

size of 91 eggs (range: 54–110 eggs) and a 90.4% mean hatching success. Prior to maturity, the *L. kempii* was predicted to be female, and confirmation of her nesting validates the use of plasma testosterone concentrations to predict sex in *L. kempii*. This record of a *L. kempii* tagged during an in-water study in Florida, USA and repeatedly observed nesting in Texas, USA provides the longest documented recapture interval (25.7 yr) for *L. kempii* and demonstrates the connectivity of foraging grounds in the eastern GoM and nesting beaches in the western GoM.

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LEPIDOCHELYS KEMPII (Kemp's Ridley Sea Turtle). PREDATION. Large predator attacks on nesting *L. kempii* adults have been observed in Tamaulipas, Mexico (*Canis latrans*; J. Montañón, pers. comm.), but have not been documented in the United States. For other marine turtle species, *Canis aureus*, *C. familiaris*, *C. latrans*, *Crocodylus acutus*, and *Panthera onca* are known to attack and kill nesting females (Marquez-M. 1990. FAO Fisheries Synopsis 11:1–81; Peters et al. 1994. Herpetol. Rev. 25:120; Ortiz et al. 1997. Chelon. Conserv. Biol. 2:585–587; Drake et al. 2003. Chelon. Conserv. Biol. 4:675–678; Alfaro et al. 2016. Int. J. Conserv. Sci. 7:101–108; Margaritoulis et al. 2019. Mar. Turt. Newsl. 158:22–23).

Canis latrans have been reported as the main and most efficient predator on *L. kempii* eggs and hatchlings in Mexico (Hildebrand 1963. Ciencia 22:105–112; Pritchard and Marquez 1973. IUCN Monograph No 2: Marine Turtle Series, 30 pp.; Marquez-M. 1994. NOAA Technical Memorandum NMFS-SEFSC-343. 91 pp.). Anecdotally, *C. latrans* would arrive in packs to the primary *L. kempii* nesting beach at Rancho Nuevo, Mexico during an arribada and consume eggs, but were not observed harassing nesting *L. kempii* (Carr 1967. The Sea Turtle: So Excellent a Fish. University of Texas Press, Austin, Texas. 280 pp.). Recently, *C. latrans* abundance has decreased at the main *L. kempii* nesting beach and predator impact is low (Bevan et al. 2014. Herpetol. Conserv. Biol. 9:563–577). In the United States, *C. latrans* have been documented predating *L. kempii* nests on the Texas coast (National Marine Fisheries Service et al. 2011. Bimational Recovery Plan for the Kemp's Ridley Sea Turtle, Second Revision. Silver Spring, Maryland. 177 pp.). Here, we provide the first documented evidence of *C. latrans* predation on, and interaction with, nesting *L. kempii* in Texas, USA.

At 0735 h on 18 May 2011, staff from the National Park Service located inbound and outbound *L. kempii* tracks and an abandoned egg chamber near the 49 km beach marker at Padre Island National Seashore (PAIS), in Kenedy County, Texas, USA. The tracks measured 65 cm in width and were estimated to be less than one hour old. *Canis latrans* tracks were present at the site, located parallel to the *L. kempii* tracks and near the abandoned egg chamber. The *L. kempii* outbound track displayed numerous marks indicative of flipper swipes, indicating that the turtle was evading a predator. Approximately 2 h later, a *L. kempii* carcass (64.4 cm straight carapace length) was discovered 6.4 meters south of the abandoned nest site (Fig. 1). A passive integrated transponder tag (Biomark, Boise, Idaho, USA) and two

Inconel metal tags (National Band and Tag Company, Newport, Kentucky, USA) were present in the left front and rear flippers, which were matched to her original tag application during a nesting emergence on 28 April 2011 at 0955 h at PAIS, in Kleberg County, Texas.

The carcass had extensive injuries, indicative of those inflicted by *Canis*. Neck injuries were not characteristic of shark predation, commonly seen on sea turtle carcasses in Texas. Intestines were pulled from the body cavity, and there were no remnants of blood on the beach, indicating that the extensive injuries occurred in the surf. Necropsy analysis indicated damage to the trachea and esophagus. Only 35% of the gastrointestinal tract remained in the carcass, and the heart was normal, but drained of blood. PAIS staff removed 88 fertile eggs from the carcass at 0945 h for protective incubation in a polystyrene box. Sixty-three eggs hatched (71.6%) and 57 hatchlings emerged and were successfully released at PAIS after a 47-d incubation period. This is the first *L. kempii* documented as killed by *C. latrans* while nesting in the United States.

At 1209 h on 19 May 2017, NPS staff located a nesting *L. kempii* near the 39 km beach marker, in Kenedy County, Texas, USA. A *C. latrans* was observed lying on top of a foredune near



FIG. 1. Adult *Lepidochelys kempii* carcass documented on Padre Island National Seashore, Texas, USA with injuries indicative of a *Canis latrans* attack.

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FIG. 2. *Canis latrans* investigating a *Lepidochelys kempii* nesting on Padre Island National Seashore, Texas, USA.

the site. After NPS staff marked the nesting site and retreated from the *L. kempii*, the *C. latrans* approached the female first from the anterior, and then from the left (Fig. 2). After a quick investigation, the *C. latrans* returned to the foredune. Staff remained at the nesting site until the *L. kempii* had returned to the Gulf of Mexico and the eggs were collected for protective incubation. NPS presence likely deterred the *C. latrans* from attacking the female and predated the nest. This is the first visual evidence of *C. latrans* approaching a nesting *L. kempii* female in the United States. PAIS staff conducted all nest detection and protection activities under Texas Parks and Wildlife Department Scientific Permit SPR-0190-122 and U.S. Fish and Wildlife Permit TE-840727.

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MAUREMYS JAPONICA (Japanese Pond Turtle). INJURY. Human activities and associated hardware, such as automotive traffic, boat propellers, agricultural equipment and bulldozers, often kill and wound freshwater turtles (Usuda et al. 2012. Landsc. Ecol. Eng. 8:9–16; Mitchell 2014. Herpetol. Rev. 45:117; Lindeman 2018. Herpetol. Rev. 49:103–104). In Japan, Japanese Pond Turtles (*Mauremys japonica*) inhabit rivers, marshes, and ponds, and will use rice paddies and other agricultural situations during irrigation periods (Yasukawa et al. 2008. Chelonian Res. Monogr. 5:003.1–003.6). Compared to other chelonians, *M. japonica* may be more frequently wounded by agricultural equipment (e.g., lawn mowers, rice planting machines) because of their tendencies to nest, feed, and rest in paddies and terrestrial environments where human activity is frequent (Haramura et al. 2010. J. Freshw. Ecol. 25:251–259). However, no detailed data on wounding of *M. japonica* by agricultural equipment have been published. Herein, I report on an encounter with an injured *M. japonica* that was likely wounded by a lawn mower.

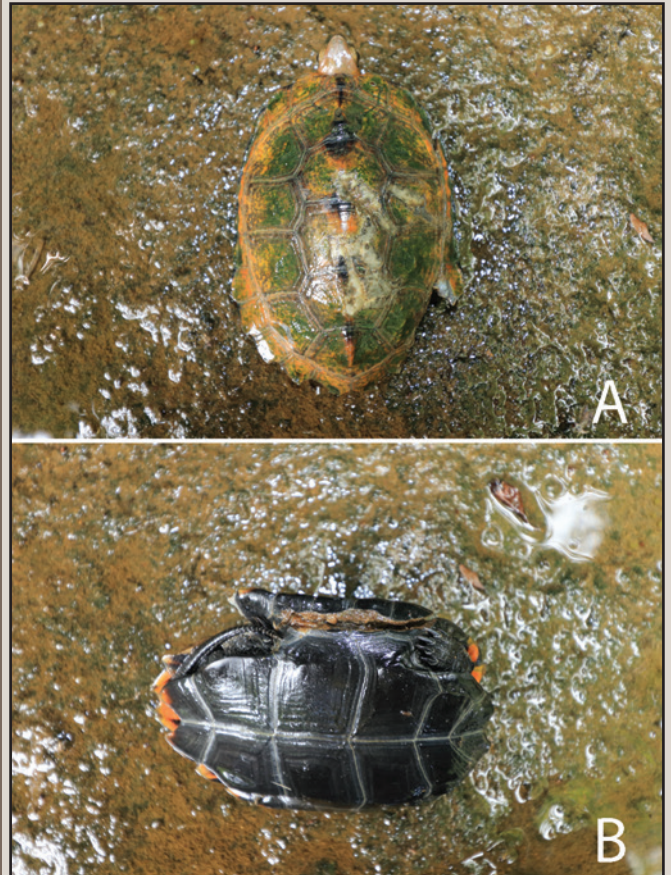


FIG. 1. A) Carapace of *Mauremys japonica* from Chiba Prefecture, Japan, with strikes on the right costal and vertebral side; B) injury to the right bridge of the plastron that had been deeply cut.

On 10 August 2019, at ca. 1230 h, I encountered a basking male *M. japonica* on a riverbank in the upper region of the Isumigawa River system, Boso Peninsula, Chiba Prefecture, Japan. I captured the turtle and measured its body size and body mass (103.79 mm carapace length; 90.89 mm plastron length; 169 g). The turtle, which was ca. three years old, had many injuries on its carapace and plastron. More specifically, the right costal and vertebral side of the carapace had been struck, and the margin on the right rear portion of the carapace was missing (Fig. 1A). Moreover, the right bridge of the turtle's plastron had been deeply cut (Fig. 1B). The evidence suggests that this turtle may have been wounded by agricultural equipment such as the blade of a lawnmower. Fortunately, the injured turtle was alive and swimming actively in the water when I released it.

Although this paper documents the injury of a turtle by agricultural equipment, reports documenting the injury or death of turtles by such anthropogenic hazards are rare. To clarify the impact of agricultural activities on turtle populations, we should accumulate further data on injuries and mortality inflicted by these activities.

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PSEUDEMYX FLORIDANA PENINSULARIS (Peninsular Cooter) and PSEUDEMYX NELSONI (Florida Red-bellied Cooter). LONGEVITY. Turtles are among the longest-lived vertebrates (Gibbons 1987. Bioscience 37:262–269; Litzgus 2006. Copeia