NORTHERN ILLINOIS UNIVERSITY

# MORPHOLOGY AND BEHAVIOR OF THE PLAINS GARTER SNAKE, *THAMNOPHIS RADIX*

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## ABSTRACT

Sexual dimorphism in body, head and tail dimensions is wide spread in snakes. Sex differences in behavior appear to be less common but occur in some species. However, information on sexual dimorphism is often limited to adults and information on neonates is frequently lacking. The objectives of this study were to 1) characterize patterns of sexual dimorphism in neonate and adult Plains garter snakes (Thamnophis radix), 2) test for sex differences in behavior and 3) document corticosterone levels in wild-caught and captive snakes and test for possible effects of corticosterone on behavior.

Sexual dimorphism in body size was absent in neonates (71 offspring in six families) whereas adult females were larger than males (64 wild-caught adults). Sexual dimorphism in head dimensions was present in neonates but not in adults. Tail length dimorphism was male-biased in both neonates and adults. Significant sex effects on growth in body size and head dimensions were absent in snakes reared to 11 months (51 snakes in five families) but present for growth in tail length.

Plains garter snakes typically flee when threatened but will sometimes strike defensively. In the closely related Butler's garter snake (*T. butleri*), the likelihood of striking is greater in males than females. In this study, sex differences in behavior were lacking among neonates (64 snakes in six families) and adults (24 wild-caught snakes). However, there was a significant age-by-sex interaction among snakes reared to 11 months of age (19 snakes in two families), with strike frequency of males increasing considerably.

Effects of corticosterone on behavior are well documents in species that maintain territories or compete for mates. For non-territorial species, like the Plains garter snake, corticosterone may have different behavioral effects. Snakes were given corticosterone implants to raise hormone levels and measures of activity were scored before and after

implantation. Unfortunately, corticosterone implants were ineffective and behavioral scores were uncorrelated with corticosterone levels. Corticosterone levels were much higher in wild-caught snakes than in neonates and in wild-caught females than in males, perhaps due to stress associated with capture.