

THE DARK SIDE OF PROTECTING WETLANDS

by Robin Hart

Of all the native plant communities in Florida, the need for protection of wetlands is best understood and supported by the general public. The natural functions of wetlands have been well publicized. The role of cypress domes and strands, wet prairies, salt and freshwater marshes, and mangroves in water quality improvement, erosion and flood control, aquifer recharge, and provision of wildlife habitat has been a subject of newspaper articles, television productions, and school conservation programs.

The importance of wetlands has even been noted in legislation and in the judicial record. The 1984 Henderson Wetlands Protection Act states:

"Wetlands are a major component of the essential characteristics that make this state an attractive place to live. They perform economic and recreational functions that would be costly to replace should their vital characteristics be lost."

The Florida State Supreme Court in 1982 upheld the denial of a permit to fill 1800 acres of black mangroves for development. It cited a landmark case in environmental law (*Just vs. Marinette County, 1972*) which stated:

"An owner has no absolute and unlimited right to change the essential natural character of his land so as to use it for purposes for which it was unsuited in its natural state and which injures the rights of others. . . . Swamps and wetlands serve a vital role in nature, are part of the balance of nature and are essential to the purity of the water in our lakes and streams. Swamps and wetlands are a necessary part of the ecological creation, and now, even to the uninitiated, possess their own beauty in nature."

There has been overwhelming support for new laws that limit development activities in wetlands and that expand regulatory jurisdiction. Isolated wetlands are now protected in many areas and a recommended increase in the number of plants that define wetlands from approximately 265 to 385 species will extend the protected area. State acquisition of land through the CARL and Save Our



This is part of 50 acres in Vilano Beach proposed as a mitigation site by a developer who plans to fill and excavate 2.5 acres of wetland on nearby property. These 50 acres of salt marsh and upland palmetto/oak/cedar islands would be preserved through a conservation easement, but almost all the islands would be scraped to salt marsh level to mitigate the destruction of the salt marsh on the developed property. The scenic beauty of these islands and the habitat for birds and small mammals would be eliminated because state regulations focus only on wetland protection.

Rivers programs tends to favor wetland communities for preservation.

The present public attitude toward wetlands is a welcome turn-around from the view held some decades ago that wetlands were useless, even unhealthy, and that their elimination through draining or dredging was a property improvement.

However, the narrow focus on wetlands has obscured the fact that most of the functions attributed to wetlands are not limited to these areas, and that upland natural communities can be just as valuable as wetlands. Moreover, other important benefits are provided by natural areas, uplands as well as wetlands, that have not received the public attention that they deserve.

Air quality. The canopies and soils of native plant communities have a vital role in the maintenance of pure air. Vegetation, microorganisms, and soils immobilize and alter air pol-

lutants, thus reducing their threat to human health, crops, and native plants. Natural vegetation can remove more than one quarter ton of nitrogen oxides and sulfur dioxide per square mile per day from polluted air, and utilize the substances as nutrients. Trees remove 30% to 40% of the particulates in the air, such as dust, pollen, trace metal particles, spores, and other substances that can affect human health. Ozone, carbon monoxide, sulfur dioxide, and nitrogen oxides are also removed from the atmosphere by bacteria and fungi in natural soils. Forest soils remove ten times more carbon monoxide than soils of cultivated and fallow cropland. Soils in natural areas also contain the resident populations of microorganisms and the organic matter that are necessary to biodegrade toxic synthetic chemicals such as pesticides and industrial compounds that are introduced into the environment.

Wetlands vs. other natural areas

Here those functions will be discussed and compared.

Water quality. Surface and ground water quality are influenced by events in the entire water basin, uplands as well as lowlands. Loss of native vegetation anywhere in the watershed can result in increased erosion, more rapid stormwater runoff, reduced infiltration, and higher pollutant loading. Excessive amounts of phosphorous in water draining into lakes and streams is one of the most common causes of algae blooms and fish kills. Forested uplands and old fields remove and retain much more phosphorus than wetlands.

Climate moderation. Both wetlands and mesic forests moderate local climates. Studies conducted in Florida demonstrated that wetlands and forests have warmer winter night temperatures and cooler summer day temperatures in comparison with nearby cleared or agricultural areas. In summer, cool air may flow from forests to bordering open areas, cooling the air on the edge. High temperatures are most extreme in urban areas. Paved urban surfaces absorb more energy during the day than vegetated areas, and then emit heat during the night, keeping temperatures as much as 8° C higher than surrounding rural areas.

Wildlife habitat and endangered, unique, and threatened species. All natural communities are habitat for wildlife. An estimated 50% of the endangered and threatened animals and 28% of endangered and threatened plants in the United States inhabit wetland. Conversely, 50% of these animal species and 72% of the plants inhabit uplands. Florida uplands such as oak and pine scrub and old growth flatwoods are crucial to the existence of many of Florida's endangered and threatened species. The Scrub Jay, Red-cockaded Woodpecker, Florida Burrowing Owl, Kestrel, and Grasshopper Sparrow, and plants such as scrub lupine, four-petal pawpaw, and the Everglades peperomia all inhabit uplands.

Human health and well-being. Natural areas have direct therapeutic effects on humans. Vegetation reduces noise by about 1/3 to 1/2 the levels in unvegetated areas, and reduces the perception of noise in urban areas. There is intriguing, although tentative, evidence that visual exposure to natural vegetation

relieves stress in anxious individuals, and that the opportunity to see trees outside a hospital window hastens post-operative healing. Many scientists believe that human well-being is linked to the experience of the natural environment.

The effect of wetland protection on other natural areas

The reasoning used by legislators and upheld by the judiciary to protect and preserve wetlands applies just as well to other natural communities. It might be argued that, although the protection of other natural communities is desirable, we can be glad that at least wetlands are given special treatment.

However, wetland protection policies can be devastating to other natural areas. If wetlands on a property cannot be developed because of regulatory restrictions, development will concentrate on the uplands which are easier to build on anyway. Destruction of natural communities is not precluded or reduced; it is simply directed towards upland communities. Cypress domes are saved at the expense of endangered Red-cockaded Woodpecker habitat or unique sand scrub species. In some cases the wetlands saved are of marginal value compared to the upland habitat that is destroyed.

The situation has been made worse by the increasing demand by regulatory agencies for wetland creation to mitigate wetland loss. Not only are developers encouraged to create wetlands from adjoining upland habitat, but regulations usually state that the area of wetland created must be much greater than the area of wetland developed. For every acre of swamp forest filled, for example, two acres of an upland forest may have to be cleared, scraped down, and replanted with saplings as mitigation.


The created wetland is then permanently dedicated through a conservation easement.

Agencies may sometimes allow wetland impacts to be mitigated by the preservation of upland habitat if the preservation can be related to improved water quality. Recently in Palm Beach County, the Department of Environmental Regulation accepted a conservation easement for an upland pine scrub buffer as partial mitigation for filling of a wetland. But the current practice of the state (and many conservationists) is to judge how well the law is working by comparing the ratio of wetlands lost per year to wetlands created or gained. This creates pressure to mandate the scraping down of natural upland communities to show more wetland acreage gained, regardless of the effect on regional ecology.

The fact that people have responded to the need for wetland preservation shows that there is fundamental public support for protection of natural resources if their value is understood.

The Florida Native Plant Society, through a variety of programs, can educate the public — from school children to retirees — about the worth of all native communities and the importance of preserving examples of all of Florida's natural heritage. An appreciation of wetlands should be the beginning of public understanding of the worth of the natural environment, and not a means by which the destruction of other native communities is hastened.

[The facts cited in this article can all be referenced to scientific literature, but the list is lengthy. The author has offered to send them to any reader requesting them. Please send a self-addressed, stamped envelope with your request to Dr. Robin Hart, KBN Engineering and Applied Sciences, Inc., P.O. Box 14288, Gainesville, FL 32604.]



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