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Oh snap: observations of heterospecific predation and cannibalism in the Snapping Turtle, *Chelydra serpentina* (Linnaeus, 1758)

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Cannibalism has been observed in numerous reptiles, yet reported instances of cannibalism in turtles are sparse (Polis and Myers, 1985). This behaviour has been observed in the wild in some turtle species, such as the Alligator Snapping Turtle (*Macroclemys temminckii*) and the Ornate Box Turtle (*Terrapene ornata*) (Ernst and Lovich, 2009). In other species, like the Snapping Turtle, *Chelydra serpentina* (Linnaeus, 1758), although this is discussed as a behaviour individuals can exhibit and may be expected due to their generalist dietary strategy (Ernst and Lovich, 2009), published, verified accounts are extremely rare. An instance of cannibalism in this species was noted from stomach content analyses (Lagler, 1943). Additionally, other dietary studies that carried out stomach content analyses of Snapping Turtles similarly observed turtle remains that could not be identified to species (i.e., thus unable to be verified as cannibalism) (Pell, 1940; Hammer, 1969; Punzo, 1975). Thus, evidence for cannibalism in Snapping Turtles remains scant, and the propensity of this species to exhibit cannibalism, or the conditions it occurs within, remain unknown. Herein we are reporting two instances of cannibalism in *Chelydra serpentina*, one of which resulted in a mortality event of a juvenile, as well as instances of attempted heterospecific predation.

In the Jemseg Grand Lake watershed of New Brunswick (NB), Canada, baited hoop traps were deployed at four waterbodies during a study on the population ecology of two native turtle species (Eastern Painted Turtles *Chrysemys picta picta*, and Snapping Turtles) (Williams, 2025). On 9 July 2024, at 11:05 h, two adult Snapping Turtles, one female (straight carapace length, SCL: 328 mm, weight: 9.4 kg) and one male (SCL: 387 mm, weight: 13.2 kg), as well as the remains of one deceased juvenile were found in a trap (45.9143°S, -66.1021°E, elevation 2 m). The juvenile remains included only the carapace (Fig. 1C), with pink flesh partially obscured by plant debris still present near the spine (Fig. 1D). The top of the carapace had multiple wounds and puncture marks in a pattern reflective of the beak of an adult Snapping Turtle (not pictured).

The following day, the traps were checked again according to our 24-hour schedule (Mount Allison University Animal Ethics Protocol #103184 and NB Scientific Permit # SP24-006) and another instance of a juvenile Snapping Turtle being wounded was observed. This observation did not result in mortality of this individual but, if not interrupted, this interaction may have also resulted in cannibalism. Specifically, at 10:19 h on 10 July 2024, two juvenile Snapping Turtles were found in a trap (45.9152°S, -66.1030°E, elevation 2 m) with a single adult female Snapping Turtle (SCL: 307 mm, weight: 8.0 kg). One juvenile (SCL: 127 mm, weight: 500 g) had numerous wounds on its carapace (Fig. 1A) and a deep wound on its hind leg (Fig. 1B). The second juvenile (SCL: 158 mm, weight: 900 g) had only a small fresh bite mark on the top left costal scute (not pictured; these injuries were fully healed at a subsequent capture on 14 June 2025).

In response to these events, we adjusted our trap-checking protocol from once to twice daily to minimise interactions between trapped turtles. Specifically, we started carrying out trap checks twice daily, rather than once every 24 hours, as is standard based on guidelines compiled by herpetological societies and supported by the Canadian Council on Animal Care (ASIH et al., 1987; CCAC, 2004). During these increased efforts, no other instances of cannibalism within traps were observed. Yet, this may have also been because no additional Snapping Turtles were captured during our subsequent trapping periods at this site in 2024 (occurred from 5–11 and 22–25 August).

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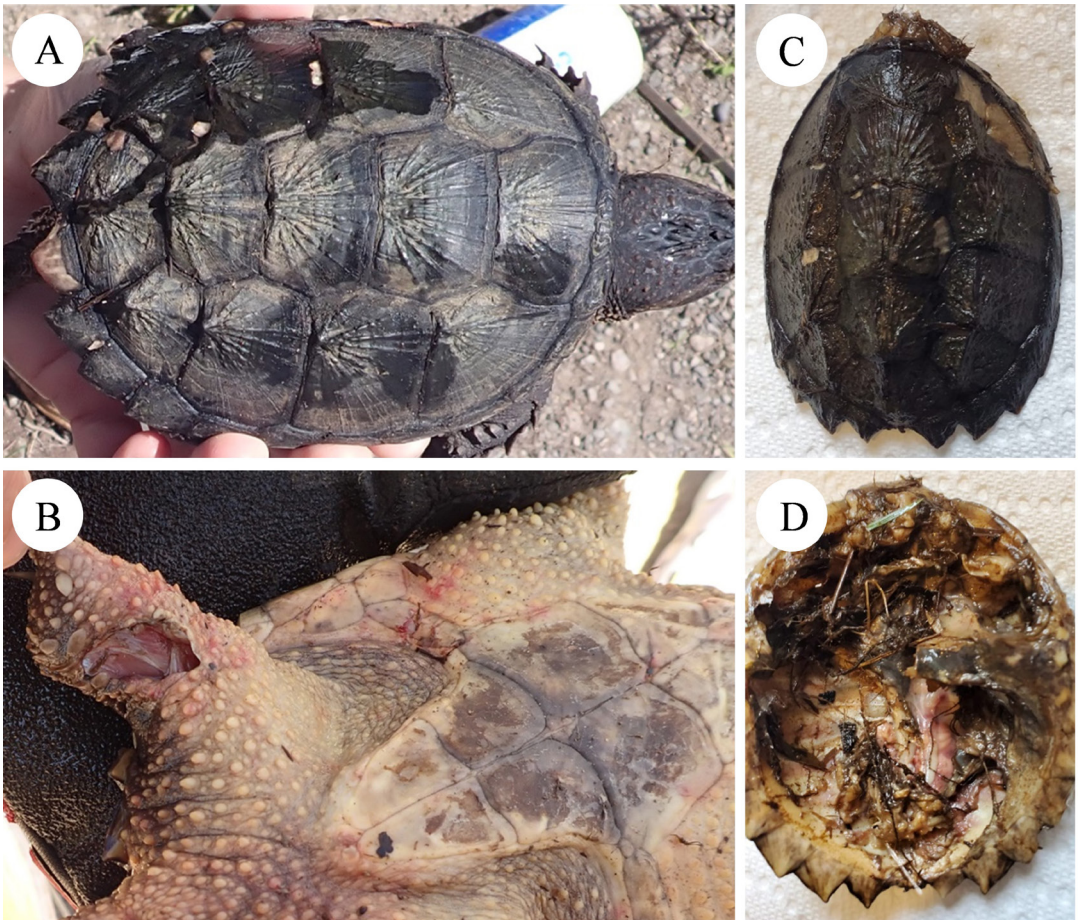

Figure 1. Evidence for negative interactions between adult and juvenile Snapping Turtles within baited hoop traps in the Jemseg Grand Lake watershed of New Brunswick, Canada. This evidence includes wounding (A and B) and the remains of a deceased juvenile that was cannibalised by an adult (C and D). Photos taken by Jordyn Williams.

Within this waterbody, we also observed instances of potential heterospecific turtle predation of Eastern Painted Turtle juveniles by Snapping Turtles. Three wounded juvenile Eastern Painted Turtles were captured (ranging in SCL between 76.97–88.03 mm and weight between 76–110 g) via a hoop-trap in one instance (on 7 August 2024) and two by hand (on 8 and 24 August 2024). All had healed or partially healed puncture marks reflective of the shape of a Snapping Turtle's beak similar to those of the juvenile Snapping Turtles described above. Each wound was paired with a crush pattern on the plastron (Fig. 2A, C, E) directly below the carapace puncture (Fig. 2B, D, F). These wounds indicate that Snapping Turtles may also target other smaller turtles within the waterbody as prey, rather than just juveniles of their own species.

The extent that hoop traps influenced these interactions between turtles is unknown. Traps were baited with sardines, which may have encouraged turtle feeding responses. Additionally, other turtle species (i.e., Ornate Box Turtles; Blanding's Turtles, *Emydoidea blandingii*) have been observed consuming dead turtles; this may have been the case for the first cannibalism event if the juvenile had died prior to being consumed (Ernst and Lovich, 2009). Further, the close proximity of juveniles and large adults was notable, as all individuals were trapped and unable to escape, but this would be a particular threat for the smaller, more vulnerable juveniles. In addition to potential trap effects, the population structure at the study site may have also contributed to these interactions. This waterbody supports a relatively high density of turtles

(Eastern Painted Turtles: 45.83 individuals/hectare, Snapping Turtles: 4.17 individuals/hectare: Williams, 2025). This site had similar or higher densities than any other waterbody studied in the Jemseg Grand Lake watershed, which ranged in densities of 0.53–16.25 individuals/hectare for Eastern Painted Turtles and 0.25–4.58 individuals/hectare for Snapping Turtles (Williams, 2025). The turtle density at this site is also

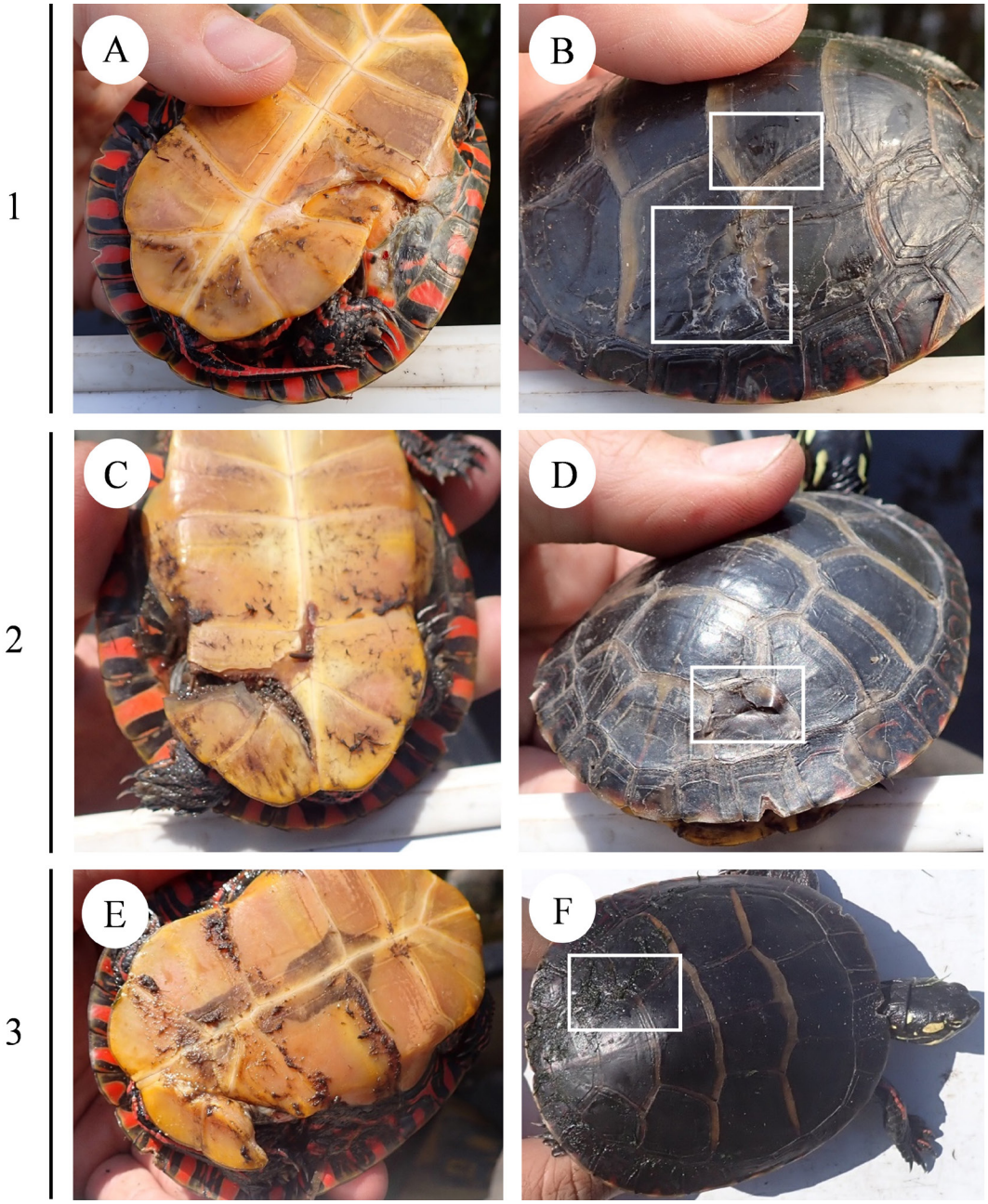

Figure 2. Evidence for negative interactions between juvenile Eastern Painted Turtles and Snapping Turtles, shown with injuries of three individuals with paired plastron (A, C, and E) and carapace (B, D, and F) wounds. Carapace wounds that are partially or fully healed are highlighted using white rectangular boxes overlayed on the photos. Photos taken by Jordyn Williams.

similar or higher than other sites in a similar climactic zone across these species' ranges (Painted Turtles: mean = 16.95 individuals/hectare, min = 0.06, max = 103.26; Snapping Turtles: mean = 8.30 individuals/hectare, min = 0.03, max = 67.50) (Williams, 2025). Elevated densities can increase intraspecific contact and competition for food resources, conditions known to facilitate cannibalistic behaviour in other reptiles (Polis and Myers, 1985). Consequently, the cannibalism observed may have resulted from both the confined trap conditions and the naturally high-density population dynamics at this site.

Apart from environmental influences, such as species density and proximity of the individuals, other influences, including relatedness, could be at play with these observations. As opportunities present themselves, cannibalism of juveniles by adults (including infanticide) is common in other reptiles, as seen across numerous species of lizards, including Blue-spotted Lizards (*Ninurta coeruleopunctatus*), Southern Karusa Lizards (*Karusasaurus polyzonus*), Swazi Dragon Lizards (*Smaug swazicus*), Transvaal Girdled Lizards (*Cordylus vittifer*) (van Blerk et al., 2021), Curly-tailed Lizards (*Leiocephalus schreibersi*) (Jenssen et al., 1989), and Black Rock Skinks (*Egernia saxatilis*) (O'Connor and Shine, 2004). Kin relationships between Snapping Turtles at our study sites are unknown, so we cannot speculate as to whether relatedness is a factor in the cannibalistic behaviour we observed.

Our observations provide more evidence that Snapping Turtles engage in cannibalism in the wild, and highlight certain conditions (i.e., within high density populations and in close proximity while inside a trap) under which it may occur. It is notable that, despite the common use of baited hoop traps in Snapping Turtle studies, this behaviour has not been formally reported previously. Further, as turtle populations experience human-mediated declines (Congdon et al., 1983; Lovich et al., 2018), opportunities for cannibalism or heterospecific predation may be reduced on the landscape. Overall, documenting these behaviours and the conditions under which they occur improves our understanding of Snapping Turtle behaviour in the wild.

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