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# Chelydra serpentina (Snapping Turtle) Diet

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Reina 2007. *Endang. Species Res.* 3:43–51); hydrozoans, scyphozoans, nematodes, annelids, mollusks (Carrion-Cortez et al. 2010. *J. Mar. Biol. Assoc. U.K.* 90[5]:1005–1013); the anemone *Palythoa ignota* (Rodríguez-Baron et al. 2011 *Herpetol. Rev.* 42:416); squids and octopus (Riosmena-Rodríguez and Lara-Uc 2015. *Herpetol. Rev.* 46:617); and sea urchin (Reséndiz et al. 2016. *Herpetol. Rev.* 47:282).

It has been suggested that such dietary diversity is a response to the energy requirements of these animals in the early life stages, facilitating nutritional (e.g., protein) gains for development and maturation (Bjorndal 1985. *Copeia* 1985:736–751) and optimizing digestion time (Amorochio and Reina 2008. *J. Exp. Mar. Biol. Ecol.* 360:117–124). It has also been noted that *C. mydas* diet is influenced by resource availability (Balazs 1980. NOAA Tech. Memo. NOAA-TM-NMFS-SWFS-7; Garnett et al. 1985. *Wildl. Res.* 12:103–112) and that diet selection is linked to the composition and capacity of their hind-gut microflora, which may change as Green Sea Turtles grow and/or occupy different habitats (Bjorndal 1980. *Mar. Biol.* 56:147–154).

During four field trips in 2016, we collected food samples from the esophagi of 20 *C. mydas* (body mass  $45.73 \pm 26.98$  kg), and straight carapace length ( $77.73 \pm 13.73$  cm) captured at “Muelle Ingles” ( $27.74684^{\circ}\text{N}$ ,  $114.01045^{\circ}\text{W}$ ) in the Ojo de Liebre Lagoon, Baja California Sur, Mexico. The jellyfish (probably Cannonball Jellyfish, *Stomolophus meleagris* [Agassiz, 1860]) were present in 17 of the total samples, and comprised 85% of the total volume. Turtle mean body condition index (BCI) was 1.33 (range = 1.3–1.8), similar to the values reported for previous studies (Koch et al. 2007. *Mar. Biol.* 153:35–46; Seminoff et al. 2003. *J. Mar. Biol. Assoc. U.K.* 83:1355–1362), which indicates that the animals were in good nutritional status and had the capacity for a favorable reproductive performance (Bjorndal et al. 2000. *Ecol. Appl.* 10:269–282). To our knowledge, this is the first report of targeted Cannonball Jellyfish consumption by *C. mydas*. The fact that jellyfish accounted for a substantial portion (85%) of the Eastern Pacific Green Sea Turtle diet suggests that this cnidarian constitutes another significant food resource for these sea turtles at Ojo de Liebre Lagoon, and that they have the capacity to assimilate nutrients from this species (Bjorndal 1990. *Bull. Mar. Sci.* 47:567–570).

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**EDUARDO RESÉNDIZ**, Alianza Keloni A. C. Antonio Rosales 698, col. Centro, C.P. 23000, La Paz B.C.S. México and Universidad Autónoma de Baja California Sur, Carretera al Sur KM 5.5., Apartado Postal 19-B, C.P. 23080, La Paz B.C.S. México (e-mail: jresendiz@uabcs.mx); **ANA SOFÍA MERINO-ZAVALA**, YOALLI HERNÁNDEZ-GIL, JORGE ARMANDO VEGA-BRAVO, Universidad Autónoma de Baja California Sur, Carretera al Sur KM 5.5., Apartado Postal 19-B, C.P. 23080, La Paz B.C.S. México; **MARÍA MÓNICA LARA-UC**, Alianza Keloni A. C. Antonio Rosales 698, col. Centro C.P. 23000, La Paz B.C.S. México and Universidad Autónoma de Baja California Sur, Carretera al Sur KM 5.5., Apartado Postal 19-B, C.P. 23080, La Paz B.C.S. México (e-mail: mlara@uabcs.mx); **JORGE MANUEL LÓPEZ-CALDERÓN**, Universidad Autónoma de Baja California-Facultad de Ciencias Marinas,

Carretera Tijuana-Ensenada 3917, Col. Playitas, C.P. 22860, Ensenada, B.C. México (e-mail: jorge.lopez67@uabc.edu.mx).

**CHELYDRA SERPENTINA (Snapping Turtle). DIET.** *Chelydra serpentina* is a widely distributed species ranging from New Brunswick and southern Quebec west to southeastern Alberta and southward east of the Rocky Mountains to New Mexico, the Gulf Coast, and southern Florida (Ernst and Lovitch 2009. *Turtles of the United States and Canada*, 2<sup>nd</sup> ed. Johns Hopkins University Press, Baltimore, Maryland. 827 pp.). It is an omnivorous generalist species feeding on both live and dead freshwater sponges, oligochaete worms, planarians, bivalves, snails, isopods, crayfish, insects, fish, small turtles, frogs and toads, birds, snakes, and small mammals (Ernst and Lovitch 2009, *op. cit.*). Here we report a *C. serpentina* preying upon an additional prey item, an adult *Ophisaurus ventralis* (Eastern Glass Lizard).

At 2106 h on 10 October 2016, we discovered a *C. serpentina* dead on the road in Beaufort County, North Carolina, USA ( $35.5641^{\circ}\text{N}$ ,  $76.5323^{\circ}\text{W}$ ). There was a rain event at this time, with ~5 mm of total rain having fallen (National Oceanic and Atmospheric Administration, 26 October 2016). A wide array of herpetofauna were active in the area, including *Nerodia fasciata*, *Nerodia erythrogaster*, *Thamnophis sirtalis*, *Thamnophis sauritis*, *Agkistrodon piscivorus*, *Pantherophis alleghaniensis*, and *Kinosternon subrubrum*. The *C. serpentina* was found with significant damage, including an evisceration of the internal organs. Immediately next to the turtle was a remnant of an *O. ventralis* individual, and it was assumed that either the lizard carcass came from inside the *C. serpentina*, or the *C. serpentina* was consuming the *O. ventralis* on the road prior to being struck (Fig. 1).

This dietary record is unusual because to our knowledge, there has been no reported predation of any Lacertilia by a *C. serpentina*. Furthermore, while *O. ventralis* may be found near wetland habitat, it is not considered to be a wetland obligate (Smith 1946. *Handbook of Lizards*, Comstock Publ. Co., Ithaca, New York. 557 pp.). However, *C. serpentina* is known to consume other terrestrial obligate squamates (*Coluber constrictor*, *Heterodon platirhinos*, *Thamnophis sirtalis*; Ernst and Lovitch 2009, *op. cit.*). As the habitats of these species usually do not typically overlap, this individual *C. serpentina* might have

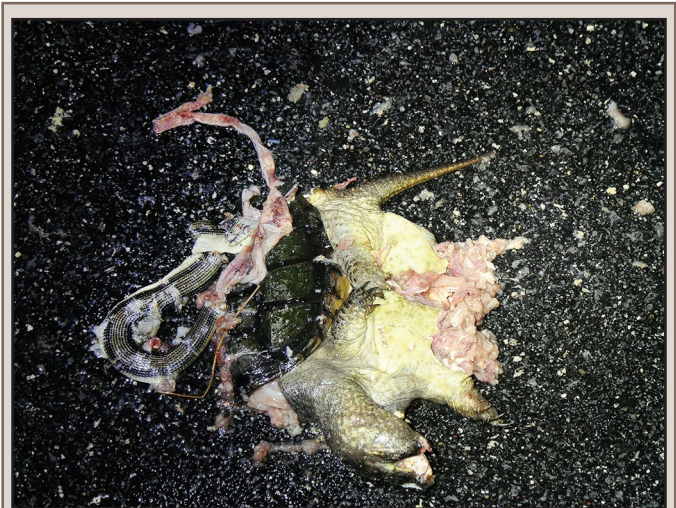


FIG. 1. Deceased *Chelydra serpentina* and *Ophisaurus ventralis* as found on the road.



discovered a dead *O. ventralis* that had already been washed into an aquatic habitat, or that they crossed paths while moving on land during the rain event described above.

**ANDREW L. ADAMS, HUNTER J. HOWELL, and SCOTT S. McDANIEL**, Susquehannock Wildlife Society, 1725 Trappe Church Road, Darlington, Maryland 21034, USA (e-mail: andy@suskywildlife.org)

**CHELYDRA SERPENTINA (Snapping Turtle). DIET.** *Chelydra serpentina* is a generalist species known to feed on a wide range of invertebrates, fish, amphibians, reptiles, mammals, and birds (Ernst and Lovich 2009. Turtles of the United States and Canada, 2<sup>nd</sup> ed. The Johns Hopkins University Press, Baltimore, Maryland. 827 pp.). Although *C. serpentina* is often considered to be a major predator of game species (i.e., sport fish and waterfowl), few data have supported such impacts (Pell 1940. Copeia 1940:131; Alexander 1943. J. Wildl. Manag. 7:278–282; Lagler 1943. Am. Midl. Nat. 29:257–312; Coulter 1957. J. Wildl. Manag. 21:17–21; Punzo 1975. J. Herpetol. 9:207–210; Korschgen et al. 1996. J. Wildl. Manag. 60:120–132; Kenow et al. 2009. J. Herpetol. 43:154–158). Birds consumed by *C. serpentina* are primarily aquatic and semi-aquatic species, although incidents of predation on terrestrial birds and songbirds have been observed (e.g., Ring-neck Pheasant: Edminster 1953. J. Wildl. Manag. 17:383; Passeriformes: Laskey 1947. The Auk 64:315–316). Several species of water birds in the Anseriformes have been reported as prey of *C. serpentina*, including *Aix sponsa*, *Branta canadensis*, *Bucephala clangula*, *Cairina moschata*, and *Mergus merganser*, as well as species of *Anas* (*A. discors*, *A. platyrhynchos*, *A. rubripes*), *Aythya* (*A. affinis*, *A. collaris*, *A. valisineria*), and *Cygnus* (*C. buccinator*, *C. olor*) (Alexander 1943, *op. cit.*; Coulter 1957, *op. cit.*; Kirk 1981. Bull. Oklahoma Ornithol. Soc. 14:14–15; Lumsden 1986. Can. Field-Nat. 100:267–268; Krementz and Pendleton 1991. Proc. Annu. Conf. Southeast. Assoc. Fish Wildl. Agencies 45:156–166; Wilson and Wilson 1992. Passenger Pigeon 54:95; Abel 1992. Passenger Pigeon 54:209–213; Korschgen et al. 1996, *op. cit.*; Ernst and Lovich 2009, *op. cit.*; Kenow et al. 2009, *op. cit.*; Bobbie et al. 2015. Herpetol. Rev. 46:77). Predatory attacks on juvenile waterfowl are reported to occur at greater rates (e.g., ducklings, goslings, cygnets; Fraser 1994. Prairie Nat. 26:33–35), with attacks on eggs (Thorp and Clark 1994. Wilson Bull. 106:46) and adults reported less frequently. Furthermore, reported attacks on adult waterfowl by *C. serpentina* have primarily involved turtles grasping bird hind limbs and pulling individuals underwater in an attempt to drown them (Alexander 1921. The Auk 38:596; Igl and Peterson 2010. Waterbirds 33:105–109). Here, we report an additional prey species consumed by *C. serpentina*.

On 16 May 2013, an adult *Chelydra serpentina* was observed capturing an adult male Northern Shoveler (*Anas clypeata*) along a marsh on Farm Island, Hughes County, South Dakota, USA (44.33916°N, 100.27786°W; WGS 84; Fig. 1). The turtle was observed initially attacking the duck (Fig. 1A) having grabbed it by one of its hind feet (Fig. 1B). The duck struggled to escape the turtle and the turtle was unable to drown the duck due to the shallow water (ca. 0.5 m depth) in a manner similar to previous reports (Alexander 1921, *op. cit.*; Igl and Peterson 2010, *op. cit.*). This struggle continued for approximately one hour as the duck seemed to become continuously weaker, likely due to exhaustion from this struggle. At this point, the turtle released its hold on the duck's foot, and although the duck appeared to have an opportunity to escape, it did not. The turtle then moved to the anterior end of the duck and grabbed the body by the neck, tearing portions of the duck's skin (Fig. 1C). The duck's head was

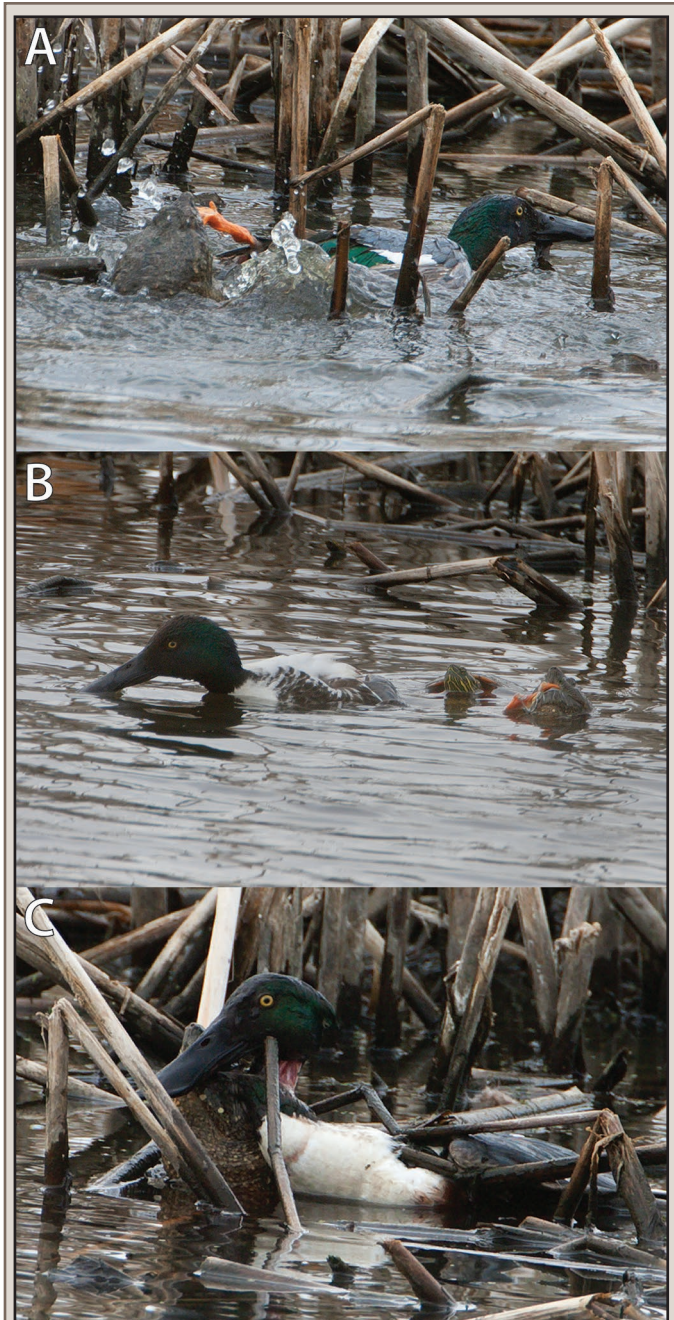


FIG. 1. An adult Snapping Turtle (*Chelydra serpentina*) attacking and killing an adult male Northern Shoveler (*Anas clypeata*) on Farm Island, Hughes County, South Dakota, USA. Photographs show the Snapping Turtle's (A) initial attack of the Northern Shoveler, (B) grasping and holding the Northern Shoveler's foot, and (C) finally grasping the Northern Shoveler's neck.

then pulled underwater and it appeared dead shortly afterwards. The entire event lasted approximately 70 min. An adult Painted Turtle (*Chrysemys picta*) was observed in close proximity (Fig. 1B) during the predation event, however, it was not observed to bite or interact with the Northern Shoveler.

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**DREW R. DAVIS**, Department of Biology, University of South Dakota, 414 East Clark Street, Vermillion, South Dakota 57069, USA (e-mail: drew.