

Effects of Water Management on the Growth and Survival of Red Mangrove Recruits

Thomas W. Doyle

U.S. Geological Survey, Lafayette, LA, USA

Many coastal parks and refuges are impounded or drained to control mosquito outbreaks or to foster wildlife use with nominal concern for the health and resiliency of native plant populations. Mangrove trees predominate the subtropical coastlines of Florida though little is known about how managed or restored hydrology might effect species success. Neotropical tree species, *Avicennia germinans*, *Laguncularia racemosa*, and *Rhizophora mangle* persist in a rather broad spectrum of salinity and hydrologic regimes, though data is lacking on specific growth and survival habits with changing hydrology. An innovative field experiment was devised to monitor mangrove growth response to changing water level patterns in a coastal refuge of southwest Florida utilizing controlled impoundments. Red mangrove, *Rhizophora mangle*, propagules of select size and genotypic groupings were outplanted in fixed and floating nursery structures designed to mimic tidal and static water level datums related to land/soil elevation. Two remeasurements were conducted in the first 6 months of study of shoot growth and survival based on leaf sets and seedling height production. Results show dramatic growth stimulation with tidal fluctuation affected by management protocol compared with static water levels. Plant survival was not significantly affected by treatment, though susceptibility to insect attack and dieback was greater with higher soil elevation above mean water level. There were no significant differences between genotypes or with initial propagule size on growth start and success. Study findings suggest that hydroperiod plays a much more important role in controlling mangrove growth and success than previously documented. This empirical evidence will be used to upgrade mangrove forest simulation models and to predict how large-scale water management and restoration alternatives may affect habitat quality and distribution of coastal plant communities.

Contact: Thomas Doyle, USGS-BRD National Wetlands Research Center, 700 Cajundome Blvd., Lafayette, LA, 70506, phone: 337-266-8647, Fax: 337-266-8592, Email: tom_doyle@usgs.gov, Poster, Ecology and Ecological Modeling