

Title – Genetics of an Isolated Population of *Plethodon hubrichti*

Program of Study – Biology

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Abstract

Plethodon hubrichti, the Peaks of Otter Salamander, is a striking amphibian endemic to a 19-km stretch of the Blue Ridge Mountains within west-central Virginia. This range borders the Blue Ridge Parkway; and, although limited, maintains healthy populations within its range. This lungless salamander (family Plethodontidae) thrives in the cool, humid habitat created by elevated mountain peaks. For many years, it was thought that this salamander could not be located outside of the primary population's range. However, a small population of *P. hubrichti* has been discovered less than one km away within a wooded area containing many large boulders. This newly-found population appears to be completely isolated from the species' primary distribution, and it is not known for how long this isolation has been maintained. Both the main and newly-discovered distributions are resistant to expansion due to competition with the more widely-spread, *Plethodon cinereus*, the Red-backed Salamander. There is competition due to territorial interactions and food competition within the sympatric reaches of *P. hubrichti*'s range. Therefore, it is likely that two separate populations of *P. hubrichti* would remain in isolation, eliminating the possibility of gene flow between them. Could these two

populations of salamanders, if separated for a significant time period, possess observable genetic differences? Tail clippings (~.75") were collected from salamanders within both populations, placed in ethanol, and brought back to the lab for analysis. To observe any potential genetic variability, whole genomic DNA was isolated from the tail tip samples and amplified via PCR techniques for specific genes. Once the PCR product was obtained, samples were sent off for sequencing and the sequences compared using a phylogenetic algorithm. Results indicate that there is minimal genetic differentiation between the main range and isolate populations.