FLORIDA NATURAL RESOURCES LEADERSHIP INSTITUTE

A Report by NRLI Fellows of Class IX, Session 5

MIAMI-DADE

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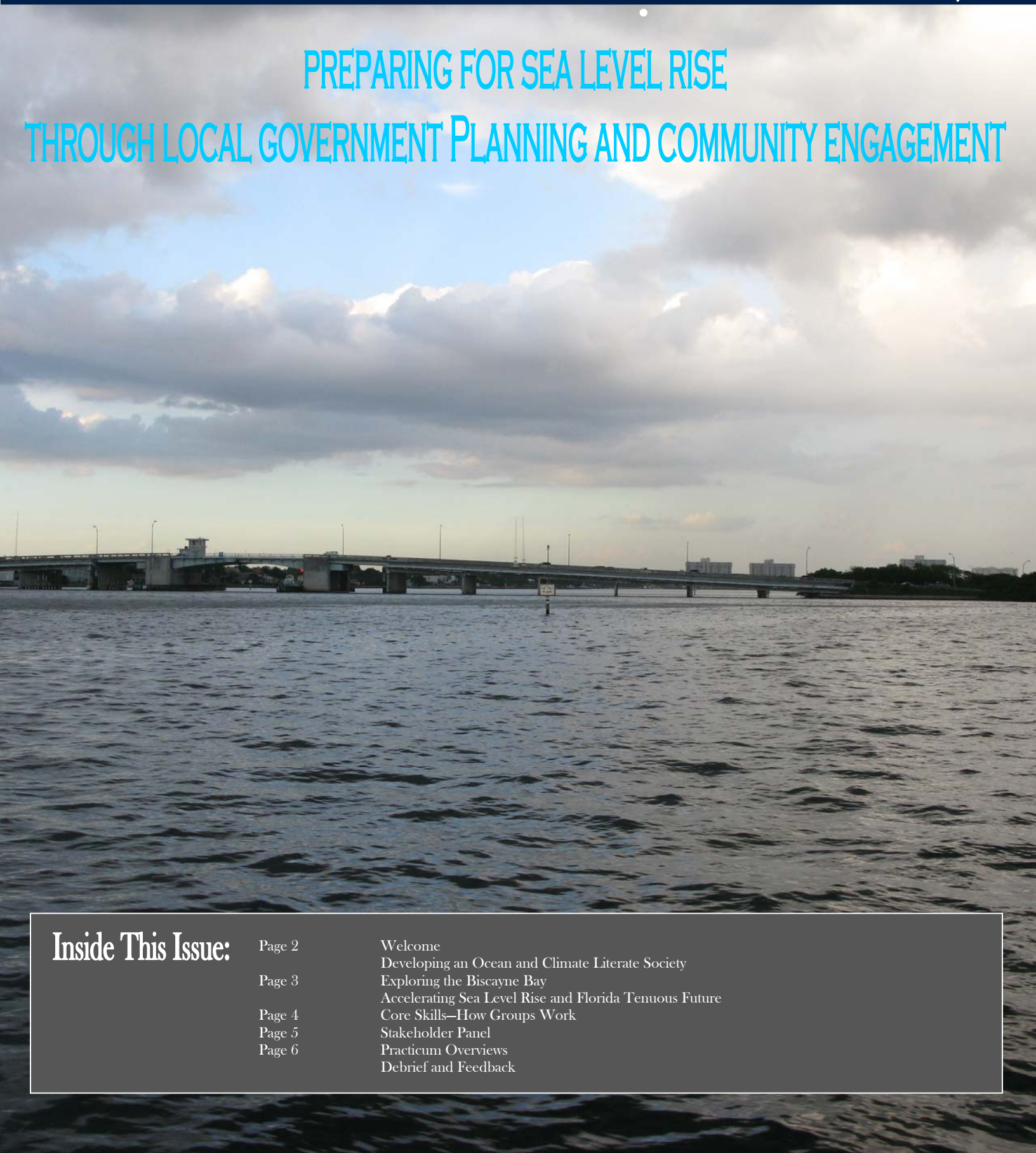
PREPARING FOR SEA LEVEL RISE THROUGH LOCAL GOVERNMENT PLANNING AND COMMUNITY ENGAGEMENT



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Welcome to Miami

NRLI Class IX's fifth session was held in one of America's most popular and active cities, Miami Beach. Hosted at the Deauville Beach Resort in the heart of "North Beach," NRLI fellows, the project team, alumni and other guests, including Indonesian visitors interested in starting a Sea Grant program and Natural Resources Leadership Institute, were welcomed by Don Pybas, Miami-Dade County Extension Director. Mr. Pybas explained Extension's role in Miami-Dade County and the concerns that face the area with sea level rise and climate change.

Miami-Dade County's population is approximately 2.5 million, making it the most populous county in Florida and the eighth-most populous county in the United States. It is Florida's second largest county in terms of land area, bordering two national parks, Everglades National Park and Biscayne National Park, and maintaining a vibrant agricultural community that is a leading national supplier of fruits and vegetables as well as ornamental plants.

Situated on a barrier island between Biscayne Bay and the Atlantic Ocean, Miami Beach as well as most of Miami-Dade County faces the threat of Sea Level Rise in the coming decades. Sea Level Rise is a matter of concern among Miami-Dade citizens, scientists, planners and elected officials.

Developing an Ocean and Climate Literate Society

Mike Spranger with the Florida Sea Grant Program speaks with the group during the opening session in Miami

A context setting presentation by Dr. Mike Spranger from the University of Florida focused on "Developing an Ocean and Climate Literate Society". Dr. Spranger made the following points in his presentation. Ocean chemistry is changing 100 times faster than it ever did before the Industrial Revolution. People's views of climate change seem to range from alarmed to concerned, cautious, disengaged, doubtful or even dismissive.

Dr. Spranger believes that regardless of the cause(s) of Climate Change the issue exists and the impact is approaching. Evidence proves that temperatures are increasing; these are observations not speculation. The world is concerned, especially the island countries. As conveyed by our Indonesian visitors through Dr. Spranger, Sea Level Rise will surely affect world culture, industry and the environment. Across its thousands of islands, Indonesia consists of distinct ethnic, linguistic, and religious groups that make up the world's fourth most populous country with a population of around 230 million people. Sea Level Rise may lead to the migration of millions of refugees all over the world who will head inland. Much like the Republic of Indonesia, many other countries are concerned about Climate Change. Dr. Spranger believes that Floridians should be concerned because the majority of us live in the coastal areas. With climate change will come increased rainfall which leads to increased storm-water which will lead to increased sickness and disease. We are already witnessing frost lines moving which escalates invasive species growth and decreases indigenous plant and animal life.

A more ocean and climate literate society is needed to address the issues we will face in the near future. Government alone will not solve the problem. Science doesn't make the decisions; it should provide the findings for policy-makers to make decisions that will protect social, economical and environmental resources. In closing, Dr. Spranger suggested that we (the world) have a series of great opportunities disguised as insolvable problems with regard to sea level rise and climate change.

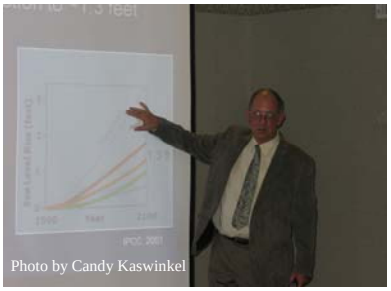
Exploring Biscayne Bay Aquatic Preserve

On Friday afternoon the NRLI fellows headed out on the waters of the northern Biscayne Bay Aquatic Preserve with Manager, Pamela Sweeney, Florida and other aquatic preserve staff to learn how Climate Change and Sea Level Rise may affect the preserve, in particular the sea grasses and mangroves. Our group was joined by Sea Grant Agent Lisa Krimsky. Biscayne Bay Aquatic Preserve was established in 1974 "to be preserved in an essentially natural condition so that its biological and aesthetic values may endure for the enjoyment of future generations". It is managed by the Florida Department of Environmental Protection, Coastal and Aquatic Managed Areas. The preserve has unique challenges associated with maintaining essentially natural conditions because it is surrounded on all sides with the highly urbanized areas of Miami – Dade County.

Biscayne Bay is an estuary, a place where fresh water from land and salt water from the sea mix. A diverse number of plants and animals depend on estuaries for survival, living in or feeding off of the different habitats such as sea-grass beds and mangrove forests. While on the bay we learned about the different sea grass species that can be found in the preserve including six of the seven species found in Florida including Johnson's sea-grass, a threatened species under federal law (the first marine plant to be listed), found only in southeast Florida. Biscayne Bay aquatic preserve also houses mangrove wetland habitats. Together, sea-grass and mangrove habitats provide food and shelter for many different marine and terrestrial organisms, protect the shoreline from erosion and storm damage and may help uptake excess nutrients from the bay. However, Climate Change may adversely affect these and other estuarine habitats. Climate Change may lead to changes in the salinity, temperature and/or water clarity in estuaries. Any or all of these changes may harm or in some cases eliminate sea grasses or mangroves. In other parts of the world these habitats may be able to deal with changing conditions by migrating to a more hospitable area, however, with the majority of the land surrounding Biscayne Bay Aquatic Preserve highly urbanized it is unlikely that our sea-grass or mangrove communities would be able to move. Changes to estuaries such as Biscayne Bay as a result of Climate Change may have profound effects on the human inhabitants including changes in economic realities, aesthetics and health.

R: Bird Island in Biscayne Bay Below: Pamela Sweeny talks with group during the field trip about the Biscayne Bay and it's delicate ecosystem that would devastated if sea levels rise as expected due to climate change

Accelerating Sea Level Rise and South Florida's Tenuous Future



Dr. Hal Wanless give an overview of the climate change and the possible effects for South Florida.

After dinner, Dr. Harold Wanless, professor and chair of the University of Miami's Geological Sciences Department and Science Committee Chair of Miami-Dade County's Climate Change Advisory Task Force, provided a presentation on Sea Level Rise and its potential effects on South Florida. Dr. Wanless has been studying the dynamics and evolution of coastal environments of South Florida and the Bahamas since the mid 1960s. Especially important to his research has been documenting the influence of changing sea level and catastrophic events, such as hurricanes. According to Dr. Wanless, global warming is real and it's getting worse. Worldwide CO2 levels are increasing at an alarming rate. He suggests that if we continue at these levels there will be a climate crisis by 2050 and human existence will be threatened.

Part of his presentation illustrated "Florida Through Time" to show the sea levels from 120,000 years ago, 18,000 years ago, and those today. For the last 1,000 years the world was cooling until the Industrial Revolution of the 18th and 19th centuries when climate was thrown from its normal cycle. Throughout time, sea levels occurred in shifts and setbacks causing an Antarctic melt. In 2001, the United Nations' Intergovernmental Panel on Climate Change (IPCC) estimated a median of 2 meters' rise by the end of the 21st Century. Since that time, lakes, rives and moulins which are similar to our limestone sinkholes, in the Greenland Ice Sheet have been "exuding like toothpaste". In 2007, sea level had reached the level predicted for 2040.

(**WANLESS** *continued on page 6)*

NRLI Core Skills - How Groups Work

Understanding Group Dynamics

The day began with a training activity about understanding group dynamics and consensus building. After a short introduction to group decision-making, project team leaders Marta Hartmann and Bruce Delaney divided fellows into two predetermined groups to participate in a consensus building activity called "Lost in the Jungle." Half the fellows were "lost in the jungle" with the task of coming to consensus on what limited items that would be taken on the journey out of the jungle and what would have to be left behind. While the groups discussed the list of items, two members were intentionally obstructive (unbeknownst to the rest of the group) to the consensus-building process. The Fellows who were observing took note to identify the roles of those "lost Fellows," in terms of who were 1) providing task maintenance functions such as giving ideas, seeking and giving information, and checking on the group's position; 2) providing group maintenance functions such as mediating, encouraging others, setting standards and admitting mistakes; and 3) providing challenging behaviors by dominating the conversation and/or using inappropriate humor or jokes to detract from the task at hand. The group members who had dominated the conversation were identified when the activity was over and the observers explained who took what roles and how they may better improve themselves in different consensus-type processes based on their observations.

NRLI Fellows participate in the "Lost in the Jungle" roll playing exercise to help better understand group dynamics.

Effective Group Decision-Making

The second training activity was presented by project team leaders Jon Dain and Laila Racevskis on effective group decision-making. The presentation included an introduction and explanation on how the brain works and what functions of the brain effect how we make decisions. Brains are the same everywhere on earth but culture and age effect decision making (i.e. East v. West). Human biology and culture affects decision-making with regard to Climate Change. Often, when there's too much information some people have trouble reaching a decision or even developing a point of view.

We learned the differences between Divergent and Convergent Thinking. Also highlighted were the two cognitive systems: automatic and reflective. Automatic consists in the oldest parts of the brain, and is also referred to as the "gut feeling" function. Reactions are usually uncontrolled, effortless, fast, unconscious, and skilled. Reflective is in the more recently evolved parts of the brain, also known as the rational or conscious thought function. Reactions are usually the opposite by being controlled, effortful, deductive, slow, self-aware, and rule-following.

Heuristics were also explained. Heuristics are "rules of thumb," educated guesses, intuitive judgments or simply common sense. A heuristic is a general way of solving a problem. The rules of thumb include 1) anchoring (habit); 2) availability (predictions); and 3) representativeness (stereotyping). Representativeness is the heuristic we can most associate with attitude toward climate change because we try to compare it with something we know.

Research shows that diverse groups make better decisions than homogeneous groups. Groupthink was explained as a type of thought exhibited by group members who try to minimize conflict and reach consensus without critically testing, analyzing, and evaluating ideas. Oftentimes, history has shown, groupthink leads to disastrous consequences. In the context of Climate Change and Sea Level Rise, it is imperative that groupthink be avoided by considering diverse opinions when making decisions.

Stakeholder Panel

Miami Stakeholder Panel discusses climate change and sea level rise and it's implications for Miami-Dade County with the NRLI Fellows during Session 5 in Miami. L to R: Nancy Gassman; Elizabeth Plater-Zyberg; Harold Wanless; Katy Sorenson; Dan Pybas; and Suzanne Torriente.

The stakeholder panel discussion focused on Miami-Dade and Broward County's approach to sea level rise and was moderated by Fellow Chris Johns. The panel consisted of Harold Wanless, University of Miami and Miami-Dade County Climate Change Advisory Task Force; Commissioner Katy Sorenson, Miami-Dade County; Elizabeth Plater-Zyberg, University of Miami and Duany Plater-Zyberk & Company, LLC; Nancy Gassman, Natural Resources Administrator, Broward County; Susanne Torriente, Miami-Dade County Office of Sustainability; and Don Pybas, Miami-Dade County Extension. Many issues were discussed regarding sea level rise. The panel members seemed to agree that the issues facing their region are not about mitigation but about adaptation. Some panelists say better maps are needed and politics seems to keep that from happening. In order for average people to be concerned the message needs to be personal, and that hasn't been conveyed to date. The biggest problem they have is that people try to argue the science and not address the issue that is happening. The sustainability and climate-focused initiative began in 1993 when Miami-Dade County wanted to return to 1988 emissions and visionary leadership. There's a lot of work going on but the policy never bubbles up. Some think resistance for policy development is led by developer-supported politicians at local and state levels. The developers, it's suggested, are resistant because adapting to sea level rise and climate change means coastal areas will become less developable. Monroe, Dade, Broward and Palm Beach counties are all taking a regional approach through a climate leadership summit. Panelists agree that this issue is not hypothetical; the ice is melting and the sea is rising. Today's flood is tomorrow's high tide. When we lose coastal communities there will be displaced people and famines will occur. Some said that when they talk to people it is like "preaching to the choir," but they say the choir is getting bigger.

Dinner at the Tap Tap Haitian Restaurant

Day two ended with a coastal exploration of Miami Beach and a group dinner at Tap Tap Haitian Restaurant where discussions about the issues related with climate change and sea level rise continued throughout the evening. Colorful murals adorned every wall in the restaurant, and great food was found by all.

Practicum Overviews

The third and last day of this session started with fellows presenting five-minute presentations on their final practicum plans. Projects included establishing a forestry working group, hosting an outreach meeting about a coastal wildlife conservation initiative, creating an invasive species management landowner assistance program, creating pathways to sustainability within local governments, curbing urban sprawl in a rural county, improving an urban watershed by reducing water use and nutrient pollution, creating a sustainable county government alliance with its municipalities, farm issues, and identifying ways to implement a regional vision plan. The posters were diverse and entertaining.

NRLI Fellows present posters outlining their practicum during the closing day in Miami.

Top: Emily Ott and Paul Monaghan; Above : Ginger Adair; Top Right: Tom Ostertag; Right; Greg Lang and Adrienne Dessey; Below: Shenley Neely; Below right; Will Miller

Photos by Candy Kaswinkel

Debrief and Feedback

Photo by Candy Kaswinkel

Emily Ott leads the debriefing session in Miami.

The debriefing was moderated by Emily Ott. Fellows discussed what has been presented, experienced and learned while visiting Miami. A review of the group activities throughout the session were discussed, as well as the field trip and stakeholder panel. The feedback panel included a humorous recounting of the session's experiences and was creatively presented by Ginger Adair, Greg Lang and Shenley Neely.

Laila Racevskis closed the session with final announcements and a brief overview of what to expect at the next session held in Apalachicola. Fellows and project team leaders enjoyed lunch and departed on their ways home.

WANLESS (*continued from page 3*)By 2008, levels reached those originally predicted for 2050. In 2007, 33 percent less ice was there than was in 2006. We're already ahead of schedule. Dr. Wanless said the easiest way to describe what is happening with sea level rise is that throughout the last few thousand years, ice has pushed land below water and now as it melts it is like pulling a cork from a champagne bottle: it rises very fast. We're already witnessing that wetlands can't keep up with current sea level rise. Barrier islands will either move or disappear. Dykes can't be built around coastal areas in Florida, as some people suggest, because the water will just come up through the limestone. Miami Beach has experienced increased flooding just in the last decade. According to Southwest Florida Water Management District, a 20 percent rise in sea level will make 80 percent of our coastal water structures useless. Even big companies like the Florida Power and Light Company (FPL) are building "higher and drier" although government has not yet addressed mitigation needed.

Dr. Wanless suggests that if we don't get hold of how we address climate change we'll be testing the limits of civilization. Much like everything else, when the U.S. starts addressing such issues the world will follow.