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 Saint Louis University Presidential Scholars Abe Grindle, Anusha Vasamsetti, Joey Kneer and Meg Fuchs receive the University's most prestigious and financially lucrative scholarship. Read about their undergraduate research projects on page 6.

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Mayden is overseeing a \$3 million grant from the National Science Foundation's "Assembling the Tree of Life" program, which aims to better understand the history and origins of freshwater ecosystems.

THE

By Clayton Berry

FISHER KING

Saint Louis University biologist Richard Mayden, Ph.D., has already discovered his fair share of new fish species. Now this ichthyologist (someone who studies fish) has hooked one of his largest projects ever. SLU is the first college in the Midwest to join a groundbreaking effort to shed light on our evolutionary history.

The chairman of SLU's biology department, Mayden is overseeing a \$3 million grant from the National Science Foundation through its "Assembling the Tree of Life" program.

It's the largest grant awarded during the first three years of this multi-disciplinary, 15-20 year initiative.

Working with researchers around the country and the globe, Mayden will focus

on reconstructing the evolutionary, biological and geographic history of one of the planet's most diverse group of freshwater fishes: *Cypriniformes*.

Found on nearly every continent and known by less scientific names, such as minnows and carps, these fishes make up a majority of the fish

species in most freshwater ecosystems around the world.

SLU's Tree of Life project

www.cypriniformes.org

"This study will have a profound impact on our understanding of the history and origins of freshwater ecosystems around the world," Mayden said.

Mayden added that results from the project could assist with medical advancements. For example, one of the species being studied is Zebra Danio (*Danio rerio*), the "zebra fish," which is examined worldwide in gene research.

"And because these fishes serve as a critical food source for many cultures

around the world, our work will have a profound impact on developing better aquaculture practices," said Mayden, also the University's W.S. Barnickel Endowed Chair of Natural Sciences.

SLU's work also will help test theories about plate tectonics, ancestral river systems and the longevity of various ecosystems, Mayden said.

The University joins 22 other funded programs in the highly competitive "Tree of Life" program. In addition to being the first program at a Midwestern university, it is the first study funded at any Catholic university and is the first project to study fishes.

"The program is extremely prestigious, with funding only going to the 'best of the best' research programs in comparative evolutionary biology," Mayden said.

"Successful funding of this SLU-originated research is a direct reflection of the prestigious nature and quality of research and instruction in the department of biology."

Robert Wood, Ph.D., and Nevin Aspinwall, Ph.D., professors of biology at

growing team of scientists from China, Czech Republic, Germany, Russia, Turkmenistan, Spain and Sweden.

The team met in Tallinn, Estonia, at the World Congress of Ichthyology for a special symposium Mayden organized. As lead investigator, Mayden already has traveled around the United States to work with collaborators in organizing and facilitating the large project.

While this may be one of the largest projects he has undertaken, Mayden is no stranger to groundbreaking discoveries. For example, he recently discovered new species of trout in the mountains of Mexico.

Although he travels the globe for his research, Mayden netted his latest find in the "wilds" of western Tennessee.

Mayden, along with his colleague and former doctoral student Steven Powers, Ph.D., of Reinhardt College in Georgia, discovered the Chickasaw darter (left), *Etheostoma cervus*, in the Forked

Deer River, which is about an hour and a half northeast of Memphis.

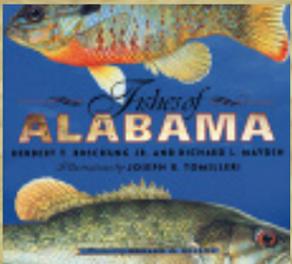


them, Mayden said, with most agencies supporting efforts to inventory tropical regions or areas under high risk of being lost.

"The reality is that there is a heck of a lot of biodiversity that has yet to be discovered in this country," Mayden said. "Even people in inner cities are living among fish species that haven't been described or discovered by scientists."

Mayden added that the newly discovered Chickasaw darter, like many other small stream fishes, is endangered in its native habitat and should be considered for state and federal protection.

Mayden's work recently gained wider exposure through a new book, *Fishes of Alabama* (right). The coffee-table book features 700 color images of freshwater fishes by world-renowned artist Joseph R. Tomelleri.



Featuring a forward by two-time Pulitzer Prize winner E.O. Wilson, the book details each of the state's known freshwater fish species. Interestingly, Mayden discovered approximately 18 new species of fish while researching the book, which was co-authored by Herbert Boschung, Ph.D., professor emeritus of biological sciences at the University of Alabama.

"Most people think that everything is known about the biodiversity of the United States," Mayden said. "I beg to differ."

Mayden's efforts to focus attention on wildlife diversity and discovery of new species of fish aren't going unnoticed by the scientific community. In December, Mayden was named a Fellow of the American Association for the Advancement of Science, which each year recognizes scientists and researchers for advancing science in a significant way.

This fall, Mayden will be one of only five people in the world invited to speak during a special symposium marking the 300th anniversary of the birth of Petrus Artedi, the father of modern ichthyology. Sponsored by the Royal Swedish Academy of Sciences and the Swedish Museum of National History, the birthday bash will be held in September in Stockholm. ❀

Having already discovered and described 10 previously unknown species from rivers in North America and working on another 30 descriptions of new species, Mayden said current predictions of biodiversity are underestimated.

How this spectacularly colorful species went undiscovered for so long points to a problem Mayden sees in science today. Most American researchers are not looking in their own backyards, and as they head into the rainforests, the funding goes with

Saint Louis University, assisted Mayden in securing funding for the project. Other researchers engaged in this project include co-principal investigator Miles Coburn, Ph.D., John Carroll University; Andrew M. Simons, Ph.D., University of Minnesota and Bell Museum of Natural History; Phillip M. Harris, Ph.D., University of Alabama; Paula Mabee, Ph.D., University of South Dakota; and Hank Bart, Ph.D., Tulane University.

These researchers are working with a

Fish illustration by Joseph R. Tomelleri