Grants Awarded

From 11/1/06 To 11/30/06

Principal Investigator: Thomas Roberts, Biology

Project Title: Collection of Data at Deer Check Stations

Activation Amount: $3,000.00

Agency: Tennessee Wildlife Resources Agency

This study is conducted annually in cooperation with the Tennessee Wildlife Resources Agency (TWRA) to provide data on the size and quality of the white-tailed deer (Odocoileus virginianus) herd in the state. Students in the Wildlife and Fisheries Science program work either independently or with a representative from TWRA on the opening week of the regular firearms season at designated stations across the state and collect basic biological information on harvested animals. Data collected at all stations includes: sex, age, antler size, and condition. At some stations tissue samples are taken for evaluation relative to potential infectious diseases. These data in conjunction with that from other stations provide TWRA biologists and managers with the information needed to determine if current management strategies are producing their desired effect at both the regional and state levels. Students participating in active learning projects such as this have the opportunity to utilize the skills they have learned in the classroom and well as gain valuable experience working with wildlife professionals.

Principal Investigator: John Harwood, Chemistry

Supporting Professionals: Peter Li, Earth Sciences/Bradford Cook, Biology

Project Title: Application of CADDIS to an Impaired Mixed Urban/Rural Watershed

Activation Amount: $16,161.00

Agency: Tennessee Department of Environment and Conservation

Grants Awarded

From 11/1/06 To 11/30/06

Principal Investigator: Glenn Cunningham, Mechanical Engineering

Project Title: Industrial Technology Program Outreach and Facilitation 2006-07

Activation Amount: $85,550.00

Agency: Tennessee Department of Economic and Community Development

Principal Investigator: Kenneth Currie, Manufacturing Center

Project Title: Center for Manufacturing Research-State Appropriations 2006-07

Activation Amount: $69,300.00

Agency: State of Tennessee

Principal Investigator: James Layzer and Phillip Bettoli, Co-op Fisheries Unit

Project Title: TWRA - Base Funds 2006-07

Activation Amount: $30,000.00

Agency: Tennessee Wildlife Resources Agency

Grants Awarded

From 11/1/06 To 11/30/06

Principal Investigator: Susan Elkins, Extended Education

Project Title: New Occupational Teacher Training and Mentorship Program

Activation Amount: $64,800.00

Agency: Tennessee Department of Education

TTU will:
1) Develop a mentoring program for occupational teachers to assist in the development of an individualized program that will lead to improved classroom instruction.
2) Identify first year occupational teachers in the Grantee service area and collect formative assessment data (i.e., surveys demographic data, classroom data).
3) Track the teachers as they move through Apprentice Occupational License requirements and monitor the completion of those requirements by classroom visits and observations.
4) Make reports to the State as to the status of the occupational teachers as they move to advancement of the Occupational Professional teacher.
5) Provide support to the local school systems by monitoring of apprentice teachers.
6) Assist the State in the ongoing professional development programs for new teachers.
7) Conduct institutes for teachers in Occupational Licenses. Additional workshops and activities can be scheduled if the need is identified.
8) Develop professional growth plan for each participant facilitated by primary mentor.
9) Schedule weekly observations of first year participants by primary and secondary mentors.
10) Identify potential secondary mentors.
11) The Office of Teacher Education (OTE) will provide training for primary mentor and secondary mentors in current TN Mentoring Program modules and customize modules for Career and Technical Education teachers and focus on needs of participants.
12) Collaborate with the primary mentor and Director of OTE to develop training modules based on Interstate New Teacher Assessment and Support Consortium (INTASC) standards and six Tennessee Framework for Evaluation and Professional Growth domains.
13) Develop applications for additional prospective mentors from pool of current CTE practitioners (i.e., teachers and administrators).
14) The Grantee, primary mentor, and Director of OTE will collaborate to customize training modules for additional secondary mentors.

Principal Investigator: Curtis Armstrong, Decision Science and Management

Project Title: Governor's School for IT Leadership 2007

Activation Amount: $118,000.00

Agency: Tennessee Department of Education

Grants Awarded

From 11/1/06 To 11/30/06

Principal Investigator: Dan Dodson, Water Center

Supporting Professionals: Dennis George, Water Center

Project Title: Water Quality Study Iron Leachrate and Treatment

Activation Amount: $25,000.00

Agency: City of Crossville

The city of Crossville is under a directive from the Tennessee Department of Environment and Conservation to fund a water quality study designed to evaluate the effectiveness of different treatment systems at removing iron from the leachate associated with fill material in the Crossville area. The three (3) different types of iron leachate treatment systems to be monitored are "Limestone barriers" and "wetland berms" at the Stone Peak Ceramics site, and a treatment wetland at the Staples site. The study objectives are: 1) to evaluate iron leachate removal efficiency for a range of hydraulic and leachate loadings; 2) to determine if the impacted streams on each site discharge iron leachate (and other constituents) that exceed the natural background concentrations measured from a selected reference stream; 3) to compare the levels of iron leachate (and other constituents) in the impacted streams of both sites to those of a local representative stream.

Principal Investigator: Joseph Ojo, Electrical and Computer Engineering

Project Title: Mixed-Winding, High Phase Order Induction Machines with Multi-Phase, Multi-Level Converters for High Power Drive and Generator Applications

Activation Amount: $158,952.00

Agency: Office of Naval Research

It is proposed to investigate the opportunities offered for high power drive and generator applications by using mixed-winding, high phase order induction machines actuated with multi-phase and multi-level inverters and rectifiers. These electric machines by virtue of their multi-phases and many winding sets deliver high total power capability in drive applications and give both controllable DC and AC sources using multi-phase, multi-level converters. Application areas include large pumps, compressors, high torque actuation and uninterrupted power sources. The inherent redundancy of the electric machines and the converters gives implicit high reliability and fault tolerance to the system, a higher degree of controllability and the opportunity for high power operation using relatively low-voltage rated switching devices.

Grants Awarded

From 11/1/06 To 11/30/06

Principal Investigator: Hayden Mattingly, Biology/Vincent Neary, Civil and Environmental Engineering

Project Title: Conservation and Recovery of Barrens Topminnow Populations Exposed to Invasive Mosquitofish

Activation Amount: $15,000.00

Agency: Tennessee Wildlife Resources Agency

Over the past several years, numerous partners including federal, state, non-government organizations, and private landowners have worked cooperatively to restore habitat for the globally rare Barrens topminnow, Fundulus julisia, with the Barrens Plateau region of middle Tennessee. Although habitat restoration activities have been successful, the establishment of self-sustaining topminnow populations has been lesss successful. Recent research has demonstrated that the survival of recently hatched topminnows is nearly non-existent in areas co-habitated by the invasive mosquitofish, Gambusia affinis. The goal of this study is to identify methods of mosquitofish control that will be ecologically sensitive and minimally disruptive to the natural structure and function of the local ecosystems. Topminnows and mosquitofish swimming performance will be assessed in a laboratory flume to determine whether an engineered water velocity barrier could selectively allow topminnow passage while preventing mosquitofish passage to protected upstream habitats. Because mosquitofish barriers may not be feasible at all field sites, this study will also investigate an ideal density ratio of topminnows to mosquitofish that could permit the two species to coexist. Furthermore, artificial habitat refuges will be tested in a laboratory setting to determine whether such structures could enhance survival of topminnow offspring in the wild. The potential benefits of the project include identification of a set of strategies to prevent topminnow extinction and to boost natural and reintroduced populations of topminnow in their native ecosystem.