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INTRODUCTION

The following paper takes a look at the three of the key environmental issues that South Florida is challenged with today. It will examine the ecological, socioeconomic, and political considerations of invasive exotics, coastal erosion, and the role that Lake Okeechobee plays in the plan of the Everglades restoration.

INVASIVE EXOTICS

Exotic invasive plants and animals have been taking their toll on Florida's environment for many decades. The introduction of these invasives can be blamed on man for the most part. Over the years exotic plants have been introduced either accidentally through shipping materials from overseas or intentionally for ornamental or commercial purposes. The **Melaleuca** (*Melaleuca quinquenervia*,) was brought in several decades ago to help dry up the swampy Everglades, so that settlers could develop the land. Exotic animals and marine life have been introduced through hobbies and pet owners, by deliberately releasing them, through their escaping into the wild, or in some cases hidden in or attached to other food brought in from various countries.



“Invasive exotic pest plants are biological pollutants that wipe out more natural habitat every year than development (Fuller, Nonindigenous...).” Delicate relationships between



plants and animals are altered or totally destroyed as habitats are transformed and plant community organization is modified by exotic species. Invasive exotics such as **Brazilian pepper** (*Schinus terebinthifolius*), **Australian pine** (*Casuarina* spp.), and leatherleaf,

invade natural communities and displace native species. They are the most significant threat to biodiversity. The Australian pine for example, originally planted as a windbreak, has drastically changed Florida landscape over the past 80 years. Nothing can grow under or around them, as they grow as a closed-canopy tree community. Australian pines heavily negatively impact even beaches, as they block the travel of salt from the ocean mist and the trees' shallow roots disrupt dune stability and interfere with nesting turtles (Austin, TNC, winter 1998).



Invasive exotic animals also play a huge roll in changing South Florida's environment. The **Spiketop applesnail** (*Pomacea bridgesi*), native to South America, is



replacing the native applesnail in the Everglades. The rare and endangered Everglades Kite feeds solely on applesnails. The Kite's beak is designed to match the shape of the native's shell and

cannot fit into the Spiketop's shell. The **Asian clam** (*Corbicula fluminea*) came to North America from china in the 1920's and was probably brought in as food for



immigrants and lives around electrical and nuclear power plants for the warm water. The larvae are drawn into the plants and clog condenser tubes, raw service water pipes, and fire fighting equipment. Economic problems can result from the decreased efficiency of energy generation.

The **Cuban treefrog** (*Osteopilus septentrionalis*), introduced in 1931 through cargo,



prey on native frog species. Because of their attraction to the buzzing noise of electrical transformers, they cause power outages by shorting out the transformer.

Most of the 25,000 exotic plant and animal species brought into Florida are relatively harmless. Their only harm is that they take up ecological space, which natives should be filling. On the other hand, it only takes a few highly invasive species to severely disrupt native ecosystems. The most difficult part of their existence is that it is often impossible to eradicate them by chemical or mechanical methods. A cost of the highly invasive *Melaleuca* has not yet been estimated, however its damage to the Everglades has to be in the billions. To certain degrees one can estimate values on eliminating some of the species; for example removal of Australian pines costs approximately \$15,000 per acre. Control of pest plant species is currently mainly obtained through the regular application of herbicides. The effects of these chemicals on the ecosystem are unknown. The costs can take up a large portion of the budget of public land managers, which is tax funded. No actual values have been placed on the loss of a native species due to an invasive take over. Habitat losses due to exotic plant infestations have not yet had a price tag put on it either. In the situation of invasives, it is extremely difficult to put a value on its impact, because there are so many trickle-down effects. Each problem exotic has its own special set of effects, not all of which are easy to project.

COASTAL EROSION

The issue of coastal erosion however is satiated with dollar values and statistics. The state of Florida is extremely dependant on its coastline for its economic and social success. Coastal erosion is an environmental problem only because it impacts human life. In this case, the key drivers are economic and population growth. It is a continual process of nature to reshape the coastline over the years through hurricanes, storms, and gradual erosion, which consistently move the coastline back and forth as a result of this



absolutely normal process. Put a few million-dollar homes, a hundreds of high-rises, and an excess of 22 million tourists, who spend more than \$8 million and create 400,000 jobs, on that same coast and you have a major environmental problem on your hands.

This environmental issue is so costly, that it is taken very seriously. So seriously in fact, that the Florida Coastal Management Program (FCMP) was formed to keep an eye on the array of agencies involved with coastal issues and policies, including the Army Corps of Engineering (ACOE), Florida Department of Environmental Protection (FDEP), water managements districts (WMD), regional planning councils (RPCs), and local governments.

According to climatologists, the U.S. appears to be embarking upon a period of increased hurricane activity, which would increase the threat of coastal erosion. A major storm can erode the coastline 100 feet in a day (Erosion on coast...The Florida Union-Times). With that in mind, construction is still increasing on the beaches and with that

construction comes rebuilding the beaches forever. It is estimated that the Palm Beach County coast is eroding at a rate of 1 ½ feet per year, not taking into account erosion caused by storms and man made inlets. In the



Juno Beach area alone, Palm Beach County is looking at a restoration project with a \$9.3 million price tag and a renourishment of a 1995 project down the street starts next year. The town of Palm Beach is picking up the \$18 million tab right now to rebuild Phipps Ocean Park, the first of a 10-year, \$42.5 million plan. Delray Beach's city beach erodes at a rate of two to four feet per year and next year will foot the \$5.5 million restoration bill covering 1.7 miles (Palm Beach Post, One out of Four...).

Reports have suggested that Congress should provide money for the Federal Emergency Management Administration (FEMA) to prepare coastal erosion maps in order to determine safe areas for beach construction, projecting a start-up cost of \$44 million with an up keep cost of \$5 million per year and require FEMA, when setting flood insurance rates, to include the estimated cost of erosion. It is more than likely that the local tax payers will foot the bill, as well as federal tax payers who will never even set foot on a beach, and tax payers not yet even born will be paying for these beaches that we are rebuilding today.



So what is the economic payoff? Beautiful white, wide beaches that attract millions of tourists and businesses that pump millions of dollars into the economy each year.

In the 1970's, \$72 million went into the rebuilding of Miami Beach. Two years later, the number of visitors tripled. Foreign tourists alone

spent approximately \$700 annually for each \$1 spent on that renourishment project and its maintenance (The Beach Builders..., Sarasota Herald-Tribune). Coastal erosion is a natural part of our ever-changing environment. However, when you put people on these coasts, the economic impact is huge. For the most part, it is measurable in restoration dollars, insurance premium increases, and income from tourism and business. The attraction of living on the ocean will never go away and neither will restoration and maintenance to keep the coast safe and attractive.

THE EVERGLADES RESTORATION AND LAKE OKEECHOBEE



The most significant environmental problem that not only South Florida faces today, but also the entire state as well and some claim the world is how to save the Everglades. The Everglades is the most valuable and critical resource in Florida. It is habitat for the greatest number of listed species in the state, the fundamental component in water supplies for all of South Florida, and nationally important in agriculture, fisheries, tourism, and other human concerns (Everglades, The Pelican). In one sentence: If the Everglades shut down, the entire state shuts down.

This has been an on-going concern for the past couple of decades. What is really meant by the expression “save the Everglades?” That depends on whom you ask. If you ask anyone on the economic side of the issue, they will tell you that it means to get the water distribution



right, so that further development would not be impeded and the needs of agricultural



interests, especially the region's sugar interest would be met. If you ask anyone in local government, they will tell you it is to get the water distribution right in order to continue reaping the region's \$13 billion annual tourist industry. Ask someone related to an environmental interest group and they will tell you that to save the Everglades means to revitalize the home of 1500 varieties



of plants and wildlife from wading birds to alligators, including at least 68 threatened or endangered species (Farrington, Optimism Blooms For the Everglades).

This is what makes this Everglades Restoration Bill so controversial. It has been touted as a "comprehensive water plan." "Stuart Stroll, the National Audubon Society's Everglades director, points out that bugs and birds don't have the same clout as say, sugar executive Alfonso Fanjul, who got President Clinton on the phone during one of his encounters with Monica S. Lowinsky (Farrington, Associated Press News Service). He states that the project would have never gotten off of the ground if it were only ecological. And the fight goes on. However, the fact is that everyone stands to reap benefits from the restoration plan, if in fact it is carried out as promised.

Before the ACOE arrived in the 1940's and began an overly ambitious flood-



control project to dry up the vast acres of the Everglades and shrink the many miles of saw-grass marshes and swamplands to half of what they once were, the river of grass used to flow

clockwise from Lake Okeechobee west of Palm Beach, all the way to the coral reef and estuaries of the Florida Bay. There are several steps to this complicated 40-year plan, but

many believe (politicians as well as environmentalists) that it starts with Lake Okeechobee.

If the lake is sick, the Everglades is sick. It is not as if the lake is some independent organ. It is as integral a part of the Everglades system as the heart is an integral part of the human anatomy (U.S. Senator Bob Graham D-FL).

Approximately \$2.4 billion of the restoration project will help Lake Okeechobee in some way, either by removing pollution or creating new reservoirs. Lake water would go into massive aboveground reservoirs to be used for drinking water, irrigating farms, and replenishing the Everglades. To do this however, the water must be clean. The price tag put on removing all of the pollution from the lake is additional to the plan and comes to \$1.6 billion; where it is coming from is a mystery.

According to the General Accounting Office, “the lake is a crucial part of the Everglades system and fixing it could add \$1 billion to the restoration...” Governor Jeb Bush signed the Lake Okeechobee Protection Act this year to begin a 15-year “crash” effort to clean up decades of pollution. State agencies were given \$38 million for Lake Okeechobee this year alone, with a promise to continue funding until the job is completed. Florida’s \$763 million, 6-year clean up of the northern Everglades receives a guaranteed steady income each year from special taxes paid by sugar growers and South Florida property taxes. This year’s \$38 million was spent on buying land, restoring wetlands, and other projects, as opposed to the past when federal money was spent on research. Within the next two years, the water district expects to have fifty employees working on the lake, nearly three times the number of employees five years ago.

The closing of more than half of the forty-nine dairies north of the lake wiped out hundreds of jobs. Twenty-three million dollars was spent in buying out farmers and pursuing other dairy programs. The farmers themselves spent \$36 million claiming to have cut their pollution outflow by 80 percent. Of the twenty-four dairies still functioning, with their 26,000 cows, farmers have dug pollution lagoons and created elaborate water-circulation systems. Maintenance of new water systems costs each dairy as much as \$10,000 per month. Taking that into consideration, they must still compete on price with dairies nation wide that do not have this expense to incur when considering profits. In relation to the fishing industry, people brought foreign plants to South Florida for beauty, farming, and landscaping (exotic invasives) for which millions of dollars are being spent in trying to kill those nuisance plants. On Lake Okeechobee, they are trying to eradicate the weeds with the use of chemical sprays. The fishermen blame this practice for wiping out beneficial plants.



There are many unanswered questions concerning how the government plans to play a role in Lake Okeechobee's clean up; what actions will be taken, exactly how much money will be allotted and what guidelines and policies will have to be followed?

However, the question of who stands to gain from Lake Okeechobee's cleanup is very clear. The Everglades,



of course, will reap the benefits. The entire economy around Lake Okeechobee, as well as that of all of Florida will reap in the residual benefits. The fishing industry may once

again thrive, construction will boom, the remaining dairy farmers can stay (if they can afford to), and residents, as well as the tourists industry, can once again enjoy the beauty and health of the lake. Environmentalists will hopefully feel as though they are benefactors of their long haul to bring Lake Okeechobee to its “original” healthy state to continue on as the heart of the Everglades. Maybe then a healthy Lake Okeechobee can bring those of us who care for environmental reasons a peaceful state of mind to increase our standard of living with the beauty of nature. How can one really put a price tag on that? For environmentalists – it’s our lives.

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