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New Lepidoptera Records for the Blue Mountains of Eastern Oregon

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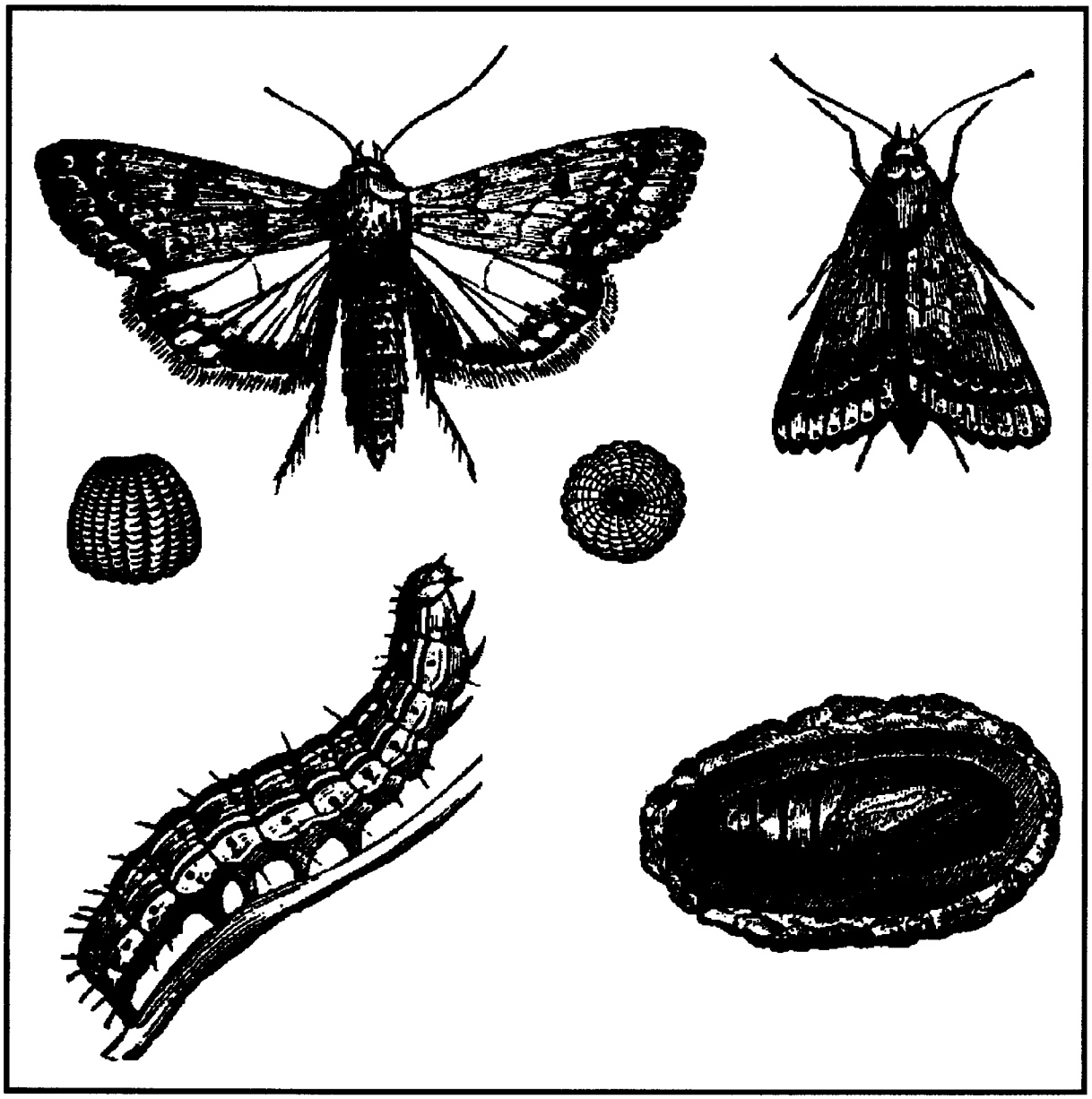

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Abstract

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Black-light trap collections in mixed-coniferous forests in eastern Oregon resulted in the identification of one Arctiidae, six Noctuidae, and one Geometridae species not previously known to occur in Oregon. The ranges of 18 other species of Noctuidae, known previously in Oregon from only the Cascade and Coast Ranges, were extended to northeastern Oregon.

Keywords: Ecology, diversity, black-light traps, nontarget Lepidoptera.

Summary

ULV black-light insect traps were operated for three nights per week in the Blue Mountains of Union and Umatilla Counties in eastern Oregon from May until October 1992. Among the moths trapped were 8 species not previously recorded from Oregon, and an additional 18 species of moths common to western Oregon but which had not been found east of the Cascade Range. Notes are presented on collection dates and larval host plants, as recorded in the literature.

Introduction

Cumulative lists of the species of macro-Lepidoptera collected in Oregon have been maintained and updated periodically in the Systematic Entomology Laboratory at Oregon State University (OSU), Corvallis, Oregon. These lists are based on specimens contained in collections at OSU, the Oregon State Department of Agriculture, and various other private and public collections, and on records reported in the literature. Extensive moth collecting has been done by many people throughout the State since 1960. Two areas of Oregon have not received much attention in the past; the high elevations in the Siskiyou Mountains of southwestern Oregon and the higher elevations of the Blue and Wallowa Mountains of northeastern Oregon.

High summer temperatures and low annual precipitation are characteristic of most of northeastern Oregon. The insect fauna on these sites is different from those of the more mesic areas of the Cascade Range or the western Oregon valleys. The Blue Mountains are especially important to Oregon forest managers because damaging outbreaks of forest insect defoliators (for example, western spruce budworm, *Choristoneura occidentalis* Free. (Tortricidae); Douglas-fir tussock moth, *Orgyia pseudotsugata* (McDunn.) (Lymantriidae)) historically have occurred there. When outbreaks occur, the preferred control agent for forest defoliators is now *Bacillus thuringiensis* Berliner subsp. *kurstaki* (BTK), which also kills some nontarget Lepidoptera on sprayed sites (Flexner and others 1986, Miller 1992). Thus, there is a need for more data on species diversity and abundance in northeastern Oregon forests to facilitate studies of the unintended impacts of BTK sprays. This paper presents information on eight species from the Blue Mountains not previously known to occur in Oregon and extends the range of 18 more Noctuidae into northeastern Oregon where they had not previously been collected.

Methods

In 1992, we operated ULV black-light traps at four locations in the Blue Mountains. Paired research plots were established in the Wallowa-Whitman and the Umatilla National Forests (NF), between La Grande (Union County) and Ukiah (Umatilla County). In the Wallowa-Whitman NF, plots 1 and 2 were about 1 kilometer apart along the Meadow Creek bottomlands of the Starkey Experimental Forest (sec. 35 and 27, T. 3 S., R. 34 E.). In the Umatilla NF, plots 3 and 4 were spaced about 1 kilometer apart in the upper watershed of Pearson Creek and at Granite Meadow (sec. 25 and 35, T. 3 S., R. 32 E.), both about 10 kilometers west of Meadow Creek. Meadow Creek has year-round running water, and the other areas are both spring-fed, marshy sites where surface water often dries up in midsummer. All four plots had similar riparian vegetation and woody plants present, as well as various grasses and forbs. All were subject to light cattle grazing, although plot 1 at Meadow Creek had some fenced portions to exclude cattle.

Two ULV black-light traps were operated in each plot for three nights per week from the first week of May through the first week of October 1992, with the exception of the last week of August and a 2-week period in mid-September. Moths were collected each day and kept in separate containers by trap number until specimens were identified.

New Records

Table 1 shows the identity, collection dates, and sources for the eight new Oregon species records. Nearly all have been previously recorded from northeastern North America, across Canada, and at various Rocky Mountain sites. Further, where hosts are known, most of them use woody plants.

The new species records are as follows:

1. *Platarctia parthenos* (Harris) (Arctiidae). This species is found from Newfoundland and New England in the East, across Canada to Alaska and southern British Columbia. No *Platarctia* sp. have previously been known from Oregon, but McGugan (1958) lists *P. parthenos* as a rare, solitary defoliator of willow (*Salix* spp.) (Salicaceae), alder (*Alnus* spp.) (Betulaceae), and birch (*Betula* spp.) (Betulaceae) in central and western Ontario and southern Alberta. Adults were recorded as flying in late June and late July in Ontario (McGugan 1958). Our specimen was caught June 11 near Pearson Creek.

2. *Orthosia segregata* (Smith) (Noctuidae). Rockburne and Lafontaine (1976) discuss *O. segregata* under the name *Polia segregata* (Smith), and report the hosts as plants in the Oleaster Family (Elaeagnaceae). Eight other *Orthosia* species are known from the H.J. Andrews Experimental Forest in western Oregon (Parsons and others 1991); all are feeders on deciduous trees. Hosts for other *Orthosia* include cherry (*Prunus* spp.) (Rosaceae), maple (*Acer* spp.) (Aceraceae), birch, and poplar (*Populus* spp.) (Salicaceae). This noctuid was relatively common on all four of our sites for 2 weeks in mid-May.

3. *Papestra quadrata* (Smith) (Noctuidae). This species, discussed in Prentice (1962) and Rockburne and Lafontaine (1976) under the name *Polia ingravis* (Smith), occurs across Canada from Nova Scotia, Quebec, and Ontario to British Columbia and the Yukon. Apparently a solitary defoliator feeding on various trees and shrubs, it has been collected from willow, alder, poplar, and birch. We caught 27 specimens from May 6 to June 10, in all four trap sites.

4. *Sideridis maryx* (Guenee) (Noctuidae). Adults of this species were collected in June and July in Ontario and Quebec (Rockburne and Lafontaine 1976), but the species is considered uncommon. We took three specimens, all on June 2 at Meadow Creek. No hosts are known.

5. *Synedoida hudsonica* (Grote & Robinson) (Noctuidae). The species has been collected from the eastern slopes of the Rocky Mountains in Alberta, Canada and from the interior of British Columbia (Prentice 1962). Parsons and others (1991) list six others from this genus in Oregon and indicate that shrubs are the food plants. This species apparently was quite abundant on our trapping sites. We caught 22 of them at Pearson Creek and Granite Meadow between June 10 and June 24. Buffaloberry (*Shepherdia canadensis* (L.)) (Elaeagnaceae) and willow are hosts (Prentice 1962). This solitary feeder is considered scarce in most locations.

6. *Xylotype acadia* Barnes & Benjamin (Noctuidae). This rare, solitary tamarack (*Larix* spp.) (Pinaceae) and alder defoliator has been recorded from Nova Scotia, Ontario, and southern portions of Alberta and British Columbia (Prentice 1962). In Canada, adults fly in August. The genus is not listed for Oregon by Parsons and others (1991). We caught two specimens, both at Pearson Creek on September 30.

Table 1—New Lepidoptera records for Oregon, 1992

Species	Number	Moth flight[a]	Collection area
Arctiidae:			
Platarctia parthenos	1	11.VI	Pearson Creek
Noctuidae:			
Orthosia segregata	27	6.V-13.V	All 4 sites
Papestra quadrata	27	6.V-10.VI	All 4 sites
Sideridis maryx	3	2.VI	Meadow Creek
Synedoida hudsonica	22	10.VI-24.VI	Pearson Creek and Granite Meadow
Xylotype acadia	2	30.IX	Pearson Creek
Zale duplicata	7	6.V	Pearson Creek and Granite Meadow
Geometridae:			
Scopula ancellata	59	17.VI-12.VIII	All 4 sites

[a] Dates are midpoints of weekly trapping periods; written as day—arabic numeral, month—Roman numeral (ex. 11.VI is 11 June).

7. *Zale duplicata* (Bethune) (Noctuidae). In southern Ontario and western Quebec, *Z. duplicata* feeds on eastern white pine (*Pinus strobus* L.) (Pinaceae), jack pine (*P. banksiana* Lamb.), and tamarack, (*Larix* sp.) (Rockburne and Lafontaine 1976). Prentice (1962) considers *Z. duplicata largera* Smith the same species, using the same hosts plus lodgepole pine (*P. contorta* Dougl.). He records this species as most prevalent through the jack pine areas of Manitoba, western Alberta, and southeastern British Columbia. This conifer-feeder flies early in the spring. We collected 7 of them, all on May 6, at Pearson Creek and Granite Meadows. It is a solitary feeder, considered uncommon in most places.

8. *Scopula ancellata* (Hulst) (Geometridae). We collected this abundant geometrid at all four sites from June 17 through mid-August. Two other species of *Scopula* are found in the H.J. Andrews Experimental Forest (Parsons and others 1991), with hosts shown as Polygonaceae (buckwheat Family), but the genus was not represented in the Canadian forest insect survey by Prentice (1963).

In addition to the new records (table 1), two other species were collected that apparently are quite rare in Oregon and previously were unknown to Oregon survey lists. Eight specimens of *Paradiarsia littoralis* (Packard)(Noctuidae) were caught at Meadow Creek from May 27 to June 10. Rockburne and Lafontaine (1976) report that this species occurs across Ontario and Quebec, northward to James Bay. Hosts were given as dandelion (*Taraxacum* sp.)(Compositae), plantain (*Plantago* sp.) (Plantaginaceae), and clover (*Trifolium* sp.) (Leguminoseae). The U.S. National Museum of Natural History collection contains two specimens; the source of one is Lake County, Oregon, and the other is Klamath Falls, Oregon (Klamath County).[1]

[1] Personal communication. J. Donald Lafontaine, Centre for Land and Biological Resources Research, Research Branch, Agriculture Canada, Oltawa, Ottawa, K1A 0C6.

Furthermore, we trapped 1 specimen of *Xylena thoracica* (Putnam-Cramer) (Noctuidae) on May 6, and 13 more in late September. Found at all our trapping sites, this species overwinters as an adult (Rockburne and Lafontaine 1976). In north-central Ontario and Quebec, adults were available in April and September (Prentice 1962). Prentice (1962) also records *X. thoracica* as collected at Debert, Nova Scotia; Pritchard, British Columbia; and throughout the forested areas of Alberta. Although considered rare, it feeds singly on alder, buffaloberry, white birch, willow, and aspen (*Populus* sp.). The Canadian National Collection contains three *X. thoracica* from "Idlewild Forest Camp, 16 mi. N. Burns, OR; elev. 5200 ft.; 21, 22, 23 Sept. 1962. W.C. Cook, Coll." (see footnote 1).

Range Extensions

Table 2 shows an additional 18 species (all Noctuidae) taken in our traps, thereby effectively extending their known ranges in Oregon. All are common in western Oregon but previously were unreported east of the Cascade Range, probably because there were no adequate surveys of that area. Insofar as their hosts are known, most of them use woody plants. Also, the generally low numbers of individuals caught, except for *Oligia illocata* (Walker) and *Papestra cristifera* (Walker), may indicate that these are uncommon species where they do occur. Three species on this list—*Hyppa indistincta* Smith, *Melanchra adjuncta* (Guenee), and *Nedra stewarti* (Grote)—apparently produce more than one generation per year, with some caught early in the season and others flying in late summer to early fall.

Most of the species listed in tables 1 and 2 are characteristic of cool, mesic forest habitats, and most are found across Canada from British Columbia to Ontario and Quebec. In contrast, much of Oregon east of the Cascade Range has a xeric, semidesert climate, and the lepidopteran fauna is primarily Great Basin in origin (Dornfeld 1980). Isolated mountain ranges, such as the Blue Mountains, represent mesic islands in which species adapted to cool, montane, or boreal forests have been able to survive in isolated refugia.

Pinned specimens of species discussed in this paper are stored at the Forestry Sciences Laboratory, Pacific Northwest Research Station, Corvallis, Oregon.

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Table 2—Noctuidae previously known in Oregon only from the Cascade and Coast Ranges; collected in ULV black-light traps in northeastern Oregon, 1992

Species	Number	Month flight[a]	Collection area
Noctuidae:			
Acronicta fragilis Guenee	3	27.V-10.VI	Meadow Creek
Agrochola pulchella (Smith)	1	30.IX	Granite Meadow
Agrotis obliqua (Smith)	4	27.V-17.VI	Meadow Creek and Pearson Creek
Anaplectoides prasina D. & S.	3	24.VI-15.VII	Meadow Creek, Pearson Creek and Granite Meadow
Asticta victoria (Grote)	6	8.VII-29.VII	Meadow Creek, Pearson Creek and Granite Meadow
Euplexia benesimilis McD.	4	27.V-10.VI	Meadow Creek
Graphiphora haruspica (Grote)	2	29.VII	Meadow Creek
Hyppa indistincta Smith	3	(1) 3.VI (2) 23.IX	Meadow Creek
Idia americalis (Guenee)	4	29.VII-12.VIII	Meadow Creek and Pearson Creek
Lacanobia lutra (Guenee)	6	27.V-17.VI	Meadow Creek
Lithomoia solidaginis (Hubner)	1	30.IX	Pearson Creek
Melanchra adjuncta (Guenee)	9	(8) 27.V-17.VI (1) 30.IX	Meadow Creek
Mycterophora longipalpata Hulst	1	12.VIII	Meadow Creek
Nedra stewarti (Grote)	6	(1) 6.V (5) 8.VII-19.VIII	Meadow Creek
Oligia illocata (Walker)	17	2.IX-23.IX	Meadow Creek
Papestra cristifera (Walker)	39	6.V-5.VIII	All 4 sites
Pyrrhia exprimens (Walker)	1	8.VII	Meadow Creek
Syngrapha epigaea (Grote)	6	12.VIII-19.VIII	All 4 sites

[a] Dates are midpoints of weekly trapping periods; written as day—Arabic numeral, month—Roman numeral (ex. 27.V is 27 May).

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