

A POWERFUL PARTNERSHIP FOR America's Everglades

GEORGE BARLEY: A LEGACY OF EVERGLADES PROTECTION AND RESEARCH

Of the more than one hundred articles published by organic geochemist Dr. Rudolf Jaffé, forty percent are related to the Everglades. So it was no surprise then, when Dr. Jaffé became the first recipient of the George M. Barley, Jr. Endowed Chair in Everglades Research at Florida International University (FIU).

"The additional resources provided through the Barley Chair have much enhanced our capacity to research a broader range of associated topics within the Everglades ecosystem and beyond," explains Dr. Jaffé, Professor in the Southeast Environmental Research Center (SERC) and the Department of Chemistry and Biochemistry at FIU. And it all traces back to one man – George McKim Barley, Jr.

The Barley Chair was established in 2000 through contributions by International Paper Co. and generous support of the Everglades Foundation. It supports the internationally recognized research of Dr. Jaffé, named Barley Chair holder in 2009, as well as funding post-doctoral collaborators and Ph.D. students at FIU.



A seventh generation Floridian and Harvard graduate, the late George Barley was a far cry from the granola-and-Birkenstock caricature of the environmental activist. His business acumen soon became evident as he emerged as one of Florida's most successful real estate developers in the pre- and post-Disney boom times. But Barley's enthusiasm for business was rivaled, if not exceeded by, his love for science, the environment and the great outdoors.

By the mid-1980's however, an environmental catastrophe was in the making. Seventy-five years of man-made damage to Florida Bay had spawned thick mats of decomposing matter that blocked sunlight, lowered the oxygen content of the water and spawned massive algae blooms that did further damage to coral and other habitats. Some scientists predicted the complete collapse of the Bay.

For George Barley, these predictions were a call to action. Barley became a one-man citizen advocate ferrying more than 1,000 elected officials, journalists and others to Florida Bay to see the damage with their own eyes. It soon became evident, however, that the entire Everglades ecosystem – from the Kissimmee River south to the Florida Keys – was threatened. Flood control canals, proliferating agriculture and explosive urban development were wreaking havoc with the natural flow of water and nutrients.

For nearly two decades, George Barley worked tirelessly in Tallahassee and elsewhere to ensure these impacts were mitigated. His Save Our Everglades Committee garnered more than 600,000 signatures to place an important Everglades cleanup provision on Florida's ballot. No less visible in Washington, federal agencies including the U.S. Army Corps of Engineers sought Barley's input as part of their decision-making process.

But perhaps George Barley's most notable contribution to Everglades restoration was the role he played in establishing today's Everglades Foundation. Along with Paul Tudor Jones II, Barley spearheaded the organization's early growth.

GEORGE BARLEY: A LEGACY OF EVERGLADES PROTECTION AND RESEARCH CONT'D

His energy and commitment could only be described as contagious, and while the Foundation grew rapidly under his leadership, his involvement would be short-lived. A tragic plane crash claimed George Barley's life in 1995.



Grief-stricken but undaunted, his widow, Mary Barley, took up the fight by traversing Florida and the nation to highlight the plight of America's Everglades. Her public appearances at water management district board meetings and the state Capitol earned her a reputation

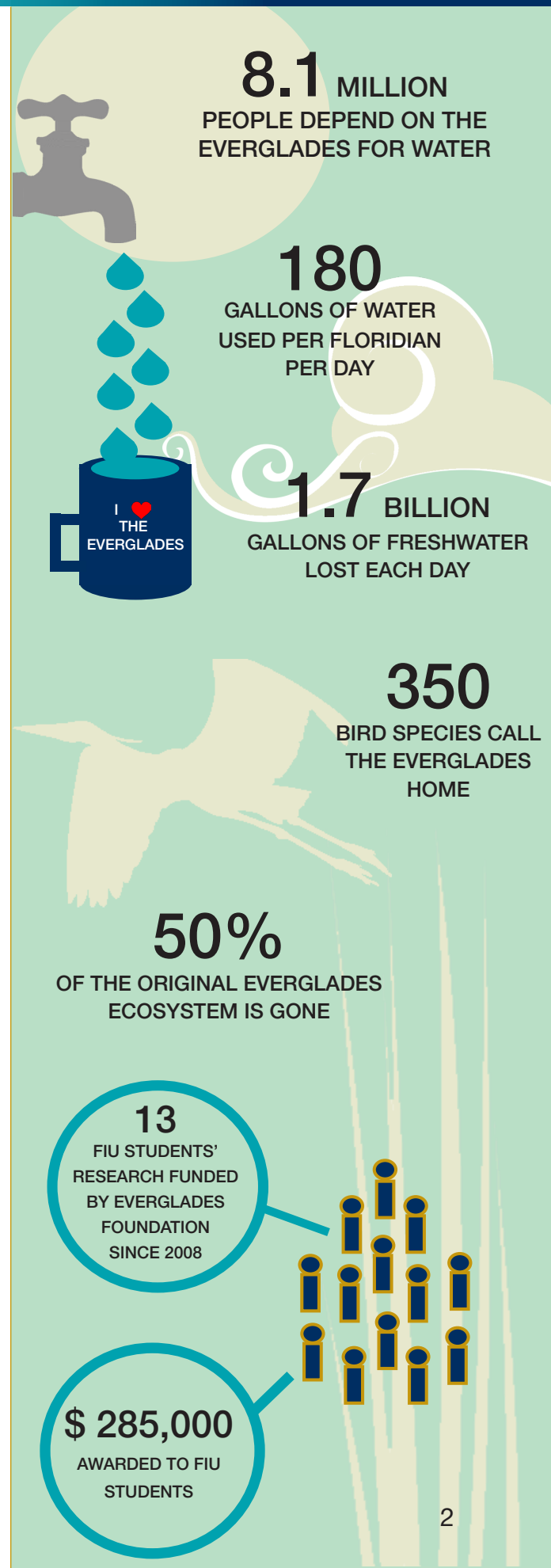
as a tough and determined activist. Ultimately becoming one of the nation's preeminent Everglades conservationists, Mary was instrumental in the passage of two Everglades protection amendments to the Florida Constitution.

Mary continues her relentless work as an active member of the Everglades Foundation's board of directors. The Foundation is widely recognized for its science-focused approach to advancing restoration. In recent years, supporting university-based scientific research has emerged as one of the Foundation's priorities. Its partnership with FIU is an excellent example.

"The recently established cooperative agreement between the Everglades Foundation and FIU significantly enhances and complements the scientific expertise, environmental leadership roles and policy experience to the benefit of both institutions and the Everglades ecosystem," explained Dr. Jaffé.

The agreement will build the Foundation's capacity as a leading conservation organization while leveraging FIU's status as a world-class public research university. Since 2008, \$285,000 in Foundation scholarships and fellowships has been awarded to FIU students. Last year, the partnership was expanded to include potential joint research endeavors, additional internship opportunities for students and the establishment of new and innovative K-12 programs.

A tenacious and passionate fighter, George Barley brought business acumen and an entrepreneur's drive to the Everglades restoration movement. The George M. Barley Endowed Chair in Everglades Research together with the ongoing partnership between FIU and the foundation he helped to establish is a fitting legacy to a man who made so much possible on behalf of one of America's most endangered ecosystems.



FIU AND EVERGLADES FOUNDATION SCIENTISTS COLLABORATE ON MAJOR SYNTHESIS EFFORT



The Synthesis of Everglades Restoration and Ecosystem Services (SERES) Project is an effort to synthesize existing Everglades scientific information in order to forecast changes in the ecology, ecosystem services, and economic benefits under different restoration scenarios. Initiated in 2010, the project was funded by the U.S. Department of Interior through the Critical Ecosystem Studies Initiative

as a means to improve management and advance restoration of the Everglades ecosystem by providing managers with the information they need and in a digestible format.

Since its inception, the SERES Project has been managed by science staff at the Everglades Foundation. Additionally, a core group of scientific experts from agencies, academic institutions and the private sector have contributed to the long-term project. Among these experts, Drs. Evelyn Gaiser, Joel Trexler, Mike Ross and Jay Sah from FIU's School of Environment, Arts and Society (SEAS) have been essential in guiding the project and leading synthesis of information and modeling for water quality, primary producers (e.g., periphyton), fish and tree islands in the Everglades. These same experts are also leaders in the Florida Coastal Everglades Long Term Ecological Research (FCE-LTER) Program based at FIU and now in its 15th year.

At its core, SERES is a synthesis project for managers and was conceived as a way to address topics that have been hampering restoration since the Comprehensive Everglades Restoration Plan (CERP) was passed in 2000. The project began with a series of interviews of key officials, including resource managers, decision-makers and heads of agencies and environmental organizations. The goal of these interviews was to ascertain "key science management questions" that still needed to be addressed in order to restore the Everglades. Those questions dictated the organization of project teams into working groups focused on Hydrology, Water Quality, Soils, Trophic Dynamics and Landscape Pattern, as well as driving the development and evaluation of a set of five Everglades restoration scenarios. Currently, SERES is in the final phase of writing a summary document with results for management.

PARTNERSHIP SUCCESS



The FCE-LTER program based at FIU, in partnership with the Everglades Foundation, South Florida Water Management

District and Everglades National Park produced a *Wetlands* special issue on water related challenges in the Everglades.

The issue examined the impacts of hydrologic restoration projects on the eastern boundary of Everglades National Park and the effects on water delivery quality in the Taylor Slough drainage. Restoration projects improved water retention, but caused seepage of nutrients into the marsh causing an expansion of invasive species. Researchers are continuing to track changes to determine whether this impact of nutrients is a short- or long-term phenomenon.

Restoring hydrology while maintaining pristine water quality is a key goal of restoration, something that the Everglades Foundation and research partners are strongly advocating.



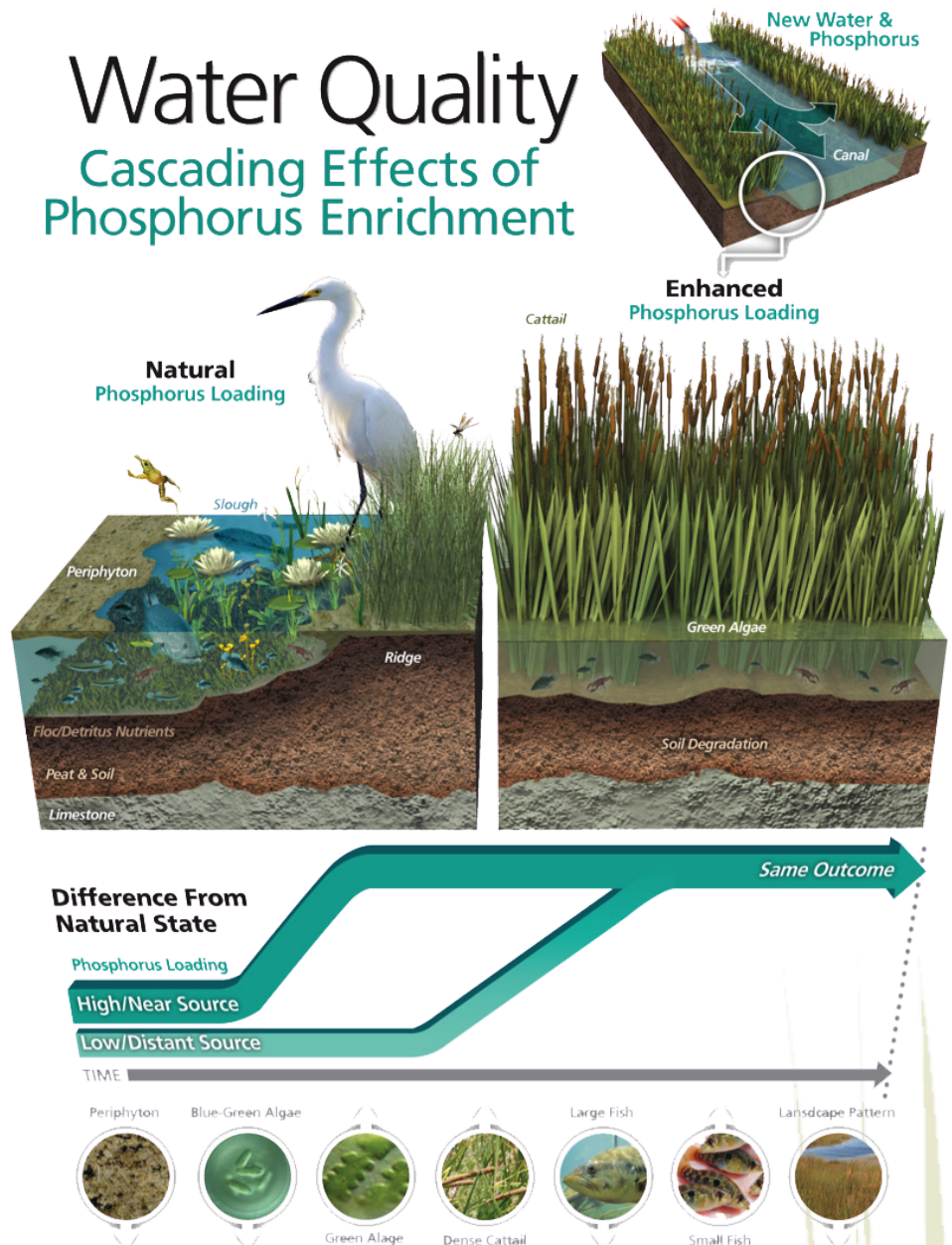
The Everglades Foundation has been helping coordinate experimental FCE-LTER research at the Florida Bay Interagency Science Center directed at understanding the consequences of sea level rise on Everglades marsh communities. Steve Davis (Everglades Foundation) and Tiffany Troxler (FIU) helped mentor FCE-LTER Ph.D. student Lisa Chambers from the University of Florida on a project to determine how sea level rise influences plant-soil-microbial feedbacks in the Everglades.

SERES CONT'D

Communication of SERES project results is critical. While much of the work has been based on technical analysis and peer-reviewed science, the communication of SERES results must be at a level managers can understand and implement into their decision-making process. As a result, a tiered communications approach was used with the review of technical science as the foundation, followed by more distilled summaries of evaluation results and finally high-level infographs accompanying concise responses to the key management questions. SERES Team experts are also working on publishing project results in a dedicated issue of the peer-reviewed journal *Restoration Ecology*. There will also be a number of technical presentations from the SERES Team at the Greater Everglades Ecosystem Restoration (GEER) Meeting in Coral Springs, FL from April 21-23, 2015.

Water Quality

Cascading Effects of Phosphorus Enrichment



FIU and Everglades Foundation Leadership with Fellow Jessica Lee at FIU Donor and Scholar Recognition Breakfast 2014.

SCIENCE SCHOLARSHIP AND FELLOWSHIP PROGRAMS

The Everglades Foundation understands the value of supporting and developing the next generation of Everglades scientists and champions. That's why the Foundation supports future scientists with educational awards through its Science Scholarship and Fellowship Programs.

This competitive scholarship program provides support for full-time graduate students actively pursuing innovative research to advance the understanding of physical, chemical or biological processes within the Everglades ecosystem or research in the economic impacts of environmental changes. The future of America's Everglades depends on the investment in knowledge that helps provide the backbone to sound, science-based restoration efforts. Since 2008, 13 FIU students have received a total of \$285, 000 in Foundation scholarships and fellowships.

FELLOW SPOTLIGHT: JULIANA CORRALES

The scale of water quality issues in the Lake Okeechobee watershed requires new and creative solutions that are scientifically and economically feasible. This is what motivates Juliana Corrales in her doctoral research. Originally from Colombia, Juliana is a Ph.D. student in FIU's Department of Earth and Environment. Since Fall 2011, she has been an Everglades Foundation Fellowship recipient, studying market-based solutions to water quality issues for ecosystem protection and restoration. Her research is supervised by a multi-disciplinary team that includes Dr. Melodie Naja, a water quality scientist with the Everglades Foundation, Dr. Fernando Miralles-Wilhelm, a hydrologist at FIU, and Dr. Mahadev Bhat, an environmental economist at FIU.



Juliana's research combines hydrology, water quality and economics to evaluate the implementation of a water quality credit-trading program in the Lake Okeechobee watershed for nutrient pollution reduction. The integrated environmental and economic model that she developed provides a comprehensive cost-benefit assessment of a water quality credit-trading program in the Lake Okeechobee watershed over more traditional regulatory-based programs. Juliana's research was recognized in the 2014 FIU's Scholarly Forum, and has resulted in two journal publications. This highly politically and economically relevant research will provide a low-cost option for decision-makers, in addition to the current solutions, to help manage the water quality problem that Lake Okeechobee has faced for decades.



TRAINING TOMORROW'S SCIENTISTS: ROSS BOUECK

As Florida residents and visiting anglers both know, snook are one of the most popular sportfish in Everglades National Park and the greater South Florida region. Snook are estuarine fish, meaning their populations and productive fisheries are found where freshwater flows into the ocean, including Florida Bay and the St. Lucie and Caloosahatchee estuaries. However, snook populations fluctuate over time and Ross Boucek aims to gain insight into snook population triggers. Ross is a Ph.D. candidate in Biological Sciences at FIU and a 2014 recipient of an Everglades Foundation scholarship. He is conducting a 6-year study to better understand

how and in what ways freshwater flow into coastal systems influences Florida's snook fisheries. In his fourth year of study, Ross already has eight published papers in various scientific journals.

With incipient Everglades restoration projects planned, Ross knows that it is crucial to understand how restored freshwater flows, especially interannual variations, will influence snook spawning and ultimately future populations. Ross hypothesizes that in sub-tropical Florida, the dynamics of freshwater cues that fish use to spawn vary widely and affect snook spawning efforts, in turn influencing the fish populations. He compares this to the dynamics of snook in the tropics, the fish's evolutionary origin, where each year there are much more predictable changes in freshwater flow into estuaries that occur between the wet and dry season, giving the fish strong cues to recognize quality spawning windows. Ross is also turning to a 30-year record of angler catch data to test if predictability of increases in angler catches with hydrologic years that maximize spawning and juvenile recruitment. Seems the science community, water managers and fisherman can all agree that his work is a catch!

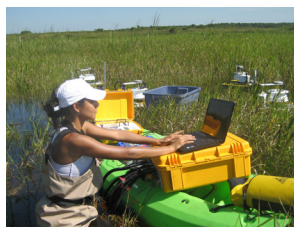


FIU + EVERGLADES FOUNDATION IN THE GLADES

FIU President Mark B. Rosenberg and Everglades Foundation CEO Eric Eikenberg hosted their organizations' top advisors, representatives of their boards, partners and community members for an educational Everglades excursion in February 2015. The group ventured out on an airboat ride with Tigertail Airboats after a stop at Shark Valley, to see and hear first-hand from scientists and staff at the foundation and the university what efforts are underway by our organizations in this imperiled ecosystem.

EVERGLADES DAY SHOUT OUT

Three years ago the Florida Legislature, in honor of Marjory Stoneman Douglas' birthday, designated April 7 as Everglades Day. This annual event provides an ideal opportunity to raise awareness and educate decision-makers about the incredible economic and environmental resources that America's Everglades provide, including habitat for 68 threatened and endangered species and drinking water supply for nearly 8 million Floridians. The 2015 Everglades Day in Tallahassee was the largest yet, featuring a performance by Jimmy Buffett in front of a packed crowd in the Capitol plaza encouraging the state of Florida to support a land buy south of Lake Okeechobee that's critical to restoring water flow to the Everglades and protecting the drinking South Florida's water supply.



STAY TUNED: THE EVERGLADES SERVICE-TO-ACTIVISM WORKSHOP

Everyone can agree on the importance of enabling our future generation to take on the critical environmental issues of today, but actions speak louder than words. In March, twenty-five undergraduate and graduate students with backgrounds in policy, science and law participated in the workshop titled "Everglades Service-to-Activism" at the University of Florida. The workshop, held by former U.S. Senator and Florida Governor Bob Graham and Dr. Stephen Davis, a wetland ecologist with the Everglades Foundation, focused on empowering college students to become more engaged in promoting Everglades restoration. Sessions focused on an array of topics, which included Everglades ecology, restoration, climate change, litigation and policy. Senator Graham and Chris Hand, his former

Chief of Staff, led an interactive afternoon session with students to illustrate the skills needed to communicate with decision-makers in both Tallahassee and Washington, D.C. Due to the strong turnout, Senator Graham and Dr. Davis are planning to repeat the workshop at FIU, where the Florida Coastal Everglades Long Term Ecological Research Program provides established research groups in Everglades science and policy arenas.

A MESSAGE FROM ERIC EIKENBERG, CEO OF THE EVERGLADES FOUNDATION

The Everglades Foundation advances restoration of the Everglades ecosystem through advocacy and policy strategies that draw upon the best available science. We have a dedicated staff of five scientists, but their work would not be possible without strong ties to the greater Everglades science community. We are proud to release this joint newsletter with Florida International University (FIU), an academic leader in Everglades scientific research, to showcase the great work that comes from such a partnership.

Since 2008, the Everglades Foundation has been funding scholarships and fellowships for outstanding graduate students working on topics that have important applications to Everglades restoration. This year, we are pleased to announce the FIU ForEverglades Scholarship! In addition to our ForEverglades Scholarship and Fellowship program open to all academic institutions, the FIU ForEverglades Scholarship is specifically for FIU graduate students and will be supported by both organizations. The future of the Everglades depends on those students becoming our next generation of Everglades science leaders.

Please take a moment this Earth Day to support our scholarship program by visiting evergladesfoundation.org/giving/. For more information on how you can become involved with FIU's School of Environment, Arts and Society (SEAS), contact Karen Wilkening at kwilkeni@fiu.edu or (305) 348-7602.

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