

## NATURAL HISTORY NOTES

### ANURA

**BUFO PARACNEMIS** (Sapo Rococo, Kururú Guazú, Sapo Buey). **MALE REPRODUCTIVE BEHAVIOR.** Wells (1977. Anim. Behav. 25:666-693) classified temporal patterns of anuran reproduction into two broad categories: prolonged breeding and explosive breeding. I observed a chorus of *Bufo paracnemis* in order to examine fidelity of males to chorus sites and patterns of spacing among individuals. A total of 50 male *B. paracnemis* were marked in a temporary pond during eight occasions between October and December 1988 at Finca San Javier, 8 km S Joaquin V. Gonzalez, Salta, Argentina. The size distribution of the males was unimodal, with a mean SVL of 180.2 mm (N=50; SD=30.84, range=150-240). Observations of male-male encounters and positions of calling sites were made during the activity period which usually lasted from 1900-0100 h. The number of individuals in the chorus varied on a nightly basis from 2 to 15 (N=8; mean=8.25; SD=4.2). Some individuals failed to appear while others appeared for the first time. There was no correlation between body size and the number of nights toads were present at the pond (N=50; r=0.016; P>0.25). The number of times an individual appeared at the pond during the study varied between one and eight (N=50; mean=2.3; SD=1.6). Calling sites of individual males changed among nights, but an individual always stayed at the same site during one night even after natural agonistic interactions with an intruder.

Wells (*op. cit.*) postulated that male-male aggression without site attachment should lead to maintenance of inter-individual distances in a breeding chorus. I observed 11 naturally occurring agonistic interactions between males. The distance between combatants was < 0.5 m on all occasions. A simple experiment was performed in the field. On four opportunities, males of similar size were placed on the site of a neighboring male to simulate invasion by an intruder. In all four cases the resident male forcefully expelled the intruder. The intruder then returned to his initial site. In conclusion, *B. paracnemis* at my study site exhibited the characteristics of a prolonged breeder: breeding choruses occurred for more than a month; males called from stationary positions on a given night; and minimum inter-male spacing was maintained at the breeding pond.

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### CROCODYLIA

**CAIMAN LATIROSTRIS** (Broad Snouted Caiman). **OMPHALOPAGUS TWINS.** Within the Crocodylia, monogamous twins have been observed in *Crocodylus porosus* (Webb 1987. In Webb et al. (eds.), Wildlife Management: Crocodiles and Alligators, pp 417-422. Surrey Beatty and Sons, Sydney), *Crocodylus acutus* (Neill 1971. Alligators, Crocodiles and their Kin. Columbia University Press, New York. 486 pp), and *Alligator mississippiensis* (Reese 1906. Anat. Anzeiger Jena 28:229-231). We report three occurrences of omphalopagus twins (fused at the umbilicus) (Lewis et al. 1992. Herpetol. Rev. 23:69-70) of *Caiman latirostris*, and describe some macroscopic features of these fusions.

Case 1: A nest of 40 eggs was laid on 27 December 1991 at the Experimental Breeding Station, Ministerio de Agricultura y Ganadería Argentina, Santa Fe, Santa Fe Province, Argentina. The egg containing twins was larger than typical (82 x 42 mm). After 78 days of incubation at 30°C and 95% humidity, 31 eggs hatched or were manually opened. The egg containing twins was manually opened. Both twins were well formed but one was dead.

Staff augmented her nesting each time by removing sand from the depression whenever she shifted her carapace outward. In the normal case, laying eggs before the egg chambers were the normal depth, ca. 43 cm (LeBuff 1990. The Loggerhead Sea Turtle in the Eastern Gulf of Mexico. Caretta Research, Inc. Sanibel, Florida. 216 pp.). All the nests were too shallow and were relocated. While QQN 226's clutches were smaller than most loggerhead clutches (mean QQN 226 = 83, N = 3; mean all = 96, N = 168), hatching success was high (mean QQN 226 = 97.6%). Her ability to produce viable eggs was apparently not affected by the injury. This observable documents an indirect consequence, reproductive dysfunction, of human-caused injury which may be less conspicuous than direct mortality or reduced viability, but which has the same result.

Case 2: A nest of 42 eggs was collected from the wild as part of the Monitoring and Restocking Program, Estancia el Lucero, San Cristobal District, Santa Fe Province, Argentina (29°55'S, 60°50'W) on 18 February 1992. After 20 days, 40 eggs hatched. One normal sized egg contained twins. One of the twins was well formed, and measured 17 cm TL and weighed 33 g. A small malaligned and measured 17 cm TL and weighed 33 g. It was surgically removed and died. Two days later the other twin died.

Case 3: A nest of 44 eggs was collected from the wild on 19 February 1992, and after 40 days, 36 eggs hatched. One normal sized egg contained twins. They were alive and completely formed, but small, measuring 15 cm TL each and weighing 18 and 20 g, respectively. They were surgically separated, but both died one day later.

In all three cases, twins shared the yolk and only one of the animals was still alive as of November 1993. The three cases of omphalopagus twins accounted for 0.26% of the total number of eggs (1166) collected during the 1991-92 season.

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### TESTUDINES

**CARETTA CARETTA** (Loggerhead Sea Turtle). **NESTING.** Nesting loggerhead sea turtles (*Caretta caretta*) with maimed or missing hindlimbs typically may make several attempts to dig egg chambers before aborting. When eggs are deposited, many are broken or exposed during nest closure. Occasionally, eggs are simply laid on a flat beach (Dodd 1988. Synopsis of the Biological Data on the Loggerhead Sea Turtle *Caretta caretta* (Linnaeus 1758). U.S. Fish Wild. Serv. Biol. Rept. 88(4). 110 pp.). Field workers have successfully excavated egg chambers for loggerheads with these deformities (LeBuff, pers. comm.). This note documents reproductive dysfunction of a loggerhead with anatomically intact but movement impaired hindlimbs.

A female turtle (tagged QQN 226, straight carapace length = 82.2 cm, width = 65.2 cm) with a deep t-shaped fracture on the left posterior portion of her carapace was observed on Key Island south of Naples, Florida. The short arm of the injury (10 cm) crossed her backbone diagonally while the longer portion (25 cm) paralleled her backbone on the left rear of her carapace. Vertebral scute 4 was fractured and pushed inward. The injury appeared boat related and impaired normal hindlimb movement.

QQN 226 was first seen on 19 May 1991 when she dug two shallow, ill-formed egg chambers before aborting. Between 20 and 23 May she made five false crawls. She nested on 26 May. Between 6 and 8 June, QQN 226 made four false crawls before nesting on 10 June. She nested once more on 26 June.

Loggerhead nesting behavior has been partitioned into 18 steps (Hailman and Elowson 1992. Herpetologica 48(1):1-29). Of these, QQN 226 completed only sand flicking and right and left posterior shift outward movements. She was able to dig and scoop sand with her right limb only to a depth of ca. 20 cm. She could dig with her left limb but could not curl it to scoop sand from the cavity. The repeated false crawls were probably the result of her inability to dig an egg chamber.

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**DERMOCHELYS CORIACEA** (Leatherback Sea Turtle). **BILL-FISH INTERACTION.** The occurrence of billfish such as marlin (*Makaira* spp.) and sailfish (*Istiophorus* spp.) bills broken off in loggerhead (*Caretta caretta*), green (*Chelonia mydas*), olive ridley (*Lepidochelys olivacea*), and leatherback (*Dermochelys coriacea*) sea turtles has recently been summarized by Frazier et al. (1994. Env. Biol. Fishes 39:85-96).

Here, we report one case of a marlin bill found in a leatherback sea turtle. On 5 May 1993, a female leatherback sea turtle (CCL = 153.0 cm) nesting on Sandy Point National Wildlife Refuge, St. Croix, U.S. Virgin Islands, was found to have the distal portion of the bill of a blue marlin (*Makaira nigricans*) protruding vertically from its carapace, 19 cm posterior to the left anterior pit. The broken end of the bill was exposed 1.5 cm and heavily fouled with algae (species unknown) and large gooseneck barnacles (*Lepas* sp.). The bill was easily extracted with a slight pull. A fibrous membrane had formed around the bill where it was encased in the body. The resulting hole in the carapace had healed around its circumference and there was no bleeding upon extraction. Width of the hole at the skin surface was 2 x 3 cm with a depth of 6 cm. The hole was directly over the left lung of the turtle, and a pink membrane could be seen at the bottom of the hole, expanding 1 cm into it as the turtle breathed. We do not know whether the bill had penetrated the dorsal surface of the lung and subsequently healed. Approximately 3.5 cm of the distal tip of the bill was worn away; it is impossible to know if this happened before or after its insertion in the turtle. Dimensions of the bill (3.0 x 5.0 x 1.75 cm) suggest that it was probably from a female blue marlin > 295 kg (Harry Fierstine, pers. comm.).

After removal of the bill the turtle returned to lay its fifth nest of the season on 15 May 1993. The wound was smaller at this time and appeared to be filling in.

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Instructions for contributors to Natural History Notes appear in Volume 25, number 1.

### CAUDATA

**SIREN LACERTINA** (Greater Siren). **DIET.** Although *Siren lacertina* is generally regarded as an opportunistic feeder on a variety of invertebrates, small fish, and plant matter, several authors have reported that mollusks are important in the diet. Hamilton (1950. Nat. Hist. Misc. 62:1-3) reported that "large individuals of *Siren* feed principally upon snails and insects" and that a "large *Siren lacertina* often contains a half pint of snails." Burch and Wood (1955. Copeia 1955:255-256) reported finding 138 mollusks of five species in the stomach of a single adult (369 mm SVL) *S. lacertina* from Virginia; 120 (87%) of these were of the sphaeriid clam *Musculium jayense*. Duellman and Schwartz (1958. Bull. Florida State Mus., Biol. Sci. 3:181-324) examined stomachs of 9 *S. lacertina* from southern Florida and found 18 insects, 2 crayfish, and 1 small fish, but they found no mollusks.

While electrofishing on 16 April 1992, personnel of the Florida Game and Fresh Water Fish Commission collected a moderate-sized (325 mm SVL, 481 cm TL; UF 86818) *S. lacertina* from Orange Lake, Alachua County, Florida. The abdomen of the specimen was obviously distended. Following several days in captivity, the siren passed shells from a total of 324 snails (323 *Planorbella scalare*, 1 *Physella pumila*) and 1 clam (*Musculium* sp.). The *P. scalare* varied in size from 4.5 to 9.1 mm in maximum diameter. In addition to the mollusks, the excreta included a pair of crayfish gastroliths. This report confirms earlier findings that some *Siren lacertina* may prey heavily on mollusks. However, this specimen had taken primarily snails, whereas the Virginia specimen reported by Burch and Wood had preyed predominantly on bivalves.

L. Mantini and R. A. Myers collected the siren and made it available. F. G. Thompson identified the mollusks.

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**TARICHA TOROUSA** (California Newt). **DIET.** Adult California newts typically feed on earthworms, insects, snails, and other small invertebrates (Stebbins 1972. California Amphibians and Reptiles. Univ. of California Press, Berkeley, 152 pp.). Other studies have found that adult newts cannibalize egg masses and larvae (Kaplan and Sherman 1980. J. Herpetol. 14:183-185.; Kats et al. 1992. Herpetol. Rev. 23:7-8; Elliott, Kats, and Breeding, unpubl. data).

On 4 June 1993 we used water lavage to flush the stomach of a female newt (6.5 cm SVL, 9.8 g) captured in a small, first order stream in the Santa Monica Mountains (Los Angeles Co., California). The contents of the stomach of this relatively small adult included several insects: 2 coleopterans, 1 lepidopteran, and 1 plecopteran. In addition, we found 5 conspecific newt larvae (10-15 mm TL) in the stomach contents. The most conspicuous animal found in the newt's stomach was a nestling bird. The small bird (0.30 g) was fully intact, including clearly visible wings, legs, and head. We often see Anna's hummingbirds nesting over stream pools. We assume that the newt preyed on the small bird after it fell from a nest above the stream pool. We believe this is the first record of a bird being found in the diet of a newt.

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