Western North American Naturalist 69(1), © 2009, pp. 140–141

NEW DISTRIBUTION RECORD FOR THE SOCIAL PARASITIC ANT *ANERGATES ATRATULUS* (SCHENCK, 1852) (HYMENOPTERA: FORMICIDAE): AN IUCN RED-LISTED SPECIES

Shawn T. Dash[1] and Leticia Sanchez[2]

ABSTRACT.—The International Union for Conservation of Nature and Natural Resources red-lists a number of ant species. One species is *Anergates atratulus* (Schenck, 1852), a rarely collected social parasite introduced from Europe. The known distribution in North America is along the Atlantic seaboard. This note reports a huge range expansion in North America, to include Colorado. This finding is important because it provides useful information about the conservation and dispersal patterns of a rare, introduced, socially parasitic ant species.

Key words: black guest ant, Anergates atratulus, Tetramorium caespitum, *Colorado, introduced species, dispersal.*

The black guest ant *Anergates atratulus* (Schenck, 1852) is rarely encountered (Fisher and Cover 2007), perhaps because of its socially parasitic lifestyle or merely because it is indeed just rare (Wheeler 1910, Hölldobler and Wilson 1990). To date, these obligate social parasites have been found only within nests of *Tetramorium caespitum* (L., 1758) in North America (Creighton 1950, Skinner 1987, Fisher and Cover 2007). *Anergates atratulus* is a workerless parasite that is fed exclusively by *T. caespitum* workers (Wheeler 1910, Creighton 1950, Skinner 1987). The natural history of *A. atratulus* is complex and interesting and may provide insight into the distribution of the species. After adelphogamitic (mating of brother and sisters) fertilization within the host nest, mated females disperse. At the completion of this dispersal flight, the female locates a nest of the host species and enters a weakened colony, unmolested by *T. caespitum* workers. (Schenck 1852, Wheeler 1910, Hölldobler and Wilson 1990). Nests of *T. caespitum* parasitized by *A. atratulus* consist of a few workers of *T. caespitum,* a number of virgin *A. atratulus* females, and pupoidal *A. atratulus* males (Wheeler 1910). One may assume that a certain density and demographic of *T. caespitum* nests are needed for *A. atratulus* to colonize.

Both *A. atratulus* and *T. caespitum* are widely distributed in Europe and are thought to have been introduced into North America during the colonial period (Smith 1943, Brown 1957, Czechowski et al. 2002, Ward 2005). Bolton (1979) reported that *T. caespitum* ranges from the eastern United States west to Washington and California but that the western distribution is localized. To date, *A. atratulus,* in contrast, has been recorded only in the New England and mid-Atlantic states: Connecticut, Pennsylvania, New Jersey, Maryland, Delaware, Ohio, Washington DC, and Virginia (Smith 1979, Coovert 2003, Fisher and Cover 2007).

We report the first record of *Anergates atratulus* from the western United States. A single female was collected in a pitfall trap near Niwot in eastern Boulder County, on Niwot Trail close to the Boulder and Lefthand irrigation systems near the 79th Street trailhead (40°05.447 N, 105°09.887 W at 1555.85 m on 7 June 2005). The specimen collected in this study will be deposited in the holdings at the University of Colorado at Boulder (UCMC). The habitat is high-elevation grassland characterized by native and nonnative grasses, including 2 species of *Bromus* as well as Kentucky bluegrass (*Poa arachnifera*), interspersed with riparian vegetation dominated by cottonwoods and willows. The traps were 30–50 m from the riparian vegetation. *Tetramorium caespitum* workers were found in 39% of pitfall traps located about 10 m from paved trails (where nests are most abundant). A low abundance of workers was found in all traps. Gregg

[1]Laboratory for Environmental Biology, Dept. of Biological Sciences, Centennial Museum, University of Texas at El Paso, El Paso TX 79968. E-mail: stdash@miners.utep.edu
[2]Ecology and Evolutionary Biology, University of Colorado at Boulder, Boulder, CO 80309.

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(1963) did not record *T. caespitum* in Colorado. However, by the mid 1990s the species was a major component of many communities in Colorado (W. Cranshaw personal communication). We found, based on museum records (CSUMC), that the first specimens from Colorado were collected in 1985. *Tetramorium caespitum* is now the major ant pest in homes in Colorado and has become a component of ant communities.

The range expansion reported here represents the westernmost record for *A. atratulus*. Given the obligate relationship between *A. atratulus* and *T. caespitum*, *A. atratulus* was not likely to have successfully invaded the area until *T. caespitum* was well established. Because *A. atratulus* is listed by the IUCN as a vulnerable taxon (Social Insects Specialist Group 1996), this range expansion has important conservation implications. Most notably, it could be that the range of *A. atratulus* is much larger than previously suspected but that where *A. atratulus* occurs, it is rare. However, in the case of *A. atratulus*, it is more likely that rarity is a result of limited sampling. Generally speaking, populations of social parasites are smaller and the ranges more restricted than those of their host species. This is likely the case with *A. atratulus* and *T. caespitum*.

Appreciation is given to William Mackay, Israel Del Toro, and Michael Breed for reviewing and providing comments on early versions of this note. We also thank Nathan Sanders and an anonymous reviewer for providing comments and critiques. Funding was provided by University of Colorado Museum of Natural History's Walker van Riper Grant. This material is based upon work supported by the National Science Foundation under Grant No. 0405470, W. Mackay, principal investigator. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the National Science Foundation.

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Received 26 September 2007
Accepted 12 September 2008