Massachusetts Natural Heritage Program

Natural Heritage & Endangered Species Program
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MASSACHUSETTS RARE AND ENDANGERED WILDLIFE

EASTERN SPADEFOOT
(Scaphiopus h. holbrooki)

DeGraaf, R.M. and D.F. Rudis. Amphibians and Reptiles of New England. University of Mass., Amherst. 1983.

DESCRIPTION

The Eastern Spadefoot Toad, only 1.75-2.25" (4.4-5.7cm) long, is a short-legged, squat, big-headed toad. The unmistakable cat-like, vertically elliptical pupils are distinctive. The skin is fairly smooth and scattered with small warts. Colors are somber, grayish or blackish-brown with olive. Two yellowish lines originate from each eye and run down the back to form a lyre-shaped pattern. Another light line runs along each side of the body. The toad's name comes from the horny, sharp-edged, sickle-shaped spade on the inner surface of the hind foot. It belongs to a primitive amphibian family that is neither a true frog nor a true toad.

SIMILAR SPECIES

The Eastern Spadefoot is the only toad in its family occurring east of the Mississippi River. It is distinguished from the true toads by its smoother skin, vertically elliptical pupils and single, sharp-edged spade on each hind foot.

HABITAT IN MASSACHUSETTS

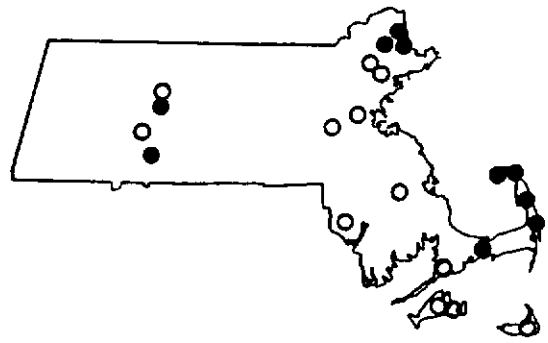
This burrowing species requires dry, sand or sandy loam soils characteristic of Pitch Pine barrens, coastal oak woodlands or sparse shrub growth, interspersed with temporary ponds. It prefers areas with leaf litter, and may be found in farmland areas. Colonies may occur within the floodplains of major rivers.

BEHAVIOR

The Eastern Spadefoot is the most fossorial species of frog or toad in Massachusetts. It burrows up to eight feet below the ground's surface

Range of Scaphiopus h. holbrooki

(continued overleaf)



● Verified since 1978
○ Reported prior to 1978

Breeding Distribution in Massachusetts by Town

1986

to hibernate during the cold months and to avoid desiccation during the rest of the year. It backs down into its burrow, digging with the hind feet and covering itself over with the fore feet. In the warmer months, from April to September, the Spadefoot comes up to breed after prolonged warm and heavy rains. Spadefoots are secretive and nocturnal; activity peaks just after sundown and before sunrise. In the summer months, individuals remain in their burrows an average of 9.5 days between feedings. They emerge uttering explosive, low-pitched grunts, short in duration and repeated at brief intervals. Home range movements are estimated to be an average of 108 sq. ft./10 sq. m., 90% of which falls within an area of 67 sq. ft./6.2 sq. m. Spadefoots have been recaptured in the same ranges after 5 years. Individuals may live for several decades. Adults apparently produce noxious or distasteful skin secretions, because native predators usually ignore them.

BREEDING SCHEDULE

Colonial breeding is initiated by heavy rainfall in April or May and lasts until August or September. This one or two night phenomenon has been likened to an orgy of raucous squawks and frantic courtship. Since Spadefoots do not breed successfully in permanent waters with fishes, they breed in temporary ponds. The adhesive eggs, laid in masses or strings of 1000-2500, are draped over submerged twigs or grass, where they hatch in 5 to 15 days. Metamorphosis of larvae to adults is said to coincide with pond conditions; longer pond life results in longer larval life. In Essex County, a natural population metamorphosed in less than 4 weeks. Sexual maturity is reached during the second year after metamorphosis, males at 15 months and females at 19 months.

FEEDING HABITS

Larvae feed on plankton for the first few days, later becoming vigorously carnivorous and sometimes cannibalistic. Adults eat flies, spiders, crickets, caterpillars, true bugs, other ground-dwelling arthropods, earthworms, snails, moths, and small vertebrates, such as salamanders.

RANGE

The Eastern Spadefoot Toad is found from Massachusetts to New York, south to eastern Florida and some of the Keys, west through Pennsylvania, through the southern Great Lakes region, to Arkansas and south to Louisiana. The species is absent from the higher elevations of the Appalachians and the Everglades. In Massachusetts, the Spadefoot is known only in scattered coastal locations from Plum Island, south to Cape Cod and Martha's Vineyard and several locations in the southern Connecticut Valley.

STATUS

The Eastern Spadefoot is listed as "Threatened" in Massachusetts. Only 12 current sites have been verified since 1978. Museum specimens and literature attest to the former widespread, if not abundant, status of the species. Several factors contribute to the rarity of the species. Plum Island is the northern limit of species' range. Destruction of suitable habitat continues to limit its numbers; Spadefoot populations have been extirpated by development from Middlesex County, inland Essex County and parts of Martha's Vineyard. The species is vulnerable to pesticides, as it was extirpated in Nantucket after WWII by the use of DDT. Many individuals are killed crossing roads, especially during the breeding season.

Adapted from: Lazelle, J.D., Jr., 1987. Eastern Spadefoot. In T. W. French and J. E. Cardoza (eds). Endangered, Threatened, and Special Concern Vertebrates of Massachusetts. Massachusetts Division of Fisheries and Wildlife (in press).