

## ANNOTATED LIST OF FOREST INSECTS OF BRITISH COLUMBIA PART III— *EUPITHECIA* SPP. (GEOMETRIDAE)<sup>1</sup>

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About 35 species of *Eupithecia* live on forest trees and shrubs in British Columbia. With the exception of *E. albicapitata* and *E. columbrata*, the local *Eupithecia* are defoliators; half the species of defoliators are conifer feeders; the others feed on broad-leaved trees. Several of the species are common although none has been observed to cause noticeable defoliation.

*Eupithecia* larvae are small slender loopers usually about 1 inch in length. The body is yellowish, brownish, or green; the majority of species have a dark dorsal line or stripe, occasionally subdorsal stripes. Others, e.g., cedar and juniper feeders, have markings that resemble the foliage. Under high magnification, the larval skin appears to have a pebbly texture. The larvae of many British Columbia species are poorly known; only a few of the commonest ones are described in this paper.

All *Eupithecia* listed here overwinter in the pupal stage, excepting *E. bryanti*, *E. niphadophilata*, *E. unicolor*, and *E. graefii* which, presumably, hibernate in the larval or egg stage.

The species below are arranged in alphabetical order for convenience.

***E. albicapitata*** Pack. *Picea glauca* (cones and *Adelges* galls), *P. engelmanni* (cones); Interior B.C. and Whitehorse, Yukon Territory. **Larva:** Body flesh coloured, with reddish stripes.

***E. annulata*** (Hlst.). *Pseudotsuga taxifolia*, *Picea engelmanni*, *P. glauca*, *Abies lasiocarpa*, *A. grandis*, *A. amabilis* (3 records), *Tsuga heterophylla*, *T. mertensiana* (1). Central Interior, Southern B.C. and V.I.†; a very common species. **Larva:**  $\frac{3}{4}$  inch; head, pale brown; body reddish-brown or yellowish-brown; brown dorsal line, double on thorax; faint cream subdorsal stripe may be present; supraspiracular area reddish-brown; subspiracular fold cream; centre of suranal plate concolorous with head, edge cream-coloured.

***E. arceuthata*** (Freyer). *Juniperus communis*, Fintry, Quesnel; *J. scopulorum*, Golden, Narcosli Creek. **Larva:** head and body, green; dark dorsal and supraspiracular stripes; spiracular line greenish-yellow.

***E. bryanti*** Tayl. *Salix* sp., Saturna Island. Larva collected May 20, pupated May 22, adult emerged June 15.

***E. castigata*** (Hbn.). *Alnus rubra* (1), Upper Pitt River, Pitt River, Buntzen Lake; *Populus balsamifera* (1), Mile 20, Alaska Highway. **Larva:** creamy-brown ground colour, dark brown markings on the dorsum.

***E. columbiata columbiata*** (Dyar). *Salix* spp., Mabel Lake; *Alnus* spp., Trinity Valley, Lillooet River; *Betula* sp., Quesnel, Queens Bay; *Acer glabrum*, Creston. **Larva:** brownish-red, with dark lines on dorsum.

***E. columbiata holbergata*** MacK. *Alnus* spp., *Salix* sp., *Rhamnus purshiana*, Southern Coast and V.I. **Larva:** reddish-brown body; vague lines on dorsum; broken dark subdorsal stripe; short anal tubercles.

***E. columbrata*** McD. *Picea sitchensis* (cones); Southern Coast and V.I. **Larva:** pale orange-brown, shaded darker on the dorsum.

***E. filmata*** Pears. *Picea engelmanni*, *P. glauca*, *P. mariana*, *P. sitchensis*, *Abies lasiocarpa* (1 record); Central and Southern Interior, and Northern Coast. **Larva:** head, pale brown; body pale brown with dark brown markings; brown pattern on dorsum extending to sides of body about each abdominal spiracle; broken dark brown subdorsal line; subspiracular stripe cream-coloured. This pattern may be obscure on some specimens.

***E. fletcherata*** Tayl. *Alnus* sp., Dashwood V.I. **Larva:** pale brown, dark brown "diamond" pattern on dorsum.

***E. gelidata*** Moeschler. Mile 1184, Alaska Highway, Y.T.

***E. georgii*** McD. *Betula papyrifera* (1 record), *Ceanothus* sp. (1); Enderby, Falkland, Armstrong, Squilax. **Larva:** "pale brown; double dorsal line expanding into diamond pattern."

***E. gibsonata*** Tayl. *Thuja plicata*; Minnette Bay, Terrace.

***E. graefii vancouverata*** (Tayl.). *Avbutus menziesii*, *Thuja plicata* (1), *Pseudotsuga taxifolia* (1); V.I. Pupates in July, adult emerges August. **Larva:** variable yellow-green; reddish dorsal stripe onto vertex of head; reddish spiracular line sometimes present.

***E. harrisonata*** MacK. *Tsuga heterophylla*, *Abies amabilis* (5), *A. grandis* (4), *A. lasiocarpa* (1), *Pseudotsuga taxifolia* (4), *Picea glauca* (3); Southern Coast and V.I. **Larva:** apparently there are two colour phases: one is a

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velvety green; the other is reddish-brown. Both phases have a dark dorsal line with pale edging; fine dark subdorsal lines, yellowish subspiracular lines; dark venter, usually with light subventral lines.

**E. kananaskata** MacK. *Alnus* sp. (1 record); Vedder; (Kaslo and Chilliwack - MacKay 1951). **Larva:** "dorsum has long diamond markings."

**E. longipalpata** Pack. *Tsuga heterophylla*, *T. mertensiana* (1), *Pseudotsuga taxifolia*, *Abies grandis* (3), *Picea sitchensis* (2), *Pinus monticola* (1), *Pinus contorta* (1), *Tbuja plicata* (1); V.I., Queen Charlotte Islands, Southern and Central Coast. **Larva:** "head and body yellowish-green; dark dorsal line; pale subdorsal lines sometimes present; yellowish spiracular line."

**E. luteata bifasciata** (Dyar). *Pseudotsuga taxifolia*, *Picea engelmanni*, *P. sitchensis*, *P. mariana* (1), *Abies lasiocarpa*, *A. amabilis*, *A. grandis* (2), *Larix occidentalis*, *L. laricina*, *Tsuga heterophylla*, *Pinus contorta* (1), *P. monticola* (2); Central and Southern B.C. and V.I. This is one of the most abundant of the forest *Eupithecia*. **Larva:** ground colour variable — may be yellowish-green, brownish, orange or reddish; dark dorsal line, may be broken; light brown subdorsal lines; suranal plate usually tipped red; dark venter, with light subventral lines.

**E. maestosa harlequinaria** (Dyar). *Alnus* spp., *Arbutus menziesii* (3), *Prunus* sp. (1), *Salix* sp. (1), *Quercus garryana* (1); Southern Coast and V.I. **Larva:** head and body, pale green; reddish dorsal stripe.

**E. maestosa maestosa** (HlSt). *Alnus* sp., Athalmer. Larvae taken during July pupated in August. **Larva:** "greenish-yellow".

**E. misturata misturata** (HlSt). *Rhamnus purshiana*, *Malus* spp.; Southern Coast and V.I. **Larva:** body, pale green, darker at terminals; darker dorsal and subdorsal lines; yellowish spiracular line.

**E. nimbicolor** (HlSt). *Salix* sp.; Miles 878 and 1202, Alaska Highway. **Larva:** "a pale yellow or cream".

**E. niphadophilata** (Dyar). *Juniperus communis*. Southern Interior; larvae taken May 24 - June 13, pupated in June and July; adults emerged in August. **Larva:** head pale greenish with brown blotches; body, green, black dorsal stripe; cream coloured spiracular area; brownish patch on suranal plate.

**E. olivacea** Tayl. *Pseudotsuga taxifolia*, *Tsuga heterophylla*, *Abies amabilis* (3), *A. grandis* (2); Southern Coast. **Larva:** head, pale brown; body yellowish-brown with darker diagonal markings along dorsum.

**E. ornata** (HlSt). *Pinus contorta*, *P. monticola* (1 record); Southern B.C. and V.I. **Larva:** 1 inch long; head, tan; body, light or yellowish-green; fairly bright red dorsal stripe edged with yellow; anal prolegs and anal tubercles reddish.

**E. palpata** Pack. *Pinus contorta*, *P. monticola*, *P. ponderosa*, (3 records); Central and

Southern Interior. **Larva:** pale tan head; greenish-yellow body, dark dorsal line, may be partially obscured by reddish or orange dorsum; yellowish spiracular stripe.

**E. perfusca** (HlSt). *Betula papyrifera*, Enderby, Mara, Creighton Valley, Howe Sound. **Larva:** small tan head; body greenish-yellow; suranal plate reddish.

**E. perfusca kootenaiata** (Dyar). *Salix* sp., *Alnus* sp., *Betula* sp. (1 record); Northern B.C., and Tagish and Whitehorse, Y.T. McDunnough (1949), gives the following distribution: "Fairly general in the south central region of British Columbia". **Larva:** "body yellowish with dark long diamond pattern on dorsum."

**E. placidata** Tayl. *Tbuja plicata*, *Juniperus scopulorum*; Southern B.C. north to Alexandria in the Interior. **Larva:** resembles cedar or juniper twig. Head, tan; body, green; black or brown dorsal line, in form of a small U on the prothorax, and a chain of diamonds on the dorsum of the abdomen; a rusty brown patch on A4 and A5.

**E. pseudotsugata** MacK. *Pseudotsuga taxifolia*, *Picea glauca* (1 record); Southern Interior. **Larva:** "head, tan; body greenish or yellowish; reddish-brown dorsum with dark dorsal line." Apparently larvae of this species have been confused in the past with *E. ornata* and *E. palpata*.

**E. ravocostaliata** Pack. *Salix* sp.; Central and Southern Interior and V.I. **Larva:** head and body bright green; olive-green dorsal and subdorsal lines; yellow subspiracular line, edged below with red; red anal tubercles.

**E. rotundopuncta** Pack. *Salix* sp., *Picea sitchensis* (host?), Prince Rupert; Queen Charlotte Islands. **Larva:** head, brown; body, pale brown; broken brown lines on dorsum.

**E. satyrata** (Hbn.). *Salix* sp., Mile 1084 Alaska Highway; Carcross, Y.T.

**E. transcanadata** MacK. *Pseudotsuga taxifolia*, *Picea engelmanni*, *Tsuga heterophylla*, *Abies lasiocarpa*, *A. grandis*, *Tbuja plicata*, *Larix occidentalis*, *L. laricina*; Central and Southern Interior, and West Prince Rupert Forest District. **Larva:** body, greenish; dark reddish dorsal line; fine dark subdorsal lines; larva very similar to *E. palpata*.

**E. unicolor** (HlSt). *Tbuja plicata*, *Pseudotsuga taxifolia*, *Tsuga heterophylla* (3), *Abies* spp., V.I., Southern Coast. Larvae taken May 4 to July 12; pupae collected in latter half of July; adults emerged in insectary from June 18 to August 11. **Larva:** a twig mimic somewhat similar to *E. placidata*; "head reddish excepting the top, which is pale."

**E. usurpata** Pears. *Abies amabilis*, *A. grandis*, *Tsuga heterophylla* (1), *Tbuja plicata* (1); V.I. and Southern Coast. **Larva:** head, bright tan; variegated brown diagonal pattern on body; irregular yellow spiracular line; dorsal and subdorsal lines at terminals.

**E. vinsullata** MacK. *Pseudotsuga taxifolia* Southern Interior. **Larva:** "body, pale brown or yellowish; dark dorsal line, fine lateral line; light spiracular line."

### Acknowledgments

Most of the adults in our collection were identified by Miss M. R. MacKay, Entomology Division, Ottawa. Our relatively advanced stage of knowledge of this group is due to the interest that Miss MacKay took in *Eupithecia* while she was stationed at the Vernon laboratory.

Descriptions of larvae appearing in quotation marks were made by laboratory personnel other than the authors.

### References

- MacKay, M. R. Species of *Eupithecia* reared in the Forest Insect Survey in British Columbia. *Canad. Ent.* 83:77-91. 1951.  
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## ANNOTATED LIST OF FOREST INSECTS OF BRITISH COLUMBIA PART IV—HYDRIOMENA SPP. (GEOMETRIDAE)<sup>1</sup>

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These loopers are considered to be of no economic importance since they occur in small numbers and have not been known to cause any appreciable defoliation. Of the 11 species noted here, 7 are conifer feeders; the others feed on broad-leaved hosts. The larvae of most species of *Hydriomena* are brownish; some species are banded, at least in the early instars.

*H. albimontanata*, *divisaria*, *irata*, *nubilofasciata*, and *renunciata* overwinter in the pupal stage; some, if not all of the other species overwinter in the larval stage.

**H. irata** Swett. All of our typical *irata* specimens came from *Picea sitchensis* on the Queen Charlotte Islands. McDunnough designated other series of specimens as "probably all forms of *H. irata*". The latter were reared from *Tsuga heterophylla*, *T. mertensiana*, *Pseudotsuga taxifolia*, and *Picea* sp. in various parts of British Columbia south of 54° latitude. **Larva:** pale brown head and suranal plate; early instars banded with reddish-brown or drab green; later instars with dark broken subdorsal and spiracular lines.

**H. marinata exasperata** B. & McD. *Pseudotsuga taxifolia*, Qualicum; *Abies grandis*,

Sooke; *Picea sitchensis*, Knight Inlet. Pupation occurs in June; adults emerge late in June or early July.

**H. probably edenata grandis** B. & McD. *Pseudotsuga taxifolia*, Colwood on Vancouver Island. Larva pupated April 29; adult emerged in May.

**H. divisaria** Wlk. *Picea engelmanni*, *Pseudotsuga taxifolia*, *Abies lasiocarpa*; Central and Southern Interior.

**H. renunciata** Wlk. *Alnus* spp. Most of the specimens from V.I. and the Southern Coast are designated as *H. r. columbiata*. Other specimens from this area and Central and Southern Interior B.C. are designated as *H. renunciata*. Probably this is the commonest of the forest *Hydriomena* in B.C. **Larva:** head and prothoracic shield, brown; body, with purplish bands; pale double dorsal, wide subdorsal, and spiracular lines.

**H. albimontanata** McD. *Pseudotsuga taxifolia*, Southern Interior. **Larva:** head, tan; body, light brown, with a small dark brown patch on dorsum of each segment; small brown patches on sides of thorax.

**H. furcata** Borg. *Salix* spp. V.I. and Coast, and Central Interior. Pupation as early as June 11; first adult emergence date is July 13. **Larva:** 1 inch; very dark brown head and body; light subdorsal and spiracular lines; indistinct pale supraspiracular line.

**H. speciosata** Pack. *Pinus contorta*, *Pseudotsuga taxifolia*, *Tsuga heterophylla*; V.I. One specimen from *Abies Grandis*, Valdes Island, one from *Pseudotsuga taxifolia*, Salt Spring Island, and one from *Tsuga heterophylla*. Bute Inlet were designated as *H. s.* form *taylori*

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