

## Predator-Prey Interaction Between an American Robin, *Turdus migratorius*, and a Five-lined Skink, *Eumeces fasciatus*

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I observed a predator-prey interaction between a juvenile American Robin (*Turdus migratorius* L.) and a juvenile Five-lined Skink (*Eumeces fasciatus* L.). Although Robins are considered omnivorous, there are no previous reports of a robin eating lizards although they have been recorded as occasionally taking snakes. I discuss the age of the individuals involved as it relates to prey capture and escape.

Key Words: American Robin, *Turdus migratorius*, Five-lined Skink, *Eumeces fasciatus*, predation.

The American Robin (*Turdus migratorius* Linnaeus) and Five-lined Skink (*Eumeces fasciatus* Linnaeus) are commonly found in deciduous forests, as well as rural and urban areas and parks, in eastern North America. However, although they inhabit the same areas, there have been no accounts of predator-prey interactions between these two species. The American Robin, the most common thrush species in North America, is a versatile forager, feeding largely on invertebrates during the spring and summer and shifting to a diet with more fruits in the fall and winter (Sallabanks and James 1999; Wheelwright 1986). Robins also occasionally consume vertebrate prey, including snakes (Davis 1969; Netting 1969; Richmond 1975; Erickson 1978), shrews (Powers 1973), and even fish (Bayer 1980; Kimball 1944). However, there are no published records of Robins pursuing or consuming any species of lizard (Sallabanks and James 1999).

The Five-lined Skink is a small lizard associated with forest openings throughout the eastern United States and southern Ontario (Fitch 1954; Behler and King 1997). Juveniles and adults differ in their appearance; adults develop a solid brownish color, whereas juveniles have five light-colored stripes on a black body and a bright blue tail (Behler and King 1997). Juveniles can lose their blue tail (autotomy) during interactions with predators. This, along with their striped pattern, is thought to confuse predators and allow the skink to escape (Fitch 1954; Clark and Hall 1970; Vitt and Cooper 1986; Goodman 2006). Numerous mammalian and reptilian predators of the Five-lined Skink have been documented (Fitch 1954). Although several birds, including mimids, icterids, corvids, and accipiters, prey upon lizards (Cooper and Vitt 1985), the American Robin has not been known to prey upon lizards. Additionally, there have only been a few confirmed avian predators of the Five-lined Skink, including the American Kestrel (*Falco sparverius*) (Heintzelman 1964), Broad-winged Hawk (*Buteo platypterus*) (Fitch 1974), Cooper's Hawk (*Accipiter cooperii*) (Toland 1985), Greater Roadrunner (*Geococcyx californianus*) (Brown

1963) and Red-shouldered Hawk (*Buteo lineatus*) (Fitch et al. 1946).

I observed a predator-prey interaction between an American Robin and a Five-lined Skink on 24 August 2006 at Joe Creason Park in Jefferson County, Kentucky (38°12'N 85°42'W). The interaction took place in a field at the edge of a forested area and I used 10 × 43 binoculars to aid my observations. The initial observations of two juvenile robins (J1 and J2), and the juvenile skink were made from a distance of over 20 m. Subsequent observations of J2 were made from about 10 m. At 18:18 I observed J1 with a skink in its beak. At 18:19 J2 approached J1, at which point the skink escaped by jumping out of J1's beak. The robins pursued the skink for approximately 30 cm; J2 captured the skink and carried it approximately 5 m away while J1 flew off. I moved closer and observed the robin handle and consume the skink over the next six minutes. The robin, holding the skink in its beak, beat the skink on the ground multiple times and then took several bites. The robin repeated this four times, stopping periodically to stand alert and scan the area. The robin also took one large bite and swallowed a large portion of the skink. After the robin flew off, I examined the spot and found only the skink's entrails. Closer examination of the site where the skink was initially captured revealed the skink's blue tail. Although I was unable to measure the skink, based on the tail remnant and entrails the skink was approximately 90 mm.

This is the first account of a predator-prey interaction between the American Robin and the Five-lined Skink. The Five-lined Skink spends most of its time under cover such as woody debris and thus may largely avoid predation from avian foragers (Fitch 1954). However, the ranges and habitat of both species overlap, and it is likely that skinks may occasionally be pursued and successfully captured by robins. At least one other thrush species is known to consume skinks; *Turdus caelanops* of Japan has been recorded to prey upon juvenile *Eumeces okadae* (Hasegawa 1990). It is interesting that the interaction I observed took place

between juveniles of both species. Previous studies have shown that juvenile robins are less skilled when foraging for invertebrates and fruits (Vanderhoff and Eason 2007). Therefore, one might not expect that a juvenile robin would attempt to capture a skink. However, juveniles are often more likely than adults to pursue and consume novel food items (Wunderle 1991).

Juvenile Five-Lined Skinks may also be less skilled at escaping predators than are adults. I did not witness the initial capture of the skink by J1 so I am unsure of any anti-predator behaviors that the skink may have used at that time. However, many species of *Eumeces* flicker their vividly colored tails to distract predators (Cooper 1998), and studies have shown that juveniles that display this behavior are better able to escape from snakes (Cooper and Vitt 1985).

Five-lined Skink populations may be more intermittent and less common in Ontario than in Kentucky where this interaction was observed. In recent years Five-lined Skink populations have been in decline in Canada, and under the Species at Risk Act the Five-lined Skink is listed as a species of special concern (Quirt et al. 2006). Human removal of woody debris has eliminated an important microhabitat for the skink, and the decline in appropriate microhabitat is thought to be one of the main causes for the skink's decline in some areas of Canada (Hecnar and M'Closkey 1998). Woody debris is important for nest sites, but also acts as an important refuge from predators (Hecnar 1994), and removal of these refuges may increase the Five-lined Skinks' encounter rate with avian predators, like the American Robin, as well as increase the skinks' likelihood of being captured.

Birds and lizards are commonly studied organisms, but documentation of predator-prey interactions between these two groups is rare (Blomberg and Shine 2000), although avian predation is thought to be the selective pressure responsible for the vivid blue tail of juvenile skinks (Cooper and Vitt 1985), little information exists on interactions between birds and skinks. Both quantitative and qualitative information on predator-prey interactions between birds and lizards is needed to add to knowledge of both groups.

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## Literature Cited

- Bayer, R. D.** 1980. Novel use of an unusual food: American robin eating parts of fish. *Journal of Field Ornithology* 51: 74-75.
- Behler, J. L., and F. W. King.** 1997. National Audubon Society Field Guide to North American Reptiles and Amphibians. Alfred F. Knopf, New York. 743 pages.
- Blomberg, S. P., and R. Shine.** 2000. Size-based predation by kookaburras (*Dacelo novaeguineae*) on lizards (*Eulamprus tympanum*: Scincidae): What determines prey vulnerability? *Behavioral Ecology and Sociobiology* 48: 484-489.
- Brown, L. N.** 1963. Status of the Roadrunner in Missouri. *The Condor* 65: 242-243.
- Clark, D. R., and R. J. Hall.** 1970. Function of the blue tail-coloration of the Five-lined Skink (*Eumeces fasciatus*). *Herpetologica* 26: 271-274.
- Cooper, W. E.** 1998. Reactive and anticipatory display to deflect predatory attack to an autotomous lizard tail. *Canadian Journal of Zoology* 76: 1507-1510.
- Cooper, W. E., and L. J. Vitt.** 1985. Blue tail and autotomy: Enhancement of predation avoidance in juvenile skinks. *Zeitschrift für Tierpsychologie* 70: 265-276.
- Davis, W. F.** 1969. Robin kills snake. *The Wilson Bulletin* 81: 470-471.
- Erickson, D. B.** 1978. Robin feeding upon snake. *The Murrelet* 59: 26.
- Fitch H.** 1954. Life history and ecology of the five-lined skink, *Eumeces fasciatus*. Kansas University Museum of Natural History Publications 8(1): 1-156. University of Kansas Publications, Lawrence.
- Fitch H.** 1974. Observations on the food and nesting of the Broad-winged Hawk (*Buteo platypterus*) in northeastern Kansas. *The Condor* 76: 331-333.
- Fitch, H., F. Swenson, and D. F. Tillotson.** 1946. Behavior and food habits of the Red-tailed Hawk. *The Condor* 48: 205-237.
- Goodman, R. M.** 2006. Effects of tail loss on growth and sprint speed of juvenile *Eumeces fasciatus* (Scincidae). *Journal of Herpetology* 40: 99-102.
- Hasegawa, M.** 1990. The thrush *Turdus celanops* as an avian predator of juvenile *Eumeces okadae* on Mayake-Jima, Izu Islands. *Japanese Journal of Herpetology* 13: 65-69.
- Hecnar, S. J.** 1994. Nest distribution, site selection, and brooding in the five-lined skink (*Eumeces fasciatus*). *Canadian Journal of Zoology* 72: 1510-1516.
- Hecnar, S. J., and R. T. M'Closkey.** 1998. Effects of disturbance on five-lined skink, *Eumeces fasciatus*, abundance and distribution. *Biological Conservation* 85: 213-222.
- Heintzelman, D. S.** 1964. Spring and summer Sparrow Hawk food habits. *The Wilson Bulletin* 76: 323-330.
- Kimball, J. W.** 1944. A fishy bird story. *The Auk* 61: 646-647.
- Netting, M. G.** 1969. Does the robin eat DeKay's snake? *The Wilson Bulletin* 81: 471.
- Powers, L. R.** 1973. Record of a robin feeding shrews to its nestlings. *The Condor* 75: 248.
- Quirt, K. C., G. Blouin-Demers, B. J. Howes, and S. C. Lougheed.** 2006. Microhabitat selection of five-lined skinks in northern peripheral populations. *Journal of Herpetology* 40: 335-342.
- Richmond, M. L.** 1975. American robin feeds garter snake to its nestlings. *The Wilson Bulletin* 87: 552.
- Sallabanks, R., and F. C. James.** 1999. American Robin (*Turdus migratorius*). *Birds of North America* (462). American Ornithologists' Union, Philadelphia, Pennsylvania. 27 pages.
- Toland, B.** 1985. Food habits and hunting success of Cooper's Hawk in Missouri. *Journal of Field Ornithology* 56: 419-422.

- Vanderhoff, E. N., and P. K. Eason.** 2007. Disparity between adult and juvenile American Robins *Turdus migratorius* foraging for ground invertebrates and cherry fruits. *Ethology* 113: 1212-1218.
- Vitt, L. J., and W. E. Cooper.** 1986. Tail loss, tail color, and predator escape in *Eumeces* (Lacertilla: Scincidae): Age-specific differences in costs and benefits. *Canadian Journal of Zoology* 64: 583-592.
- Wheelwright, N. T.** 1986. The diet of American robins: An analysis of U.S. Biological Survey Records. *The Auk* 103: 710-725.
- Wunderle, J.** 1991. Age-specific foraging proficiency in birds. Pages 273-324 in *Current Ornithology*. Edited by Dennis Power. Plenum Press, New York.

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