

### **Grants Awarded August 1 Through August 31, 2005**

Barry Stein, Counseling and Psychology, Ada Haynes, Political Science and Sociology and Michael Redding, Biology, "Project CAT: Assessing Critical Thinking Skills", \$56,610, The National Science Foundation.

- The primary goal for this project is to build on past efforts and refine a promising assessment instrument to evaluate critical thinking skills.

Vincent Neary, Civil and Environmental Engineering, "Everglades Hydrodynamic Models Review", \$11,344, U. S. Department of Interior-Fish and Wildlife Service.

- This cooperative agreement between the Fish and Wildlife Service and the University is being implemented for the purpose of providing Resource Managers with high quality scientific technical assistance with special emphasis on hydrodynamic and water quality model selection and development with specific recommendations to the Fish and Wildlife Service.

G. K. Stearman , Dennis George and Yvette Clark, Water Resources Center and Vincent Neary, Civil and Environmental Engineering, "Pigeon Roost Creek Watershed Restoration Project: Long Range Comprehensive Plan", \$44,305, Tennessee Department of Agriculture.

- The purpose of this project is to install a bioretention filter in the highly urbanized upper reach of Pigeon Roost Watershed, and to develop a long-range plan for restoring the complete watershed.

Michael Birdwell and Jeffery Roberts, History, "Cumberland Plateau Consortium: Teaching American History", \$37,503, U. S. Department of Education/White County Schools.

- This project deals with methods for teaching American History in the Schools of White County.

James Layzer, Biology, "Status and Recovery of the Endangered Ringpink *Obovaria retusa* in the Green River" \$18,868, U. S. Geological Survey.

- The purpose of this study is to intensively search several sites on The Upper Green River to collect and establish a captive breeding population of Ringpink mussels and identify glochidral hosts.

James Layzer, Biology, "Survey of the Mussel Fauna of the Wolf River, Pickett and Fentress Counties, Tennessee", \$5,000, Tennessee Wildlife Resources Agency.

- The purpose of this study is to thoroughly survey the Wolf River and document the present and historical fauna with special emphasis on endangered species.

James Layzer, Biology, "Distribution of Chucky Madtom in Upper Little Chucky Creek", \$5,000, Tennessee Wildlife Resources Agency

- The objective of this project is to conduct a survey of chucky madtoms in Little Chucky Creek upstream of Radar, Tennessee. Only fourteen specimens have been collected and the species has not been found since 1940.

Jiahong Zhu, Mechanical Engineering, "Novel Composite Materials for SOFC Cathode-Interconnect Contact", \$62,939, U. S. Department of Energy.

- This project will develop a novel low-cost, damage-tolerant silver- base alloy/ceramic composite material with low silver evaporation/migration, suitable coefficient of thermal expansion , oxidation resistance, electrical conductivity, chemical stability and compatibility tailored compositionally and microstructurally for intermediate-temperature SOFC cathode interconnect contact application.

Jiahong Zhu, Mechanical Engineering, "Tailoring Iron Base Alloys for Intermediate-Temperature SOFC Interconnect Application", \$52,910, U. S. Department of Energy.

- This project will have as its focus developing a new class of iron-base alloys to serve as interconnect material for intermediate-temperature solid oxide fuel cells (SOFC). The project will be a collaborative effort among Oak Ridge National Laboratory, University of Missouri-Rolla and Tennessee Technological University with Tennessee Technological University serving as the leading research institution

Robert Qiu, Manufacturing Research Center," Time Reversal for UWB Communication System", \$15,000, Army Research Office.

- Time-reversal has the promise of utilizing the spatial structures of the multipath channel. Experimental verification of the feasibility of using time-reversal will be performed in difficult propagation environments such as indoors and industrial settings.

Sastry Munukutla and Robert Cravens, Energy Systems Research Center, "Updating the Real-Time Performance Monitoring Software for JPM and Genoa Units of Dairyland Power", \$15,000, Dairyland Power Cooperative.

- This project deals with updating software for certain units of Dairyland Power Cooperative.

Kristen Pennycuff, Jane Baker, Angie Smith, Larry Peach and Darrell Garber, Curriculum and Instruction/Child Development Laboratory, "Tennessee Early Childhood Education Pilot Program", \$65,001, Tennessee Department of Education.

- This project is a continuation of the Pilot Program in Early Childhood Education in keeping with statutes and regulations issued by the State of Tennessee.

Darrell Garber and Angie J. Smith, Curriculum and Instruction, "Child and Adult Food Care Program (CAFCEP)", \$33,264, Tennessee Department of Human Services.

- This project deals with certain aspects of child and adult food care programs in the State of Tennessee.

Sue Bailey and Betty Vaudt, Human Ecology, "-Upper Cumberland Child Care Resource and Referral – Inclusion Services", \$5,000, Department of Human Services Through Signal Centers of Chattanooga.

- The Child Care Resource and Referral Service shall provide technical assistance to area child care providers based on local needs assessment and shall provide consultation to child care agencies related to assessment scores and the Star Quality Ratings and similar services.

Joseph Biernacki, Chemical Engineering, "Multiscale Kinetics-Based Model for Predicting Mechanical Property Development of Concrete Containing Supplementary Cementitious Materials", \$38,836, The National Science Foundation via The University of Michigan.

- The purpose of this research is to coordinate activities associated with the use of synchrotron X-ray facilities at the National Synchrotron Light Source at Brookhaven National Laboratory. The work will be done in collaboration with Oak Ridge National Laboratory colleagues through the High Temperature Materials Laboratory and Participating Research Team to be established through the National Science Foundation funding. The objective of this work is to develop quantitative x-ray diffraction-based kinetic data for various blended cement systems.

Barry Stein, Counseling and Psychology, Ada Haynes, Sociology and Political Science and Michael Redding, Biology, "Project CAT: Assessing Critical Thinking Skills", \$179,507, The National Science Foundation.

- This project was described with the first entry of this list.

Ben L. Byler, Agriculture, “Tennessee Association FFA Camp Clements Leadership Grant”, \$75,282, Tennessee Department of Education, Division of Vocational Education.

- This project deals with providing services to the Tennessee Association of Future Farmers of America and its members, advisors and other groups attending Camp Clements Leadership Camp.

Hayden T. Mattingly, Biology, “Identifying Mechanisms of Species Coexistence for Barrens Topminnow Population Exposed to Invasive Mosquitofish”, \$24,000, U. S. Fish and Wildlife Service.

- The goal of this project is to investigate the impact of mosquitofish on wild barrens topminnows with in situ mesocosms.

S. Bradford Cook, Biology, “Spotfin Chub (*Eriomonax Monachus*) Microhabitat Evaluation, Emory River Watershed”, \$5,100, National Park Service – Southeast Regional Office.

- This project will be an evaluation of the habitat features of the spotfin chub in the Emory River Watershed. Data will be collected for at least two years.

Ying Zhang and B. A. Nagaraj, Mechanical Engineering, “Platinum- Enriched Y + Y’ Bond Coats for Next-Generation Single-Crystal Ni-Base Superalloys”, \$113,319, The National Science Foundation.

- This GOALI collaborative effort between Tennessee Technological University, General Electric Aircraft Engineers and Oak Ridge National Laboratory is to explore a new bond coat system with interest in assessing and modeling the long-term stability of this new bond coat system in terms of interdiffusion with substrate alloys and coatings microstructural/compositional evolution.

Gail Gentry, “Hands-On Art/Craft Program for Elementary School Students”, \$5,000, Tennessee Arts Commission.

- This project will focus on the importance of the art/craft experience for students in the elementary grades.

Gail Gentry, Music and Art, “High School Art/Vocational Craft Program”, \$5,500, Tennessee Arts Commission.

- This project will focus on the importance of Arts and Crafts at the high school level and the role it plays.