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Short communication

Cypress Swamps: demonstrating the utility of swamps[☆]

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Water resource policy makers, planners, scientists and engineers—take note of the following statement from the introduction to *Cypress Swamps*:

the utility of swamps to human ecosystems must be perceived if conservation efforts are to succeed, and no system can be adequately understood until it is viewed in the context of the larger system of which it is a part.

As the seminal book on *Taxodium distichum*, *Cypress Swamps* takes readers on a journey of discovery through time, space and systems ecology. While the technical aspects of nutrient cycling mechanisms, productivity rates, producer and consumer diversity patterns and distribution of microorganisms are presented, *Cypress Swamps* also describes the role of cypress wetlands within the larger landscape and underscores the usefulness of wetlands as an interface ecosystem. On a metaphysical level, *Cypress Swamps* documents the development and application of general ecological principles, and while these principles grew from the cypress swamp research, their application has been expanded to other forested wetlands,

and wetlands in general, throughout the landscape. For example, in contrast to the theory that ecosystems evolve into a steady state, *Cypress Swamps* shows that external energy pulses shape these ecosystems so that these ecosystems take advantage of this external energy with the result that they increase the power processed by that system. Other notable concepts described include embodied energy and ecosystem quality; the role that cypress swamps have had in the development of human society in the southeastern United States; the principle that wetlands attract economic investment and are a basis for economic vitality; how a region's carrying capacity is related to protection of wetlands, and self-organization of wetland ecosystems.

While unwrapping the mysteries of the role of hydroperiod, nutrient input and fire on the ecology of forested wetlands, *Cypress Swamps* also documents the development of theories and concepts of responsible water and land use management designed to achieve “a harmonious interface between humanity and nature.”

Studies reported here develop concepts for maximizing regional productivity, water conservation, and economic vitality by using wetlands as working solar energy zones in the landscape, and thereby retaining the considerable energy embodied in their structure.

Even though almost 20 years have passed since the publication of *Cypress Swamps*, the issues presented are as relevant today as they were then. Indeed, there is an even greater urgency today in Florida for policy

[☆] *Cypress Swamps* (Ewel and Odum, 1984) stemmed from a National Science Foundation/Rockefeller grant that led to landmark changes in Florida laws to allow use of wetlands for wastewater recycle. While 30 or more University of Florida graduate students got their degrees as part of that project, the careers of an even greater number of professionals have been positively influenced by the principles compiled in *Cypress Swamps*. Many of those professionals are shaping the environmental resource management and ecosystem restoration programs throughout Florida and the nation.

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makers, planners, scientists and engineers to recognize the value of cypress swamps, and wetlands in general, as population pressures increase the demands on the State's limited environmental resources. A dramatic large-scale application of this principle is the incorporation of over 40,000 acres of constructed wetlands for water quality improvement into the State's Everglades restoration efforts. The first of these six stormwater treatment areas began operation in 1994, and to date over 400 metric tonnes of phosphorus have been removed by the biogeochemical processes elucidated by the investigations compiled in *Cypress Swamps*. Annual phosphorus concentrations have been reduced to as low as 14 parts per billion and an additional 36,000 acres of stormwater treatment areas are planned as part of the State/Federal Comprehensive Everglades Restoration Plan.

Gary Goforth, Ph.D., P.E., is Chief Consulting Engineer at the South Florida Water Management District and is involved in the design, construction and operation of wetland systems for the restoration and protection of the Everglades ecosystem. In tribute to Dr. Odum's invaluable contributions to the human and natural landscape, in April 2003 Gary directed the planting of over 3000 cypress trees in a 5400-acre treatment wetland in Hendry County, Florida.

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