

was found on 4 November 2004 at the entrance to a female tortoise's hibernation burrow. This scat was fresh and contained three rabbit pellets, along with coarse plant fibers, seeds, as well as sand and small gravel.

In addition to native and exotic vegetation, *Gopherus agassizii* individuals have been observed to consume bones, stones, and soil (Esque and Peters 1994. In Bury and Germano [eds.], Biology of North American Tortoises. pp.105–111. Nat. Biol. Surv., Fish Wildl. Res. 13. Washington, D.C.). Observations on Desert Tortoise foraging behaviors have also included bird feathers, mammal hairs, snake and lizard scales, arthropod parts (Hansen et al. 1976. *Herpetologica* 32:247–251), and scat from Desert Woodrats (*Neotoma lepida*), lizards, and other Desert Tortoises (Henen 2002. *Chel. Cons. Biol.* 4:319–329). Ingestion of these various other items is suspected to be important for mineral and nutrient supplementation. The scats of rabbit are known to be nutritious (WallisDeVries 1996. *J. Appl. Ecol.* 33:688–702). This latter study found that cattle ate rabbit feces because it was of equal nutritive value to the sparse winter grasses and that the cattle could consume the feces at a faster rate than the sparse grass. The Texas Tortoise (*Gopherus berlandieri*) has also been observed consuming rabbit droppings (Auffenberg and Weaver 1969. *Bull. Florida State Mus.* 13:141–203) indicating that consumption of rabbit feces by tortoises is not an isolated event. Thus, the fibrous rabbit pellet may act as a food source for the Desert Tortoise from which trace elements or nutrients may be obtained and, if fresh, a small amount of water.

An alternate explanation for the consumption of feces, as demonstrated in Common Iguanas (*Iguana iguana*), is that intra-specific coprophagy is important in the transfer and inoculation of unique gut microbial symbionts which assists in digestion (Troyer 1982. *Science* 216:540–542). Intra-specific coprophagy, typically juveniles eating adult feces, is a well-documented behavior in reptiles (Montanucci 1999. *Herpetol. Rev.* 30:221–222; Troyer 1982, *op. cit.*) and has been observed in many species of tortoises (Ernst and Barbour 1989. *Turtles of the World*. Smithsonian Institution Press. Washington, D.C.), including the Desert Tortoise (Lance and Morafka 2001. *Herpetol. Monogr.* 15:124–134; Henen 2003, *op. cit.*). It is assumed that a similar inoculation function is present for the Desert Tortoise. Inter-specific coprophagy may play a similar role as many species of tortoise worldwide have been observed to consume feces (Ernst and Barbour 1989, *op. cit.*). Congeners of the Desert Tortoise have been observed consuming feces including: Gopher Tortoises (*G. polyphemus*) eating fox and their own scat (Anderson and Herrington 1992. *Herpetol. Rev.* 23:59; Macdonald and Mushinsky 1988. *Herpetologica* 44:345–353); Texas Tortoises eating Collared Peccary (*Tayassu tajacu*) feces (Mares 1971. *Texas J. Sci.* 23:300–301) as well as rabbit droppings and their own feces (Auffenberg and Weaver 1969, *op. cit.*); and Desert Tortoises have been observed eating scat from Desert Woodrats, lizards, Collared Peccaries, and other Desert Tortoises (Henen 2002, *op. cit.*; Hart et al. 1992. Unpubl. report to Arizona Game and Fish Dept. and U.S. Bureau of Land Management, Phoenix). Many of these observations involve the consumption of other herbivores' scats, which might aid in the transfer of gut microflora such as bacteria and fungi. Our observation of a Desert Tortoise eating the scat of another desert herbivore might provide the Desert Tortoise with nutrients and might also provide the tortoise

with a unique gut microflora. To our knowledge these are the first reports of adult Desert Tortoises eating scat of *L. californicus*.

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GOPHERUS POLYPHEMUS (Gopher Tortoise). **COYOTE PREDATION.** *Gopherus polyphemus* is listed as a species of special concern by the state of Florida (Florida Wildlife Code Chap. 39 F.A.C.), and as a threatened species by the Florida Committee on Rare and Endangered Plants and Animals (Moler 1992. *Rare and Endangered Biota of Florida: Volume III, Reptiles and Amphibians*. University Press of Florida, Gainesville, Florida. 291 pp.). Coyotes (*Canis latrans*) are invasive to Florida with ranges that are expanding within the state (Schmitz and Brown 1994. *An Assessment of Invasive Non-Indigenous Species in Florida's Public Lands*. Florida Dept. Environmental Protection. Tallahassee, Florida. 283 pp.; Wooding and Hardinsky 1990. *Florida Field Nat.* 18:12–14), including the southeastern coast (Cunningham and Dunford 1970. *Quart. J. Florida Acad. Sci.* 33:279–280; Brady 1983. *Florida Field Nat.* 11:40–41; Hill et al. 1987. *Wildl. Soc. Bull.* 15:521–524; Wooding and Hardinsky, *op. cit.*). We report here evidence of Coyote predation on Gopher Tortoise hatchlings in southeastern coastal Florida.

Passive tracking index data used to monitor both exotic and native species on public lands (Engeman et al. 2001. *Environ. Cons.* 28:235–240) indicated an increasing presence of Coyotes on state and county public lands in the Palm Beach to Port St. Lucie areas (Engeman, unpubl. data), prompting us to opportunistically examine Coyote scats for evidence of Gopher Tortoise predation. On 3 April 2004, one of us (JAM) collected a Coyote scat with Gopher Tortoise remains from a path in a pine flatwoods greenway in the Abacoa development of Jupiter, Florida. The dried scat was 9 cm long and the gular projection of the plastron of a 2–3 yr old Gopher Tortoise was clearly visible, along with mammal fur, rodent bones, and grasshopper fragments. Hatchlings might be more vulnerable to predation than juveniles, but less noticeable in casual observation of scats. Efforts at the time to conduct larger surveys for evidence of Gopher Tortoises in coyote scats were made impossible by hurricanes Frances and Jeanne. Coyote predation on Gopher Tortoises is of concern because predation is a critical threat to endangered or locally rare species (Hecht and Nickerson 1999. *Endangered Species Update* 16:114–118), and predation losses can further stress populations already impacted by habitat loss and altered predator communities (Reynolds and Tapper 1996. *Mammal Rev.* 26:127–156), both of which apply to Gopher Tortoises in Florida.

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KINOSTERNON INTEGRUM (Mexican Mud Turtle). **SIZE.** *Kinosternon integrum* is one of the largest species in the genus (Pritchard and Trebau 1984. The Turtles of Venezuela. SSAR. 466 pp.) and males obtain larger sizes than females. The largest specimens reported in the literature were 202 mm carapace length (CL) (Ernst and Barbour 1989. Turtles of the World. Smithsonian Institution Press. 313 pp.) and 210 mm CL (Iverson et al. 1998. Cat. Amer. Amphib. Rept. 652:1–6). We found two males exceeding 210 mm CL in the municipality of Tonicaco, Estado de México, México (18°45'04"N, 99°37'35"W) in April 2004. The first male was 223 mm CL with a mass of 662.9 g, and the second 220 mm CL and 810 g. This apparently represents the largest size (CL) reported to date for males of this species.

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TRACHEMYS GAIGEA (Big Bend Slider). **REPRODUCTIVE CHARACTERISTICS.** Relatively little information has been published on reproduction in *T. gaigeae* (see review by Stuart and Ernst. 2004. Cat. Amer. Amphib. Rept. 787:1–6). Herein we provide descriptive statistics and other data for the subspecies *T. g. gaigeae* (following taxonomy of Seidel 2002. J. Herpetol. 36:285–292) obtained during field studies in the Rio Grande Valley, southern Socorro County, New Mexico, USA in 1996–1998. Collection methodology and locations were previously discussed by Stuart and Painter (2002. Bull. Maryland Herpetol. Soc. 38:15–22). Mensural data are presented as: mean \pm standard deviation, range.

Twelve adult females (maximum straight-line carapace length [CL] = 242.2 mm \pm 11.9, 228–266 mm; maximum straight-line plastron length [PL] = 228.3 mm \pm 11.1, 213.5–247 mm; pre-oviposition mass = 1890.1 g \pm 281.4, 1538–2364 g), captured in aquatic traps, were identified as gravid with shelled eggs based on abdominal palpation. Dates of collection were between 19 May and 11 July; no female captured before or after this period showed evidence of bearing shelled eggs. All 12 females were induced to oviposit within 24–48 h of capture by injection of oxytocin (Ewert and Legler 1978. Herpetologica 34:314–318) and were judged to be spent (devoid of shelled eggs) via abdominal palpation over a several day period post-oviposition. Eggs were incubated in moist vermiculite at 28–30°C in the laboratory, and hatchlings were retained alive for up to 12 months post-hatching.

Number of eggs per clutch (N = 12) averaged 15.4 \pm 4.9, 6–22.

Previous reports of clutch size in *T. g. gaigeae* ranged from 6 to 29 (reviewed by Morjan and Stuart 2001. Southwest. Nat. 46:230–234). Eggs (N = 170) were measured within 24 h after laying. Egg length averaged 35.0 mm \pm 1.3, 31.6–37.7 mm; and width averaged 22.5 mm \pm 0.9, 20.1–24.6 mm. Individual egg mass (N = 147, from 10 of the 12 clutches) averaged 10.7 g \pm 1.1, 8.5–13.0 g.

Incubation period in the laboratory for 11 clutches averaged 60.8 days \pm 2.4, 57–64 days, and hatching success rate was ca. 72%. Hatchlings (N = 123) were measured within one month after hatching: CL averaged 29.0 mm \pm 1.4, 25.2–32.7 mm; PL averaged 27.4 mm \pm 1.2, 24.1–30.6 mm; and mass averaged 6.0 g \pm 0.8, 4.3–7.7 g. As noted by Morjan and Stuart (2001, *op. cit.*), the hatchling color pattern was similar to that of adults, although the reticulate pattern on the carapace was much more densely arranged, and the olive carapace and yellowish plastral colors were much paler and duller than in adults.

In 10 clutches, mean egg mass was significantly correlated with means of egg length ($r^2 = 0.77$, $F = 27.0$, $p < 0.001$), egg width ($r^2 = 0.84$, $F = 42.9$, $p < 0.001$), hatchling CL ($r^2 = 0.65$, $F = 15.0$, $p < 0.005$), and hatchling mass ($r^2 = 0.79$, $F = 30.9$, $p < 0.001$). Mean length and width of eggs were significantly correlated with mean hatchling CL ($r^2 = 0.56$, $F = 11.4$, $p < 0.01$; and $r^2 = 0.52$, $F = 9.8$, $p = 0.01$, respectively). Female CL and pre-oviposition mass were not significantly correlated with length, width, or mass of eggs; clutch mass or size; or hatchling CL or mass (r^2 values < 0.26 , $p > 0.13$), possibly because of the small sample size. However, extensive variation in these reproductive characteristics has been observed in better-studied species of slider such as *T. scripta* in the U.S. (e.g., Tucker et al. 1998. J. Herpetol. 32:515–526).

Egg mass index (EMI; mean individual egg mass \times 100/spent female mass) and relative clutch mass (RCM; clutch mass/spent female mass) were calculated for 10 females and their clutches. EMI averaged 0.65 \pm 0.10, 0.55–0.86, and RCM averaged 0.10 \pm 0.02, 0.05–0.14. The mean EMI for *T. g. gaigeae* fell between ratios reported for *Trachemys* spp. from the central U.S. (0.95) and Central America (0.41–0.49), whereas the mean RCM was comparable to that of *T. scripta* in the central U.S. (0.10) but lower than the ratio for *T. venusta* in Costa Rica (0.14) (Moll and Moll 1990. In J. W. Gibbons [ed.], Life History and Ecology of the Slider Turtle, pp. 152–161. Smithsonian Institution Press, Washington, D.C.; Moll 1994. Chelon. Conserv. Biol. 1:107–116). In terms of EMI, *T. g. gaigeae* appears to be intermediate between temperate and tropical populations of *Trachemys* spp.

Our data, although derived from a small number of gravid females and their offspring, suggest that *T. g. gaigeae* is similar in its reproductive characteristics to other species of *Trachemys*. We thank K. A. Buhlmann, J. D. Congdon, and J. M. Legler for comments, and J. B. M. Miyashiro for assistance. Fieldwork was funded in part by the New Mexico Department of Game and Fish, Share with Wildlife Program.

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