

POPULATION STUDIES, ABUNDANCE, HABITAT USE, TROPHIC DESCRIPTIONS, AND REPRODUCTIVE STATUS OF MARINE TURTLES INHABITING FLORIDA BAY

Investigators: **Barbara Schroeder**, National Marine Fisheries Service, Office of Protected Resources, Allen Foley and Blair Witherington, Florida Fish and Wildlife Conservation Commission

Florida Bay is known to be extensively used by sea turtles. Four sea turtle species known from Florida Bay are the loggerhead (*Caretta caretta*), green turtle (*Chelonia mydas*), hawksbill (*Eretmochelys imbricata*), and Kemp's ridley (*Lepidochelys kempii*). Federal Recovery Plans for these species clearly emphasize the need for studies of developmental, foraging, and migratory habitats, all of which characterize the significance of Florida Bay to marine turtles. Objectives of this study are to 1) capture sea turtles in Florida Bay in order to continue long-term population monitoring of individual growth rates, foraging-site fidelity, residency rates, health status, and trends in abundance; 2) elucidate the trophic role of loggerheads as apex predators in Florida Bay; 3) provide detailed descriptions of loggerhead habitat use and behavior; and 4) examine the sexual maturity and reproductive frequency of adult-sized loggerheads inhabiting Florida Bay.

The principal study area will be the central-western region of Florida Bay. Methods involve capturing turtles by hand, retrieval to a research vessel, and eventual release. Previous efforts demonstrate that 75-100 turtles can be captured this way during a 2-week sampling period. Captured turtles will be weighed, tagged, photographed, and externally examined, including the detailed description of fibropapilloma disease (known to be common in Florida Bay sea turtles). Each turtle also will be painted with a unique identifier to enable in-water identification and to allow within-sampling-period mark-recapture population estimates. An examination of loggerhead diet will help to describe the trophic role of this apex predator within Florida Bay. Diet will be measured by lavage sampling of live-captured loggerheads (n=60) and by necropsy of dead loggerheads that strand from the Bay (n=40). Descriptions of loggerhead movements and behavior, and of habitat types chosen by loggerheads, will be made by tracking individual loggerheads (n=15) over 24-hour periods using sonic and radio telemetry. During 24-hour monitoring, behavior and habitat data will be recorded for each of eight, 3-hour intervals. Habitat assessment will follow the approach used by the Florida Bay Fisheries Habitat Assessment Program and will include quantitative descriptions of major organisms and their cover-abundance, and of the physical substrate, bathymetry, water temperature, and conductivity. Sexual maturity and reproductive frequency of adult-sized loggerheads will be determined by conducting ultrasound and laparoscopic examinations of gonads in live-captured turtles. Examinations will allow estimates of the proportion of mature loggerheads breeding within a season and will serve as a comparison to similar assessments at other foraging areas.

The proposed study will provide thorough descriptions of a prominent protected resource within Florida Bay. The descriptions will allow a proper direction of sea turtle

conservation activities and will likely result in a revelation of important linkages between sea turtles and other living resources within Florida Bay.