

## **Insect species occurrence and ecological interactions in Palouse prairie and surrounding habitats**

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Insects are arthropods with hard jointed exoskeletons made-up of chitin (Chapman 1998). The body of these small animals (0.25 to 300 mm in length) is divided into a head, thorax and abdomen. The insect head has a pair of antennae, eyes and a mouth. The thorax is divided into three segments (pro-, meso- and metathorax) with each thoracic segment supporting a pair of legs. The meso- and metathoracic segments often support a pair of wings (adults only). The insect abdomen is composed of 11 segments, although some may be fused or reduced, with the posterior segments developed for mating and oviposition (Chapman 1998).

A number of recent studies provide information on insect species occurrence and ecological interactions in Palouse prairie and surrounding (matrix) habitats. Insect taxa studied include bees and other pollinators on sticky geranium (*Geranium viscosissimum*) (Finer 2003), beetles (Hatten 2006, Hatten et al. 2006, Looney et al. 2006, Hanovan et al. unpublished), butterflies (Pocewicz 2006, Pocewicz and Morgan 2006) and moths found in Palouse prairie. Species list from several of these studies are provided below.

**Table 1.** List of weevils (Curculionidae), darkling beetles (Tenebrionidae) and scarab beetles (Scarabaeidae) found in prairie remnants and/or agricultural fields during 2002, NW Idaho and SE Washington.

Family	Species	Common Name	Habitat <sup>1</sup>
Curculionidae	<i>Sitona lineatus</i> (Linnaeus)	pea leaf weevil	P, A
	<i>Otiorhynchus orvatus</i> (Linnaeus)	strawberry root weevil <sup>Ex</sup>	P, A
	<i>Ceutorhynchus assimilis</i> (Paykull)	cabbage seedpod weevil <sup>Ex</sup>	P, A
	<i>Barypeithes pellucidus</i> Boheman	weevil	P, A
	<i>Gymnetron tetrum</i> (Fabricius)	weevil <sup>Ex</sup>	P, A
	<i>Eustenopus villosus</i> (Boheman)	yellow starthistle hairy weevil <sup>Ex</sup>	P, A
	<i>Rhinocyllus conicus</i> (Frölich)	thistle head weevil <sup>Ex</sup>	P, A
	<i>Mesagroicus longates</i> Buchanan	weevil	P
	<i>Panscopus squamosas</i> Pierce	weevil	P
	<i>Anthonomus</i> sp.	weevil	P
	<i>Lixus perforatus</i> LeConte	weevil	P
	<i>Hypera postica</i> (Gyllenhal)	alfalfa weevil <sup>Ex</sup>	A
	<i>Sphenophorus cicatristriatus</i> Fahraeus	Rocky Mountain billbug	A
	<i>Ceutorhynchus erysimi</i> (Fabricius)	weevil <sup>Ex</sup>	A
	<i>Ceutorhynchus rapae</i> Gyllenhal	weevil <sup>Ex</sup>	A
Tenebrionidae	<i>Eleodes nigrina</i> LeConte	darkling beetle	P, A
	<i>Blapstinus substriatus</i> Champion	darkling beetle	P, A
	<i>Eleodes novoverrucula</i> Boddy	darkling beetle	P, A
	<i>Coniontis ovalis</i> (LeConte)	darkling beetle	P
	<i>Coelocnemis californicus</i> Mannerheim	broad-necked Darkling Beetle	P
Scarabaeidae	<i>Euphoria inda rufobrunnea</i> (Casey)	scarab beetle	P, A
	<i>Onthophagus nuchicornius</i> (Linneus)	scarab beetle <sup>Ex</sup>	P, A
	<i>Serica curvata</i> LeConte	scarab beetle	P, A
	<i>Bolboceras obesus</i> (LeConte)	scarab beetle	P
	<i>Aphodius militaris</i> LeConte	scarab beetle	P
	<i>Aphodius cribratulus</i> (Schmidt)	scarab beetle	P

<sup>1</sup> P = prairie, A = agricultural field (pea or wheat). Two prairie remnants were sampled in NW Idaho (Paradise Ridge and Tomer Butte), three were sampled in SE Washington (Kramer, Smoot Hill and Rose Creek), while 12 agricultural fields were sampled in Idaho.

<sup>Ex</sup> Exotic species.

(Source: Hatten et al. 2006)

**Table 2.** List of silphid beetles captured in prairie remnants during 2003 in NW Idaho and SE Washington.

Family	Species	Common Name	Habitat <sup>1</sup>
Silphidae	<i>Nicrophorus guttula</i> Motschoulsky	burying beetle	P
	<i>Nicrophorus marginatus</i> Fabricius	burying beetle	P
	<i>Nicrophorus hybridus</i> Hatch & Angell	burying beetle	P
	<i>Nicrophorus nigritus</i> Mannerheim	burying beetle	P
	<i>Nicrophorus investigator</i> Zetterstedt	burying beetle	P
	<i>Thanatophilis lapponicus</i> Herbst	carrion beetle	P
	<i>Necrodes surinamensis</i> (Fabricius)	red-lined carrion beetle	P

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<sup>1</sup> Data derived from the sampling 12 prairie remnants most of which are located in Washington state. (Source: Looney et al. 2006)

**Table 3.** List of butterfly species found in prairie remnants and other habitats during April - July, 2004-2005, Latah Co., NW Idaho.

Family	Scientific name <sup>1</sup>	Common name	Habitat <sup>2</sup>
Hesperioidae	<i>Carterocephalus palaemon</i> (Pallas, 1771)	arctic skipper	DG,F,FM
	<i>Euphyes vestries</i> (Boisduval 1852)	dun skipper	P
	<i>Hesperia juba</i> (Scudder, 1874)	juba skipper	P,DG,F,FM
	<i>Oarisma garita</i> (Reakirt, 1866)	garita skipper	DG,FM
	<i>Erynnis icelus</i> (Scudder & Burges,1870)	dreamy duskywing	FM
	<i>Erynnis persius</i> (Scudder, 1863)	persius duskywing	FM
Papilionidea	<i>Papilio eurymedon</i> (Lucas, 1852)	pale swallowtail	P,DG,A,F,FM
	<i>Papilio rutulus</i> (Lucas, 1852)	western tiger swallowtail	P,DG,A,U,F,FM
	<i>Papilio zelicaon</i> (Lucas, 1852)	anise swallowtail	P,F
Pieridae	<i>Anthocharis stella</i> (W.H. Edwards, 1879)	Stella's orangetip	P,F,FM
	<i>Colias eurytheme</i> (Boisduval, 1852)	orange sulfur	P,DG,A,U,F,FM
	<i>Colias philodice</i> (Godart, 1819)	clouded sulfur	P,DG,A,U,F,FM
	<i>Pieris rapae</i> (Linnaeus, 1758)	cabbage white	P,DG,A,U,F,FM
	<i>Pontia beckerii</i> (W.H. Edwards, 1871)	Becker's white	P
	<i>Pontia occidentalis</i> (Reakirt, 1866)	western white	P,DG,U
Lycaenidae	<i>Celastrina echo</i> (W.H. Edwards, 1864)	spring azure	P,DG,A,F,FM
	<i>Euphilotes battoides</i> (Behr, 1867)	square-spotted blue	P
	<i>Cupido amyntula</i> (Boisduval, 1852)	western tailed blue	DG,F,FM
	<i>Glaucopsyche lygdamus</i> (Doubleday, 1841)	silvery blue	P,DG,A,F,FM
	<i>Glaucopsyche piasus</i> (Boisduval, 1852)	arrowhead blue	P,DG, F,FM
	<i>Plebejus acmon</i> (Westwood, [1851])	acmon blue	DG
	<i>Plebejus icarioides</i> (Boisduval, 1852)	Boisduval's blue	P,DG,FM
	<i>Plebejus saepiolus</i> (Boisduval, 1852)	greenish blue	F,FM
	<i>Lycaena editha</i> (Mead, 1878)	Edith's copper	DG,F,FM
	<i>Lycaena helloides</i> (Boisduval, 1852)	purplish copper	P,DG,
	<i>Callophrys eryphon</i> (Boisduval, 1852)	western pine elfin	F,FM
	<i>Callophrys iriodes</i> (Boisduval, 1852) <sup>a</sup>	brown elfin	DG,F,FM
	<i>Callophrys polios</i> (Cook & Watson, 1907)	hoary elfin	FM
	<i>Callophrys sheridanii</i> (W.H. Edwards, 1877)	Sheridan's green hairstreak	P
	<i>Mitoura rosneri</i> (Scudder, 1872) <sup>a</sup>	cedar hairstreak	FM
	<i>Satyrium saepium</i> (Boisduval, 1852)	sylvan hairstreak	FM
	Nymphalidea	<i>Strymon melinus</i> (Hübner, [1813])	grey hairstreak
<i>Cercyonis pegala</i> (Fabricius, 1775)		common wood nymph	P,DG,F,FM
<i>Coenonympha californica</i> (Westwood, 1851) <sup>a</sup>		common ringlet	P,DG,A,U,F,FM
<i>Limenitis lorquini</i> (Boisduval, 1852)		Lorquin's admiral	P,DG,A,U,F,FM
<i>Aglaia milberti</i> (Godart, 1819)		Milbert's tortoiseshell	P,U,FM
<i>Nymphalis californica</i> (Boisduval, 1852)		California tortoiseshell	P,DG,A,U,F,FM
<i>Nymphalis antiopa</i> (Linnaeus, 1758)		mourning cloak	U,F,FM
<i>Polygonia faunus</i> (W.H. Edwards, 1862)		green comma	F
<i>Polygonia satyrus</i> (W.H. Edwards, 1869)		satyr angelwing	P,F,FM
<i>Polygonia zephyrus</i> (W.H. Edwards, 1870) <sup>a</sup>		zephyr angelwing	P,F,FM
<i>Phyciodes mylitta</i> (W.H. Edwards, 1861)	mylitta crescent	P,DG,A,F,FM	

**Table 3, continued.**

Family	Scientific name <sup>1</sup>	Common name	Habitat <sup>2</sup>
Nymphalidea	<i>Phyciodes tharos</i> (Drury, 1773)	pearl crescent	P,DG,F,FM
	<i>Euphydryas chalcedona</i> (Doubleday, [1847])	chalcedon checkerspot	FM
	<i>Chlosyne palla</i> (Boisduval, 1852)	northern checkerspot	FM
	<i>Boloria epithore</i> (W.H. Edwards, 1864)	western meadow fritillary	F,FM
	<i>Speyeria cybele</i> (Fabricius, 1775)	great spangled fritillary	P,A,F,FM
	<i>Speyeria hydaspe</i> (Boisduval, 1869)	hydaspe fritillary	F,FM
	<i>Speyeria zerene</i> (Boisduval, 1852)	zerene fritillary	P,DG,F,FM
	<i>Vanessa cardui</i> (Linnaeus, 1758)	painter lady	P,A,U,FM

<sup>1</sup> Scientific names follow Opler and Warren (2003) unless designated by <sup>a</sup> = Guppy and Shepard 2001.

<sup>2</sup> Habitats: P = Palouse prairie, DG = disturbed grassland, A = agricultural field, U = urban, F = forest, FM = forest meadow

(Source: Pocewicz, A. 2006a, b)

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