

Species: Jefferson Salamander (*Ambystoma jeffersonianum*)
Global Rank: G4
State Rank: S3S4
State Wildlife Action Plan: Responsibility Species
Climate Change Vulnerability: Highly Vulnerable
Confidence: Low

Habitat:

Jefferson salamander is found in well-drained deciduous or mixed upland forests within 250 to 1600 m of a small vernal pool or pond (MA NHESP 2007). Within the United States, the species range extends from southern New York, northern New Jersey, and most of Pennsylvania to Ohio and southern Indiana. Their range extends southward to Kentucky, West Virginia, and Virginia (NatureServe 2010).

Current Threats:

Current threats to the species include alteration of vernal pool breeding sites, loss and alteration of forested habitats surrounding pools, road mortality during migration to and from breeding sites, and acidification of vernal pools due to acid deposition (NatureServe 2010).

Main Factors Contributing to Vulnerability Rank:

Distribution relative to natural barriers: The species is found in and around vernal pools (depending on season and life stage). Natural barriers such as extensive forests between pools will make movement for this species very difficult.

Distribution relative to anthropogenic barriers: Significant areas of urban development and agriculture occur within the species range in Pennsylvania that would impair movement in response to climate change.

Dispersal and movements: Young tend to move less than 100 m/yr during the dispersal process (Douglas and Monroe 1981; Semlitsch 2007).

Predicted micro sensitivity to changes in temperature: Jefferson salamanders prefer moist and cool microhabitats.

Predicted micro sensitivity to changes in precipitation, hydrology, or moisture regime: Jefferson salamanders are completely dependent on aquatic habitats (vernal pools or small ponds) for egg laying and the larval stage. The hydrology of these systems may be altered due to climate change effects.

Physical habitat specificity: The species is moderately to highly specialized in its physical requirements for vernal pools. A specific water chemistry range (a function of

surrounding soils and underlying bedrock) is required within pools for successful larval growth (Freda and Dunson 1986).

Dietary versatility: While adults eat a wide range of invertebrate prey, larvae are largely limited to a diet dependent on anuran larvae and aquatic invertebrates that also reproduce in seasonal pools.

References:

Douglas, M.E., and B.L. Monroe, Jr. 1981. A comparative study of topographical orientation in *Ambystoma* (Amphibia: Caudata). *Copeia* 1981:460-463.

Freda, J. and W.A. Dunson. 1986. Effects of low pH and other chemical variables on the local distribution of amphibians. *Copeia* 1986:454-466.

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NatureServe. 2010. NatureServe central Databases. Arlington, Virginia. USA.

Semlitsch, R. 2007. Differentiating migration and dispersal processes of pond-breeding amphibians. *Journal of Wildlife Management* 72:260-267.