

**Title** – Peaks of Otter Salamander (*Plethodon hubrichti*) Condition Declines along an Elevational Gradient

**Program of Study** – Biology

**Presentation Type** – Print Poster

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### Abstract

The Peaks of Otter Salamander, *Plethodon hubrichti*, is a montane species found at elevations above 442 m within a 117 km<sup>2</sup> area of the Blue Ridge Mountains in central Virginia, USA. In allopatric areas (areas without the Eastern Red-backed Salamander, *P. cinereus*, a potential competitor) salamander condition was hypothesized to decrease at lower elevations due to increased temperatures and lower humidities, which may adversely affect the ability of salamanders to forage effectively. On 28 October 2017 Peaks of Otter salamanders were collected by turning over rocks and logs at three sites ranging in elevation from 503 to 991 m. Mass, snout-vent-length (SVL), and gender were recorded in the field for 22 females and 21 males. From the SVL and mass data, salamander condition was calculated using the residual method. Condition index values were then regressed against elevation where a significant relationship was found with salamander condition declining with elevation. Average condition declined from a high of 0.10 at 991 m to a low of -0.19 at 503 m. Based on these preliminary

results, the residual condition index has the potential to be a simple method for assessing the effects of elevation, or other stress factors such as competition, on this montane salamander species. Additionally, condition indices can provide researchers with a surrogate measure for density, survival, growth, and reproduction rates which also decrease with elevation.

Furthermore, since this method requires significantly less time and effort than traditional methods for measuring survival and growth rates, it could be very useful in the conservation of this montane species with a very limited distribution. In the future, we plan to collect and assess the condition of salamanders from sites at several additional elevations.