



The Value of Environmental Services Provided by Agriculture

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Welcome to Lake Placid



Mike Jensen, Highlands County Extension Director, welcomes NRLI to Lake Placid and gives the Fellows some background on the county.. *Photo by Candy Kaswinkel*

The 7th Session of NRLI Class XI convened at the Archbold Biological Station (ABS), a private research, education and outreach Center in Lake Placid, Florida. As the Fellows enjoyed lunch in a screened porch at the facility, NRLI team member Candace Kaswinkel gave Fellows an initial welcome and provided guidelines for use of the newly renovated and "LEEDS Green" facility, including notes about water-saving dual-flush toilets, pre-programmed AC in rooms, and

lights based on motion sensors.

The more formal introduction to the session began with Dr. Laila Racevskis who welcomed us on behalf of NRLI before passing the baton to Highlands County IFAS Extension Director Mike Jensen. As is the NRLI custom, the Fellows introduced themselves before Mr. Jensen gave a brief talk on background and context of Highlands County where the ABS is located. Mr. Jensen pointedly noted that our session coincided with region's biggest event: The "12 Hours of Sebring" competition; an internationally-known endurance car race. While events like auto races contribute to the local economy, Mr. Jensen pointed out that the real economic base of the county resides in agriculture which accounts for, 1 of 3 jobs in the area. Fully 66% of the county's surface area is dedicated to agriculture, mostly ranching, with 13% in citrus production. Of particular note is the fact that Highlands County is the world's largest producer of caladiums, a popular ornamental. Delray, a large and well-known producer of indoor and outdoor plants, calls Highlands County home.

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Looking Back Looking Forward

Before presenting the session's context speaker, Jon Dain led a discussion looking back at the places, issues, ideas, and techniques Class XI had experienced over the past seven months with a particular focus on the last session in Ft. Myers Beach. The Fellows reviewed the issue (conflict between endangered birds nesting on a wide stretch of beach and condominium owners angered by regulations designed to protect the birds that limited beach raking and impacted beach use) and content training in "Dealing with difficult dynamics" and "Scenarios planning".

Jon also introduced a guest for the session—Kim Love—a NRLI alumna from Class IV. Finally, Jon introduced the Lake Placid session topics including Payments for Environmental Services (PES), "Third party intervention" (Mediation) and a review designed to pull together the elements involved in effective natural resources conflict management.



Hilary Swain, Archbold Biological Station Director, presents the context of the session at Lake Placid. *Photo by Candy Kaswinkel*

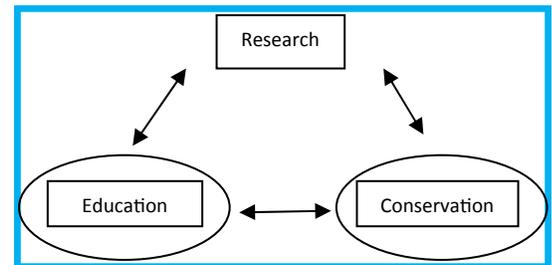
Director of the Archbold Biological Station, Dr. Hilary Swain, served as context speaker for the session. Dr. Swain provided a fascinating history of the ABS and explained its three components: 1) The Archbold Biological Station itself, 2) the MacArthur Agroecology Research Center, also known as Buck Island Ranch, and 3) the Archbold Reserve. While the overall objective of the ABS is conservation, the practice of conservation must be balanced with the need for humans to use and live on the land. This has led to the development of the MacArthur Agroecology Research Center as a working cattle ranch used to explore the relationship between environmental conservation and the management of ranchlands.

The original buildings and infrastructure at the ABS were constructed by John A Roebing in anticipation of a large mansion that was never built. The site and buildings were eventually donated by Roebing to Richmond Archbold in 1941 who established the ABS and served as its director until his death in 1976. Richmond Archbold donated his entire personal fortune to create an endowment to support ABS in perpetuity.

The mission of ABS is to understand, interpret, and protect the landscape of the ar-

Ecosystem Services And the Archbold Biological Station

ea—the Lake Wales Ridge and Northern Everglades ecosystems - through research, conservation, and education.



Dr. Swain discussed the historical focus on cattle ranching in this part of Florida and how researchers at ABS seek to understand and promote practices that maintain ecological services on landscapes used for cattle ranching. Among the most compelling current proposals is to protect water quality and quantity by managing ranch lands to store excess water during the wet season. This proposal, originally introduced by a representative of the World Wildlife Fund led to the current work of ABS and the MacArthur Agroecology Research Center on payments for environmental services or "PES". In a pilot program, ABS and other researchers and groups working in partnership are working with several ranches to pay the ranches to manage for the environmental service of increased water storage (the Florida Ranchland Environmental Services Project).

Mediation Training

The session's 'skills training' unit focused on third party intervention in situations of conflict. NRLI project team member Bruce Delaney helped by Jon Dain led an experiential training session on the practice of mediation. Mediation ranges from formal—such as that required in some instances by a court prior to litigation—to informal—such as when one family member may try to help others settle a dispute. Florida has a statutory definition for mediation and in many cases requires use of court-certified mediator. Bruce has been certified by the Florida Supreme Court as a mediator in Florida for many years and is Director of the Florida Agricultural Mediation Service, NRLI project team member Jon Dain is also a Florida Supreme Court certified mediator.

After Bruce's discussion of mediation, he and Jon led a mediation role-play exercise, in which an extended family involved in clam farming suffered a total loss of the year's clam harvest and ended up in a contentious dispute with a crop insurance program. As background, Fellows learned about how clam farming works and its history in the Cedar Key area where the scenario took place. A constitutional ban on gill nets in Florida decimated the fishing industry in Cedar Key and with the help of Florida Sea Grant, a clam farming industry was created and has become an important livelihood strategy for the area's former fishing families.

For the exercise, Fellows were separated into three groups, with members of each group assigned one of four roles: the clam farmers, an insurance adjuster, the insurance adjuster's supervisor, and a mediator. The job of the mediator was to set up a space appropriate for mediation, describe the mediation process to the "opposing parties", and then, using mediation techniques, seek to help those involved in the dispute reach an agreement.

After simultaneous and animated mediation sessions, the three groups came together to discuss their experiences. The exercise offered the Fellows an excellent opportunity to put into practice the skills and tools about which the Fellows had read and studied.



Pictured Above top: Bruce Delaney discusses mediation with the Fellows. Above: NRLI Fellows break into small groups to get hands on experience in mediation through a role play exercise. Photo by Candy Kaswinkel



Reading Discussion

After a break and dinner, the Fellows reconvened for a reading discussion led by Fellow Lindsay Cross. Readings included sections from the book "Getting to Yes", "Mediators Handbook," and "Facilitator's Guide to Participatory Decision-Making."

The Fieldtrip—MacArthur Agroecology Research Center and Buck Island Ranch



Pictured above from top to bottom: NRLI Fellows gather for a short break at the MacArthur Agroecology Research Center.; Water Recharge area on Buck Island Ranch; Cattle grazing at the ranch; NRLI Fellows take a swamp buggy tour of Buck Island Ranch. *Photos by courtesy of NRLI Fellows*

The NRLI group left the ABS research station facilities for the MacArthur Agroecology Research Center, also known as “Buck Island Ranch.” The ranch’s research director—Betsy Boughton—gave a talk on the value of ecosystem services and described how human activities if well considered and including ranching, can be of benefit to the environment. She then proceeded to discuss some of the environmental services provided by the ranch. These include carbon sequestration, water recharge, regional climate stabilization, flood control, and provision of habitat for animals with large home territories. After providing some background on the history of the ranch, Ms. Boughton discussed how the ranch is managed for both cattle production (as a functioning business) and as a research site.

Buck Island Ranch covers 10,500 acres, has 3,000 head of cattle, and is one of the largest producers in the state. While they no longer add phosphorous (P) fertilizer to pastures on the ranch, past practices on the ranch seemed to have created “legacy” phosphorous Load that continues to runoff of the ranch. In some areas, legacy phosphorous Load combines with current phosphorous application from ranches to create extensive

phosphorous pollution in Lake Okeechobee. Spillover from Lake O contributes phosphorous pollution to the Everglades and eventually runs off into Florida Bay. Research on the ranch indicates that grazing intensity on the ranch has little to do with phosphorous runoff patterns, which seem controlled more by the legacy phosphorous load.

Ms. Boughton then delved into the Florida Ranchland Environmental Services Project. This program provides payments to participating ranches for managing their ranches to hold additional water on the land during the rainy season. This promotes increased water supply, especially during dry spells, better water as it leaves the ranch and increased recharge of the aquifer. A major challenge for the project has been quantifying how much water has been stored and how much to pay ranches for storing this water.

After the presentation and discussion, the group climbed onto swamp buggies for a tour of the ranch and views of some of its research. During the tour the group saw alligators, red-shouldered hawks, karakara, otter, wild turkeys, and other wildlife, along with lots of cattle.



Pictured Above: Stakeholder Panel at Archbold Biological Station includes Lto R: Sanjay Shukla, Betsy Boughtton, Kimberely Love, Hilary Swain and Patricia Martin.
Photo by Candy Kaswinkel

THE STAKEHOLDER PANEL: A discussion about Ecosystem Services

As with other NRLI sessions, this session included a stakeholder panel to discuss the benefits and challenges of environmental service payments. The panel session was moderated by NRLI Fellow Curt Williams and panelists included Betsy Boughtton (research director of the ranch); Hilary Swain (ABS executive director); Kimberly Love (NRLI alumna involved in payment for environmental services initiatives); Patricia Martin (The Nature Conservancy); and Sanjay Shukla (IFAS Ag Engineering hydrologist stationed at the IFAS Immokalee Research Station and works with PES research and extension). The stakeholders each began with a short presentation related to the payment for environmental services (PES) pilot project taking place on area ranches. Sanjay, whose works to quantify water storage on the land as well as the

impact of this on phosphorous (P) storage, indicated that a 3,000 acre wetland could reduce runoff of up to 8,000 lbs./year of P at a cost of only \$100 to \$300/ lb. of P. This is much less expensive than alternatives such as constructing large reservoirs to prevent P runoff.

All stakeholders strongly emphasized that an important part of the payment of the PES program has been the development of a collaborative relationship between the ranchers, non-governmental organizations, and governmental organizations involved in the pilot PES project. All panelists noted that the focus on positive incentives and payments helped to bring ranchers to the table and build trust. This was contrasts, they pointed out, with the mistrust, anger, and frustration that often accompany regulatory programs that result in fines and long

-term resentment.

Important themes throughout the presentations and discussions were technical issues and financing. The technical issues include the complexity of measuring and quantifying how much “extra” water is retained, how much pollution it contains, and how much pollution is “avoided”. Developing a baseline from which to measure these factors presents another technical challenge. Money frequently arose as an issue because the panelists worry that even if PES is proved to be an efficient and effective strategy, it lacks a sustainable funding mechanism.

Conceptual Framework for Understanding Natural Resource Conflict Management

In the afternoon of the second day, Laila, Jon, and Bruce led a discussion module focused on helping the group consider “Why NRLI?” In other words, why is there so much conflict around natural resources and why spend so much time and energy learning about different ways of dealing with conflict? In essence, conflict increasingly arises because “easy” natural

resource issues have been solved and we are left with “wicked” problems—those that are technically and ethically complex with many different affected parties and stakeholders. A common theme among “wicked” problems is that they lack a single solution that can address the desires of all involved.

To help fellows assimilate all that has begun development of a new Natural Resource Conflict Management framework, the project team is helping fellows a more unified, connected way of understanding natural resource conflicts and which strategies in which situations.

As part of the framework, Fellows represent different strategies, ranging from negotiation to coercion or even avoidance. For each of these strategies there are suggested techniques for facilitation and participatory decision making which Fellows have learned over the course of the year. These include, for example, focus groups, public forums, workshops, advisory committees, community mapping exercises, etc.

The NRLI team showed the Fellows a diagram which listed a series of conceptual or analytical tools and another list of physical, material or process tools linked to each of the conceptual or analytical tools. The distinctions are not always neat and clear, but nonetheless, the development of a framework that links conceptual tools with related physical/material/process tools for natural resource conflict management represents an important step for NRLI in helping Fellows understand, plan for and successfully manage conflict.

To practice linking these conceptual and physical/process tools, Fellows divided up into four groups with each group selecting one of the natural resource conflicts highlighted at a session of Class XI. The groups were asked to consider: How did the natural resource conflict in question arise? How did it manifest itself? Who are the actors? What are their interests and how might those interests be met without denying the interests of other, equally deserving parties? Each group proceeded to apply the conceptual framework and select appropriate strategies and approaches for managing the conflict they had selected. The exercise provided an excellent opportunity to connect the practical tools and theoretical concepts behind them to specific and contentious natural resource situations known to the Fellows.



Above: Fellows discuss the conflict management strategies and tools and processes to help deal

A common theme among “wicked” problems is that they lack a single solution that can address the desires of all involved.

NRLI has to offer, the NRLI project team “Conceptual Framework for Understanding.” This framework seeks to give Fellows a better understanding of the dynamics of natural resource conflicts and the tools that work best

viewed a spectrum of conflict management and mediation to arbitration and ad-

A TOUR OF ARCHBOLD BIOLOGICAL STATION



Above: Archbold Biological Station LEED approved meeting facility and lodge Photos by Candy Kaswinkel

Day 3 was the end of Class XI's last substantive NRLI session. The day began with a tour by ABS Director Hilary Swain of the new buildings at ABS's facility. Dr. Swain explained that the conference center and bunkhouse were the first commercial buildings in Florida to be built and certified to the "Platinum" standard under the criteria established in the Leadership in Energy and Environmental Design—a program designed to rate buildings based on their energy efficiency.

Dr. Swain discussed the long, sometimes difficult, road to designing and constructing the LEED-certified facility. She indicated that while many of the aspects of the building were great, there were a few instances where she was less enthusiastic about what was required for certification, such as having

to promise to pressure wash cement sidewalks under windows to retain the reflectivity of the cement.

While pressure washing cement may seem a strange way to conserve energy, the reflectivity exterior cement plays a key role in a fascinating part of the conference building: it requires no artificial lighting during normal daylight hours. This is an amazing advance for a large commercial building and was accomplished without adding excessive solar heat to the illuminated rooms from too much direct sunlight—an important consideration in Florida's hot climate. The design was developed by working with consultants at the Rocky Mountain Institute in Colorado who used a specially developed computer model to analyze daylight reflected throughout the structure and thus maximize natural illumination inside the building. The result is a series of small and large workspaces that function well without artificial lights.

Other features of the building design include water conservation measures within the restrooms (waterless urinals and dual-flush toilets) and in landscaping where regionally-appropriate vegetation is used that requires no irrigation after establishment.

PAYMENT FOR ECOSYSTEM SERVICES: Promises and Challenges

To wrap up the session, Fellows reviewed the concept of Payment for Environmental Services (PES), both its promise and its potential challenges. As opposed to the commonly used definition of PES ("value of ecosystems to people"), Hillary Swain's more nuanced framework was used to frame the discussion. Swain suggested that evaluation of PES initiatives must include both public benefits and costs and landowner benefits and costs:

PAYMENT FOR ENVIRONMENTAL SERVICES (Swain 2012)	
Landowner Benefits	Landowner Costs
Public Benefits	Public Costs

These benefits and costs can be more than just economic and environmental; they may include things like maintaining local cultural traditions and identity or helping facilitate new political partnerships among former adversaries. **Payment.** *Continued on page 8.*

Payment. *Continued from page 7.* In particular the Fellows discussed current partnership experiments between ranchers, environmentalists and researchers to determine whether water storage on south Florida ranches can bring economic and cultural benefits (payment for storage service, incentive to maintain ag lands) to cattle ranchers while providing environmental and economic benefits (water control and storage, CO2 storage and reduced need for new and costly infrastructure) to the public. It was noted that the Buck Island Ranch trip illuminated how researchers are trying to measure some of these benefits/costs via the monitoring of a working cattle ranch in order to provide scientific data to inform political decision making. In addition to reviewing PES and the fieldtrip, Fellows touched on the Stakeholder panel, mediation practice and the review of conflict management approaches and tools. In particular, it was noted that preparation is often the key to addressing natural resource conflicts as exemplified by a famous quote from Abraham Lincoln: “If I had eight hours to cut down a tree, I would spend six hours sharpening my ax.”



Above: Fellows give feedback on the Lake Placid session during the final moments of the workshop. *Photo by Candy Kaswinkel*

FEEDBACK AND DEBRIEF

The last activity of the Lake Placid session was a feedback panel, led by Chris Martinez and Pati Negreros. The overall feedback was very positive for the session. In particular, Fellows enjoyed the natural setting, the excellent content speakers and the mediation role-play training. The field trip was also a big hit and Fellows raved about the facilities. Suggestions for session improvement included the addition of an actual rancher and perhaps a DEP representative on the stakeholder panel. Finally, the Fellows offered suggestions for the program as a whole including more hands-on role-play sessions like the mediation practice, videos (if available) of real-life situations of conflict management in groups and continued efforts to point out effective facilitation techniques during sessions (“Did you notice how Paul just did X in order to accomplish Y?”).

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This report forms part of a series written by current NRLI Fellows. Reports represent and are a product of the experiential learning process that is a highlight of the NRLI program and have not been formally peer reviewed.