

Assessment of Genetic Diversity in the Western Shovel-nosed Snake

Wood, D.A. (US Geological Survey, San Diego Field Station, 4165 Spruance Road, Suite 200, San Diego, CA 92101), W.P. BURGER (Arizona Game and Fish Department, 7200 E. University Dr, Mesa, AZ 85207), and Holycross, A.T. (School of Life Sciences, Arizona State University, Tempe, AZ 85287)

The Western Shovel-nosed Snake (*Chionactis occipitalis*) is distributed throughout much of the Sonoran and Mohave deserts. Four subspecies are currently recognized based on clinal variation in pattern: Mohave Shovel-nosed Snake (*C. o. occipitalis*), Colorado Desert Shovel-nosed Snake (*C. o. annulata*), Nevada Shovel-nosed Snake (*C. o. talpina*), and Tucson Shovel-nosed Snake (*C. o. klauberi*). In December 2004 the Fish and Wildlife Service was petitioned to list *C. o. klauberi* under the Endangered Species Act. An important question in evaluating that petition is whether *C. o. klauberi* is a distinct subspecies. In 2006 we coordinated surveys for *Chionactis occipitalis*, and collected samples from 32 Arizona specimens. These samples, along with 51 previously collected samples, were used in a phylogeographic assessment of *Chionactis occipitalis* based on mtDNA data. We assumed that subspecies should reflect some indication of evolutionary history; thus, current morphologically-based subspecies of *Chionactis occipitalis* should, if valid, exhibit exclusive or near-exclusive distinctions within their mtDNA. Our analysis revealed significant geographical structuring of haplotypes and two distinct regional lineages, yet none of the currently defined subspecies form an exclusive group by themselves. Instead, our data suggest 2 subspecies, which would be formed by combining eastern populations of *C. o. occipitalis* with *C. o. annulata* and *C. o. klauberi*, and western populations of *C. o. occipitalis* with *C. o. talpina*. MtDNA data suggest specimens currently recognized as *C. o. klauberi* are embedded in a larger geographic clade that resulted from recent range expansion from western populations, and these data are concordant with the west-to-east clinal variation exhibited in morphology. We also include data from our 2006 surveys, which involved extensive collaborative effort and included >100 hours and >2000 miles of road surveys, walking surveys, and pit fall traps.