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## Osprey Killed by Lightning at Merritt Island National Wildlife Refuge, Florida

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**Wood Storks feeding on fish from dredging activities.**—While excavating water and bottom material, the hydraulic dredge also entrains many resident organisms, including fish, and deposits them as well as the excavated material into diked disposal areas. The fish that pass through the dredge are usually alive or freshly killed when deposited on the disposal site. Hydraulic dredging and upland disposal operations have provided an unusual feeding opportunity for Wood Storks (*Mycteria americana*) in east-central Florida.

This phenomenon was first observed on the J. F. Kennedy Space Center, Brevard County, Florida, in the spring of 1978 during maintenance dredging of the Saturn Barge Canal in the Banana River. As many as 35 Wood Storks were seen picking up fish, mostly 10-20 cm sea (*Arius felis*) and gafftopsail (*Bagre marinus*) catfish as they rolled out the discharge pipe (Scott Clark pers. comm.). In 1978 during banding operations at the Moore Creek Wood Stork colony (10 km away from the disposal areas), young storks regurgitated small sea catfish indicating that the adults were utilizing dredged fish to feed young. Wood Stork productivity in 1978 was the worst ever recorded in Florida (John Ogden pers. comm.), but the Moore Creek rookery fledged 225 storks out of 150 nest attempts (Clark 1978, Proc. Colonial Waterbird Group 1978: 178-188), possibly because of being supplemented by the dredged fish. Wood Storks feeding around spoil sites frequently appeared gray instead of the usual white plumage because of being splattered by discharge material. Wood Storks continued to use disposal areas as late as August, 1978 (Scott Clark pers. comm.).

Again in 1986 Wood Storks were observed feeding at hydraulic dredging disposal areas. Maintenance dredging of the Barge Canal and Port Canaveral in Brevard County, Florida, provided two disposal areas. Wood Storks were seen feeding at both sites since operations began in June. As many as 75 storks, one-third of which were immature, were observed at one time feeding and loafing in the vicinity of the Barge Canal disposal area. Many of these birds remained in the area for several days when spoiling operations were halted. Wood Storks continued to feed in the disposal areas through September. Great Blue Herons (*Ardea herodias*) and Great Egrets (*Casmerodius albus*) frequently were seen feeding in the disposal areas with the Wood Storks.

Hydraulic dredging and disposal operations in the vicinity of Wood Stork colonies may provide additional food for Wood Storks if properly planned. April and May operations may provide supplemental food for nestlings and summer operations may increase the survival rate of young of the year birds. Once begun, especially during the nesting period, it is important that this food source not be interrupted for any length of time. If interrupted the birds dependent on this food may be in jeopardy if an alternative food source cannot be found readily. This additional food should not be considered as mitigation for the dredging operation. The food source benefits provided the Wood Stork may be far outweighed by other environmental hazards not addressed here. However, it appears that the Wood Stork is a very adaptable species and is able to take advantage of unusual foraging opportunities.—Willard P. Leenhouts, Merritt Island National Wildlife Refuge, P. O. Box 6504, Titusville, Florida 32782-6504.

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**Osprey killed by lightning at Merritt Island National Wildlife Refuge, Florida.**—On 13 June 1986, the Merritt Island National Wildlife Refuge received a report that a 20 m steel U. S. Geological Survey bilby tower containing an Osprey (*Pandion haliaetus*) nest at the top was struck by lightning and that an Osprey fell out of the nest at the time of the lightning strike. A ground inspection at the base of the tower two hours later revealed a dead immature Osprey. The carcass was sent to the U. S. Fish and Wildlife Service, National Wildlife Health Laboratory. The post-mortem diagnosis was "electrocution by lightning strike based on history, the presence of pulmonary edema, and lack of any other obvious cause."

Lightning caused avian mortality is rare in the literature. Sindelar et al. (1980, Passenger Pigeon 42: 76-78) reported an adult Bald Eagle (*Haliaeetus leucocephalus*) died when lightning struck its nest, but young in the nest survived. Glasrud (1976, Can. Field-Nat. 98: 503) reported several Canada Geese (*Branta canadensis*) killed during a lightning storm.

Lightning mortality of Osprey may be more frequent than this single recorded event especially in areas with high lightning activity. A survey of Osprey nests on Merritt Island National Wildlife Refuge (Leenhouts 1986, 1986 Osprey inventory Merritt Island National Wildlife Refuge, Florida, unpubl. rept.) found 23 active nests, 13 in natural sites (pine or oak trees) and 10 on man-made structures (power poles, antennas, weather towers, bilby towers, etc.). The man-made structures are built out of metal or contain lightning grounding wires and may be more susceptible to lightning strikes. Studies by J. F. Kennedy Space Center personnel have shown that there are between 10,000-30,000 cloud to ground lightning strikes over the 29,000 ha of terrestrial habitat of the Merritt Island National Wildlife Refuge each year, most between the months of June-September. Lightning data are not precise enough to identify each strike location, but the launch pads and 150 m weather towers are struck on the average of two times per year and other tall towers are struck more often than their surroundings (James Stahmann pers. comm.).

Ospreys may be more at risk nesting on man-made structures than in trees and the risk is increased for late fledging birds (late May and June). Since death may be caused by other factors associated with a lightning strike other than direct electrocution, little can be done to protect Osprey nests at sites prone to lightning strikes. If these sites could be identified, then it may be possible to discourage Osprey use in favor of less prone sites.—Willard P. Leenhouts, Merritt Island National Wildlife Refuge, P. O. Box 6504, Titusville, Florida 32782-6504.

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## REVIEW

**The Marsh Hen. A natural history of the Clapper Rail of the Atlantic coast salt marsh.**—Brooke Meanley. 1985. Centreville, Maryland, Tidewater Publishers. 123 pp., 33 black & white photos, 6 drawings by John W. Taylor. \$8.95, paperback.—Brooke Meanley has worked with Clapper Rails for several decades and probably knows as much about the secretive Marsh Hen as anyone. His book on the Clapper Rail is pleasant reading, thin enough to be consumed in two evenings. As subtitled, this book is of natural history of the Atlantic coastal salt marshes as much as of the Clapper Rail. A tribute to the 2 million acres of salt marshes along the Atlantic coast, The Marsh Hen reminded me of Teal and Teal's Life and Death of the Salt Marsh, Warner's Beautiful Swimmers, and even Michener's Chesapeake.

Eleven chapters cover all major aspects of the natural history of clappers, from systematics (are Clapper and King Rails conspecific?), foods and feeding behavior, courtship, nesting and parental care, to predators. Five appendices deal with U.S. subspecies or races of the clapper (Ripley, in Rails of the World, listed 24 subspecies throughout the geographic range), capturing, sexing, and aging the birds, and methods of censusing clappers in the salt marshes (not easy!). There is a peculiar chapter juxtaposing fall migration and the hunting season, yet failing to connect these events in any meaningful way. The main conclusion I drew from the section on hunting is that Clapper Rails are such easy marks that to call hunters of clappers "sportsmen" is generous.