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INSTITUTIONAL ARRANGEMENTS FOR ECOSYSTEM MANAGEMENT:

The Case of South Florida, United States

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A Case Study for
Shifting the Power:
Decentralization and Biodiversity Conservation

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"In our every deliberation, we must consider the impact of our decisions on the next seven generations." From the Great Law of the Iroquois Confederacy

The South Florida Ecosystem

The South Florida ecosystem stretches some 483 km (300 miles), extending south from the Kissimmee chain of lakes, through Lake Okeechobee, into the freshwater marshes of the Everglades, to the mangrove estuaries and the coral reefs in the Atlantic beyond. The Big Cypress swamps, over 96 km (60 miles) wide, and the Caloosahatchee estuary are located in the eastern portion, and the Loxahatchee National Wildlife Refuge and the St. Lucie estuaries are located in the western portion of the ecosystem. The southern end of the ecosystem includes the only subtropical estuary in the United States, Florida Bay, and the only coral reef in North America, the third largest in the world (Bancroft 1996). Water is the lifeblood of the ecosystem, flowing through a myriad of interconnected freshwater rivers, lakes, marshes, and estuaries, and the Everglades system is its heart.

About 75 percent of the annual rainfall in the ecosystem occurs during the six-month period from mid-May through October. Historically, during the wet seasons, water levels within the marshes and lakes gradually rose and water slowly flowed south in a sheet 80 km (50 miles) wide and rarely more than half a meter deep. During the dry season, water levels receded, but Lake Okeechobee and the Everglades acted as vast reservoirs, releasing water slowly to keep the sawgrass wet. The annual pulse of fresh water into the estuaries created a highly productive balance of fresh and salt water from the Gulf of Mexico. The estuaries were important nursery grounds for pink shrimp, sea turtles, gray snappers and other economically important species.

Beneath the Everglades is a vast, flat shelf of porous limestone. Much of the water in the Everglades sinks through this rock into the shallow Biscayne aquifer and eventually feeds the

springs and wells that are the sources of clean drinking water for Dade, Broward and Palm Beach counties. The coastal cities depend on the natural flow from the Everglades through the limestone into the aquifer to replenish their drinking water and to keep saltwater from intruding into their well fields.

The ecosystem provides essential habitat for more than 56 endangered or threatened species, including the Florida panther (*Felis concolor coryi*), the Key deer (*Odocoileus virginianus clavium*), the American crocodile (*Crocodylus acutus*), the snail kite (*Rostrhamus sociabilis*), and the wood stork (*Myceteria americana*). At the beginning of the 20th century, over 200,000 wading birds nested in the Shark River Slough. Now, according to one report, "less than ten percent of many wading bird species that once populated South Florida can today be found there" (World Wildlife Fund-U.S/National Audubon Society 1996:3). Plants of Caribbean and Central American origin dominate the islands of the Florida Keys; tropical plants generally not found in the continental United States. Everglades National Park is listed as a World Biosphere Reserve, a World Heritage Site, and a Wetland of International Importance in the Convention on Wetlands of International Importance Especially As Waterfowl Habitat (RAMSAR). Only two other sites in the world appear on all three lists.

The area of this ecosystem also includes a population of more than 5.2 million people (as of 1990) living in small rural towns and urban centers, seven of which are among the ten fastest-growing metropolitan areas in the United States. The economy is based on a multi-billion dollar tourist industry. Many of Florida's tourist attractions, including Disney World, Sea World, long white sand beaches, and sport fishing and diving spots are found in the region. Given the region's favorable winter climate and fertile agricultural lands, the extensive commercial agricultural sector is a primary producer of citrus, many tropical fruit varieties, sugar cane, and winter-grown vegetables. Florida Bay and other estuaries directly or indirectly support a large portion of Florida's billion dollar fishing industry, although production has decreased dramatically in recent years. The desirability of South Florida's climate, geographic location, cultural and social setting, and economic opportunities has contributed to a population explosion predicted to reach eight million inhabitants by 2010. Many of the new arrivals are retirees, who require unique infrastructure

investments, including more medical services per capita; over 30 percent are foreign-born. Much of the population is transient. Few current residents can remember how South Florida used to be.

The South Florida ecosystem ranks second nationwide for percentage of land owned by the federal government. Land and water are owned by federal, state and local governments, as well as by private landowners. Planning and decision-making for the South Florida ecosystem involve a number of federal, state, regional, and local agencies, including 16 county governments, 200 local governments, two tribal governments, five regional planning councils, eleven federal agencies, five major state environmental planning and regulatory agencies, and the South Florida Water Management District (SFWMD).

The Governor's Commission for a Sustainable South Florida and the South Florida Ecosystem Restoration Task Force, two state-level entities, define the term "ecosystem" as "a community of organisms, including humans, interacting with one another and the environment in which they live." The definition reflects the unavoidable link between the human community and natural systems. The people of South Florida depend on the ecosystem for their livelihoods, their drinking water, and as a harbor of biological diversity. The future of the ecosystem is in the hands of politicians, landowners, local residents, and others as they make decisions that affect both present and future generations. Underlying the Everglades restoration effort is a commitment to "maintain the biological diversity and sustainability of the ecosystem and support actions that incorporate economic, socio-cultural, and community goals" (South Florida Ecosystem Restoration Task Force 1997:2).

Threats to the Ecosystem

Since 1900, about half the Everglades' 1.2 million hectares (ha) (2.9 million acres) has been destroyed in successive waves of development aimed at adapting the wetlands to serve the cities and agriculture needed to support a burgeoning human population. Manmade changes to the South Florida ecosystem began in the late 1800s. First, the Kissimmee flood plains and the wetlands around Lake Okeechobee were drained and converted to agricultural lands. The most significant event has been the construction of the Central and South Florida (C&SF) project by the U.S. Army

Corps of Engineers, done at the request of the state of Florida. Authorized by Congress in 1948 and completed in the mid-1960s, the project was intended to provide increased flood control for all residents and increased agricultural land and irrigation for the expanding industrial agricultural sector. The primary flood control and water delivery system now contains over 1609 km (1,000 miles) of levees and canals, 150 water control structures, and 16 major pumping stations.

The C&SF Project completed the drainage of the northern quarter of the Everglades, creating the 222,577 ha (550,000 acre) Everglade Agricultural Area (EAA), and effectively cutting the hydrologic connection between Lake Okeechobee and the Everglades. To prevent flooding, the project diverts water east and west through coastal estuaries into the Atlantic Ocean and the Gulf of Mexico, disturbing the delicate balance between fresh and salt water and thus disrupting marine life. During the dry season, water is used for irrigation, depriving the Everglades of critically important floodwaters.

A related threat is the decline in water quality, particularly evident in the rising amount of phosphorus entering the natural system from crop and dairy farming, as well as other sources. The Everglades system can tolerate only very small levels of phosphorus and nitrogen. Increased levels of these nutrients in the surface water have resulted in shifts in species composition in the algal and plant communities in lakes and marshes. Mercury levels in wildlife have also increased. Runoff from the sugar plantations in the EAA is so high in phosphorus that tolerant cattails are replacing sawgrass in the Loxahatchee Wildlife Reserve and the Everglades National Park (ENP).

An increasingly serious threat to the ecosystem results from sprawling urban development and water management practices required by rapid population growth. Homebuilding, often on .2 ha (.5 acre) or more, and infrastructure development—includinggolf courses—and related increases in water consumption and demands for flood protection have resulted in habitat destruction and fragmentation, as well as removing millions of cubic meters of water from the natural system. Habitat destruction is particularly devastating; once lands have been converted, the opportunity to protect or restore biodiversity has been lost. The Florida panther, red-cockaded woodpecker (*Picoides borealis*), Florida scrub jay (*Aphelocoma coerulescens coerulescens*), Key deer, Keys

march rabbit *(Sylvilagus palustris hefneri)*, sand skink (*Neoseps reynoldsi*), blue tailed mole skink (*Eumeces egregius lividus*) and 18 species of plants all face extinction because their habitats are threatened.

Native American Peoples and the South Florida Ecosystem

Two Native American tribes live within the South Florida Ecosystem: the Miccosukee and the Seminole. Originally, both groups were part of the Creek Confederacy in Alabama and Georgia. U.S. government soldiers forced both groups into the Everglades in the 1800s. In three U. S. wars against the Miccosukee and Seminole peoples, these two tribes have never been defeated nor have they signed a peace treaty with the United States Government. Both tribes view themselves as a part of nature and perceive a strong link between a healthy environment and land, and a healthy people. Their teachings hold that a lack of respect for nature and living things will soon lead to a lack of respect for people.

The Miccosukee Indian Reservation, 30,351 ha (75,000 acres), is located within the South Florida ecosystem's Water Conservation Area 3A. Given its location, it is highly susceptible to water management practices further north, particularly in the EAA. Following the heavy rains of 1994-1995, for example, this land was left under two feet of standing water as flood control measures for other areas of the ecosystem were implemented. Tribal members were not able to plant their sacred corn for two years. Hundreds of deer drowned, starved, or left the area. The tribe responded by prohibiting hunting to avoid decimating the deer population. Similarly, the Reservation is susceptible to the negative effects of high nutrient runoff from the EAA. The Miccosukee have been engaged for several years in a lawsuit against the State of Florida to enforce restrictions on phosphorus levels more stringent than those established by the 1994 Everglades Forever Act (EFA).

The Special Use Permit Area is a five-mile long strip located along the northern border of the Everglades National Park (ENP), in which the Miccosukee are allowed to live and build community infrastructure. The Special Use Permit area was given to them after the ENP was established in the midst of their traditional landholding area. Relations between the National Park

Service (NPS) and the Miccosukee Tribe have been strained, at best. The chairman of the Miccosukee, Billie Cypress, has stated, "They [the NPS] give the plants and animals more respect than the native people who lived and cared for these lands long before the parks existed" (Wilkinson 1996). As of 1997, no Miccosukee were employed in the park, nor were they involved in park management. They had to pay a park entrance fee each time they wished to return home. The Miccosukee Tribe is counted among the founding members of the Alliance to Protect Native Rights in National Parks, which claims that Native Peoples' rights in National Parks are under attack by the National Park Service.

Partners in the Restoration Effort

South Florida Ecosystem Restoration Task Force and South Florida Ecosystem Restoration Working Group

Today, a range of actors at the federal, state, and local levels are jointly involved in the South Florida ecosystem restoration effort (see Figure 1). This is a relatively recent phenomenon. Prior to 1993, the federal government's investments in South Florida ecosystem restoration had not been well coordinated either at the federal level or with state and local agencies. At the initiative of the federal government, specifically of Interior Secretary Bruce Babbitt, six federal agencies established the Interagency South Florida Ecosystem Restoration Task Force and the associated South Florida Ecosystem Restoration Working Group to coordinate development of consistent policies, strategies, plans, programs, and priorities to address the environmental concerns of the South Florida ecosystem.

The 1993 federal interagency agreement creating these bodies acknowledged that the restoration effort would require close and ongoing coordination among them and state, tribal and local governments. Yet, because of restrictions imposed by the Federal Advisory Committee Act (FACA), Task Force membership was limited to federal agency employees, and even then the circumstances under which the Task Force might receive input and advice from non-Federal agencies were strictly limited. Similarly, the Interagency Working Group was also limited by the

1993 interagency agreement to "Florida-based or other appropriate" representatives of the six federal agencies.

In 1996, a milestone federal law, the Water Resources Development Act (WRDA), superseded the 1993 federal interagency agreement. This law formally established the South Florida Ecosystem Restoration Task Force and, by association, the South Florida Ecosystem Restoration Working Group. The Act stipulates that the members of the task force must include seven federal, three state, two tribal and two local government representatives. The Act also authorized a 50/50 cost share between federal and state expenditures for restoration and dedicated $75 million for critical projects over the subsequent three years. The WRDA requires that the Task Force "implement procedures to facilitate public participation in the advisory process," including posting notices of meetings, providing opportunities for public comment, and maintaining records for public inspection. The Act also allows the Task Force and Working Group to seek advice and input from "any interested, knowledgeable, or affected party" without being subject to the enumerated restrictions of the Federal Advisory Committee Act that had earlier encumbered the South Florida Ecosystem Restoration Task Force.

The Task Force has been successful in creating a unified federal policy regarding scientific, economic, and engineering aspects of the restoration effort. Key to making this process work is joint financial planning. The Integrated Financial Plan produced in this process is a compendium of restoration project descriptions, containing information on funding, on links among projects, appropriations, milestones, and cooperating agencies and other project information. Together, these documents provide an overall framework for ecosystem restoration. As one commentary notes, the techniques and mechanisms of a "cross-cutting budgeting process" such as this one involving five major federal agencies may also have much wider applicability "for a variety of other ecosystem restoration and management efforts where multi-agency coordination is necessary" (Keystone Center 1996).

The Miccosukee and Seminole Tribes are increasingly involved in the South Florida Ecosystem Restoration Task Force, and in making decisions that affect their natural resources. Since the 1980s,

the Seminole Tribe has had a water compact with the state of Florida. The compact recognizes Seminole water rights and spells out the responsibilities of the state (represented by the SFWMD) and the tribe. When the Seminole and Miccosukee Tribes were first getting involved in the restoration efforts, in an effort to level the playing field, Florida Governor Bob Graham assigned staffer Timer Powers to work full time with the tribes to provide information about the ecosystem, political processes, and means of working with local government and other stakeholders; this move was well-received by tribal representatives.

The South Florida Ecosystem Restoration Task Force and Working Group together provide an example of deconcentration of federal control to more local levels of federal agencies. While conflicts continue to arise, the federal government, through the mechanism of the Working Group, has recognized the authority of state-level units of the federal administration and committed these units to establish a partnership with state agencies and tribal governments. This approach allows for the Working Group to customize its policies to local circumstances and to more easily span interagency and professional boundaries. The Working Group is in regular contact with—in fact shares some of the same members as—the Governor's Commission for a Sustainable South Florida, a formal advisory body to state-level decision-makers (and, informally, to federal levels). Tribal governments, the SFWMD, and federal agency offices often jointly implement the restoration efforts. Several committees exist at the implementation level to further coordinate inputs. The chairman of the Working Group, Col. Terry L. Rice, noted that in 1996, the augmented Working Group took advantage of the federal enabling legislation to focus increasingly on problem-solving and consensus-building on tough issues, and "probably the most important, many members took another major step in relinquishing organizational sovereignty in favor of mutual cooperation" (South Florida Ecosystem Restoration Working Group 1997). At the time of this study, local governments and civil society had only limited access to decision-making and planning. Despite the limitations on public participation, decentralization has allowed for some engagement of citizens and organizations, and they have continued to be important actors at the local level (see Boxes 1 and 4).

The State of Florida and the South Florida Water Management District

One of the first efforts by the state of Florida to comprehensively address restoration of the Everglades was the 1983 "Save Our Everglades" program, intended to restore key hydrological functions of the natural system. Actors in the Save Our Everglades initiative were unable to convince agricultural interests in the EAA or private landowners to become involved. Lacking collaboration among all of the stakeholders, the Save Our Everglades program was not able to overcome special interests to implement significant changes (Long and Arnold 1995:91-92).

In 1988, the federal government sued the state of Florida and the SFWMD for not enforcing a state law, the Surface Water Improvement Act, which established water quality standards, and for allowing polluted water from the sugar cane farms in the EAA to flow into the Loxahatchee National Wildlife Refuge. The federal government was acting to protect the quality and value of lands in South Florida that were of national interest. Bitter courtroom battles, committee meetings, negotiations, and technical assessments continued over the next six years. Best Management Practices such as applying fertilizer directly to sugar cane roots, rather than broadcasting, and leaving storm waters in fields for longer than usual periods, were consequently implemented by many of the sugar producers and dairy farmers. Dairy farmers' waste storage ponds have unintentionally proven to help increase populations of waterfowl, eagles, alligators, and turtles.

In 1990, the state of Florida passed the Preservation 2000 Act, which provided substantial funds for land acquisition necessary for restoration. The Kissimmee River Restoration Project, described below, was designed by the state and a 50/50 cost share approved by Congress in 1992. Not until May 1994 did Governor Lawton Chiles sign the landmark Everglades Forever Act, setting into motion a plan to restore a significant amount of the remaining Everglades ecosystem through a program of construction, research, regulation, and financing. The plan taxes sugar-cane growers, vegetable farmers, and property owners to pay for the restoration effort. Critics argue that the plan over-taxes residents and protects the powerful sugar industry. Many factions, including the Miccosukee, say that it is too little, too late. The EFA requires that phosphorus levels in runoff from agricultural lands flowing into the Everglades will reach an interim level of 50 parts per billion (ppb) by 2003, at which time Stormwater Treatment Areas will be in place to

reduce phosphorus levels further. These impoundments, created by bulldozing land, putting up levees, and establishing marsh grasses and other vegetation, receive and filter polluted water that is pumped into the marshes. While they may be effective for reducing phosphorus, Stormwater Treatment Areas do not help to restore the natural hydroperiod of the Everglades. In any event, the Miccosukee argue that the phosphorus limit should be ten ppb, to be reached by 2002. Whether the technology currently exists to achieve these levels is debated.

The South Florida Water Management District is the state sponsor of the C&SF project. Its jurisdictional boundaries are drawn according to the watershed it manages, an important step in reducing conflicts between agencies working in the ecosystem. The SFWMD is known as an effective negotiator both with other agencies and with communities. It has established the Southern Everglades Restoration Alliance (SERA) to design and oversee the Modified Water Deliveries Project and the Canal C-111 Modifications Project. SERA includes 65 members, including federal, state, tribal and community actors representing agriculture, environment, and development interests, among others. At least some sections of the SFWMD see themselves as brokers among the varied interests.

The SFWMD is a relatively powerful actor. It has the ability to raise funds through property taxes. It holds responsibility for a large geographical area and authority over the aqueous lifeblood of South Florida. Among its assets are a large, competent staff of engineers and scientists. In fiscal year 1997 alone, the SFWMD spent about $324,899,000 on ecosystem restoration and protection (South Florida Ecosystem Restoration Task Force 1997). While the primary objective of the SFWMD has always been flood control and providing water for agriculture, the SFWMD has increasingly given consideration to the environmental impacts of its decisions.

The Governor's Commission for a Sustainable South Florida

The Governor's Commission was established by executive order of the governor of Florida in March 1994. Its mandate is to recommend ways to ensure that the South Florida ecosystem, including the Everglades, can supportively co-exist with a healthy economy. The Commission members are advisors to the governor and state agencies. They are not decision-makers. Their

primary objective is sustainable development. The Commission is bi-partisan. The governor chooses the commission chairman and members. At the time of this case study, the commission had 47 members, among them representatives of agricultural interests—including sugar, citrus, dairy, and row crops; environmentalists; urban developers; local, state, tribal, and federal government agencies; regional planning councils; and minority community leaders. The state and federal governments share funding for the Commission equally, with most of the federal share provided by a Coastal Zone Management Grant received annually from the National Oceanic and Atmospheric Administration (NOAA).

The Commission has agreed upon a set of recommendations that seek to incorporate the needs of society, the economy, and the environment. Recommendations focus on managing water to benefit both the environment and people, improving water quality, combating exotic species, changing urban development patterns, improving the quality of life, and fostering coordination among agencies and between levels of decision-making (Governor's Commission 1995). The Governor's Commission has initiated an integrated planning process called "Eastward Ho!" to revitalize Southeast Florida's urban core and reduce pressures from urban expansion on the Everglades' habitats (South Florida Regional Planning Council 1996).

The Commission also acts as a sounding board for recommendations developed by the primarily federal South Florida Ecosystem Restoration Task Force. This was particularly important before 1996 when the Task Force did not include state or local representatives. The Commission developed a conceptual plan for the C&SF Project Restudy, with recommendations about the Army Corps of Engineers' efforts to modify the C&SF Project. The plan sets forth 40 restoration components and several recommendations to accelerate the overall effort (Governor's Commission 1996). The plan was well received in many quarters.

Commission decisions have been made by consensus, often with assistance from the Florida Conflict Resolution Consortium. However, factions continue to exist and are sometimes belligerent. Rather than try to resolve some of these conflicts, the Commission has ducked certain battles, including one over a proposed penny-a-pound tax on sugar for restoration efforts. The

Commission is not a decision-making forum; it is not requisite that it resolves every conflict, and indeed it lacks enforcement authority for its recommendations.

Many agree that the Commission has been useful but that several challenges remain in the way of its optimal functioning. For example, the ability of the Commission to reach civil society, and the related issue of members' abilities to represent their supposed constituencies, concern many observers and members alike. Commission members have noted that work through 1997 was at a conceptual, macro-level. As recommendations are now translated into more specific actions, interest groups are becoming more keenly aware of potential changes in the status quo and of the implications of agreed-upon compromises. These positions must now be explained to their constituents, and changes implemented. Local government, agricultural interests, and the environmental community face the biggest struggles. That the Commission, at the time of this study, had not been formally institutionalized and lacked secure, long-term funding was also a concern. Under this arrangement, its status and membership can change significantly following any gubernatorial election.

Land-Use Planning Agencies

Given the significance of the threat of urban development, it is critical to examine how land-use decisions are made. Land-use planning in Florida is controlled mainly at the county level. The state-level Department of Community Affairs (DCA) does have the right to take a county planning commission to court if it believes land-use planning decisions will have negative impacts on state residents. Regional Planning Councils provide coordination among counties, and advice to both counties and the DCA.

The DCA is spearheading implementation of the Eastward Ho! Initiative. It spent 1.2 million dollars on this by 1997. The initiative aims to slow development to the west, towards the Everglades, by capturing in the east a high percentage of the anticipated population growth projected for the next 20 years. It promotes infill and redevelopment of lands along the urban coastal ridge, stretching from Miami to Palm Beach. The state of Florida, through the DCA, is to set limits to growth and development, by contract with a given city. The city will then develop its

own plans and proposals within those limits. The state, through DCA, will provide incentives and some funding for sustainable land-use planning. Support for Eastward Ho! slowly has been gaining ground. Many local governments have been reluctant to support the initiative, because it restricts growth and could mean a loss of their planning authority. In some areas, local residents are afraid they will be pushed out of areas that are renovated and gentrified. It will take much more effort to build support from property owners, neighborhoods, and local government.

Box 1. Partners in the Restoration Effort: Local Communities

Local communities, as the stewards of natural resources, are also partners in the restoration effort. They often best know the resources, understand what has been lost and the impact of that loss, and are most affected by decisions taken at other levels. On Big Pine Key, for example, a group of residents worked with the Monroe Planning Commission to develop a comprehensive plan to balance the need to conserve habitat for the endangered Key deer and to allow housing and infrastructure development. The compromise position developed could have sustained the Key deer population for a long time; however, the County Commission rejected the plan and continues to argue for development. This has only strengthened the group's resolve to conserve habitat. The residents of Big Pine continue to fight for a limit to growth on their island. With assistance from World Wildlife Fund-US, The Nature Conservancy, and other non-governmental organizations, the group continues to grow in numbers and to educate the broader community. They have successfully organized opposition to some of the incumbent political leaders.

Accountability of Conservation Institutions

Both the Governor's Commission and the Working Group continue to struggle with how to attain public involvement in the restoration effort, as promoted in the legislation. Commission and Working Group members, as well as outsiders, have recognized that civil society is not engaged in the restoration effort. The Working Group minutes from December 12-13, 1996 acknowledged the validity of consistent criticism that the Working Group hadn't interacted with a sufficiently wide public audience, and that efforts to date to deal with the problem "have not addressed fundamental changes needed to reach a substantial number of the South Florida population, rather than reaching those few special interest groups that attend the meetings" (South Florida Ecosystem Restoration Working Group 1997). Similarly, a member of the Governor's Commission noted that potential existed for links between the Commission and

Communities, but that appropriate linking mechanisms and processes had not evolved (Brown 1997). Like the Working Group, the Commission has a relationship with organized, explicitly environment-oriented community-based groups. In response to requests from these groups, the Commission chairman gave 70 speeches in 18 months to promote community support for the Eastward Ho! urban revitalizing effort, but Commission efforts to connect with society as a whole have stalled.

Several factors contribute to this lack of communication and accountability between Commission and Working Group members and civil society. Funds and human resources dedicated to engaging the public and local government are inadequate. Increasing committee budgets would help, but probably not solve the problem. The underlying issue is that public participation has not been a priority for committee members. They are faced with a dying ecosystem, conflicting environmental and economic priorities, and a major hydro retrofit redirecting millions of gallons of water, to name just a few issues. Engaging the public, complicated and conflictive, has not been a priority. Furthermore, many Commission and Working Group members still see people as the problem. According to one Commission member, "Technical issues will continue to take precedence [over information and dissemination], until people are seen as a critical contribution to the solution" (Brown 1997). Human resources are also stretched thin. Participation on the Governor's Commission is voluntary, yet it requires a high level of involvement. For example, from April 1994 to September 1996, the Commission met an average of two days per month, and members also had subcommittee meetings.

There are so many varied interests and complexities in an ecosystem of this size that it is nearly impossible to include everyone. The fact that many of the constituent groups are not organized also hinders the ability of the Commission and Working Group to communicate with residents of South Florida. Currently there are few mechanisms for exchange with constituents. When these mechanisms exist, communication is enhanced. For example, Art Darling, a Governor's Commission member, is a lobbyist for the Sunshine State Milk Producers. He reports back to the Producers' board of directors and to two milk-marketing cooperatives, which provide him with policy direction. The cooperatives provide an opportunity for farmers to get involved and express

their opinions (Darling 1997). Organizing constituents is outside the mandates of the Commission and Working Group. Some of the environmental NGOs have recognized this absence of organizing and are taking steps to compensate for it (see Box 2).

Box 2. National Audubon Society's Everglades Restoration Campaign: Building Constituencies and Links

Recognizing the need for an informed public and decision-makers, the National Audubon Society is focusing on building local constituencies and educating people on the linkages between the ecosystem and their quality of life. Florida Bay, other estuaries, the Everglades system, and a consistent water supply are just a few of the essential ingredients for a successful multi-billion dollar tourism sector. When there are environmenal disasters, economic ones are sure to follow.

To elevate environmental concerns among private sector decision-makers, Audubon is collaborating with the Miami Chamber of Commerce, the largest in the state, and has established the Environmental Economic Council. With funding from the SFWMD and private donors, the campaign is also facilitating workshops for business leaders to discuss sustainability issues, how the restoration effort affects them, and steps they can take to support an environmentally healthy South Florida. Local, state, and federal decision-makers have commended the Audubon Society for its efforts to build workable partnerships between agricultural interests and the environmental community.

To engage community members in the restoration effort, the Audubon Campaign holds workshops with community leaders in Broward, Dade and other counties. These workshops provide information on the ecosystem of South Florida and its links to everyday life. Each group then develops plans to engage citizens more actively in the restoration initiative.

Specifically, Audubon is reaching out to minority groups to broaden the support base for the restoration effort. Traditionally, concern for the environment has been dominated by the ideas of habitat conservation and species preservation, notions far removed from the day-to-day survival of recent immigrants and low-income households. Audubon gives technical assistance and funding to Citizens for South Florida and to Earthwatch Production to support their efforts to build constituencies for ecosystem restoration within minority populations.

While more efforts are needed, some avenues exist for local residents to voice their positions effectively to the Commission and Working Group. Residents can attend meetings and speak at public comment sessions. They can send letters via mail and the Internet. In some cases, state and federal agencies have sought out public involvement. For example, in a bottom-up planning

process for the Florida Keys National Marine Sanctuary, a Sanctuary Advisory Council consisting of 22 stakeholders, agency representatives, and citizens worked diligently with Sanctuary staff and an Interagency Core Group to develop the final plan.

The Working Group and the Governor's Commission have recognized the need to further involve local communities and have taken some steps towards increasing public awareness. The 1997 Standard Public Affairs Procedures of the Task Force assigns a public affairs representative to the Working Group and to each of its subordinate teams and advisory groups. In addition to encouraging public comment at meetings, the representatives will establish media contacts and disseminate news releases. The Governor's Commission has similarly discussed steps to increase public awareness.

Varying Interests in the South Florida Ecosystem

A critical issue in the decentralization of resource management and decision-making in the South Florida ecosystem is "decentralization to whom?" A number of levels of authority are involved, each with its own interests in and objectives for resource management. Many local stakeholders see no link between maintaining their own well-being and protecting biological or ecosystem resources, so they will be inclined to support the development status quo. In this South Florida case, many of the resources are clearly of national and global importance, including two national parks, one national preserve, one marine sanctuary, and 14 national wildlife refuges. Federal authorities have generally assumed the role of acting in the public's interest regarding these resources, to safeguard them for present and future generations. Between its responsibility to undo the harm it created by constructing the C&SF Project and its responsibility to protect a resource of both national and worldwide importance, the federal government has a significant interest in the South Florida ecosystem's restoration. Federal involvement can also provide much needed financial resources--the total restoration bill is now estimated at $3-5 billion—beyond the fiscal capacity of most state governments.

Florida's economic future depends on a healthy Everglades ecosystem for water supply, tourism, and the fishing industry. The state government has taken several steps towards restoration, beginning with the Save Our Everglades initiative in 1983. This was followed by the state's 1990

land acquisition act, Preservation 2000. Following the 1990 election of Governor Chiles, the state helped break the deadlock over the 1988 federal lawsuit regarding the quality of water flowing into the Loxahatchee Refuge. One commentator notes that to settle the lawsuit, Governor Chiles made use of his control over the Department of Environmental Regulation, his influence with the legislature, his ability to appoint members of the SFWMD board "and, ultimately, his own ability to pull a rabbit out of the hat" (DeWitt 1994). The governor and Cabinet also played critical roles in the approval of the Florida Keys National Marine Sanctuary (FKNMS).

Box 3. Florida Keys National Marine Sanctuary (FKNMS)
Balancing Federal and Local Interests

Planning for the FKNMS, established to protect the third largest reef in the world, was initiated in 1990. Federal sanctuary planners held several scoping meetings and workshops with the general public and decision-makers in 1991-1992. The draft plan was then discussed with numerous stakeholders at public fora and included an eight-month open period for written public comment. Finally, sanctuary planners worked with an advisory group, incorporating many of the public comments to develop a final plan acceptable to various interest groups. The net result was a final management plan covering 7,252 square kilometers (2,800 square miles) of coastal waters around the Florida Keys, of which 65 percent falls under state control. State approval was needed to include these waters in the Sanctuary.

Opponents of the plan argued that the Sanctuary would result in federal takeover of the reef. Outside interests, primarily from the Wise Use movement, also became involved in the debate and argued an anti-regulatory position. An issue was the fear, actual or perceived, of federal control over local resources. Plan supporters included the Monroe County Commission, the city of Key West, federal and state officials, the South Florida Ecosystem Restoration Working Group and Governor's Commission, and many local residents. In a 1995 referendum, 55 percent of county residents voted down the Sanctuary. The Governor and State Cabinet, recognizing the worldwide, national, and state significance of the Florida Keys, nonetheless approved the Sanctuary in January 1997. However, they split control of the Sanctuary between NOAA and the Florida Department of Environmental Protection, in continued consultation with local residents. They also required that the management plan be reviewed every five years. In short, the state created a federal-state partnership in an attempt to provide effective management of a natural resource of both local and national importance.

County governments have very different interests in the environment than do federal entities. Much of a county's infrastructure must be supported by county-level income. Many counties in

Florida support their infrastructure investments with economic expansion, primarily through construction and development. Local government officials are also accountable to local interests and immediate demands. Often their strongest sense of accountability is to those parties who have helped fund their campaign or otherwise supported them, rather than to civil society at large. Given the long-term nature of environmental change, many of today's politicians have left office before the impact of their decisions were fully realized, so they do not have to address the effects of mismanagement. It is difficult for local governments to consider the long-term costs such as overcrowded schools, and expensive police and fire services; their focus is short-term and localized. Often lacking the inclination or mechanisms in place to take the holistic and long-term perspective needed to effectively manage an ecosystem, local governments still make decisions regarding resources of worldwide importance and exercise a role in responsibility for long-term stewardship. The Dade County Planning Commission, for example, proposed a 400 percent increase in the number of units along the urban development boundary, a line which they had actually drawn right through existing Everglades wetlands. The South Florida Regional Planning Council approved the development by a vote of 19 to one, with a staff member of an environmental group casting the sole opposing vote.

Not surprisingly, local level government is often distrustful of state and federal government. Actors at the local level seem to fear, sometimes with reason, that state and federal efforts at restoration are aimed at usurping their control and decision-making authority, both of which they must maintain if they are going to be able to deliver to local interests. In the case of the South Florida ecosystem, local government generally was left out of, and kept uninformed about, initial restoration efforts. While the other partners in the restoration effort are now trying to change this, they must contend with already entrenched local attitudes.

In 1997, the Working Group acknowledged the importance of engaging regional planning councils and local government to ensure lasting success. How to engage local government, however, remained unclear, given these conflicting agendas and interests. In order to most effectively engage local government, local links between a prosperous economy and a healthy environment must be

demonstrated. To accomplish this, the Working Group would need to expand its work at the sub-regional or county level, rather than working solely at an ecosystem level.

Local community members also have environmental interests. They frequently know the most about local resources and will be most affected by restoration efforts. They are asked to make financial contributions to restoration efforts, both directly, through their taxes, and indirectly, through lost opportunities when state resources that could go elsewhere are used for restoration efforts. Residents must be more directly involved in deciding what their community and its environmental restoration efforts will look like. Community-based planning, including exercises that help communities see the implications of their choices, is among the efforts that will support reasoned community involvement (see Box 4).

Box 4. Public Participation in Resource Planning at the County Level

The St. Lucie estuary extends between St. Lucie and Martin Counties, on the eastern coast of the South Florida Ecosystem. Following construction of the Central and South Florida Project (CSFP), the size of the watershed doubled, increasing the total amount and speed of water flowing into the St. Lucie estuary. In order to maintain stable water levels in Lake Okeechobee and the agricultural areas west of the estuary and to reduce the possibility of flooding, the release of water through canals by the SFWMD is highest during heavy rains and lowest during dry periods. At its highest levels, a three-month supply of fresh water for the local communities of St. Lucie and Martin Counties (about 5.7 billion liters, or 1.5 billion gallons) flows through these canals and into the estuary in one day. Many see the loss of this water to tides as a tremendous waste. The resulting changes in water clarity and salinity levels in the estuary have a negative impact on the production of fish, oysters, and other economic resources worth millions of dollars annually.

St. Lucie and Martin Counties have a tense relationship with no history of real partnership. However, following the 1995 state legislative session, State Representative Ken Pruitt secured $150,000 to begin to look for a solution. The Regional Attenuation Facility Task Force was established by resolution of Martin and St. Lucie Counties. The Treasure Coast Regional Planning Council was selected to facilitate Facility Task Force discussions and ideas. The Facility Task Force includes representatives from both counties, including real estate interests, planners and ecologists from local government, agricultural interests, and private sector engineers, as well as the U.S. Army Corps of Engineers and the SFWMD. The Treasure Coast Regional Planning Council supports the Facility Task Force by providing staff, facilitating public outreach, drafting documents, preparing maps, and administrative support. The Council also plays a crucial role in maintaining honest and forthright relations not only between the two counties, but also between county politicians and citizens. Facility Task Force meetings are frequently held in the Council's office, which offers the benefit of being effectively neutral ground.

The goal of the Facility Task Force is to restore the estuary to natural levels of salinity by establishing a series of large intermediate storage facilities and releasing water at appropriate times. This water could also be used for human consumption as needed, but the primary use of the stored water is for estuary restoration. The Facility Task Force has identified 20 possible sites for these reservoirs. The identification process included assessing options, consulting with landowners in the proposed areas, and determining areas where land acquisition would be possible.

Throughout the process, public input has been critical. The Facility Task Force, St. Lucie River Initiative, and Regional Planning Council established a speakers' bureau, which has provided more than 30 presentations in the last two years. In addition, three "charettes" were conducted to seek public opinion on how prototypical sites should be designed in the countryside. A charette is a design activity that enables participants to visualize and express their hopes and desires through words and drawings; the objective is to break down barriers between participants. Gathered around a table or other accessible location, people of all walks of life and interests participate equally, so no idea is discounted. The public was invited to these events via press releases, newspaper, TV and radio announcements, and flyers. More than 100 participants at each charette were asked to design the reservoir sites as they would like to see them, regardless of cost. This generated a range of options, even though some were later discarded owing to technical or financial limitations. The Facility Task Force then made a composite picture of the community's vision.

A number of design issues and activities were identified. At all sites, participants identified the need to use previously farmed or altered land as sites for deep water storage, leaving wooded areas and wetlands intact or restored. All sites included wetland restoration or creation—sometimes both. The community vision included walkways and paths, boating and fishing, development of an ecotourism lodge and observation tower, educational facilities, and a memorial pumping station, among other structures and activities. People indicated a general willingness to sell their land for reservoir construction. Following the charettes for the development of Ten-Mile Creek, landowners volunteered to sell additional parcels to be included in restoration efforts. Many of the community's ideas have been incorporated into the final site plans.

The Ten-Mile Creek project has been proposed by the SFWMD as a "critical project" under the federal Water Resources Development Act. The project was ranked 11th by the South Florida Ecosystem Restoration Working Group and will probably receive funding, provided non-federal matching funds can be identified. Many issues remain unresolved. While the Facility Task Force successfully brought together the two counties to agree on the goal of estuary restoration, still the details of and standards for what each one wants remain distinct. There is also recognition that establishing a water storage facility will not be enough on its own to restore the estuary and that additional actions are required. Not all members of the community have been reached through the outreach efforts. The Facility Task Force believes its work should continue and increasingly focus on building a constituency for Everglades restoration. However, Martin County has decided to disband the Facility Task Force, arguing that the tasks of identifying and planning the projects have been completed.

This story has several lessons for the restoration effort. Public outreach went far beyond meeting attendance and public comment sessions. Local communities and landowners were included as valuable partners on an equal footing with county officials, Facility Task Force members, and public decision-makers. Citizens participated in shaping the future vision for natural resources and in developing solutions to problems they had identified as important to their well-being. Communities felt they had a realistic possibility of making a difference. The process built ownership and responsibility for the natural environment; citizens wanted to preserve natural places and systems wherever possible.

The Facility Task Force worked at the appropriate level. The South Florida Ecosystem Restoration Working Group includes both St. Lucie and Martin Counties in the Lake Okeechobee sub-region, but even that sub-region is too large to represent a geographic area wherein residents truly may be said to share key short-term and long-term interests. The communities of St. Lucie and Martin Counties share common and immediate interests in the resource, and it is at this county or local level that land-use decisions affecting these resources are made.

The Treasure Coast Regional Planning Council also played an important role in these activities, providing facilitation, technical support, and neutral arbitration. As "collaborative operators," Council staff utilized their skills in landscape design and regional planning, and also their understanding of group process, promoting teamwork, listening, and communication to promote successful outcomes of this participatory planning process.

Biodiversity Conservation

Threats to the South Florida ecosystem have stemmed from the C&SF Project, industrial development, urban development, and agriculture. These activities have lead to changes in the Everglades' hydroperiod (the quantity, timing, and distribution of water) and changes in the Everglades' nutrient levels—specifically, an increase in phosphorus levels, causing algal blooms in Florida Bay. These development activities have also led to loss of habitat, biotic communities, and endangered plant and animal species, as well as to colonization by exotics such as Melaleucca and Brazilian pepper (Davis and Ogden 1994).

Much of the current restoration effort has focused on re-establishing the natural flow of water that existed before the C&SF project. Most observers expect restoring a semblance of the natural hydroperiod will have a positive impact on biological diversity in the South Florida Everglades ecosystem. This expectation contains an assumption that plant and animal species are just waiting in the wings to stage a comeback. It does not take into consideration the changes to habitats and species losses that have already occurred, or the complex dynamics of the ecosystem's ecology, much of which is still poorly understood. Given this complexity, it is almost impossible to determine the ecological outcome and biodiversity conservation impact of hydrological restoration" (Culotta 1995). The results for biodiversity are not likely to be optimal, particularly if habitat loss continues.

It will require many years to see concrete, attributable ecological results from the Everglades hydrological restoration effort. At the time of this study, monitoring was occurring on a small scale, but it had yet to be effectively instituted at a landscape level. State-initiated monitoring efforts, including EFA-related efforts at the Kissimmee River, evidenced some preliminary results. To provide some sense of the restoration effort's potential, the discussion below focuses on a few projects and their anticipated impacts on biodiversity.

Land Acquisition

Land acquisition is a critical component of the restoration effort. Land must be purchased for construction and water management projects. If land is to be flooded, used to hold storm water, or act as a buffer between the Everglades and urban areas, for example, it must be purchased from private landowners. Land is also being purchased to expand the area being managed for conservation. This includes additions to the Big Cypress National Preserve and the Everglades National Park. Of the $200 million provided for land acquisition in the 1996 Farm Bill, the U.S. Interior Department had spent about $70 million by mid-1997 on acquiring water preserve areas and lands in the Everglades Agricultural Area. In addition, the SFWMD purchased over 20,234 ha (50,000 acres) in 1996 and was to add another 21,853 ha (54,000 acres) in 1997. Significant tracts of land were purchased in the Kissimmee River Basin, the EAA (for stormwater treatment areas), Okaloacoochee River and Shark River, Taylor Slough, and the East Coast Buffer/Water Preserve Areas, among other sites.

Agricultural interests particularly oppose land acquisitions, as they see the loss of land as a threat to their livelihood. In some cases, it is; for example, the purchase by SFWMD of the "Frog Pond," the largest area in the U.S. for growing winter tomatoes, represented a loss in potential agricultural revenue. Several additional, perhaps more threatening, issues for agricultural interests include the North American Free Trade Agreement and land takeover by developers. The status of the Florida Everglades and associated areas as the "sixth most threatened agricultural region in the nation" (Brennan 1997) stems from many more factors than land acquisition for Everglades restoration. However, this perceived threat to agribusiness has been the primary impetus for resistance to restoration.

Hydroperiod Changes for the Everglades System

The United States Congress approved one of the earliest restoration activities, the recommended plan for the Kissimmee River Restoration project, in 1992. The project, funded equally by the U.S. Army Corps of Engineers and the SFWMD, is to restore about 69 km (43 miles) of the natural river and the adjacent wetlands. It should also restore historic water level fluctuations and discharges from the upper basin lakes. After two years of mediation between local landowners and the

community, a test site was established in 1994 to evaluate the proposed construction plans. The Kissimmee River/Lake Okeechobee Coordination Council built broad consensus and support. Back-filling beyond the test site was to begin in 1997.

Adjacent to the test fill areas, water is once again flowing through the oxbows. The area affected is too small to witness a large influx of wildlife, but Bill Porter, a biologist with the Army Corps of Engineers, reports that vegetation is slowly colonizing the filled-in canal, and game fish are spawning in the newly restored flood plain. Game fish species are those species indigenous to the area, as opposed to rough fish species, which are introduced. For example, bass thrive in sandy areas in low water. When the Kissimmee was dredged, these fish were confined to the deep channels. Now, they are able to return to the shallower areas (Porter 1997). Numerous wading bird species are once again using the area, with more nesting success than before the restoration.

By 1997, the Army Corps had begun construction, in collaboration with the SFWMD, on the Modified Water Deliveries Project and Canal C-111 Modification Project to improve water flow to the Everglades National Park and Florida Bay. These projects also include flood control measures for adjacent residential areas. At the time of this study, the Southern Everglades Restoration Alliance was implementing both of these projects and anticipated their completion in 1999.

Changes in Water Quality

According to a water quality expert at Florida International University, the SFWMD's Stormwater Treatment Areas (STAs) demonstration project, functioning at 20-30 ppb, over the first two years of operation reduced approximately 40,823 kg (90,000 pounds) of phosphorus that would otherwise have flowed directly into the Loxahatchee National Wildlife Refuge. It is anticipated that all of these STAs will be completed by 2006, at a cost of $200 million. In addition, sugar producers are implementing suggested Best Management Practices, with big producers assisting smallholders when possible. Appropriate application of fertilizer has demonstrated the greatest impact on reduction of phosphorus. Phosphorus per unit of land was reduced by about 65 percent from 1993-1996. However, while the management practices of sugar producers helped, high rainfall in 1994

and 1995 may have also supported this decline. Finally, if more land is put in production, the result will be higher overall levels of phosphorus, even if the per-unit level is reduced.

Changes in Wildlife and Plant Species

It is difficult to chart changes in biodiversity, let alone assign causality to the restoration effort. When changes can be noted, good rainfall years seem as likely a cause as the restoration effort. Rick Cook, Public Affairs Director at Everglades National Park, has noted that in 1996 the Park "had its best wildlife year in 35 years," but also that 1994 and 1995 were the two wettest years in the previous half-century (Cook 1997). At that time, a number of water birds were returning and the threatened wood stork seemed to be making a comeback. Similarly, Mark Robertson, director of the Florida Keys Initiative at The Nature Conservancy, noted in 1996 that algae blooms in the Florida Bay were persistent and widespread, although the concentration of algae within a bloom had diminished; this made fishing possible again in some places where five years before it was not. This change, too, perhaps was attributable to the heightened influx of fresh water into the Florida Bay resulting from the increased rainfall (Robertson 1997).

A number of activities have been planned by the different members of the South Florida Ecosystem Restoration Task Force to promote species recovery. That these actions are coordinated through the Working Group should increase their effectiveness. The United States Fish and Wildlife Service, with inputs from state, tribal, and local agencies, was to finalize the multi-species recovery plan during 1997-1998, providing federal, state, local, and tribal government agencies with a blueprint for protecting, conserving, and managing the threatened and endangered fish and wildlife resources of South Florida, while undertaking ecosystem restoration.

Findings

- ***Carefully consider what is being decentralized to whom.*** Many rights and responsibilities are best implemented by comparatively centralized agencies. At the same time, communities, as the stewards of the resources, have a significant role to play in decision-making and management. Only by analyzing the specific context, the actors,

and their interests, can the best institutional arrangements for decentralization be designed.

In the case of South Florida, there seems no doubt in anyone's mind that the restoration effort must be one of partnership. On the one hand, the federal government maintains its responsibility for protecting and restoring national interests—parks and other resources. Given common goals between state and federal levels, water management in South Florida has been a joint effort over the years. Federal government can provide a broad and long-term perspective that goes beyond local-level interests. The federal level is generally, although not always, far enough removed from the benefits of environmental mismanagement that it does not support local interests promoting short-term benefits with long-term costs. Federal government is also critical in providing levels of funding often beyond the reach of state and local agencies.

There are limits to what the federal government can accomplish on its own. The diversity of local situations makes it impossible to draft solutions in Washington to many local non-point pollution or ecosystem problems. Furthermore, the power to implement decisions is fragmented, with several actors holding pieces of the plan. Not only are different levels of federal government involved, but also state, local and private forces. Because states are smaller and less diverse than the nation as a whole, state governments are more likely able to customize their policies to local circumstances, engage citizens and organizations, and span interagency and professional boundaries. For example, despite its shortcomings, the Governor's Commission for a Sustainable South Florida has had rare success in engaging diverse stakeholders and reaching meaningful consensus decisions.

In the case of South Florida, federal agencies brought resources to the partnership and forced the issues onto the state's agenda by filing the 1988 lawsuit about the Surface Water Improvement Act. The federal government has established parameters necessary to safeguard national environmental interests, within which states have the flexibility to implement tailor-made solutions. The federal government cannot resolve the issues on its

own. The restoration effort requires leadership by state and local officials and centers on state and local processes.

While most people believe local government must be brought into the process, it must be done with caution. At the local level, many decisions continue to be made which support uncontrolled urban development, less stringent protection of natural resources, and poor water quality, to the benefit of powerful local interest groups. Local levels frequently lack the necessary long-term vision and cannot deal holistically with the problems and challenges of ecosystem management when they lack the necessary jurisdictions, tools, and perspectives. Ultimately, success of the restoration effort will hinge on the ability of federal, state, and local governments to provide unprecedented levels of teamwork and partnership with civil society, private sector, and non-governmental organizations, in order to come up with unified decisions. This will be a tall order to fill given the present governing systems (Governor's Commission 1995).

- ***Collaborative leaders and operators are essential to decentralization of ecosystem management, as the process of decentralization involves complex institutional arrangements and numerous stakeholders*** (Bernard and Young 1997). Collaborative leaders can see the core ideas clearly and communicate them in a language that stakeholders can understand. They understand how to bring people together in a constructive way with good information to create authentic visions and strategies for addressing the shared concerns. Collaborative operators are those individuals who stitch together task forces and working groups. They have an understanding of group processes and a natural talent for teamwork, listening, and communicating. This premise is supported in the case of South Florida, where collaborative leaders who know how to work together, among them the Chairman of the Governor's Commission and the Executive Director of the South Florida Ecosystem Restoration Working Group, have played a pivotal role in fostering joint planning of the restoration effort.

- ***While often difficult and time consuming, it is important that decision-making is by consensus, so that stakeholders share in ownership over and responsibility for implementing decisions.*** Court-mandated solutions have often only resulted in even more serious divisions and barriers to implementation. In these situations, people are not working together to come up with the best solutions, but instead are working at cross-purposes as they try to protect their own interests. There is frequently a conflict mediation role for outside facilitators. For example, the Florida Conflict Resolution Consortium provided invaluable assistance in fostering the Commission's unanimous support for the restoration plans. The risk in pursuing decision-making by consensus is that it may result in maintaining the status quo.

- ***Given their decision-making authority over land-use allocations and their ties to local interests, local governments must be included in the restoration process.*** However, local governments should not be seen as proxies for their constituents. In the case of South Florida, there is little evidence that local government will act to benefit the majority of their constituents or to improve natural resource management. But if local governments are not included, the results can be equally detrimental. A critical step is to ensure that restoration efforts are linked to local and immediate concerns. Jim Webb, former director of The Wilderness Society, has pointed out that Everglades restoration plans might never be fully implemented if it were not made clear that restoration would deliver some practical benefits to the urban coast, like resolving some water problems of coastal communities (DeWitt 1994).

- ***Organizing Constituents: A Role for NGOs.*** Very often people want to participate, but they just can't figure out how. As the Working Group and Governor's Commission have found, task forces and public hearings usually attract the same few vocal people. Other citizens, even when aware of a meeting, may chose not to attend, believing they have no realistic possibility of making a difference.

The partners in the Everglades restoration effort clearly intended to consult the public in deliberations regarding issues and solutions. With passage of the 1996 federal Water Resources Development Act, legislative hurdles to this involvement have been removed. Promoting public participation is still a challenge as there are few structures or mechanisms for communicating with and otherwise involving constituents. As illustrated in the case of South Florida, public participation can be increased when people are informed and organized. Florida dairy farmers, residents of Big Pine Key, the Miccosukee and Seminole Tribes, and the business community of Dade County all provide examples of increased participation spurred by organization and increased access to information. Without some basic changes in the mechanisms and processes of participation in the restoration effort, placing more representatives on the Commission or Working Group will not have an impact on public participation. The first change needed is to make public participation a priority and invest the necessary funds.

- ***Strengthening community is often as important as environmental action.*** A lesson well documented in the recent book by Ted Bernard and Jora Young, *The Ecology of Hope*, is the inextricable link between community and environment. Building one is part and parcel of strengthening the other. When there is no sense of community, each unit acts on its own and in its own interest and, depending on the interest, usually at the expense of the environment. The community as a whole must address environmental issues, which can either break down barriers or make new ones (Bernard and Young 1997).

  As one organization, The Countryside Institute, has noted of its experiences, in many communities people see development and conservation as mutually exclusive, with debate focusing on data regarding developers' short-term financial interests or environmental specialists' narrow technical criteria. Those focused on the longer-term welfare of the community and on community character often feel "shut out" (Countryside Institute 1997:21).

Based on this premise, efforts by World Wildlife Fund-U.S., the National Audubon Society, The Nature Conservancy, and other groups working in the South Florida ecosystem have often focused on strengthening communities. These organizations are working at the grassroots level to build a constituency for environmental action. They are focusing on issues that directly address people's concerns, and linking these to the broader economic and environmental contexts.

- ***Support both ecosystem and community levels, as well as ongoing dialogue between the two.*** Increasingly, conservation organizations are using an ecosystems approach. While this is critical to ensuring a sustainable system including both nature and people, continued support for local action is essential. In South Florida, the combined state and federal effort to restore the Everglades is key to both environment al protection and to economic development. Efforts by communities to stop growth in Monroe County, to monitor water quality in Florida Bay, and to design systems to restore the St. Lucie estuary, among many other examples, are also essential elements of this approach. To facilitate the interface between the ecosystem and local levels, the South Florida Ecosystem Restoration Working Group has organized itself by sub-regions, but even that level may be too comprehensive to enable constituents to establish shared concerns. As in the case of the Regional Attenuation Facility Task Force in St. Lucie and Monroe Counties, working at the county level is one possibility. The challenge is to keep sight of the big picture, while acting at the local level. Working at various levels, including ecosystem, sub-region, county, and citizens' groups may offer part of the solution.

- ***Ecosystem management takes time and resources, often far more of each than initially anticipated.*** Ecosystems are large and encompass a variety of resources, so they also include diverse stakeholders, each with their own interests in the area. When operating at such a large scale, technical knowledge may be the easiest thing to come by; maintaining individual and agency energy, funding, and political will for the long term may prove far greater challenges (Culotta 1995). Situations involving private land and resource tenure require consultation and negotiation to establish shared resource management objectives,

implementation and monitoring (as with the Regional Attenuation Facility Task Force), or call for land purchase to allow for unilateral decision-making by the overarching management institution (as with federal and state land acquisitions). Because much of the land is privately owned in the South Florida ecosystem, time-consuming consultation and mediation processes are necessary. Another sometimes unaccounted for time element is the inherently slow pace of bureaucracies. When federal, state, and local levels work together, the result is "additive slowness," which can still beat working slowly in isolation. A necessary step is to institutionalize effective working structures, as with the South Florida Ecosystem Restoration Task Force and Working Group, through the provisions of the Water Resources Development Act. The Governor's Commission has not yet developed similarly effective structures.

Box 5. Isle au Haut Principles: Ecosystem Management and the Case of South Florida

Ecosystem management is emerging as an innovative framework for achieving harmonious and mutually dependent sustainability of society and the environment. Ecosystem management focuses on human and natural systems at regional scales across intergenerational time periods. Principles developed based on the case of South Florida include the following:

- Use an ecological approach that would recover and maintain biodiversity, ecological function, and defining characteristics of natural ecosystems.
- Recognize that humans are a part of ecosystems. They shape and are shaped by natural systems. Integrate sustained economic and community activity into the management of ecosystems.
- Adopt a management approach that recognizes ecosystems and institutions are characteristically heterogeneous in time and space.
- Develop a shared vision of desired human/environmental conditions.
- Provide for ecosystem governance at appropriate ecological and institutional scales.
- Use adaptive management as the mechanism for achieving both desired outcomes and new understanding regarding ecosystem conditions.
- Integrate the best science available into the decision-making process, while continuing scientific research to reduce uncertainties.
- Implement ecosystem management principles through coordinated government and non-government plans and activities.

(Adapted from: *Isle au Haut Principles: Ecosystem Management and the Case of South Florida*, United States Man and the Biosphere Program, Human-Dominated Systems Directorate, September 1994)

Conclusion

In the case of the South Florida ecosystem, authority, responsibility and decision-making over the allocation of funds has been decentralized to a partnership of state agencies and deconcentrated federal agents. Local governments and the general public continue to remain on the sidelines of the decision-making processes, with only periodic inputs. There seems to be a fear, perhaps well founded, that decentralization to the local level will reduce the ability to manage growth and the environment for the benefit of both present and future generations. Further, local jurisdictions do not extend far enough to address the problems of ecosystem management in a holistic manner. However, the interested parties agree that local governments must be part of the process if restoration efforts are going to work. The question is how to balance local and short-term interests with national and long-term interests. Persuasively establishing the links between economic development and a healthy environment is a first step.

In the case of the general public, its lack of involvement in the formal processes of decentralization seems due to a lack of organization and mechanisms for participation and in some cases, a genuine lack of concern. Public engagement is critical, as the public will be strongly affected by decisions taken at higher levels. However, communities do participate at the local level. Mechanisms need to be developed so people can think and act both locally and ecosystem-wide. Neither local nor ecosystem action is sufficient by itself to effect successful ecological—or even hydrological—restoration of the Everglades.

Between 1993 and 1996, the partnership approach to Everglades restoration produced consensus documents and amicable discussion, but no results that made a difference to imperiled species. It is still too soon to judge the effectiveness of this approach. Given the rights, responsibilities, and funds—the powers—controlled by different layers of government and society to manage resources in the Everglades ecosystem, all levels must be included in the ongoing planning and implementation process.

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Figures

Figure 1. Partners in the Restoration

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The Biodiversity Support Program (BSP) is a consortium of World Wildlife Fund, The Nature Conservancy, and World Resources Institute, funded by the United States Agency for International Development (USAID). BSP's mission is to promote conservation of the world's biological diversity. We believe that a healthy and secure living resource base is essential to meet the needs and aspirations of present and future generations. BSP began in 1988 and will close down in December 2001.

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Figure 1. Partners in the Restoration (Based on field work completed in April 1997)