Milbert's Tortoiseshell, *Aglais milberti* (Lepidoptera: Nymphalidae): A facultative trogloxene in alpine caves

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Use of caves as a habitat by moths has been reported for the herald moth, *Scoliopteryx libatrix* (Linnaeus) (Noctuidae)¹, granny’s cloak moth, *Speiredonia* spp. (Noctuidae)²,³, the hop vine moth, *Hypena humuli* Harris (Noctuidae)⁴, guano moths (Tineidae)⁵,⁶ and Geometridae (e.g., *Triphosa haesitata* [Guenee])⁷⁻⁹. However, most other Lepidoptera – the butterflies, moths and skippers – are almost never thought of as trogloxenes or troglophiles.

Milbert’s Tortoiseshell, *Aglais milberti* (Godart) (Lepidoptera: Nymphalidae: Nymphalinae) is a boreal North American brush-footed butterfly, most closely related to the Palearctic butterfly *Aglais urticae* (Linnaeus)¹⁰. It occurs from Alaska to Newfoundland, extending to the south – in the western United States west of the Great Plains – to southern California and New Mexico. In the eastern United States it is less frequently recorded further south than Wisconsin, Minnesota, Michigan, Ohio and west to Pennsylvania and New York¹¹.

This butterfly is reported as being a riparian species¹²,¹³, and occurs in meadows, roadides, and clearings¹⁴,¹⁵. Adults are strong fliers¹², and migrate to alpine habitats to forage in the summer¹⁶, where they can be common¹⁷⁻¹⁹. Nectar sources include phlox and bee plant²⁰, and, in the eastern United States, Burdock, Joe-Pye Weed, and Shrubby Cinquefoil²¹. Adults return to lower altitudes to overwinter, with eggs being laid at lower altitudes in the spring¹⁶. Larvae feed on herbaceous vegetation, especially *Urtica* sp.¹⁴,¹⁵,²²,²³.

We have recently completed a bioinventory of caves of Great Basin National Park (White Pine County, Nevada) in which we observed and collected butterflies in two caves located above timberline. In Mountain View Cave (length 16.2 meters, elevation 3413 meters), two specimens of *A. milberti* were collected on 18 July 2007 from dry bedrock ceiling in the twilight zone, where the
temperature was between 2.07 and 15.57 °C, the relative humidity was between 34.6 and 80.9%, and light was less than 4 lux (the collection was between two stations where the parameters were measured, thus a range is given). Surface conditions were 20.39 °C, 25.9% relative humidity, and light 94600 lux. In Broken Cave (length 32.9 meters, elevation 3407 meters), one specimen of Milbert’s Tortoiseshell was collected on 10 July on a dry rock wall and another on 16 July 2007 on a dry bedrock ceiling (Figure 1), with others observed on 16 July 2007. Here the collections were in the twilight zone where on 16 July 2007, air temperature was 8.27 °C, relative humidity was 48.2%, and light level was 1 lux. Surface conditions on 16 July 2007 were air temperature 18.28 °C, relative humidity 38.0%, and light 9860 lux. All specimens at both sites were observed to be roosting with wings folded over their dorsum as in Figure 1.

![Figure 1](image1.jpg)

**Figure 1.** Milbert’s Tortoiseshell, *Aglais milberti* (Nymphalidae) roosting on the ceiling of Broken Cave (16 July 2007).

Our study of caves in Nevada’s Snake range included multiple visits to 26 caves ranging in elevation from 1724 to 3413 meters, yet we observed *A. milberti* in only two of these caves, both of which were above timberline. These
butterflies were resting on dry bedrock ceilings and walls in the twilight or dark zones of the caves, functioning as facultative troglobiontes. Careful examination of western North American caves above timberline during the period when *A. milberti* has migrated to the alpine zone to forage should yield additional observations of facultative cave use by this species.

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**Literature Cited:**


