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PREDATION BY BLACK RAT SNAKES IN BANK SWALLOW COLONIES.—During May, June and July of 1974 I observed several large black rat snakes, *Elaphe obsoleta*, associated with colonies of bank swallows (*Riparia riparia*) in steep banks of the Kansas River near Lawrence, Douglas County, Kansas. These snakes were notably larger than black rat snakes in a nearby population studied by Fitch (1963).

The largest male had a total length of 2150 mm (1850 S-V, 300 tail). While not approaching the record of 256.5 cm (Conant 1975) this snake exceeded the record for the state of Kansas—1843 mm total length (Collins 1974). Fitch (1963) captured 359 *E. obsoleta* 516 times over a 15-year period at the University of Kansas Natural History Reservation 6.8 km north of my study area. In his samples, the largest male and female were 1530 and 1465 mm S-V, respectively, with only eight males and one female exceeding 1400 and only 17 males and two females between 1300 and 1400. In my sample of 10 snakes the snout-vent lengths in mm (weights in gms) were: Males- 1850, 1595 (1245), 1540 (1220), 1520, 1380 (1090), 1360 (1100); females- 1455 (750), 1430, 1390, 1360. Six of the 10 snakes in my sample fall into Fitch's maximum SVL category while the other four fall into the 1300–1400 range. If the growth of the 1850 SVL male in my study conformed with the mean male growth rate that Fitch calculated, this individual would have an estimated age of almost 40 years. In view of the proximity of Fitch's population to the snakes I observed, one would not expect large differences in size and age.

Probably growth rate is faster in the snakes I observed because they spend approximately half of their five-month growing season (Fitch 1963) feeding, at will, on the swallows and expending little energy in doing so. By observing through 7x binoculars from a boat on the river I saw snakes move from hole to hole in the colonies apparently in search of prey. One male rat snake was captured seven times within the colonies; his records spanned most of the time from the swallows' arrival in May to their departure in August. Snakes often could be seen resting in nest holes with the head and forebody protruding, and would slowly withdraw into the holes upon approach. Two individuals were dug out of one nest cavity along with freshly broken eggs. The arboreal tendencies of *E. obsoleta* and their predation on birds, especially on the eggs and nestlings, are well documented (e.g. Fitch 1958, 1963). Many rat snakes were located by Fitch (1963) when he investigated disturbances caused by various species of birds mobbing the climbing snakes, but the birds eaten were mostly nestlings. In my study adults as well as young were preyed upon as determined by the remains of feathers in scats of captured snakes. Probably these adult birds were trapped in their nest cavities when the snakes entered. No mobbing or other aggressive behavior toward snakes by the swallows was observed. Small snakes were not found in the colonies. This absence may be the result of the small sample obtained or it may reflect real behavioral differences. Fitch (1963) stated that young black rat snakes must either be more secretive or much less conspicuous than adults because a higher proportion of the young were overlooked in his population size estimates. Perhaps the snakes captured in the swallow colonies represent individuals which have, by chance, located the colonies and have learned to return to them each year.

E. obsoleta typically is associated with deciduous forests and seldom is found far from woodland (Fitch 1963). The four swallow colonies on my study area were all excavated in the almost vertical river banks at the edge of a large cultivated field. The colony that suffered most from observed predation was nearest (ca. 100 m) to

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woodland and was relatively small with about 370 holes extending along the bank about 60 m. The other, larger colonies were 500, 800, and 1100 m from the woodland, respectively. The Kansas River flooded following heavy rains in early June; undercutting and sloughing of the banks completely destroyed burrows and nests of all four colonies. Within three days after the water level receded, three of the four areas were recolonized with swallows present in nearly their former abundance and soon new clutches of eggs were laid. However, the colony near woodland that had suffered heavy predation by *E. obsoleta* was not restored. Only after the flood were snakes captured in the other colonies farther from woodland even though equal effort had been expended in searching all colonies before the flood. Two of the six snakes located in these colonies after the flood had been originally captured and marked in the colony nearest the woodland.

My observations suggest that: (1) Predation by *E. obsoleta* in bank swallow colonies may be sufficiently great to affect local abundance and distribution of the birds; (2) Individual *E. obsoleta* may become accustomed to bank swallows as prey and may rely on them throughout a major portion of the snake's season of growth. The relative ease with which such well situated individuals obtain their food causes them to grow faster and larger than less favored individuals that must depend upon normally dispersed prey.

I thank the Don Cain family for permitting me the use of their property to gain access to my study area. Henry S. Fitch critically evaluated the manuscript and made his field notes on *E. obsoleta* available to me. Mary Groves kindly typed the manuscript.

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NEW MARGINAL RECORDS FOR THE EASTERN HARVEST MOUSE AND SOUTHEASTERN SHREW IN ARKANSAS.—The eastern harvest mouse, *Reithrodontomys humulis*, previously has been reported from extreme western Arkansas (Sealander, Amer. Midl. Nat. 56: 257–296, 1956) and eastern Oklahoma (Jones and Anderson, Southwestern Nat. 4: 153–154, 1959; Smith, Trans. Kans. Acad. Sci. 67: 204–205, 1964). Although there was presumptive evidence for its occurrence in northeastern Arkansas based on records from extreme northwestern Tennessee (Goodpaster and Hoffmeister, J. Mammal. 33: 362–371, 1962), no specimens have been reported from that part of the state. Recently a specimen (UADZ M67-148)

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