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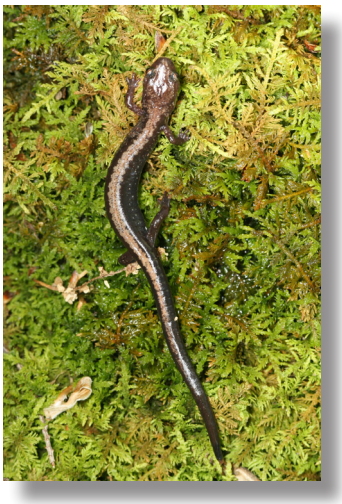
Patuxent Wildlife Research Center

Managing the Extinction Risk of the Shenandoah Salamander Under Predicted Climate Change

- ***The Challenge:*** In many National Parks organisms at high elevation are severely threatened by climate change. Climate change is expected to result in dramatic alteration in temperature and moisture gradients in the Appalachians, which may result in species extirpation in high elevation habitats. Many species are specifically adapted to the unusual conditions typical of high elevation sites; risks of extirpation increase as conditions change. Compounding the risk is the extraordinarily small range of many high elevation species; such is the case with the endangered Shenandoah salamander.



- ***The Science:*** We will combine detailed habitat occupancy models for the endangered Shenandoah salamander (Plethodon shenandoah) with projections of future climate to predict risk of extinction for this species, and provide information on the best way to manage this extinction risk. Along with the Virginia Dept of Fish and Game, US Fish and Wildlife Service, National Park Service, USGS, Smithsonian, and the University of Virginia, the USGS Patuxent Wildlife Research Center will conduct a Structured Decision Making workshop to develop the management plans for the Shenandoah Salamander.

- ***The Future:*** To plan the future a structured decision making approach to natural resource management results in clearly defined objectives, management activities linked to these objectives, and a monitoring program designed to better predict the Shenandoah salamander's response to climate change, competition with the red-backed salamander, and the response to management activities. We will identify optimal management actions and decision thresholds (which identify the characteristics of the ecosystem at which a decision must be made to achieve management objectives), given projected climate change forecasts. Ultimately, we will identify the combination of management actions which may best protect Shenandoah salamander populations from extinction.

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