

Species: Eastern Spadefoot (*Scaphiopus holbrookii*)
Global Rank: G5
State Rank: S1/S2
State Wildlife Action Plan: High-level Concern Species
Climate Change Vulnerability: Extremely Vulnerable
Confidence: Low

Habitat:

The unpredictable and primarily fossorial nature of the eastern spadefoot makes it a difficult species to study. In Pennsylvania, the eastern spadefoot usually inhabits sandy soils along the floodplains of streams and rivers and in agricultural fields (Hulse et al. 2001). Seasonal activity is variable and dependent upon the frequency and intensity of rainfall (Hulse et al. 2001). A heavy rain event usually precedes breeding which occurs in vernal pools (Gibbs et al. 2007). The species can be found from Cape Cod to the Florida Keys and west to eastern Missouri and Louisiana (White and White 2002).

Current Threats:

Current threats to the species include habitat destruction from development, habitat alteration, and changes in water chemistry from agricultural practices.

Main Factors Contributing to Vulnerability Rank:

Distribution relative to natural barriers: Upland habitat and mountains to the north of the species current known range in Pennsylvania may likely limit its ability to move northward in response to climate change.

Distribution relative to anthropogenic barriers: Major highways in Pennsylvania, such as the Pennsylvania Turnpike, create dangerous obstacles for northern movement of the eastern spadefoot.

Predicted impact of land use changes resulting for human responses to climate change: Climate change mitigation activities, such as the construction of solar facilities, may occur within the current range or potential future range of the species.

Dispersal and movements: Evidence suggests that the eastern spadefoot is probably only capable of short distance dispersal. Based on observations of a Florida population, Pearson reported an average home range of about 12m² (Pearson 1955).

Predicted sensitivity to exposure to past variations in precipitation: Considering the species range in Pennsylvania, the eastern spadefoot has experienced a very small variation in precipitation in the past fifty years.

Predicted sensitivity to changes in physiological hydrological niche: The species is completely dependent on vernal pools for egg laying and the larval stage. The hydrology

of these systems may be altered due to changes in precipitation patterns and increased temperatures. An alteration in the pattern of heavy rain events and the seasonality at which they occur may also impact this species since explosive breeding events usually follow heavy rainstorms.

References:

Gibbs, J.P, A.R. Breisch, P.K. Ducey, G. Johnson, J.L. Behler, and R.C. Bothner. 2007. The Amphibians and Reptiles of New York State. Oxford University Press Inc, New York, New York. pp 113-115.

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