

Summary and Status of SMEP Grant Proposals under the 2007-2008 RFP as of October 2008

The following three (3) grant categories are offered on a continuous basis under the 2007-2008 SMEP Grants Initiative:

1. Networking Travel Grants (NTG) Maximum of \$5,000.
2. Participatory Research Grants (PRG) Maximum of \$10,000
3. Integrative Project Grants (IPG) \$10,000-25,000 per year for up to three years

Funded Integrative Project Grant (IPG) Proposals

SMEP Number: 2008001

Project Title: **The Michigan Invasive Species Information Network (MISIN): engaging stakeholders in invasive species detection and management**

Primary Applicant: Douglas A. Landis, Department of Entomology

Co-Applicants: Robert Ahern and Amos Ziegler, Department of Entomology; Phyllis Higman and Edward Schools, Michigan Natural Features Inventory

Award Amount: \$75,000

Abstract: At the heart of the Great Lakes Region, Michigan is a focal point for exotic species introductions. Invasive species threaten the sustainability of our natural lands and waters, agriculture and natural resource based economies, negatively impacting human health and wellbeing. Successfully addressing the threat of invasive species is information intensive and requires the coordinated action of multiple actors from individuals and agencies to regional and international governments. Our prior work has led us to the conclusion that a central problem in invasive species policy and management in Michigan is that there is no comprehensive system to report and track new occurrences or allow multiple individuals and agencies to share data and coordinate responses. This leads to inaction or ineffective responses allowing invasive species to largely spread unabated. Using seed funding from the MSU Environmental Research Initiative we have developed a prototype system to overcome this key barrier. The Michigan Invasive Species Information Network (MISIN) is a web-based education and reporting system designed to dynamically engage and empower multiple partners to cooperate in invasive species prevention and management. MISIN has been developed to a proof of concept state and we are currently beta testing the system with key partners (www.misin.msu.edu). At the heart of the system is a spatial database that allows real-time reporting and mapping of invasive species occurrences. These data allow immediate identification of first time occurrences (e.g. state, county and township levels) and tracking of invasion fronts at multiple scales. These data are critical to prioritizing use of limited resources and directing rapid response efforts. At present, we are able to accept existing data from our agency (MDNR) and NGO (The Nature Conservancy) partners. With SMEP and partner support, we propose to complete development and implementation of the system with initial launch by spring 2009. This will include development of on-line educational modules to allow individuals (agency personnel to general public) to become trained observers capable of entering data into the system. We will also develop invasive species alert functions that will automatically deliver text or email messages to individuals who have requested to be alerted to new occurrences in their area. We envision powerful synergies from such as system. For example, the reported occurrences of a new invasive by one individual will instantly inform multiple agencies of its location and facilitate coordinated responses. Alerts can be sent to nearby officials and linked to information used to inform the public and drive the educational process. Finally, the central database can

be analyzed by researchers to gain unprecedented information on the patterns of spread of invasive species leading to new understanding of pathways and promising policy or management interventions.

SMEP Number: 2007002

Project Title: **Assessment of Environmental Variables and Anthropogenic Impacts to Microbial-Induced Egg Mortality of Lake Sturgeon: An Imperiled Native Great Lakes Fish**

Primary Applicant: Kim T. Scribner¹, Department of Fisheries and Wildlife and Department of Zoology

Co-Applicant: Terence Marsh, Department of Microbiology and Molecular Genetics

Award Amount: \$42,824 (over 2 years)

Abstract: The sustainability of Michigan's valuable aquatic resources is in jeopardy, due largely to increasing man-made perturbations. Persistence of key components of diverse aquatic ecosystems including economically and ecologically important fish species occupying the highest trophic positions of complex food webs depends on coevolved linkages that are at risk. Because there are numerous links that bring diverse populations into co-dependencies, there are more ecologically sensitive intersections where the ecosystem can be tripped into an unsustainable trajectory. Therefore, greater understanding of inter-trophic interactions and the effects of man-made changes to environmental characteristics will help to determine the structure of system sustainability. Our long-term studies of lake sturgeon in Great Lakes tributaries in Michigan offer an ideal setting to study the relationship between microbial community dynamics, natural and anthropogenically-imposed dynamics of streams, and fish recruitment.

SMEP Number: 2007005

Project Title: **Graduate education in sustainability: socioeconomic well-being in Michigan and the Genuine Progress Indicator (GPI)**

Primary Applicant: Robert B. Richardson, Department of Community, Agriculture, Recreation and Resource Studies

Award Amount: \$11,733

Abstract: This project aims to integrate graduate education, research in sustainability, and outreach in development in Michigan. A graduate course in sustainability will focus on economic aspects of sustainable development. Graduate student members of the class will study and understand the inherent problems with GDP as a measure of welfare, explore alternative indicators, and calculate the GPI for the State of Michigan and several counties. Counties will be chosen to contrast rural and urban economic bases as well as industrial and agricultural development paths. The course will include theoretical discussions, empirical analysis, and planning for data sourcing and analysis. Students will work in groups that will be responsible for individual elements of the data collection, assembly, and GPI calculation. Counties will be chosen based on a variety of characteristics, including size, location, and industrial composition in order to depict the diversity within urban and rural settings within Michigan. Michigan is an ideal case for GPI calculation, given its abundant human, rural, and natural capital. The present economic challenges in the State present an opportunity to estimate the values of some of these forms of capital that are frequently obscured by unemployment statistics and the news of plant closures. GPI estimates will be useful to State policy makers and local governments as they seek to set development priorities with limited budgets. Students will benefit from the valuable experience of applying theoretical concepts about sustainability in their

home state and contributing to the sparse literature on sustainability indicators at local scales.

The proposed course will be held in spring semester, 2009. The project outcome will be a final report, co-authored by the students in the course. The data will be collected and assembled during the spring semester, and the calculations and report will be prepared in the following summer term with the support of a graduate assistant.

Funded Networking Travel Grant (NTG) Proposals

SMEP Number: 2008002
Project Title: Electronic Waste: Risks, Injustice and Policies for Increased Sustainability
Applicant: Carole Gibbs, School of Criminal Justice and Department of Fisheries & Wildlife
Research Contact: Peter Grabosky, Professor
Regulatory Institutions Network (REGNET)
Research School of Pacific & Asian Studies
The Australian National University

Award Amount: \$5,000
Abstract: Policy options to “regulate” environmental risks are diverse, ranging from criminal justice to educational interventions. Policies must be tailored to the complexity and diversity of the extant risks and systematically evaluated to determine sustainability. This Networking Travel Grant seeks funding for an eighteen day fellowship in Australia to collaborate with environmental risk and regulation scholars. In addition to advancing sustainability research at MSU in general, this networking grant will enhance an ongoing interdisciplinary project on the recycling, reuse and disposal of electronic waste (Ewaste) by businesses and the public. Ewaste is a substantial and growing risk to human and environmental sustainability. Deconstructing the Australian approach to Ewaste and collaborating with members of the Regulatory Institutions Network (RegNet) will result in creative policies to increase the sustainability of Australian and Michigan Ewaste management as well as an assessment of inequalities in the distribution of Ewaste. Additional goals include building a more general collaborative research relationship between myself, MSU and RegNet to develop future projects and grants on environmental risk. Directly interacting with RegNet members in Australia will dissolve barriers to communication and facilitate more effective collaboration. Impacts include individual and institutional capacity building for sustainability scholarship; opportunities for student involvement in the study of local, national and international environmental risks; and the development classroom material on corporate environmental risk for the interdisciplinary certificate program in Conservation Criminology.

Status: Funded

SMEP Number: 2007003
Applicant: Meredith L. Gore
Office of the Provost Diversity Fellow and Department of Fisheries and Wildlife
Research Contact: Dr. Paul Slovic
Decision Science Research Institute, Inc. Eugene, OR

Award Amount: \$4,890
Abstract: The relationship between social networks and perceived risk needs to be explored further to the benefit of applied sustainability research at Michigan State University. Additional research will provide deeper understanding about how networks function in a community setting, inspire collective action, facilitate empowerment, and

inform communication strategies and policy about risk issues. This Networking Travel Grant seeks funding for a mutually beneficial opportunity: an intensive, three week fellowship in Eugene, OR to work with world-renowned scientists at the independent nonprofit research organization Decision Research (DR). This fellowship will initiate a collaborative research project focused on perceived risk and sustainability that will deepen understanding about social and cultural processes that influence public behavior. The goals of this travel project are to: 1) scaffold a collaborative relationship between myself, MSU, and DR; 2) initiate a RDMS NSF proposal; and 3) build theoretical and methodological capacity in natural resources decision and risk sciences. Directly observing, interacting, and engaging with DR scientists will break down barriers to communication and facilitate more effective collaboration. Diverse short- and long-term impacts and outcomes will manifest from this collaboration, including individual and institutional capacity building, paving inroads for theoretical and applied discourse, and improved scholarship in research conducted at Michigan State University.

Status: Completed

SMEP Number: 2007001

Project Title: Improving participation in resource management decisions: Understanding, evaluating, and incorporating local knowledge

Primary Applicant: Joe Arvai, Dept. of CARRS

Award Amount: \$2,940

Abstract: Local knowledge about environmental systems refers to the collective and indigenous wisdom about the environment, broadly defined, which is gained by people over generations of living within or near a system of interest. Increasingly, policy makers are recognizing the need to incorporate input in the form of local knowledge in environmental as well as other resource management decisions. However, very little in the way of meaningful guidance is available regarding how best to elicit and incorporate local knowledge into decision making processes that are typically viewed as fundamentally technical problems. The focus of future research in this area (by the PI, Arvai), therefore, is to develop a more rigorous and widely accepted basis for eliciting, understanding, evaluating, and making use of local knowledge during decision making for environmental and resource management efforts that promote sustainability. This short proposal is for a Networking Travel Grant; themes and contexts for research—as well as collaborations identified—as the result of a Networking Travel Grant will be used to develop, at minimum, two large proposals that focus on formally embedding local knowledge within environmental and resource management decisions that promote sustainability in Michigan and elsewhere around the world.

Status: Completed

Summary and Status of SMEP Grant Proposals Under the 2004-2005 RFP

SMEP Number: 2004006

Project Title: **Enhancing Michigan's Rural Communities with a More Sustainable Agricultural Sector**

Primary Applicant: Suzanne Thornsby, Dept. of Agricultural Economics

Award Amount: \$30,000

Status: Completed. Will present research findings at the SMEP Sustainability Science Seminar in the spring of 2009.

SMEP Number: 2004004
Project Title: **Integrating Ecological, and Social Dimensions for Sustainable Management of Michigan's Jack Pine Resource**
Primary Applicant: David Rothstein,
Co-applicants: Deborah McCullough, Larry Leefers
Award Amount: \$73,000
Status: Completed. Will present research findings at the SMEP Sustainability Science Seminar on November 18, 2008.

SMEP Number: 2004002
Project Title: **Measurement and Interpretation of the "Heartbeat of the City" through its Acoustic Signatures**
Primary Applicant: Stuart Gage, Entomology Department
Co-applicants: Subir Biswas, Electrical and Computer Engineering
Award Amount: \$52,615
Status: Completed grant. Presented research findings at the first SMEP Sustainability Science Seminar in April 2008.