

Gatorback Reports

Gleanings from the Natural History Forum

Stephanie C. Haas

Since many of the sessions have been summarized in other parts of the report, I will comment only on the themes that were reiterated by multiple speakers throughout the conference and three individual presentations of particular interest to me.

While the science of understanding Florida's ecosystems and species is progressing, the translation of science to policy remains perilously connected. Several speakers with legislative experience warned of the likely change in Florida's legislature to a more business, less environmentally oriented body. Repeatedly, the point was made that if Florida's scientists cannot or are not willing to provide guidance in issues, decisions will be made anyway. An effective method for communicating scientific issues to legislators is a critical need.

Florida still does not have a comprehensive land use plan, nor has land use planning been tied to water issues. Many felt that this gap will continue to exacerbate Florida's environmental conflicts in the future. One participant commented that the water issues remained undecided because there is no sense of urgency to the issue — everyone still has drinking water.

Steve Humphrey asked for a show of hands to indicate the diversity of viewpoints represented at the conference. A substantial number of individuals were scientists; educators and librarians/GIS managers were represented by much smaller groups. I believe there were only two individuals involved in government administration and that was at the local level. One of the recommendations tacitly agreed upon at the meeting was to plan the next one so that legislators would be willing attendees and contributors.

I realize that the individual sessions will be summarized by other individuals, but will comment on three presentations that I found particularly interesting. Michael Burrige, UF Vet School, alerted participants to the potential threat of Heartwater, a lethal tick-borne disease of wild and domestic ruminants including cattle, sheep, goats, deer, and antelope. The disease is being brought into Florida in ticks on exotic species such as tortoises, iguanas, etc. and in the blood stream of imported African ungulates. Linda Tyson, Ph.D. student, Environmental Engineering UF, has developed a predictive model to assess whether imports have the potential to become invasive species. David Carter, Food and Resource Economics, UF, presented a multiple alternative/multiple attribute analysis matrix which allows informed lay people to understand the technical/scientific aspects of projects; thus allowing more informed participation in policy development by all interested parties.

Overall, I believe the conference contributed to useful exchange of information between participants. I believe that the general consensus was that future meetings would be helpful and attempts should be made to include a broader participation by all "stake holders" in the ecosystem management arena in Florida.

Generalizations, Surprises, and Reminders about Natural Resource Linkages

Stephen R. Humphrey

[\(Video Available, Click Here\)](#)

A habit of linkage-thinking and working across areas of expertise-would raise new questions, yield new ideas and plans, and lead to futures different from the discouraging linear projection of the present. The habit of thinking and working in linked fashion can be cultivated and taught. Its cultivation must be a goal, the process must be designed, and implementation takes significant investment of resources. Such planning, design, and investment was advocated by numerous speakers (deHaven-Smith, Sims, Dyer).

Two general principles emerge: to habitually think and work across boundaries (1) requires knowledge of social processes and (2) demands investment of time, money, and intellect.

All the presenters advocated or exemplified social processes, first to generate new ideas when faced with novel challenges, and second to arrive at consensus on goals and actions. Disciplines, generalizations, and practices have long been established for doing this, in the social sciences. Natural scientists who want to use social processes effectively would be well advised to study the social sciences systematically. Educational institutions claiming to prepare scientists for the world of work should recommend or require such study.

Many presenters also commented on how much work, communication, funding, and thoughtfulness were necessary to work in teams and engage stakeholders. Linkages fail without this investment, and unwillingness to invest is a frequent reason for linkages to not be attempted.

Rice discussed attributes and challenges of adaptive management in the context of a simple analytical model of how science and policy relate: science discerns (a) truth, education informs the public, a discerning public elects a government to make policy based on the truth, and managers carry out the policy driven by science. Sociologists call this a "theory of agency," which identifies actors, actions, and motivations. Such a theory provides a basis to anticipate who could act, what steps they should take, and whether the conditions in place encourage them to act appropriately. My own experience in policy-making suggests a different theory: particular interests discern ways to avoid or reduce their share of the costs of linked research, education, and policy outcomes, and they influence policy-makers accordingly. If we seek to realize Rice's theory of agency and a society that invests in science-driven policy, we should more clearly articulate the alternative theories of agency to help visualize how the necessary linkages can be built and sustained.

Beyond these generalizations were some noteworthy lessons.

Gordon revealed a remarkable mismatch of priorities, and hence a striking failure to link, between researchers and managers-all of whom are biologists. This case shows how profound is the dysfunctional force of our current cultural attributes.

Kelly-Begazo reminded us that a US law creating the land-grant university system gave us a remarkable instrument-the cooperative extension service-for supplying usable knowledge to those who need it. We take this extensive education network for granted, but we should not, because it's precious. Lack of such a system of linkage accounts for the massive, disastrous failure of farms and communities in the recent settlement of the Amazon basin, for example.

Hoctor and Carr reported on a desirable linkage blocked by conflict. The conflict was resolved by passage of a law. The result: they believe progress toward desired outcomes is now possible. When such a conflict is identified, we should routinely engage experts in the fields of policy and law to design instruments to resolve the conflict.

Environmental Education Summary

Martha C. Monroe

I am pleased to be able to summarize and address the education component of this conference. It was a strong connector, woven throughout the ecosystem themes, and certainly often cited as one element of the solutions when we look to future changes to policy and behavior.

The presentations and posters that addressed educational programs tended to target older students and adults - teachers, middle school, high school, and citizens of Florida. This is appropriate, as the programs we are developing require a sophisticated understanding of issues or problem solving skills. And the programs portrayed a healthy diversity between ecosystem restoration, such as planting dune grass or developing school site habitats, to develop investigation and action taking skills around wetlands. We need more of these examples. Some programs focused on extending the way we do education, through building partnerships, using new technologies, and meeting new needs. Examples portrayed here are the DEP activities with Orange Park High School, the CD Rom Kiosk at the Florida Museum of Natural History, and the Milton campus of the University of Florida. In these cases institutions are learning to bend a bit to help more folks understand environmental issues and develop environmental expertise. We will have more opportunities to demonstrate institutional flexibility as we begin to address urban populations with better environmental education programs.

And several programs address adult education, such as the Master Wildlife Conservationist and the Florida Yards and Neighborhoods programs through Extension. Both were excellent examples of adult education that will lead to behavior changes and will promote program expansion as the trained individuals begin to work in their communities. I particularly remember mention of the sign that participants can display in their front yard to advertise the appropriateness of their gardening skills. We need more strategies that use the powerful determinant of social norms and peer pressure to encourage education and behavior change.

Finally, in an example of the old "process vs. content" interaction, two presentations explored how to present information and how people weigh decisions to engage and predict public participation. Certainly attention to how we convey information and what makes that process more efficient is an important component of our efforts.

We have some excellent examples of dynamic and successful programs to help Florida's citizens understand our environmental challenges and work to resolve them. In thinking about what we need, I have several suggestions:

1. Most of these programs are sustained by good will, high interest, motivation, and constant efforts to find funding. We need to institutionalize environmental education programs and offerings so they can expand throughout the state.
2. Most of these programs were evaluated by demonstrating that something is better than nothing. That is helpful, and certainly better than no evaluation at all, but if we think about program improvement and effectiveness, it would be nice to compare models and tweak programs a bit. This strategy may make it harder to find significant differences, but it may be possible to identify some major point of difference around which a program turns. How can we best use our educational tools to achieve our goals?
3. Most of these programs, and indeed most of this entire conference has looked at linkages between ecosystems, science and policy, or resources and economics. When any of us think about the future, we bellyache and worry about growth and increasing pressures on the ecosystems. Yet I do not hear many of us talking about slowing population growth rates or changing consumption patterns. Perhaps we need to develop linkages with completely other fields in order to truly develop a sustainable environment in Florida. Thank you.

Gatorback Report

Hilary Swain

[\(Video Available, Click Here\)](#)***A view of this meeting***

All of us come to meetings with different perspectives and wearing different hats. One of the measures of success of a meeting such as this is to consider what it would be like to attend as a person with limited background. How would a decision-maker arriving at this conference with insufficient knowledge of conservation or environmental issues feel? Perhaps their viewpoint would resemble that of an untrained person walking into the air traffic control center at Los Angeles International Airport. There would be a large number of screens with lots of science and management projects flashing urgently, blinking on and off. Some areas of the radar screen would be chaotic and blinking fiercely, and other areas would seem less pressing. But somehow this person, the decision or policy maker, has to make a decision as to how to prioritize the projects in flight and bring them down for a safe landing. I would suggest conferences, such as this one, do a marvelous job of posting the issues on the radar screen. But we still have a way to go before such meetings are truly able to help scientists, managers and decision makers develop a integrated and linked approach to natural resources traffic control. Two ideas to improve attempts at linkage come to mind.

Linking the steps of science with outreach

For effective natural resource management, the base of this social pyramid of linked agencies and ideas has to be sound science. Rigorous science in the service of natural resource management has to be a 3-4 step process. Projects should be a linked sequence of (1) establishing a hypothesis, (2) data collection, monitoring or collation of existing data, (3) modeling to extrapolate the results from these findings, and then (4) conveyance of this information to the scientific and management communities, public and decision makers. These should be guiding principles for review of conference contributions, but were not necessarily present in all papers. In particular the methods employed in conveying information out to the other components of the linked pyramid, especially to education programs and decision-makers, should be a critical component of all future projects. New innovative tools are available to convey information out to the public. Visualization models coming on line, like those available on the San Diego Super Computer web site, are able to clearly present complex analytical facts such as those data collected for San Francisco Bay. Web site-based displays, such as those Bob Costanza projected for hydrological models of South Florida, are well suited to conveying complex spatial information to the public.

Integrated spatially-explicit analysis as a organizing principle for promoting linkage

One thing that struck me was how few of the “science projects” presented at this conference were genuinely interdisciplinary or transdisciplinary; they were all over the map thematically and regionally. An overwhelming issue in natural resources management in Florida is to examine whether there is a coherent relationship between ecological, economic and socio-political factors, and how this relationship changes over time. Tackling this type of question requires truly interdisciplinary spatial analysis. One idea to promote linked spatial analysis is to consider the establishment of an independent Center of Spatial Analysis, fully equipped with the tools of the trade for the complex spatial analysis of issues facing Florida. There is a good model for this at the National Science Foundation-sponsored National Center for Ecological Analysis and Synthesis (NCEAS) in Santa Barbara, California—it sponsors high-level workshops to look at integrated spatial analysis. How nice it would be to have a center like this in Florida where we could bring in independent scientists, from different disciplines, to undertake some of the state’s complex analytical problems. The way NCEAS works is that it seeks proposals, on a competitive basis with peer review, to have knowledgeable groups address a particular issue or discipline, and subject it to analysis. An institution like this for Florida might propel the state into the forefront of complex spatial analysis for applied problems and help us examine some of the most intransigent linked ecological and economic problems.

In conclusion

Going back to the original analogy of the radar screen with science projects blinking away at a great rate of knots, the metaphor I want to leave with is that I feel “we are flying without landing gear”. There are a large number of science projects in the air and we do not have good mechanisms to bring them down to the ground in an orderly manner. This will involve conveying information to the public and presenting data in a way that people are receptive to hearing. With this approach, we might actually arrive on schedule, with a soft landing, having got the information out to the people whom we’d really need to reach.