

## State Issues Panelist Summaries

### *Integrating Land and Water Management*

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### **Conceptual Problems in Ecosystem Management**

Lance deHaven-Smith, Ph.D.

When new programs and policies prove difficult or impossible to implement, it is often because of ambiguities, confusions, and contradictions in the theories on which they are based. This is definitely the case with efforts to link land-use and water-use planning and regulation. The principal conceptual problem is the failure to state clear objectives that can be used to decide exactly how such regulatory frameworks should be connected and steered. Two objectives that have been tried thus far include growth management and concurrency, both of which produced unintended negative effects because they were not well thought through. Ecosystem management, which is the newest policy directive for land and water policy, may fail similarly if it is not quickly clarified.

The term “growth management” was coined in the early 1970s in Florida as policy makers and their advisors formulated the Area of Critical State Concern (ACSC) program and the Development of Regional Impact (DRI) review process. The concept is clear enough to rule out certain options; the aim is not to stop in-migration or to influence urban form; Florida does not have a “growth limitation policy” or a “development control policy.” But beyond this, the notion of growth management is fundamentally ambiguous, which is why Florida’s environment continued to deteriorate in the 1970s and 80s despite the existence of the ACSC and DRI programs.

The goal of the ACSC program was to prevent development from destroying resources important to the state. One might have expected sections of the Everglades around the major cities—especially in North Dade, West Broward, and around the conservation district in Palm Beach County—to have received protection. But the ACSC program never included criteria that would have mandated designations, so it has rarely been applied. In fact, this is why the program was at one point declared unconstitutional, and why, today, ACSC designations must be reviewed by the Legislature.

The DRI program had the same weakness. Its goal was to identify and prevent any negative effects that developments might have on surrounding counties. However, the law failed to define the important multi-county resources to be protected. Much later, in 1992 when the DRI program was initially slated to be phased out, Regional Planning Councils were instructed to designate and map resources of regional significance, but (even after the DRI was retained) these resources were not folded into the DRI review. In practice, the DRI review focused on transportation, on-site water retention, and wildlife, while completely ignoring the effects of large developments on the pace, location, and form of urbanization within the region. The result is that, today, we have many well planned and highly capitalized developments in disastrous locations.

The concept of “concurrency” was introduced in 1985 to help provide direction to the State’s system of comprehensive planning and land use regulation. Cities and counties were required to include a capital facilities element in their plans, and to keep facilities and services up to established levels as population grows. The word “concurrency” came from the requirement that facilities be brought on line “concurrent with the impacts of development.” With respect to water supply, this concept is obviously muddled. Is population growth to be restricted if additional water supplies are not readily available, or must new supplies be found to accommodate growth regardless of costs and environmental consequences? In practice, the latter approach has prevailed, but the question has never really been explicitly taken up and

resolved.

Ecosystem management has been proposed in part because comprehensive planning and land development regulations have failed to protect Florida's most important natural resources. The system to be steered by this goal is not land-use planning and regulation, but environmental permitting. In the standard approach to environmental permitting, projects are typically expected to safeguard to the maximum extent possible the environmental values being protected by each permitting agency. The problem with this approach is that it sometimes works to the detriment of the overall ecosystem and fails to recognize possible balances and interactions between environmental objectives. Florida has had single-issue permitting since the 1950s, and yet the state has nevertheless lost parts of some of its largest ecosystems, including the Kissimmee River/Lake Okeechobee/Everglades system; the Ocklawaha River; and the Florida Keys. Ecosystem management is intended to foster a permitting system that considers the forest in addition to the trees.

Unfortunately, the permitting methodology for ecosystem management has been difficult to work out because central concepts are unclear. The basic idea is to encourage project designs that provide net benefits to the environment, but the idea of "net environmental benefits" remains to be decisively defined and operationalized. What qualifies as an "ecosystem"? Lake Okeechobee? The lake plus the Everglades? The lake plus the Everglades plus Florida Bay? Do we add the Kissimmee River? Furthermore, how do we handle actions that improve one ecosystem or one part of an ecosystem while harming another ecosystem or ecosystem component?

As with growth management and concurrency, the tendency of agencies, when given the ambiguous mandate of ecosystem management, has been to fall back on old practices and thus negate the benefits of the new approach. The Tampa Water Resource Recovery Project was the first public sector project to be permitted under ecosystem management. The project would provide 50 million gallons of water per day to a region suffering from over reliance on groundwater. However, the permitting agencies were uncomfortable with balancing this important benefit against potential degradation of waters in the Tampa Bypass Canal (from Nitrogen in the purified wastewater). In the end, the permitting agencies approved the project, but at many points in the process they showed a willingness to sacrifice the region to protect the canal.

Linking water management and land use regulation is not impossible or even difficult from a technical point of view. The problem is achieving consensus on the purpose of the linkage.

## **Integrating Land and Water Management**

Linda Conway Duever

It is easy to think that integrating land and water conservation is simply taking some land concerns and some water concerns into account, but I want to remind you of basic ecological concepts and a few specific things we need to remember when going into any conservation project.

- When we talk about integrating conservation of terrestrial and aquatic systems, we must first ask, how are those two systems linked ecologically? There are two basic ways these systems relate to each other. Terrestrial systems can affect the wetlands and aquatic systems, and the wetlands and aquatic systems can affect the terrestrial systems. And then, we need to keep in mind that the zones between terrestrial and wetland/aquatic systems are critical ecotones.
- In a given project, you need to look at how land and water systems are specifically related. Some factors to consider are water quantity, water quality, disturbance, erosion, etc. What is happening on land and how is it affecting aquatic systems?
- Wetland systems affect terrestrial systems by providing water sources for wildlife and people, food sources, breeding habitat, and aesthetic values that drive the land-use process. We need to look at both wetland configuration and distribution on the landscape.
- Ecotones: What is going on in the ecotone between a given type of aquatic and terrestrial system? Where are the edges, firebreaks, drought refugia, flood refugia? How are the functions changing in terms of droughts and floods?
- We need to recognize that the communities we can put neat labels on are not the only ones that are important. As someone who has written the classifications of these communities, I can tell you that they are not real and you will not find red lines separating communities. We made some arbitrary decisions. There are important unclassified communities and narrow ecotones critical to rare species especially in areas where land and water meet. We need to look at these carefully as we work.
- Finally when we talk about land and water integration, we need to identify what things matter in a given landscape. What are the issues in this particular place? Regional needs? A rare plant in a narrow ecotone that must be managed in a particular way? We need to always go back and ask if our plans make sense for this particular site or are we just taking some general ideas out of a text book?

Note: The Center for Natural Resources wrote this transcription of Ms. Duever's presentation.

## **Integrating Land and Water Management**

Jerry A. Scarborough

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

### **Introduction**

Since 1985, the State of Florida has spent a considerable amount of time, money and other resources in an attempt to integrate land use and water use in Florida, one of the fastest growing states in the nation. Through ELMS I, II, and III, as well as numerous other studies and conferences, we have attempted to come up with a mechanism by which we could truly integrate land use and water use.

Today, we still face the same question: Is there enough water for each county and region to meet its own current and future water demands, based on population projections?

### **Enough talk, it is time to act.**

Three things must happen if we are to be successful in finding a solution to the age-old question of how to effectively integrate land use and water use in Florida.

- First, local governments must become major players in the process, because in Florida, local governments are responsible for land-use management. Regional comprehensive growth management plans must contain regional water supply programs, and to assist local governments with land- and water-use planning, the five water management districts must provide accurate needs and sources assessments.
- Citizens and private property owners are the second most important participants in the land- and water-use planning process. Incentives rather than regulations must be used to encourage land owners to become willing partners and stewards in land-use planning and water-use management.
- Finally, the water management districts must develop minimum flows and levels (MFLs) for ground-water and surface waters, to ensure adequate water supplies **and** the protection of natural systems.

### **Conclusion**

If it is so important for Florida to integrate land-use and water-use planning, why has it not happened? Simply put, there is no sense of urgency. It seems that most citizens, elected officials, and governing bodies do not yet fully grasp the importance of developing adequate potable water supplies, and the possible consequences of not properly balancing regional growth with protection of our natural systems.

## **Natural Resources Forum: Linkages in Ecosystem Science, Management and Restoration** Roger W. Sims

Ecosystems are interrelated, and everything we do to change the environment has consequences. However, our legal system evolved as a piecemeal response to specific concerns. There has been “linkage” only in the sense that the agencies talk to each other to some degree and sometimes participate formally in the permitting process administered by others. An applicant is generally responsible to coordinate the often inconsistent and conflicting requirements of the various agencies.

This has resulted in a disjointed review process with the Development of Regional Impact (for example) being started first, because it addresses the broadest scope of issues and because a denial means that the project cannot proceed.

But since DRI's can take 2-3 years to complete, other permitting review had to be started while the DRI was pending. As the process evolved, decisions by one agency often caused a change to project plans or conditions that conflicted with the requirements of another agency. If the other agency had already approved the conflicting plan or requirement, the applicant had to re-open the approval.

Each time an approval is approved or changed, third parties have a “shot” at challenging the proposed action. The result often was a long, tortuous process of coordinating the requirements of numerous agencies and the preferences of third parties at the end of a long and expensive review process.

Ecosystem management/team permitting (“EMT”) was introduced by 1997 legislation which established section 403.075, Florida Statutes. This legislation provides in part that

“Ecosystem management is a concept that includes coordinating the planning activities of state and other governmental units, land management, environmental permitting and regulatory programs, and voluntary programs, together with the needs of the business community, private landowners and the public, as partners in a streamlined and effective program for the protection of the environment.”

DEP is charged with the responsibility of taking the lead to coordinate comprehensive EMT solutions in a manner which “improves the integration between land use planning and regulation, and which achieves positive environmental results in an efficient and cost-effective manner”.

The DEP Secretary is authorized to enter agreements to “better coordinate the legal requirements and time lines applicable to a regulated activity”, which may include permit processing, project construction, operations monitoring, enforcement actions and compliance with DO's and comp plans.

Holland & Knight has become involved in an EMT process for two major phosphate mining projects in west central and southwest Florida proposed by IMC-Agrico Company. The EMT program has facilitated a much more coordinated and flexible process with vastly improved “linkages” between the legal system and reality.

Participating agencies include: Florida Department of Environmental Protection, Southwest District; Florida Department of Environmental Protection, Bureau of Mine Reclamation; Southwest Florida Water Management District; Florida Department of Community Affairs; Central Florida Regional Planning Council; Tampa Bay Regional Planning Council; DeSoto County; Hardee County; Manatee County; Florida Game and Freshwater Fish Commission; United States Fish and Wildlife Service; United States Army Corps of Engineers; Florida Department of Transportation.

## COORDINATED AND CONCURRED REVIEW

“Coordinated and concurrent review” in this case means that the participating agencies and jurisdictions agree to coordinate their activities to avoid duplication and arrive at a common understanding of the relevant issues and data requirements “up front”. They further agree to a joint process to:

- concurrently identify relevant questions and needed information;
- concurrently review the applications for their respective permits, and;
- coordinate their individual agency or jurisdiction responses, resulting in mutually reinforcing permitting decisions.

The anticipated result for the applicant is a significantly shorter and more efficient review process. The anticipated benefit for the reviewing agencies and jurisdictions is a more accurate, efficient, and innovative review procedure. The anticipated benefit for Florida is the best possible outcome for the environment.

## NET ECOSYSTEM BENEFIT

“Net ecosystem benefit” means that review under this process must produce a result more favorable to the ecosystem than conventional reviews. Far from compromising their substantive standards of review, participants look for ways to exceed them. In order to obtain the coordinated and concurrent review, the applicant must show that such a benefit is likely before the agencies and jurisdictions agree to enter into process. The following opportunities for net benefit to the greater Peace River ecosystem have been discussed by the participating agencies, jurisdictions, and IMC-Agrico, and have been deemed sufficient to warrant an ecosystem permitting approach to reviewing the applications. Additional opportunities will continually be sought as the process moves forward.

### *Opportunities for Net Ecosystem Benefits*

- Holistic focus on ecosystem-wide impacts and benefits, considering factors both inside and outside the project boundaries.
- Formalized, early, and continuing public participation.
- Establishment and long-term protection of a greenway or integrated habitat network on IMC-Agrico property, both inside and outside the project boundaries.
- Restoration of historic wetland habitat.
- Restoration of upland habitat and connections.
- Restoration of some historic water flow and hydrology in the Peace River System.
- Improvement of recreational opportunities.
- Evaluation of opportunities to coordinate with the Southwest Florida Water Management District’s Comprehensive Surface Water Management Initiative.

*Integrating Land Use, Water Flows, and Estuary Activity*

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**Summary Not Available**

Tom Dyer

[\(Video Available, Click Here\)](#)**THE TAMPA BAY NITROGEN MANAGEMENT STRATEGY:  
Public and Private Partners in Ecosystem Management**

Holly S. Greening

Participants in the Tampa Bay Estuary Program have agreed to adopt nitrogen loading targets for Tampa Bay based on the water quality and related light requirements of turtle grass *Thalassia testudinum* and other native seagrass species. Based on monitoring data, it appears that light levels can be maintained at necessary levels by “holding the line” at existing nitrogen loadings. However, the “hold the line” goal may be difficult to achieve given the 20% increase in the watershed’s human population and associated 7% increase in nitrogen loading that are projected to occur over the next 20 years. Through an intergovernmental agreement addressing the issue of nitrogen load allocation, partners in the TBEP will be committing to develop Action Plans detailing specific projects that will be implemented to ensure that nitrogen management targets are met.

To maintain nitrogen loadings at existing (1992-1994) levels, local government Action Plans will address that portion of the nitrogen target which relates to non-agricultural stormwater runoff and municipal point sources within their jurisdictions, a total of 6 tons of nitrogen per year through the year 2010. A Nitrogen Management Consortium of a local electric utility, industries and agricultural interests, as well as local governments and regulatory agency representatives, has been established to develop a Consortium Action Plan to address the remainder (a total of 11 tons of nitrogen per year each year through the year 2010), which is attributed to atmospheric deposition, industrial and agricultural sources and springs.

A significant portion of the Consortium Action Plan will be implemented through an Interlocal Agreement which was entered into by the member governments of the TBEP Management Committee in March 1998. Through the Agreement each local government and agency member of the Management Committee (which are also represented on the Consortium) will commit to achieving the goals of the CCMP by developing and implementing individual action plans for their governmental units. The Agreement calls for each party to the Agreement to incorporate appropriate elements of the Consortium Action Plan into their individual Actions Plans by November 30, 1997. The private sector members of the Consortium will pledge to implement projects for which they are solely or jointly responsible for through a Resolution, approved by the private and public partners, which is accompanied by the Consortium Action Plan.

## **The Florida Yards and Neighborhoods (FY&N) Program**

Christine Kelly-Begazo

It may be surprising that a homeowner's yard is the first line of defense for Florida's fragile environment. The health of Florida's estuaries, rivers, lakes and aquifers depends in part on how a yard is landscaped and maintained. One does not even have to live on the water to make a difference.

Storm-water runoff is the reason. Rain falls on yards, roads and parking lots, then washes into tributaries, bays, lagoons, and the ocean carrying pollutants like fertilizers, pesticides, soil and petroleum products. Scientists have discovered that fertilizers and pesticides from residential areas are serious threats to the health of Florida's waters. When runoff contains nitrogen from fertilizers, algae can become so abundant that sea grasses are smothered, oxygen is depleted and fish kills may result. In some freshwater environments phosphorus is often the nutrient responsible for algae blooms. Toxic substances, such as common landscape and household pesticides, can damage reproduction in marine life.

A new ethic is emerging among concerned Florida homeowners who seek to redefine the image of home and landscape. The idea is to cooperate with local, natural conditions, rather than to battle the elements. More people are conserving water and energy inside and outside the home. Interest is growing in landscaping with native and other beneficial trees, shrubs and ground covers. Homeowners are choosing plants that blend beauty and environmental benefits. People are selecting safer alternatives to chemicals used indoors and out. Best of all, many of these benefits to the environment also save time and money while enhancing our special Florida lifestyle.

The *Florida Yards & Neighborhoods* Program provides helpful concepts, tools and techniques for reducing storm water runoff and the resulting non-point source pollution. With this program the homeowner, and lay person, will learn the basics of designing a landscape featuring carefully selected plants suited to our climate, natural conditions and wildlife. Special tips on cost-saving, environmentally friendly landscape maintenance are incorporated into the program to help reduce water, fertilizer and pesticide use. Special programmatic consideration is given for homeowners who live on the waterfront to address shoreline management.

The FY&N program incorporates nine basic concepts, and corresponding lawn care practices, that will help the homeowner reduce the dependency on high inputs, save time, energy and money, and help protect Florida's natural ecosystem. The nine concepts of a "Florida-friendly" yard are: Mulching, Recycling, Providing for Wildlife, Water Conservation, Protecting the Waterfront, Right Plant in the Right Place, Fertilizing, Reducing Storm Water Runoff, and Caring for Yard Pests.

There are many different types of educational material that have been developed and are available to the general public. The FY&N program also supports special incentive programs geared toward including the homeowner as a major stakeholder in the protection of Florida's natural resources through implementation of changes in current lawn care practices. For more information about this program, please contact the County Cooperative Extension Service office or the statewide FY&N coordinator.

## **Linkages in Ecosystem Science, Management, and Restoration**

Woody Miley

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

For me, ecosystem management means managing by functional boundaries regardless of land use patterns and land ownership patterns. Apalachicola is a good example of ecosystem management, because linkages, integrating, ecosystem management is what we do. We have memoranda of understanding with the local government, with the county, with the city of Apalachicola, and with the Eastpoint Water and

Sewer District. We are doing the partnership programs, because we cannot do it all, we do not have the authority to do it all, and because ecosystem management is all about these partnerships.

The Apalachicola National Estuarine Reserve, as soon as NOAA (National Oceanic and Atmospheric Administration) approves the boundary expansion, will be 246,000 acres. That is huge. The Reserve, the Bureau of Coastal and Aquatic Managed Areas, and DEP, manages 20,779 acres out of 246,000. That cannot be done except through linkages and integrating through the process of ecosystem management. So we have memoranda of understanding with the Florida Game and Freshwater Fish Commission who is the largest lead role manager within the boundary of the Reserve, the Northwest Florida Water Management District, and the US Fish and Wildlife Service - all of whom have lead role management within the Research Reserve.

We are collectively a good example of ecosystem management in Apalachicola, at least at the state level. We now have the challenge and the opportunity to be an excellent example of ecosystem management or there is a very real potential for total failure in that the Apalachicola is only a small part of our ecosystem. Our system is actually a three river system - the Apalachicola, the Chatahoochee, and the Flint Rivers. The drainage basin for this tri-river system is 19,800 sq. miles. Only 2,400 of that is in the State of Florida. Eighty-eight percent of the drainage basin that feeds or pollutes the Apalachicola Bay originates outside the state of Florida and based on average flow for the three rivers, 84% of the freshwater that feeds or pollutes the Apalachicola Bay originates outside the state of Florida. That is a management nightmare. It is certainly a challenge for ecosystem management, because we have to go beyond the boundaries of Florida.

The negotiations between the tri-states and the effort at ecosystem management have gotten to the point where Alabama and Florida have sued Georgia and the Army Corps of Engineers over water rights within the River. The courts put that on hold, and the hold is over after several extensions in December 1998. The most important aspect of the negotiations now is the actual water allocations. The Northwest Florida Water Management District plays lead role with support from DEP. It is just like the old water wars out West. The mindset is defensible, though. If you stand in Georgia and look down, there are three rivers. If you stand at Apalachicola and look up, you get a much better functional view. There is only one river. We change her name when she crosses man's political boundaries, and more importantly, we change the use and demands on the system, but there is only one river. We have to get to the point through negotiations, through integrating and linking, so that we recognize this as a regional resource and turn "mine and yours" into "ours," into a stewardship role for everyone.

We are engrossed in a pretty serious fight. Ecosystem management is the role we want to play. What Florida does is say, we are a part of this system; we want to be a partner in this system. We are negotiating now with Alabama and Georgia, and the deadline for water allocation is this December. I wish that this year had stayed wet like it started off. It is much easier to discuss equitable allocation in a plentiful situation. If the River continues to be dry, we are going to go to those negotiating tables and start off talking about each others mothers which is where we left off a few years ago when negotiations got pretty bad.

At the bottom of this ecosystem is Apalachicola Bay, one of, if not the most, productive estuarine systems in the Northern Hemisphere on a production per acre basis. The economic benefit of just the commercial seafood in Apalachicola Bay is a 70-80 million dollar a year industry — totally renewable, almost no overhead. However, we must understand the functional relationship with the land use, with up-stream uses, with the role of marshes, the floodplains, the barrier islands as a dynamic system. If you are not impressed with 70-80 million dollars, you are absolutely right on target. It does not begin to tell the story of the importance of the Apalachicola estuarine system. Forty-two percent of all seafood harvested in U.S. waters comes from the Gulf of Mexico, more than either the Atlantic or the Pacific. Of the species harvested in the open Gulf of Mexico, 95% of all species harvested commercially and 85% of all species harvested recreationally have to spend a portion of their life cycle in an estuarine system. Blue crabs, for example,

migrate as many as 300 miles to spawn in Apalachicola Bay. They spend their larval and juvenile stages in our Bay and then they scatter out all over the Gulf. They are harvested somewhere else, landed somewhere else, and reflected in somebody else's dockside value, but the product would not be there if the Apalachicola Bay were not where she is and in the relatively pristine, productive condition she is in.

Environmentalists like myself have been saying things like this for years, but we never really had good data to back it up. With the dissolve of the Soviet Union, and our access to their scientific literature and their scientists, we do now have good, hard data. They made all the mistakes; they have been where we are now. The Aral Sea lost a \$1.2 billion dollar a year seafood industry, the same horror story holds for the Azov, the Caspian Sea, and the vast Volga Delta. Collapse of the seafood industry and sometimes total collapse of the seafood industry. The number one culprit identified by Soviet research was changing freshwater inflows into estuarine systems. It was not pollution or changing other things, changing freshwater inflows was the number one culprit in the loss of estuarine productivity.

Thus, the compact and the water allocations are critically important for Apalachicola. Apalachicola and other coastal estuarine systems in the Gulf collectively and synergistically are key elements in the production of the Gulf of Mexico. So, John Muir was right, when you tug on a thing in nature, you find it connected to the rest of the world.

### **Deciding an Approach to Gain Local Compliance with Restoration Objectives for the Indian River Lagoon Estuary**

Joel S. Steward

Joel S. Steward, Technical Program Manager, St. Johns River Water Management District, Division of Environmental Sciences, Coastal Basins

The SJRWMD's restoration and management programs for the Indian River Lagoon (IRL) follow a formula of comprehensive watershed management with a focus on the recovery or protection of selected resources. In general, seagrasses, shellfisheries, and emergent wetlands (especially salt marshes) are the prime resources of interest in the IRL when developing a project's objectives. This is because these resources are good indicators of the Lagoon's overall ecological health. Since the 1920s, these resources and the Lagoon's general condition have fallen victim to several regional-scale surface water drainage projects that cause excessive discharges of freshwater and nutrient loads to this estuary. Solutions to better manage these inflows for the sake of the Lagoon is further complicated by the fact that the Lagoon's watersheds are rapidly increasing in population, exerting increasing pressure for improved flood control drainage. To curb future increases in drainage rates and volumes in addition to reducing present drainage excesses, the District has adopted for the IRL a largely non-regulatory, cooperative approach in surface water management.

The approach attempts to leverage friendly compliance by local jurisdictions with discharge restrictions and pollutant reduction targets through cost-share projects that also provide flood control enhancements (and potential water supply benefits in some cases). This 'carrot' approach, however, does not have a mechanism to ensure compliance in perpetuity once the projects are constructed. A regulatory approach to ensure such compliance could be perceived by local governments as a threat and imposing this 'stick' could jeopardize the initiation of any cooperative project that would help achieve IRL objectives. Presently, local governments can obtain permits for flood control and water supply without addressing restoration objectives for the IRL. Therefore, is regulation necessary to gain long-term compliance with IRL objectives? Is there an effective alternative to regulation? Or, is there a way to effect an equitable balance between the 'carrot' and the 'stick' ?