Results of a Tagging Study at Cedar Key, Florida, with Comments on Kemp's Ridley Distribution in the Southeastern U.S.

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In 1985, the NMFS Panama City Laboratory began a long-term study to establish the distribution, seasonal occurrence, growth and structure of the sea turtle populations of Waccasassa Bay on Florida's west coast. The current study is modeled after earlier investigations by Carr and Caldwell (1956) and utilizes large-mesh tangle nets (51 cm stretch mesh, 50 m length) formerly used in the commercial turtle fishery. Waccasassa Bay is a shallow, turbid embayment located east of the Cedar Keys. The study area is divided into two main features. Corrigan Reef, in northwestern Waccasassa Bay, is a series of oyster and sand bars on rocky bottom. The eastern half of the bay is comprised of three parallel seagrass-covered shoals known as Waccasassa Reefs. Although Kemp's ridley, green and loggerhead turtles have been captured or observed at the different netting locations, there is a preference by each species for a particular habitat. Kemp's ridley and loggerhead turtles are caught by the crustacean-rich oyster bars of Corrigan Reef compared to the capture of green turtles on the seagrass shoals of Waccasassa Reefs.

Since 1986, 99 Kemp's ridley, 9 green and 2 loggerhead sea turtles have been measured (straight-line), weighed, tagged and released. With the possible exception of the loggerhead, the sea turtle populations of Waccasassa Bay are composed of subadults. Loggerhead carapace lengths range from 57 to 88 cm. Mendonca and Ehrhart (1982) reported a 70.5 cm female loggerhead nesting on Florida's east coast. Green turtle carapace lengths range from 49.5 to 74 cm with a mean of 66 cm. For Kemp's ridley turtles, the carapace lengths range from 30 to 57 cm with a mean of 46 cm. Length frequency data shows the majority of captured ridleys are in the late subadult phase. However it is unclear whether the data reflect the actual size-class distribution of the population or bias due to our large-mesh nets.

Historically, the turtle netting season on Florida's west coast began in April and ended with the first cold front of fall. Our netting efforts began in May and extended to early December, with turtles captured from May to November. Analysis of the Kemp's ridley recaptures suggests the majority of growth occurs within a netting season as opposed to between netting seasons. Perhaps this is indicative of local winter dormancy or movement to deeper, warmer waters where prey are less abundant resulting in reduced growth. Many local fishermen believe the turtles "bury-up" in mud holes when the water temperature drops as evidenced by the muddy carapace of turtles captured in spring.

Other long-term studies on the distribution and abundance of subadult sea turtles are being conducted on the northwestern and central east coast of Florida. Kemp's ridleys captured in the Apalachicola Bay-Panacea area range from 20 to 58 cm CL (mean=36.7 cm, n=106) (Rudloe, Rudloe and Ogren, 1989). Length frequency data show the majority of these turtles are in the early subadult phase, in contrast to distribution of Waccasassa Bay ridleys. In addition, the ridley population on the northwestern Florida panhandle appears transitory, with turtles recaptured only within a season. Cedar Key recaptures indicate a more residential population. Kemp's ridleys captured in the Cape Canaveral area range from 21 to 60 cm CL (mean=36 cm, n=90) and have a length frequency distribution similar to northwest Florida. The Atlantic population is highly migratory, traveling between summer foraging grounds north to Chesepeake Bay and winter foraging grounds off of Cape Canaveral (Henwood and Ogren, 1987).

The fate of the Atlantic ridleys remains an enigma. None of the Kemp's ridleys tagged in the Atlantic have been reported or recaptured in the Gulf of Mexico. Ridleys are not observed along the southeastern Florida coast below the Palm Beaches. Captain Edgar Campbell, of Cedar Key, has never caught or observed a ridley during 14 seasons (October to March, 1963-1978) of netting out of Marathon, Florida. Florida Bay has been identified as subadult ridley habitat, but information is lacking (Carr, 1980). If Atlantic ridleys do return to the Gulf of Mexico, the route they follow has yet to be determined.

Other puzzling aspects of the Kemp's ridley life history include the current mediated movements of neonates and the duration of pelagic development in the Gulf of Mexico. There are no documented observations or collecting records of neonates from the Gulf of Mexico pelagic habitat. Collard (1987) and Collard and Ogren (In press) have suggested dispersal scenarios based on major oceanographic features operating in the Gulf of Mexico. The minimum size of post-pelagic ridleys (20-25 cm) are reported from western Louisiana and the Florida panhandle. Preliminary skeletochronological estimates by Zug (1989) indicate that these individuals may be two years old and that would then be the length of their pelagic developmental life stage.

Continuation of these studies on the distribution and abundance of subadult ridleys in the coastal zone will hopefully shed more light on the dependency of the smaller size classes on the shallow bays and sounds of the inshore area. These individuals, having survived the vulnerable first years, from their natal beach and through the pelagic life stage, have successfully adapted to their marine environment. As potential recruits to a declining adult population their importance to the successful recovery of this endangered species cannot be underestimated.

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Table I Recaptures of Kemp's Ridley Turtles in Waccasassa Bay

Tag Code	Date Tagged	Date Recaptured	Days Out
NNW 729-(730)	7/30/86	5/21/87	295
PPH 909-(910)	7/01/87	5/10/88	314
PPH (930)-931	9/03/87	6/21/88	292
PPH 953-954	5/26/88	8/31/88	97
PPH 901-(902)	6/04/87	9/21/89	839
BBA 183-184	7/19/90	8/02/90	14
BBA 193-194	8/02/90	8/16/90	14
BBA 175-176	7/12/90	8/16/90	35
BBA 158-(159)	9/21/89	8/29/90	342

Parentheses indicate tag loss. In addition, 6 turtles were captured with tag scars.