

odor to reach deeper water, the possible lack of a continuous odor trail may hinder the ability of *M. temminckii* to locate the source. Other predominantly benthic turtles, such as *Sternotherus minor* and *Chelydra serpentina*, may be similarly affected. Though the sample size was too low for statistical analysis, this point is reinforced by the capture of four of the five *C. serpentina* in traps baited with fish. Unfortunately, the relatively large mesh size used precluded capture of *Sternotherus*.

Trachemys scripta, also considered an opportunistic omnivore (Ernst et al., 1994), was decidedly more attracted by chicken than fish. Basking occupies a great deal of the daily activity cycle of *T. scripta* (Auth, 1975), which therefore involves more frequent exposure to the upper, rather than lower, water column. It may be possible that *T. scripta* is more likely than *M. temminckii* to smell near-surface odors than those submerged below.

Cagle and Chaney (1950) stated, and later Frazer et al. (1990) demonstrated that the mere presence of an individual turtle in a trap may attract other conspecifics. This attraction may have biased the capture data for *T. scripta*, but not likely for *M. temminckii*. Two particular traps, baited with chicken, captured 19 and 14 *T. scripta*, respectively. Seven *T. scripta* per trap was the next highest concentration. If the turtles from those two traps were eliminated from the analysis (due to possible influence from the presence of other turtles), no significant bait preference would have been revealed for *T. scripta*. Two traps containing four *M. temminckii* each represented the only multiple captures of this species. Since one of these traps was baited with fish and the other with chicken, it is unlikely that bias associated with attractiveness to other conspecifics influenced the analysis.

The interest in capturing aquatic turtles for survey and inventory, rather than simply for subsistence or commercialization, has made studies such as this important. Increasing the odds of capturing a larger percentage of a particular species' population increases the accuracy of distributional and demographic surveys, but care must be taken that new and improved capture techniques are not utilized to the detriment of turtle populations.

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Sexual Dimorphism of Neonate Eastern Spiny Softshells, *Apalone spinifera spinifera*

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Sexual dimorphism in the carapacial pattern of adult eastern spiny softshells (*Apalone spinifera spinifera*) is well known (Webb, 1962; Ernst et al., 1994). Males have clear paravertebral spots with dark bordering rings and females lack clear spots. The development of obvious sexual pattern differences in headstarted juvenile softshells has been reported by Graham (1991) at a carapace length (CL) of as little as 52 mm.

On 14 August 1997 a clutch of 19 softshell eggs was discovered on a sandbar in the Lamoille River, Chittenden County, Vermont, USA, and removed to the laboratory for incubation. Seventeen eggs hatched on 9 September and the neonates ranged in CL from 39.0 to 41.7 mm ($x = 40.2$). We carefully examined each hatchling under a 7X dissecting microscope. Two patterns in the appearance of the anterior paravertebral spots were noted. In the first pattern, the spots were bordered by a distinct dark ring, as in adult males (Fig. 1A), and in the second pattern, the spots had either an indistinct or absent ring as in adult females (Fig. 1B). These

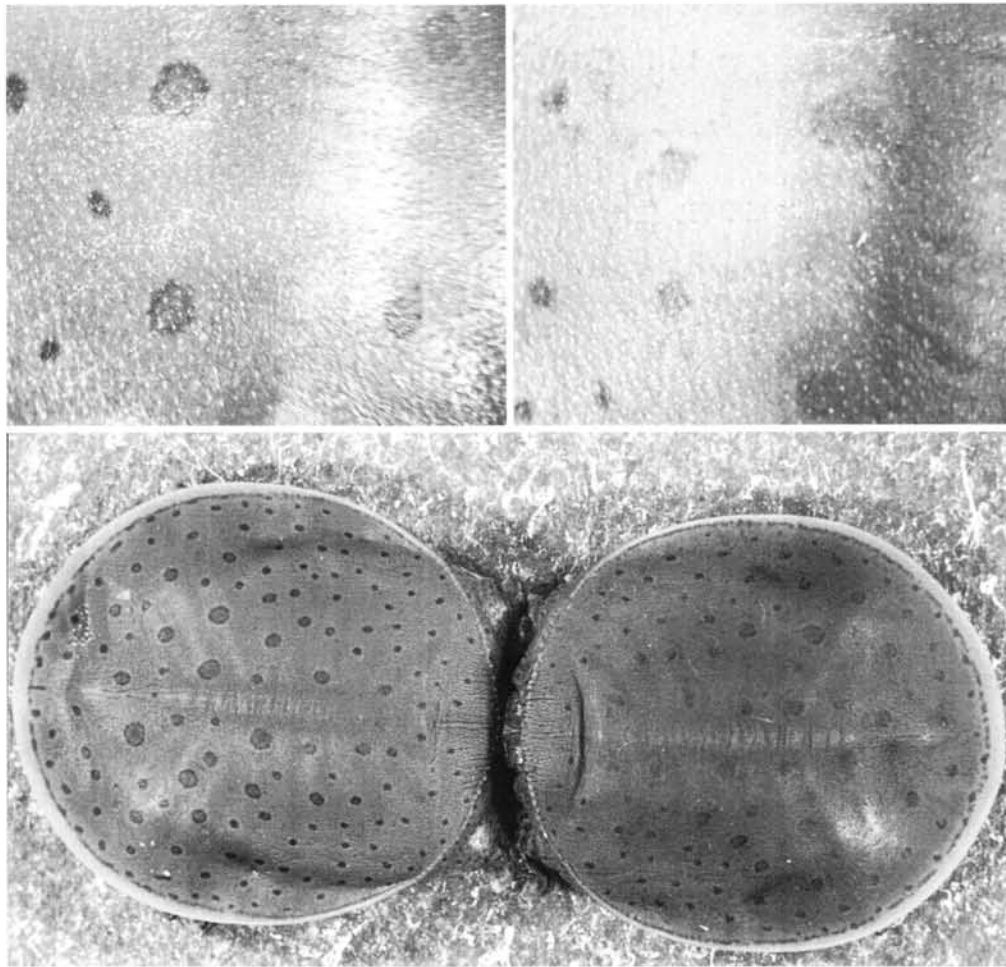


Figure 1 (top). Hatchling *Apalone s. spinifera* anterior paravertebral spots: **A (left)**, male spots with ringed outline, **B (right)**, female spots with faded or absent ring. **Figure 2 (bottom).** Carapace spotting characteristics of a neonate male (left) and female (right) *Apalone s. spinifera* (see Fig. 1 for detail).

differences could also be distinguished with the unaided eye (Fig. 2). Sorting the clutch according to apparent sex, we found 9 females and 8 males. Although on average the females had longer CL than the males (40.5 vs. 39.6 mm), the difference was not significant ($t = 1.734$, d.f. = 15, $p > 0.05$). When all animals were remeasured on 28 January 1998 the females had significantly greater CL than the males (44.3 vs. 42.8 mm; $t = 4.085$, d.f. = 15, $p < 0.001$). Adult females are also significantly larger than adult males in this population (Graham and Graham, 1997). Because all animals were housed together and fed an identical diet of ReptoMin® prior to remeasurement, these size differences reflect a significant difference in growth rate.

Another indicator of sexual dimorphism noted at hatching was a contrast in carapacial ground color. In males this was grayish horn (Smithe, 1975; color 91), while in females it was brownish olive (Smithe, 1975; color 29).

Though we are certain that the characteristics we have observed reflect true sexual dimorphism, verification through gonadal histology or observation of continued sexual dimorphism with growth would be confirmatory. The ability to distinguish sex at hatching in spiny softshells will afford researchers a unique opportunity for intersexual comparison

of a variety of neonate life history parameters, including growth and behavior.

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