

A NEW ELEVATION RECORD FOR SHASTA SALAMANDER, *HYDROMANTES SHASTAE*, IN NORTHERN CALIFORNIA

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The Shasta salamander, *Hydromantes shastae*, is a state-listed threatened species endemic to a small region of the southeastern Klamath Mountains generally located north and northeast of Redding, Shasta County, California. This species has long been known to occur in habitats associated with limestone formations (Stebbins 2003) and recently found to occur in various non-limestone habitats (Lindstrand 2000, Nauman and Olson 2004, Olson 2005). Most of the 556 previously recorded Shasta salamander locations occur at elevations between 244 and 610 m (California Natural Diversity Data Base 2007¹, Museum of Vertebrate Zoology 2007², L. Lindstrand, North State Resources, Inc. unpublished data). Only six recorded locations occur at elevations above 610 m, with the two highest of these found at 950 m (Olson 2005, Museum of Vertebrate Zoology 2007²). Herein, I describe the finding of a Shasta salamander at an elevation significantly higher than previously reported.

On 15 February 2007, we surveyed limestone outcrop features at a site on Bohemotash Mountain (40°47'229"N, 122°28'214"W), Shasta County, California (Fig. 1) and detected one Shasta salamander. This individual was an adult (SVL 54 mm) found under limestone talus. Photographs were taken of the individual and habitat. The elevation at this site is 1158 m, which is 183 m higher than the highest previously recorded location. No other Shasta salamanders were found that same day during approximately 13 hours of search effort. Finding one individual is not uncommon and somewhat significant considering Shasta salamander capture rates on various surveys I have performed over the past eight years range between 0.008 and 1.7 per person-hour (L. Lindstrand, North State Resources, Inc. unpublished data).

The habitat type as classified using the California Wildlife Habitat Relationship system (Mayer and Laudenslayer 1988) at the Bohemotash Mountain site was characterized as Klamath mixed conifer dominated by Douglas-fir, *Pseudotsuga menziesii*, sugar pine, *Pinus lambertiana*, and ponderosa pine, *P. ponderosa*, with occasional incense cedar, *Calocedrus decurrens*. Hardwoods present included canyon live oak, *Quercus chrysolepis* and big-leaf maple, *Acer macrophyllum*, with occasional California black oak, *Q. kelloggii* and California bay, *Umbellularia*

¹California Natural Diversity Database. 2007. Version 3.1.0. California Department of Fish and Game Natural Diversity Database, Sacramento, California, USA.

²Museum of Vertebrate Zoology, University of California, Berkeley. 2007. Specimen Database. <http://mvzarcot.berkeley.edu/>. Web site accessed April 2007.

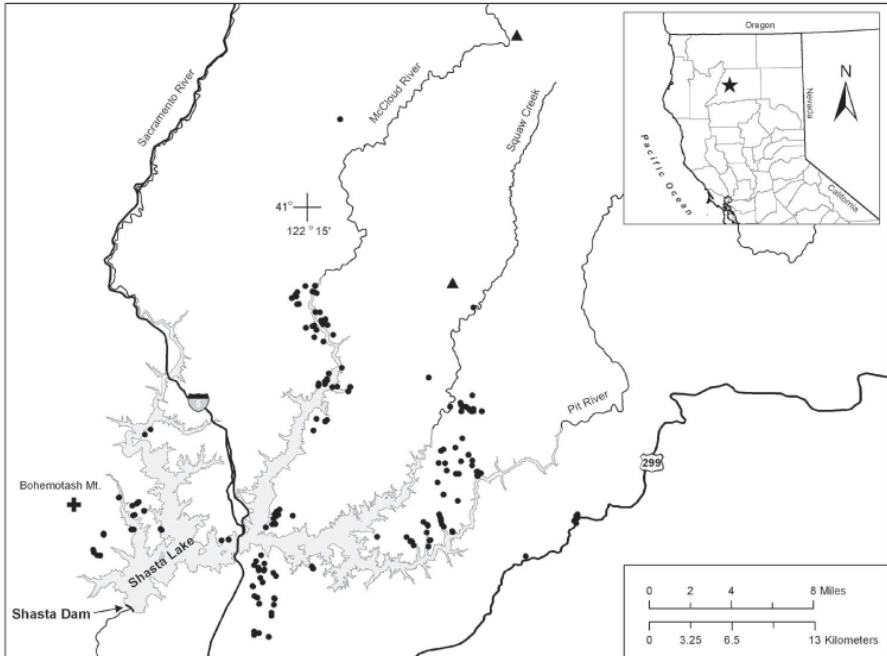


Figure 1. Bohemotash Mountain Shasta salamander, *Hydromantes shastae*, discovery site location, Shasta County, California. Solid circles indicate known Shasta salamander sites, solid triangles indicate the two previously known highest sites at 950 m elevation, and a solid cross indicates the Bohemotash Mountain site. Location data sources include California Natural Diversity Data Base 2007¹, Museum of Vertebrate Zoology 2007², Nauman and Olson 2005, and L. Lindstrand, North State Resources, Inc. unpublished data.

californica. Dominant shrubs included whiteleaf manzanita, *Arctostaphylos viscida*, deerbrush, *Ceanothus integerrimus*, poison oak, *Toxicodendron diversilobum*, sierra gooseberry, *Ribes roezlii*, shrub tanoak, *Lithocarpus densiflorus echinoides*, and huckleberry oak, *Q. vacciniifolia*. This species composition is more typical of higher elevation montane conifer habitats in the southeastern Klamath Mountains, and represents a more “true” conifer forest habitat than the lower elevation habitats in which Shasta salamanders are known to occur.

The significance of this new elevational record is attributed to the differences between habitat and environmental conditions at this site relative to those at lower elevations. Habitats at approximately 975 m and above in the region considered to encompass the Shasta salamander’s geographic range are generally subject to persistent freezing temperatures and snow, lower daily average temperatures, and lower relative humidity levels in the winter months than habitats found at lower elevations. Although it is likely due to the lack of specific survey effort, it was previously unknown whether Shasta salamanders occurred at higher elevations, since all the documented locations suggest that the species was limited to lower elevations where environmental conditions are warmer, more mesic, and have greater relative humidity levels than higher elevations

during the winter months. While the Bohemotash Mountain discovery does not provide insights into the population status, dynamics, or structure, it documents at least one Shasta salamander occurrence at a high elevation limestone habitat site. This finding suggests that other high elevation limestone and non-limestone forest habitats within the known geographic range of the species may represent potential Shasta salamander habitat.

ACKNOWLEDGMENTS

I thank the U.S. Bureau of Reclamation Mid-Pacific Region for their support, K. Marine for reviewing an early version of the draft manuscript, M. R. Jennings and S. Barry for review of the draft manuscript, and all North State Resources, Inc. staff that participated and supported this, and many other related survey efforts. Surveys were conducted under a California Department of Fish and Game Scientific Collection Permit and Memorandum of Understanding issued to L. Lindstrand III.

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Received: 3 May 2007

Accepted: 22 June 2007