

## A new and unusual host plant record for the rare moth *Lasionycta wyatti* (Lepidoptera: Noctuidae)

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### ABSTRACT

Moths reared from larvae collected from sand around the bases of silver burweed (*Ambrosia chamissonis* [Less.] Greene) at Tsawwassen, BC were identified as the rare noctuid *Lasionycta wyatti* (Barnes & Benjamin). Thiarrubrin, toxic secondary compounds produced by *A. chamissonis*, are well tolerated by these larvae. This constitutes a new hostplant record for the species.

**Keywords:** *Lasionycta*, *Ambrosia*, thiarrubrin, insect-plant chemical interaction.

### DISCUSSION

*Lasionycta wyatti* (Barnes & Benjamin) (Lepidoptera: Noctuidae) has a reported distribution along the west coast of North America from central British Columbia to northern Washington (J. Troubridge, pers. comm.). Little is known of the natural history of this species, but Crumb (1956), who "...collected many larvae on coastal sand dunes in Washington and Oregon," listed its host plants as beach buckwheat (*Polygonum paronchia* Cham. & Schlecht.), beach verbena (*Abronia latifolia* Eschsch.), seaside tansy (*Tanacetum douglasii* D.C.), "...and a slender grass which roots at the nodes."

In 1995, larvae of an unidentified species of noctuid were collected from the sand surrounding silver burweeds (*Ambrosia chamissonis* [Less.] Greene, Asteraceae) at Centennial Beach in Boundary Bay Regional Park, Tsawwassen, BC. The following year, additional larvae were collected from the same location and reared on artificial medium to pupation. The resulting adult moths were later positively identified as *L. wyatti* (J. Troubridge and D. Bright, pers. comm.). Voucher specimens are archived at the Canadian National Collection (Ottawa) and the Spencer Entomological Museum (University of British Columbia, Vancouver).

To locate larvae, scrupulous digging was done around the bases of *A. chamissonis* plants. Sand to a depth of 5-10 cm was brushed aside using a hand-held trowel, a shovel, or simply by hand. In late April to early May when larvae were collected in 1996 and 1997, they were in the second or third instar. The distribution of larvae found at the bases of plants was uneven. Some plants lacked larvae, while at others, from 2-20 larvae were found. Larvae were almost always found around the bases of *A. chamissonis* plants that showed subterranean feeding damage. Most of the larvae were collected from the top 5-10 cm of sand surrounding the succulent subterranean stems, but none were found at 20-30 cm below the surface where the woody roots begin. No larvae were found in the sand surrounding other species of randomly selected plants in close proximity to *A. chamissonis*.

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Silver burweed (*A. chamissonis*) is chemically characterized by the production of a diverse array of polyynes, known as thiarubrines, in the roots, stems and leaves (Ellis 1993) that are toxic to bacteria, fungi and certain insects (Towers *et al.* 1985; Ellis *et al.* 1995; Guillet *et al.* 1997). Liquid chromatographic analyses of field-collected larvae and their frass revealed relatively high levels of thiarubrines, with patterns remarkably similar to that of *A. chamissonis* stem extracts (Dojillo-Mooney *et al.*, 1999). These results, together with the lack of detectable levels of thiarubrines in the sand surrounding *A. chamissonis* plants provide unambiguous evidence that this population of *L. wyatti* larvae are using *A. chamissonis* as a host plant. Furthermore, laboratory bioassays established that thiarubrines from *A. chamissonis* are well tolerated by larvae whereas they impair the growth of the generalist feeder *Spodoptera litura* Fab. (Noctuidae) and cause significant mortality in the non-adapted specialist *Manduca sexta* (L.) (Sphingidae) (Dojillo-Mooney *et al.* 1999).

It is interesting to note that *L. wyatti* larvae are reported to feed on *Tanacetum douglasii*, as *Tanacetum* species are known to produce toxic acetylenes and thiophenes in their roots. The latter compounds are breakdown products of thiarubrines; thus *Tanacetum* and *Ambrosia* are related both taxonomically and with respect to their secondary chemistry. On the other hand, *Polygonum* (Polygonaceae) and *Abronia* (Nyctaginaceae) are relatively unrelated and do not produce characteristic secondary compounds that would explain their utilization as hostplants by *L. wyatti*.

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