

Bruce Spanworm, *Operophtera bruceata* (Hulst)

Winter Moth, *Operophtera brumata* (L.)

Lepidoptera: Geometridae

Fitzpatrick, S. M.; Troubridge, J. T.; Peterson, B. 1991. Distribution of European winter moth, *Operophtera brumata* (L.), and Bruce spanworm, *O. bruceata* (Hulst), in the lower Fraser Valley, British Columbia. *Journal of the Entomological Society of British Columbia* 88: 39-45.

Objective: To present characters used to differentiate between male *O. bruceata* and *O. brumata* trapped in pheromone-baited traps.

Abstract: Winter moth, *Operophtera brumata* (Linnaeus), is a significant defoliator of northern red oak, *Quercus rubra* L., maple (*Acer* spp.), and aspen (*Populus* spp.). It was introduced accidentally to Nova Scotia from Europe in 1930, and has expanded its range to include most of eastern Canada, portions of the northeastern US, and western Canada. It is a serious pest in commercial berry fields in British Columbia. Traps baited with the sex pheromone (Z,Z,Z)-1,3,6,9-nonadecatetraene were placed in a mixed coniferous/deciduous forest and in commercial raspberry and blueberry fields in the lower Fraser Valley of British Columbia. This pheromone is attractive to males of *O. brumata* and the related Bruce spanworm, *Operophtera bruceata* (Hulst), which is a defoliator of various hardwood trees in North America. The baited traps collected both *O. bruceata* and *O. brumata* as well as some individuals with intermediate characters, suggesting that hybridization does occur between the two species. Adult *O. bruceata* and *O. brumata* are similar morphologically and can be difficult to separate to species. The authors present external and genitalic characters useful in differentiating between male *O. bruceata* and *O. brumata*. Both species are pests and monitoring each population is of importance.

Sampling Procedure: Use the external and genitalic characters given in Table 1 to separate male *O. bruceata* and *O. brumata* caught in pheromone-baited traps.

Reference:

Eidt, D. C.; Embree, D. G.; Smith, C. C. 1966. Distinguishing adults of the winter moth *Operophtera brumata* (L.), and Bruce spanworm *O. bruceata* (Hulst) (Lepidoptera: Geometridae). *Canadian Entomologist* 98: 258-261.

Table

Table 1. Characters used to separate males of the Bruce spanworm, *Operophtera bruceata* (Hulst), from males of the European winter moth, *Operophtera brumata* (L.)

Type of Character	Spanworm	Winter moth
External		
Wings	distinct lines and bands on dorsal surfaces	lines on dorsal forewing are obscure; often no lines on dorsal hindwing
Forewing	pale yellow-orange ventral costal margin ¹	yellow-orange color faint to absent
Hindwing*	dark dorsal discal dot	dot absent
Abdomen*	golden brown ²	brown
Genitalic³		
Uncus	narrow (<0.12 mm); nearly parallel-sided; not spatulate	wider (ca. 0.14 mm); slightly spatulate
Juxta	shallow medial notch at base; dorsal process wide (ca. 0.25 mm) at base	divided at base by a medial cleft; dorsal process narrowed (ca. 0.16 mm) at base
Saccus	long (ca. 0.63 mm); as long as or longer than width at base of valva	short (ca. 0.40 mm); shorter than width at base of valva

* Previously unreported characters

1, 2 True only of Bruce spanworms in B.C.

3 Genitalic characters are illustrated in Eidt *et al.* (1966).

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