIC AND TERRESTRIAL SPECIES	The major goals of this project are: Accurately estimate the number of evolutionarily significant units (ESU's)/management units (MU's) for selected species of conservation concern. Confirm effects of evolutionary processes (selection, drift etc.) and estimate the amount of

			gene flow between these entities. Make recommendations to appropriate federal or state agencies for the management and conservation of these entities. Recently completed work by my lab has established the number of evolutionarily significant units (goal 1) and recommendations have been made regarding the management of these ESU's to the US Fish and Wildlife Service (goal 3).The current project is focused on achieving goal 2: to confirm the effects of evolutionary processes on these ESU's. My lab will achieve goal 2 of this project through the following three objectives'. I. Confirm the maintenance of the color polymorphism via a form of balancing selection. II. Determine the specific form that balancing selection takes in this. III. Confirm the causative relationship between mitochondrial proteins and the observed color polymorphism.
Morris, J.	IOW05393 Hatch	REGIONAL AQUACULTURE CENTER - NORTH CENTRAL REGION	To support the North Central Regional Aquaculture Center (NCRAC) for aquaculture research, development, and demonstration; for the enhancement of viable and profitable commercial aquaculture production in the United States for the benefit of producers, consumers, and the American economy; and to utilize the regional center in a national program of cooperative and collaborative research, extension, and developmental activities among public and private institutions having demonstrated capabilities in support of commercial aquaculture in the United States.
Weber, M.	IOW05390 Hatch	FACTORS AFFECTING AQUATIC ECOSYSTEMS IN AGRICULTURALLY IMPACTED LANDSCAPES THROUGHOUT IOWA	Evaluate biotic and abiotic effects on native and invasive fish populations. * Quantify Asian carp egg, larval, and adult relative abundance in Iowa rivers. * Evaluate relationships between environmental variables (e.g., temperature, flow) and Asian carp population characteristics. 2. Evaluate anthropocentric effects on aquatic ecosystem health. * Examine relationships among land use, water quality, biotic metrics, and pesticides to evaluate wetland condition. * Examine relationships among land use, water quality, fisheries, and mercury contamination in fishes.
Moore, P.	IOW05391 M-S	ECO-GEOMORPHIC PROCESSES AND RIPARIAN LAND MANAGEMENT IN MIDWESTERN STREAMS	MAJOR GOALS: To better understand the role that trees play in the morphology of stream channels and the integrity of stream habitats across different midwestern landscapes.
Isenhardt, T.	IOW05369	DENITRIFICATION WITHIN	The long-range goal of our research is to develop locally acceptable,

	AFRI	SATURATED RIPARIAN BUFFERS RE-DESIGNED TO REMOVE NITRATE FROM ARTIFICIAL SUBSURFACE DRAINAGE	economically viable, management practices that increase the sustainability of agriculture in the Midwestern United States with respect to surface and ground water quality, while improving the integrity of the aquatic and terrestrial ecosystems. The overarching goal of this application is to advance our understanding of the mechanisms by which saturated buffers remove nitrate.
Schultz, R.	IOW05368 AFRI	PROCESSES CONTROLLING THE SOURCE, MOVEMENT, AND RELEASE OF SOIL PHOSPHORUS IN MIDWESTERN STREAMS FROM PASTURE AND CROP LAND	The major objectives of this project are to: (1) quantify annual flux of sediment-bound P from channel erosion; (2) quantify annual flux of soluble P; (3) determine how adsorption/desorption and precipitation/dissolution processes regulate P mobility; and (4) estimate the net contributions of channel, groundwater, and overland flow sources of P loads in the Walnut Creek, which drains a 12-digit HUC watershed in Central Iowa.
Headlee, W.	IOW05356 AFRI	SHORT ROTATION WOODY CROPS ON MARGINAL LANDS IN THE SOUTHEASTERN USA - USING THE 3-PG MODEL FOR ECONOMIC OPTIMIZATION AND SPECIES SELECTION	The goal of this project is to better inform woody crop selection and improve economic performance on marginal lands in the southeastern USA. To achieve this goal, the objectives of the project are as follows: 1. Adapt the 3-PG model for poplars, loblolly pine, and eucalypts within the region, and further calibrate and validate the model with existing plantation yield data. 2. With the validated model from Objective 1 and existing GIS layers for soils and climate, generate productivity estimates for marginal lands within the region by climate zone and soil type. 3. With the productivity estimates from Objective 2, determine the optimum rotation age and land expectation value (LEV) for each species, as well as the economically optimum species (i.e. highest LEV) by climate zone and soil type.
Thompson, J., T. Stewart, C. McMullen, J. Randall, J. Tyndall, L. Naeve	IOW04115 M-S	RELATIONSHIPS AMONG ECOLOGICAL AND SOCIAL SYSTEMS IN URBAN AND URBANIZING AREAS	The goals of this project are to identify ways to restore, protect, and/or create a variety of ecosystem services in urban landscapes, and to quantify the ecological effects of doing so. Specific objectives are to: (1) Develop and evaluate ecological and social protocols for restoration of forest ecosystems in urban and urbanizing areas; and (2) Quantify links and feedbacks between ecological systems (terrestrial land cover, stream characteristics, and macroinvertebrate community composition) with social systems (individual, group, and governance characteristics) in urban settings.
Schulte-Moore, L., M. Helmers,	IOW05354 M-S	FUNCTIONAL RESTORATION OF MIDWESTERN	The long-term goal of this project is to develop locally acceptable, economically viable, management practices that increase the

T. Isenhardt, R. Schultz		AGRICULTURAL LANDSCAPES	sustainability of agriculture in the Midwestern United States with respect to surface and ground water quality, while improving the integrity of the aquatic and terrestrial ecosystems.
Wolter, P.	IOW05348 M-S	SATELLITE-BASED APPROACH TO RELATE PRE-FIRE FOREST CONDITION TO FIRE IMPACTS AND VEGETATION RECOVERY: APPLICATION TO THE PAGAMI CREEK WILDFIRE IN NORTHERN MINNESOTA	The proposed project supports a broadly relevant issue of the reintroduction of fire as a natural disturbance into historically fire-prone ecosystems. The project is poised to evaluate pre- and post-fire dynamics with an unprecedented level of spatio-temporal detail that will improve methods for predicting fire severity and monitoring fire recovery as new generations of data become available. Hence, the primary goal of the propose project is to understanding how forest conditions correspond to initial disturbance impacts and future forest states to answer critically important research and monitoring question facing land managers nationwide.
Blodgett, S., Bradbury, R. Hartzler, D. Debinski, R. Hellmich, J. Pleasants	NC507 Hatch	Monarch Butterfly Conservation in the Upper Midwest	1. Cost-effective methods to establish and maintain milkweeds and companion plants in rural, suburban and urban landscapes 2. Optimal milkweed species and companion plants patch characteristics and spatial arrangements to maintain and promote larval productivity and population viability. 3. Survey and sampling protocols to monitor milkweed and larval and adult monarch populations. 4. The extension program will ensure the distribution of practical, science-based information on conservation approaches in agricultural landscapes.