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LIFE HISTORY NOTES

KINOSTERNON SUBRUBRUM STEINDACHNERI (FLORIDA MUD TURTLE)

PATHOLOGY

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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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## LIFE HISTORY NOTES

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### **KINOSTERNON SUBRUBRUM STEINDACHNERI** (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 steindachneri* 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