



Indiana University of Pennsylvania

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**March 2, 2010**

**Robert H. Gardner  
Appalachian Laboratory  
University of Maryland Center for Environmental Science  
301 Braddock Road  
Frostburg, Maryland 21532**

**Re: Application to Join the Chesapeake Watershed Cooperative Ecosystems Studies Unit**

On behalf of the Indiana University of Pennsylvania (IUP) and the IUP Research Institute, I ask that we be considered for participation as a new partner in the Chesapeake Watershed Cooperative Ecosystems Unit. I have reviewed the general CESU descriptive materials and the CWCESU Cooperative and Joint Venture Agreement.

The Indiana University Research Institute is an independent non-profit (50C3) corporation affiliated with Indiana University of Pennsylvania for the management, development, and coordination of externally funded grants and research. Indiana University of Pennsylvania is a State Owned University and member of the State System of Higher Education.

Indiana University of Pennsylvania is a leading public, doctoral/research university, strongly committed to undergraduate and graduate instruction, scholarship, and public service. Through its research programs, IUP offers services to community leaders in government, business, education, human service, and health-care agencies and organizations. Whether it is within our laboratories or in research sites beyond our campus, our research provides opportunities for graduate and undergraduate students.

IUP is located in Indiana, Pennsylvania approximately 50 miles east of Pittsburgh. Through our faculty we can provide the CSCESU expertise in Archaeology, Geospatial Sciences, Biology, and Environmental Education. The following faculty members are interested and available to participate in cooperative projects:



beyond expectations

**Dr. Timothy Nuttle, Department of Biology**

**Areas of Expertise: Forest Ecology, Ecological Modeling, Restoration Ecology**

Dr. Nuttle's research seeks to understand the processes by which diversity in biological communities develops, is maintained, and is lost, and the subsequent consequences of these changes on other ecosystem properties and processes. Specific projects have addressed factors affecting restoration of forest bird and tree diversity in forested wetlands, drivers of diversity collapse in eastern deciduous forest, and effect of herbivores in determining structure and function of forest ecosystems. These questions are addressed using mathematical and simulation models to generate rigorous hypotheses that are tested against data from experimental and observational studies. A second area of research seeks to develop methods to represent and model ecological ideas in ways that support reasoning, communication, and education about environmental sustainability. Dr. Nuttle's research has been supported by grants and cooperative agreements with the US Fish and Wildlife Service, USDA Forest Service, European Commission, and private foundations.

**Dr. Jeff Larkin, Associate Professor of Conservation Biology, Department of Biology**

**Areas of Expertise: Wildlife Reintroduction, Imperiled songbird Ecology and Conservation, Restoration Ecology, Forest and wildlife management**

Dr. Larkin has been the principal investigator for several research projects related to a variety of wildlife conservation topics. This reflects his diverse research interests. Dr. Larkin's research is best described as applied. That is, he and his students synthesis their research findings into applied information that is used by various government agencies and NGOs to better manage, conserve, and restore wildlife and their habitats. Prior to joining the IUP faculty in 2005, Dr. Larkin was a research associate at the University of Kentucky and a visiting scholar at Yellowstone National Park. Dr. Larkin has published extensively in professional journals and has contributed chapters to several books, as well as editing *Large Mammal Restoration: Ecological and Sociological Challenges in the 21st Century*, which won the 2002 Wildlife Society book award. He is also a member of the Wildlife Society, the Society for Conservation Biology, the Cerulean Warbler Technical Committee, and the Golden-winged Warbler Working Group. Dr. Larkin's work has been funded by grants and cooperative agreements from 1) U.S. Fish and Wildlife Service; 2) National Fish and Wildlife Foundation; 3) National Park Service; 4) U.S. Forest Service; 5) Kentucky Department of Wildlife Resources; 6) Pennsylvania Game Commission; 7) Pennsylvania Department of Conservation and Natural Resources; and 8) several NGOs. Currently, Dr. Larkin and his students are conducting research associated with the following species: Allegheny woodrat demographics, Golden-winged Warbler response to habitat management, Cerulean Warbler breeding ecology and forest management, fisher distribution and abundance, elk dispersal, migratory behavior of eastern tree bats, and reforestation of reclaimed surface mines.

**Dr. Joseph Duchamp Department of Biology**

**Areas of Expertise: Mammalian Wildlife and Population Ecology**

Dr. Duchamp has over 10 years of experience studying populations of bats and other small mammals. His research examines the relationship between environmental conditions and the response of wildlife populations over multiple spatial scales. His interests span fragmentation and landscape ecology, population and community dynamics, conservation biology, applied statistics, and assessing wildlife management tools. As part of his research efforts, he has worked with federally endangered species (Indiana bat, *Myotis sodalis*) and state-threatened species in Pennsylvania (Allegheny woodrat, *Neotoma magister*). He has experience with wildlife population surveys and assessing wildlife habitat use. During his research, he has employed techniques such as wildlife capture and handling, radio telemetry, acoustic surveys of bat echolocation calls, mark-release-recapture modeling, occupancy modeling, habitat selection analysis, classification modeling, and population viability modeling.

**Dr. Yvonne Branan, Department of Geoscience**

**Areas of Expertise: Environmental Education**

Dr. Braun's interests are in education and local environmental issues. She is interested in the connections between IUP and the community through that education of the public on issues that will affect them. She is on the board of Evergreen Conservancy, a local group and has worked to clean-up local waterways through a variety of methods including holding property, grant writing to support an environmental educational site.

**Dr. Richard J. Hoch, Department of Geography and Regional Planning**

**Areas of Expertise: Land-use change, watershed planning, and LiDAR application in stream management**

Dr. Hoch has over 10 years of practical experience in land-use and watershed planning in Appalachia. His research interests include geospatial applications in land-use planning, regional economic and environmental development, and nature and society interactions. He has worked in the private sector performing National Environmental Policy Act (NEPA) and Clean Water Act (CWA) compliance investigations for the West Virginia and Pennsylvania Department of Highways, and has been the primary investigator for many watershed conservation plans. In the non-profit sector, Dr. Hoch managed the "Decision Support Center for Mid-Atlantic Highlands Sustainability", a USEPA funded geographic information systems (GIS) and remote sensing (RS) laboratory at the Canaan Valley Institute, whose mission is to facilitate technical assistance and technology transfer in the support of environmental and economic sustainability to local groups throughout the Mid-Atlantic Highlands of Pennsylvania, West Virginia, Maryland, and Virginia. Dr. Hoch has formal and tacit knowledge in the airborne acquisition and research application of LiDAR (light detection and ranging) data, particularly in the areas of natural stream channel design and floodplain delineation. Dr. Hoch has worked with the Federal Emergency Management Agency as a Cooperating Technical Partner, has successfully completed applied fluvial geomorphology training from Wildland Hydrology, Inc. ('Rosgen I'), is a Certified Floodplain Manager (CFM - #761054), and is a member of the American Institute of Certified Planners (AICP - #020887).

**Dr. John Benhart, Jr. Department of Geography & Regional Planning**

**Areas of Expertise: Geospatial Techniques and Spatial Analysis**

Dr. Benhart's research interests include geographic information science (GISc), technical aspects and applications of geographic information systems (GIS), spatial decision support systems, and environmental decision support systems. He has expertise in geospatial techniques such as global positioning systems (GPS), remote sensing, and geographic information systems – with particular experience in the integration of such technologies to address human-environment research questions relating to phenomena such as acid mine drainage, deforestation, mine subsidence, and groundwater contamination. Additionally, he has a background in the application of spatial analysis techniques such as spatial interpolation, spatial statistics, geostatistics, point pattern analysis and spatial modeling. He has been an investigator on projects funded by the National Science Foundation (NSF), the National Institutes of Health (NIH), and United States Department of Education, the United States Office of Surface Mining (OSM), and the North Atlantic Treaty Organization (NATO).

**Dr. Ben Ford, Department of Anthropology**

**Areas of Expertise: Historical and Maritime Archaeology**

Dr. Ford has 13 years of experience in North American archaeology. His particular expertise is in the historical archaeology of the Eastern U.S., Great Lakes archaeology, GIS, historic preservation, underwater archaeology, shoreline archaeology, and maritime cultural landscapes. He specializes in how humans interact with bodies of water but is broadly interested in the recursive relationship between humans and the environment. Additionally, he has experience excavating and recording a wide variety of sites, both terrestrial and submerged. Dr. Ford has completed projects for the American Battlefields Protection Program (in partnership with the National Park Service Cultural Resources Geographic Information Systems Facility), the Minerals Management Service, and the U.S. Army Corps of Engineers (New England District), as well as many state and local agencies. Dr. Ford has three years of experience in Great Lakes underwater and terrestrial archaeology, including his Ph.D. dissertation research, which consisted of a survey of seven square kilometers of the Lake Ontario shoreline and two years of experience in Chesapeake Bay underwater and terrestrial archaeology including work with the Maryland Historical Trust and his M.A. thesis research, which resulted in a predictive model for historic shipyard sites in the region.

**Dr. Beverly Chiarulli, Department of Anthropology**

**Areas of Expertise: Pre-European and Historic Archaeology, Archaeological Geophysics, and Public Archaeology**

Dr. Chiarulli has been at IUP for 13 years and during that time has directed projects for state and Federal agencies. Her current research includes the investigation of Late Prehistoric occupation in three watersheds in Pennsylvania through the development of predictive models and geophysical surveys. She is currently the Principal Investigator for a five-year agreement between IUP and the Pennsylvania Department of Transportation for the development of public outreach programs and the curation of archaeological collections. Other projects have included surveys of the Allegheny National Forest, the Allegheny Portage National Historic Site including investigations of

Staple Bend Tunnel, the earliest railroad tunnel in the United States and the Skew Arch Bridge associated with the crossing of Incline 6 by the historic Bedford Turnpike, for the National Park Service; investigations of the Southfork Hunting and Fishing Clubhouse a Save America's Treasures funded project at the Johnstown Flood National Memorial Unit of the National Park Service and the preparation of the Archaeological Overview for the Flight 93 National Memorial. She has received funding from the NPS National Center for Preservation Training and Technology for an investigation of geophysical techniques for the investigation of iron furnace sites and has used ground penetrating radar, magnetometry, electrical resistivity, magnetic susceptibility and conductivity to map subsurface features in the Ridge and Valley portion of Pennsylvania falling within the CWCESU as well as in the areas further west in the Unglaciaded Allegheny plateau.

IUP faculty members include biologists, ecologists, environmental educators, archaeologists, and geospatial scientists who will support the CWCESU mission through our assistance in developing an understanding of the relationship between the past and present of the watershed. Our ecosystem researchers including biologists and environmental educators can assist in ecosystem studies and educational outreach programs. Our geospatial scientists including geographers and archaeologists can provide technical assistance in landscape analysis connecting the past and present of watershed resources. Because of our close location to the CWCESU, we believe that through this partnership, we will have new opportunities for research and to include graduate and undergraduate students in this research.

Andrea Kimmel will be the contact person for IUP/IUP Research Institute. Her contact information is:

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Sincerely,

Timothy Mack, PhD  
Dean of the College of Graduate Studies and Research