

## TESTUDINES

**CLEMMYS INSCULPTA** (Wood Turtle). **PREDATION-MUTILATION.** A fifteen year mark-recapture study in northern Michigan revealed that 12.5% (42/337) of marked wood turtles (*Clemmys insculpta*) had mutilated or amputated limbs (amputation defined as loss of at least one-half of one limb). Most of these injuries were sustained after the specimens reached adult size (carapace length at least 160 mm). Direct observation and circumstantial evidence point to the raccoon (*Procyon lotor*) as the cause of most limb mutilation.

To test the hypothesis that limb loss would compromise a turtle's long-term survival, a statistical comparison was made of recapture rates (minimum 10 month interval) for specimens with intact limbs (n=250) versus those with at least one amputated limb (n=38). The recapture rate for injured turtles was significantly lower than for intact animals ( $p < .04$ ; details on request). However, multiple recaptures of several limb-mutilated female turtles on nesting beaches indicates that some individuals can overcome any disadvantage posed by limb loss as long as sufficient mobility is retained.

A different form of injury noted in several specimens was extensive damage to the shell caused by rodent gnawing activity, possibly beaver (*Castor canadensis*) or porcupine (*Erethizon dorsatum*) judging from incisor grooves in the bone. It is clear that the rodents are interested in the bony shell, perhaps as a source of calcium, and not in the turtles' flesh, which is often rendered exposed and accessible. Such shell damage is not immediately life-threatening, but might make the turtle more vulnerable to future predation.

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**KINOSTERNON SUBRUBRUM STEINDACHERI** (Florida Mud Turtle). **PATHOLOGY.** The occurrence of cystic calculi has been reported in captive-raised tortoises and attributed to dietary calcium/vitamin D imbalances. Frye (1972. J. Amer. Vet. Med. Assoc. 161: 600-602) surgically removed a large magnesium urate calculus from a 40 year captive *Gopherus agassizii*. Wallach (1969. J. Amer. Vet. Med. Assoc. 155:1017-1034; 1971. J. Amer. Vet. Med. Assoc. 159:1632-1643) noted the occurrence of cystic calculi in a captive *Geochelone elephantopus* and captive lizards and noted that calculi vary in composition from 98% calcium phosphate to mixed assemblages. Marcus (1981. Veterinary Biology and Medicine of Captive Amphibians and Reptiles. Philadelphia, Lea and Febiger) felt the altered captive diet was a probable cause of calculus formation. Cystic calculi have apparently never been reported from either wild or aquatic turtles, nor previously noted as a cause of mortality.

On 4 April 1984 I collected a mature male *Kinosternon subrubrum steindacheri* in Lutz, Hillsborough County, Florida (carapace length 95 mm, body weight 190 gm) in a relatively shallow permanent body of water. The base of the tail was slightly swollen and the perianal skin somewhat hypertrophied and

erythematous. The animal appeared healthy. It occasionally attempted to unsuccessfully expel a firm mass from the cloaca. On 15 April the animal died suddenly, appearing listless for only about one or two days prior to death. A radiograph obtained immediately post-mortem demonstrated a round calcific mass with concentric lamellae apparently lodged in the cloaca. At necropsy, a round calcific calculus measuring 15 x 12 mm was found impacted in the cystic neck (mouth of the urinary bladder) at its entry into the cloaca. The calculus was adherent to the cloacal walls with a surrounding area of chronic inflammatory response with necrotic debris and destruction of a large portion of the penis and cloacal wall. No gross perforation of the cloacal wall or cystic neck was noted. There was mild enlargement of the distal colon, suggestive of a low-grade chronic partial obstruction, but evidently colonic contents had been able to bypass the adherent calculus. Massive distension of the urinary bladder was present, without evidence of cystitis or perforation, suggestive of a high-grade chronic partial obstruction. The kidneys were of normal appearance and size. The rest of the necropsy was unremarkable. A cross-section of the calculus revealed distinct peripheral, hard, yellowish-brown concentric lamellae, with a chalky white dry powder without lamellae in the center. Identification of the calculus components by polarization microscopy supplemented by X-ray diffraction and infrared spectroscopy revealed 100% carbonate apatite, a form of calcium phosphate. The cause of death of the animal was felt to be septicemia from the cloacal infection secondary to the impacted cystic calculus.

The specimen is deposited in my personal collection, AGJR 304. I wish to thank Robert McAuley of the Department of Pathology, Burbank Hospital, Fitchburg, and Edwin Prien of the Laboratory for Stone Research, Newton, for their assistance in these investigations.

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**TRIONYX TRIUNGUIS** (Nile Softshell Turtle). **HABITAT.** Some members of the softshell turtle family Trionychidae are known to tolerate high levels of salinity. *Pelochelys bibrani* has been found in coastal waters over a wide area in the Indo-Australian Archipelago and Asia (De Rooij 1915. Reptiles of the Indo-Australian Archipelago. I., Lacertilia, Chelonia, Emydosauria. Leiden, 384 pp) and *Trionyx spiniferus emoryi* occurs in brackish inland water (238.0 meq/liter) in the United States (Seidel 1975. Copeia 1:124-128). *Trionyx triunguis* often enters salt water in the Mediterranean (Geldiay et al. 1982. In K. A. Bjorndal, ed., Biology and Conservation of Sea Turtles, Smithsonian Institution Press, Washington, D.C., pp. 425-434; Sella 1982. In *ibid.*, pp. 417-423), and two specimens were recorded by Villiers (1958. Initiatives Africaines, 15. Dakar) from the sea near Dakar. These last appear to be the only records for the West Coast of Africa.

During a recent survey of sea turtles made in Angola, West Africa, in September and

October, 1983, we encountered the Nile softshell turtle, *Trionyx triunguis*, in salt water, and found evidence that it nests on ocean beaches. In Luanda we identified a "sea turtle" being kept in a fountain after having been caught in the sea off Luanda. It was a Nile softshell. At Barra Do Bengo, north of Luanda, a local fisherman informed us that softshell turtles frequently nested on the beach, near the river mouth. At Cabo Ledo, a small settlement in Kissama Park, south of Luanda, over 40 km from any fresh water, beachside residents told us that "river turtles nest here on the beach." At Barra Do Dande, we found the fresh shell of a *Trionyx* which had been butchered and eaten after drowning in a gill net that had been set in the sea, off the river mouth.

Sea turtle fishermen in Baia Do Mussulo, a salt bay just south of Luanda and 70 km from the nearest fresh water source, told us that local people had recently captured a Nile softshell. They said that this was a kind of sea turtle, and that it was commonly found in the salt bay the year around. While making an aerial beach survey in the Province of Cabinda we found the tracks of a softshell that had come ashore 200 meters upstream from the mouth of the Rio Chiloango estuary, travelled over intervening ground to the beach, nested, and then gone on into the ocean surf. Throughout our interviews, wherever the subject of softshell turtles came up, the name most commonly used for them was *Mundo*.

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These geographic distribution records have a **standard format**, and all authors should adhere to that format, as follows: SCIENTIFIC NAME, COMMON NAME (as it appears in **Standard Common and Current Scientific Names for North American Amphibians and Reptiles**, Second edition. Collins, Conant, Huheey, Knight, Rundquist and Smith, 1982), LOCALITY, (use **metric** for distances), DATE (day, month, year), COLLECTOR(S), VERIFICATION BY, PLACE OF DEPOSITION AND CATALOG NUMBER (required), COMMENTS, CITATION(S), SUBMITTED BY (give name and address in full — no abbreviations).

Some further comments. This geographic distribution section does not publish "observation" records. Records submitted should be based on preserved specimens which have been placed in a university or museum collection (private collection depository records are discouraged).