

Ever Tougher Fight Faces Everglades Over Water Rights

By Gary Hendrix

Certainly to some, the Everglades water problems must seem like a soap opera: When you tune in the show's still on, and the actors are the same only older. And too, a like soap opera, the story seems to go on and on, exploring every possible twist in "The Predicament." Everglades's predicament happens to be that it must share its replenishing waters with more and more people in south Florida. The park is in constant negotiations with its neighbors. In fact, it's a tough battle just holding on to the water resources we have, let alone getting the additional amounts we think we need. All parties must plead their cases with one another, and those cases have to be pretty convincing to win much in the water game.

Sometimes even the most ardent bargaining hasn't worked. Indeed, the U.S. Congress had to intervene in 1970 to get at least a minimum yearly amount of water for the park. As might be expected in this competitive arena, the minimum soon became regarded also as the maximum. Some of the park's more aggressive neighbors felt that the park had been taken care of, and the water left over was up for grabs or should be drained away. However, Congress in its wisdom, acknowledged that its 1970 intervention was based upon a limited understanding of the Everglades, and that more information might justify a change in the park's share of upstream waters. Therefore, the Army Corps of Engineers was directed to prepare, by 1984, a report to Congress on any change in the park's water needs that might result from an increased understanding of the Everglades. The clock's still ticking and 1984 looks very close.



Shark Slough research team members: seated (l to r) Ingrid Olmsted, plant ecologist; Gary Hendrix, research director; Bill Loftus, fishery biologist; kneeling, Terri Jacobsen (left), wildlife biologist, and Jim Kushlan, wildlife ecologist; standing (l to r) David Sikkema, hydrologist; Mark Flora, hydrologist; Pete Rosendahl, hydrologist; Jim Tilmant, marine biologist.

Where do we find ourselves? What have we learned? Has the guaranteed minimum water delivery saved the park?

In the last twelve years that the park has received the Congressional schedule of water, we have documented a steady decline in the number of wading birds nesting and feeding in the park. Moreover, a forest of exotic trees, which thrives in marshes that dry out quickly, is advancing menacingly into the central Everglades drainage. In addition, local fishing interests claim that park estuaries fed by the Everglades are no longer productive and blame it on reduced fresh-water flow. Clearly something is wrong in the Everglades and Congressional help won in 1970 may have to be asked for again.

As if these weren't enough problems for the National Park Service to sort out, major land development began in the watersheds east of the park in 1976. The park had long enjoyed a wide buffer between its eastern boundary and the edges of Miami's agricultural fields. The east Everglades contains the headwaters of one of the most important drainages to Florida Bay, Taylor Slough, and a large portion of the main park drainage, Shark Slough. Uncontrolled development in this area is a serious threat to the survival of Everglades National Park. Fortunately for Everglades, many local people not only saw it as a threat to the park, but a threat to their own water sup-



Wildlife technicians, radio tracking collared alligators from an airboat, to determine home ranges.

ply and loss of an important recreational area. All agreed something had to be done.

The park and the National Park Service realized that some very serious problems were looming in the Everglades' future and, in 1977, launched a major research effort to design a better water management scheme for the park. This also meant developing closer working relationships with those park neighbors who wanted to bring some sanity to south Florida's water problems. To this end, the park joined with Dade County and several state agencies forming a work committee to develop a land use plan for the east Everglades which would both allow prudent use of the area and would protect the county's water supply and those water sheds so important to the park. Utilizing a grant from the Environmental Protection Agency, the committee gathered the large resource data base necessary to write plans and implement the necessary protective legislation.

At the same time all of this was unfolding, the park and the local water management district co-sponsored a project with the Army Corps of Engineers to study water delivery problems affecting the park's major drainage, Shark Slough. These two efforts, the East Everglades Plan, and the Corps' study of Shark Slough have been immensely effective in getting local attention focused on the park's water dilemma. However, now that we have peoples' attention, we have to suggest some workable alternatives to the Everglades' problems. These alternatives not only have to satisfy our needs, but must seem practical and beneficial to the park's neighbors.

Developing and evaluating water management alternatives is the highest priority assignment for our research team at the South Florida Research Center. Shark Slough, because it is the largest drainage and subject to intense external management, has become the main focus of this research. As with many intractable questions, we've had to dance around this research problem looking for insights that would lead to a real solution. We've adopted a loose team approach allowing for several premises about water conditions in the Everglades to be explored simul-

aneously.

Pete Rosendahl and his team of hydrologists started from the premise that if we could return to historical water conditions, which fluctuated with seasonal rainfall, the ecology of the Everglades would restore itself in due course. Realizing that this condition might not be achievable with today's vastly altered watershed, hydrology is taking three research tracks: First, determine what were the historical water conditions; next, evaluate how the present system of canals, levees and water schedules affect water conditions inside the park; and finally, consider what possible engineering and hydrological practices might be changed in today's water management system in order to approximate historical Everglades water conditions. At this time, several of the hydrologists' alternatives are being tested on the local water management district's water shed model.

The biologists, on the other hand, have explored water management options from a slightly different perspective. Jim Kushlan and his team of wildlife biologists are seeking first to unravel the intricate web that links the fortunes of wildlife populations to water conditions and then, to reconstruct that web to propose a pattern of water conditions that would best sustain a productive marsh ecology with the traditional Everglades diversity. This is no easy task; Dr. Kushlan has focused his attention primarily upon how the ups and downs of water management practices affect three wildlife populations: alligators, freshwater fish, and wading birds.

What the wildlife biologists have found thus far is that the rate at which the marsh floods, and then later dries, is extremely important in stimulating wildlife productivity. Unfortunately, our past water delivery operations have all too often ignored this essential element. Indeed, water released to the park more often reflects the upstream users' need to withhold or drain away water than it does the conservation of Everglades health.

There are two aspects of Everglades ecology where our understanding still is preliminary. We know very little detail yet on how water conditions change



Ingrid Olmsted makes notes from a canoe on the plant life of Shark Slough.

marsh vegetation and estuary communities. Initial work on Shark Slough plant communities is being done by Dr. Ingrid Olmsted. In addition, both Dr. Olmsted and Lance Gunderson have surveyed the spread of exotic plants into wetland habitats. Since these kinds of vegetation studies unfold over long periods of time, our research and monitoring efforts will have to continue several years more to match our information on wildlife and hydrology.

Everglades estuaries always have enjoyed a reputation as some of the most productive fishing habitats in the world. Something has eroded their health, and we're all anxious to discover what is wrong. We suspect that changes in Everglades' flow into the estuaries has a great deal to do with the problem. The zone between the upland marsh and the marine world is recognized by researchers everywhere as one of the most complex habitats. Nonetheless, marine biologist Jim Tilmant and his team have launched several studies seeking out the important relationships between estuary environmental conditions and estuary productivity. Initially, they are examining estuary fish populations and their supportive food chains, but eventually we know that our work must examine the more complex relationships between fresh-water inflow and the salinity and nutrient patterns in the bays.

The challenge now is to bring all these hydrological, wildlife, vegetation, and estuary approaches together for the 1984 report to Congress. None of us expects that our work will stop with the report. Refinement and longer term studies will be needed to implement any water management plan - but, our next and maybe last shot for awhile for something better appears to come in 1984. The most likely prediction for the Everglades is that water problems will go on but the bargaining will get tougher. The National Park Service's investment in research and understanding of the Everglades will improve the park's hand in the next round of the water game.



Perched in the top seat of an airboat, Hydrologist Pete Rosendahl records water depths and conductivity at one of 35 hydrological stations within Shark Slough.

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