Limb Mutilations in Snapping Turtles, *Chelydra serpentina*

RAYMOND A. SAUMURE[1,2]

[1]Department of Natural Resource Sciences, McGill University, 21111 Lakeshore Road, Ste-Anne-de-Bellevue, Québec H9X 3V9, Canada
[2]Present address: Shark Reef at Mandalay Bay, 3950 Las Vegas Boulevard South, Las Vegas, Nevada 89119, USA

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Adult Snapping Turtles (*Chelydra serpentina*) with mutilated limbs were captured in Ontario and Québec. Although similar injuries have been reported for several other species of North American turtles, this is the first documented report of such mutilations in this species. The implications of such injuries are discussed.

Key Words: Snapping Turtle, *Chelydra serpentina*, mutilations, leech, *Placobdella parasitica*, Ontario, Québec.

Limb mutilations have been reported for several species of North American turtles. Nemuras (1966) noted that Spotted Turtles (*Clemmys guttata*) often had limbs missing, but did not report exact figures. A later study on *C. guttata* reported that 5.8% of a population (n = 207) in Pennsylvania had missing limbs (Ernst 1976). A Musk Turtle (*Sternotherus odoratus*) population (n = 204) at the same Pennsylvania location exhibited a limb loss rate of 4.9% (Ernst 1986). Belinky and Belinky (1974) reported having encountered many Wood Turtles (*Clemmys insculpta*) with mutilated limbs. Harding (1985), however, was the first to quantify limb loss in this semi-terrestrial species. He found that 12.5% of Wood Turtles in a northern Michigan forest population (n = 337) had mutilated limbs. In most cases of limb mutilations in *C. insculpta*, the Raccoon (*Procyon lotor*) was observed and/or suspected. Subsequently, there have been numerous reports of limb loss in Wood Turtles. Foscarini (1994) reported a limb mutilation rate of 12.9% from an agricultural population (n = 270) in Ontario. Tuttle (1996) documented a rate of 9% from an agricultural population (n = 82) in New Hampshire. Saumure and Bider (1998) found rates of 15.2% and 32.3% for Québec agricultural (n = 33) and forest (n = 31) population samples, respectively. Waller and Micucci (1997) reported that fewer than 13% of *Geochelone chilensis* (n = 59) in Argentina had missing limbs. The lowest percentage of mutilated turtles was reported by Meek (1989) for *Testudo hermanni* in Yugoslavia, where only two of 213 turtles (0.94%) had missing limbs. To date, there have been no published reports of limb loss in Snapping Turtles, *Chelydra serpentina*. Herein, I report two instances of limb mutilations in *C. serpentina* and discuss the implications of such injuries.

On 23 June 1994, I encountered an adult female *Chelydra serpentina* nesting in a gravel pit located along an old logging road, approximately 30 m from a stream in a mixed-deciduous forest in Pontiac County, Québec (45°53′N; 76°12′W). This specimen had both anterior limbs amputated through the radius and ulna bones, at a point close to their junction with the humerus. The wounds were completely healed. On 13 June 1996, this turtle was recaptured in the same gravel pit, measured, and photographed (Figure 1). This specimen had a carapace length of 289.4 mm. Of note is the fact that this turtle produced clutches in at least two of three nesting seasons, despite being devoid of anterior limbs. This suggests that the foraging ability of this turtle was not seriously compromised by the mutilations.

On 19 August 1995, an adult male *Chelydra serpentina* was captured as it crossed a road near Port Royal, Big Creek National Wildlife Area (BCNWA), Regional Municipality of Haldimand-Norfolk, Ontario (42°35′N; 80°31′W). The turtle had a carapace length of 248.2 mm. This particular turtle was noticed because it appeared to be limping, and because Snapping Turtles are frequently run over ($\bar{x}$ = 68/year) by motorized vehicles in this area (Ashley and Robinson 1996). The specimen was missing its right posterior limb, which had been severed sufficiently high on the femur so as to leave the turtle without a stump to walk on (Figure 2). The point of amputation was completely healed, although the skin to the right of the posterior lobe of the plastron was chafed and bleeding. This chafing appears to have been the result of friction between this part of its body and the paved road. The turtle possessed three shallow bloodless gashes of unknown origin on the anterior plastron, only one of which had completely healed shut. Of 229 Snapping Turtles captured between 1992 and 1996 in the BCNWA, only this turtle (0.44 %) had a missing limb. Three adult Smooth Turtle Leeches (*Placobdella parasitica*) were attached to this turtle in the damaged limb socket. This is similar to a report by Saumure and Bider (1996) of leeches parasitizing the injured areas of mutilated Wood Turtles (*Clemmys insculpta*). Hendricks et al. (1971) hypothesized that leeches could readily colonize sick or injured turtles because of the host's inability to avoid or rid themselves of the parasites.

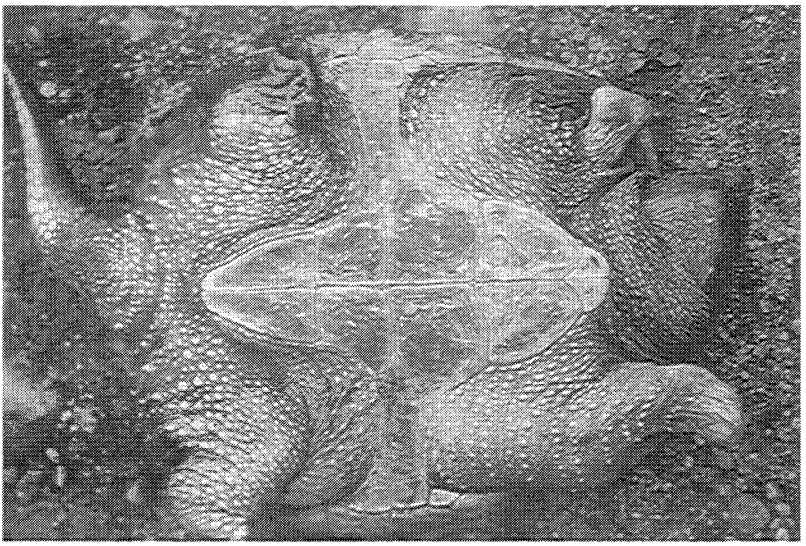

FIGURE 1. *Chelydra serpentina* from Pontiac County, Québec, with mutilated anterior forelimbs.

The absence of previous reports of limb mutilation in Snapping Turtles is not surprising, as the species has a number of physical and behavioural characteristics which serve to dissuade potential predators. Wild adult male *Chelydra* can reach a maximum carapace length of 494 mm and weigh as much as 34 kg (Conant and Collins 1991: 41). When harassed, they can also exude a foul smelling musk from glands located on the shell bridge (Carr 1952: 65). Moreover, a Snapping Turtle will tilt and lower the portion of its shell under attack, while turning to face its aggressor (Dodd and Brodie 1975). Lastly, the Snapping Turtle has a distinctly belligerent nature which it backs up by lightning quick strikes at speeds exceeding 78 ms (Lauder and Prendergast 1992). Therefore, it is not surprising that encounters between Raccoons and nesting female Snapping Turtles do not lead to predation attempts on the turtles (Congdon et al. 1987).

Known causes of limb loss in turtles include attacks by mammalian predators (e.g., Harding 1985) and agricultural mowers (Ernst 1976; Tuttle 1996). It is, however, improbable that an adult Raccoon could gnaw off both anterior limbs of a fully alert adult Snapping Turtle. Consequently, it is much more likely that the attack occurred when the turtle was small and relatively defenseless (e.g., Robinson 1989; Walley 1993), or while it was in a state of torpor during hibernation (e.g., Brooks et al. 1991). Due to the remote location of the Pontiac site, it is unlikely that an agricultural mower was the cause of the amputations. However, limb loss due to agricultural mowers or predation cannot be ruled out for the BCNWA turtle. Brooks (personal communication) reports that the observed frequency of limb loss in *Chelydra serpentina* at his Algonquin Park, Hamilton Harbour, and Lake Erie research sites in Ontario was also < 1%, despite the various types of predators and anthropogenic disturbances at these sites.

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FIGURE 2. *Chelydra serpentina* from Regional Municipality of Haldimand-Norfolk, Ontario, with amputated right posterior limb and two leeches (*Placobdella parasitica*) attached posterior to the injury.

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