

**Surveys for Lepidopterans on the west side of the
Colville National Forest
Northeast Washington
Summer 2010
ISSSP Project**

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SUMMARY

This is the first year of a two-year project to document butterflies and moths (lepidids) that occupy the Colville National Forest (CNF) in northeastern Washington (NE WA). In the 2 years the survey will run, we aim to sample most of the butterflies that occupy the lower and mid-elevation of the CNF and nearby public lands accessible by open roads, obtaining general distribution records and targeting *Boloria bellona* and *Speyeria egleis*. We also will sample macromoths when the opportunity arises. The first year primarily targeted the west side of the CNF.

We captured, vouchered and pinned nearly 1,400 individuals of 263 species at 34 locations. All vouchered specimens will be deposited at Oregon State University (OSU). We captured *Boloria bellona* at 1 location (Vulcan Mt.). We also captured *Boloria selene*, a somewhat uncommon *Boloria*, sensitive in OR, at 1 site. We captured *Callophrys nelsoni rosneri* though did not sample much habitat for this species. We did not encounter *Speyeria egleis*, nor did we expect to encounter, *Lycaena cupreus* or *Oeneis melissa*, both sensitive species, which would occupy the highest elevations on the CNF (Guppy and Shepard, 2001; Pyle, 2002).

INTRODUCTION

Since 2005, the CNF has maintained records of miscellaneous lepid sightings. In NE WA, surveys for invertebrates had been ad hoc in nature until 2009, no systematic surveys having been conducted to document distribution, either by extent or elevation. The CNF funded a 2-week pilot project in 2009. That short survey discovered 9 county records, including several species not recorded from NE WA (moving known distribution by more than 100 miles); 1 record of the sensitive species *Boloria bellona*; 1 record of the Oregon-sensitive species *Boloria selene*; and more than 70 sites of the sensitive species *Callophrys nelsoni rosneri* (aka *Mitoura rosneri rosneri* or *Mitoura grynea*). In 2009 we sampled prior to the time when most lepidopterists have netted NE WA (mid June) and seemed to hit the peak flight for *Callophrys*. As a result of the high number of locations, we no longer consider *Callophrys nelsoni rosneri* to be uncommon on the CNF.

The Update of the Regional Forester's Sensitive Species Lists and Transmittal of Strategic Species List (USDA Forest Service 2008) listed 3 lepidids as "sensitive species" that have been recorded on or near the CNF (*Boloria selene*, *Callophrys nelsoni rosneri*, and *Speyeria egleis*). The list also contains 1 species that has been recorded on the CNF, *Boloria selene*, as sensitive in Oregon. It lists 2 species, *Lycaena cupreus* and *Oeneis melissa*, that could occur on the highest peaks on the CNF (J. Shepard, pers. comm.) but are known only from the Okanogan/Wenatchee NF.

METHODS

We used the CNF roads layer and the contractor's knowledge of NE WA to identify areas to survey that would provide an overview of habitats across primarily the west side of the CNF and adjacent public lands. We surveyed primarily in the late spring and early summer, targeting open areas considered likely habitat for *Boloria bellona* and *Speyeria egleis*. We also broadened the scope into conducting an area-wide survey to better understand the distribution of butterflies in NE WA (Van Norman, pers. com.). Surveying relatively early precluded sampling higher elevation sites due to snow cover or lack of flowering plants.

Areas sampled for butterflies were netted until all species present were captured multiple times. Butterfly surveys were conducted on warm, sunny days to maximize encounters. Some sites consisted of a drive-by sighting and subsequent capture of 1 species.

Moths were collected using a fluorescent light trap placed over a funnel and bucket. Moth traps were placed at twilight and retrieved after dawn the next morning. Moth traps were placed in areas close to areas sampled for butterflies, though not all areas were sampled for moths. Moth surveys were conducted during evenings without rain.

All individuals collected were identified and pinned by Jon Shepard and will be transferred to OSU's collection. Between 2 and 5 people participated in surveys.

RESULTS & DISCUSSION

During 52 days of netting and we surveyed 34 unique locations, some near each other (Table 1).

We captured and identified 1,385 individuals of 263 different species of lepidids (Table 2). A cooler and wetter spring than in 2009 resulted in a later start than anticipated and precluded sampling at some mid-elevation sites. Health issues by one of the surveyors restricted sampling, and the 7 days missed will be added to the 2011 season.

We captured *Boloria bellona* at 1 location (Vulcan Mt.). Some of the better potential habitat for this species in Ferry and western Stevens counties is privately held. We also captured *Boloria selene*, sensitive in Oregon, at 1 site.

We captured 1 *Callophrys nelsoni rosneri*. Because of the large number of sightings in 2009, we did not concentrate on sampling their habitat.

We did not encounter *Speyeria egleis* though sampled some of the better-looking habitat on public land near the south end of the CNF.

We did not encounter, nor did we expect to encounter, *Lycaena cupreus* or *Oeneis melissa*, which would occupy only the highest elevations on the CNF, areas we did not survey.

All specimen records are in the process of being batch-entered into NRIS.

The work to conduct a broad lepid survey across the Colville National Forest started using ISSSP funds in 2010 and will continue through 2011. Proposals for targeted surveys *Lycaena cupreus* or *Oeneis melissa* probably will be submitted for surveys in 2012.

BIBLIOGRAPHY

Guppy, Crispin S. and Jon H. Shepard. 2001. Butterflies of British Columbia. The Royal British Columbia Museum. Victoria, B.C. 414 pages.

Pyle, Robert M. 2002. The butterflies of Cascadia. Seattle, WA, Seattle Audubon Society. 420 pages.

USDA Forest Service. 2008. Update of the Regional Forester's Sensitive Species Lists and Transmittal of Strategic Species List. Letter from Regional Forester Linda Goodman to Forest Supervisors, January 31, 2008. 2 pages plus 2 enclosures.

Table 1. Areas surveyed, dates surveyed, and number of species captured.

Locality	Lat (WGS84)	LON (WGS84)	Date	# Species
Rickey Point	48.544	-118.139	24-May	1
LPO NWR HQ	48.461	-117.731	7-Jun	1
Haag Cove, nr.	48.561	-118.152	15-Jun	9
Sherman Cr.	48.585	-118.141	18-Jun	20
Sherman Cr.	48.585	-118.141	19-Jun	7
Curlew Lake SP	48.722	-118.649	19-Jun	3
10 Mile CG	48.515	-118.739	20-Jun	5
10 Mile CG	48.515	-118.739	21-Jun	22
10 Mile CG	48.515	-118.739	22-Jun	29
McMann Cr. Rd.	48.566	-118.733	22-Jun	11
10 Mile CG	48.515	-118.739	23-Jun	2
Swamp Cr. Rd.	48.682	-118.770	23-Jun	20
10 Mile CG	48.515	-118.739	24-Jun	10
Scatter Cr.	48.557	-118.779	24-Jun	13
10 Mile CG	48.515	-118.739	25-Jun	14
Storn King Mt. Rd.	48.686	-118.830	25-Jun	10
Storn King Mt. Rd.	48.705	-118.826	25-Jun	2
Cottonwood Cr.	48.915	-118.657	26-Jun	13
Alkali Cr.	48.933	-118.610	26-Jun	17
Heron Cr. Rd.	48.695	-118.618	27-Jun	5
Heron Cr. Rd.	48.738	-118.584	27-Jun	17
Lambert Cr.	Unk	-118.572	27-Jun	2
Curlew RV	48.888	-118.602	27-Jun	19
Curlew RV	48.888	-118.602	29-Jun	9
Little Vulcan Mt.	48.910	-118.658	29-Jun	14
Cottonwood Cr.	48.915	-118.657	29-Jun	7
Alkali Cr.	48.933	-118.610	29-Jun	17
Cottonwood Cr.	48.906	-118.608	30-Jun	4
Alkali Cr.	48.933	-118.610	30-Jun	19
Pierre L. CG	48.907	-118.141	6-Jul	30
Bangs Mt.	48.830	-118.229	7-Jul	1
Pierre L. CG	48.907	-118.141	7-Jul	53
Box Canyon Rd.	48.939	-118.133	7-Jul	10
Camp Cr., nr.	48.972	-118.096	7-Jul	16
Donaldson Draw	48.546	-118.240	8-Jul	6
Bangs Mt.	48.547	-118.231	9-Jul	72
Bangs Mt.	48.548	-118.237	9-Jul	43
Bangs Mt.	48.551	-118.232	9-Jul	45
Crown Cr.	48.899	-117.953	9-Jul	6
Crown Cr.		Polygon	9-Jul	4
Flat Cr. Rd.	48.943	-118.016	9-Jul	13
Flat Cr. Rd.	48.950	-118.011	9-Jul	3
Rose Ranch		Polygon	9-Jul	7
Kettle Falls	48.600	-118.065	10-Jul	1
Bangs Mt.		Polygon	10-Jul	41
Donaldson Draw	48.546	-118.240	11-Jul	3
Bangs Mt.	48.830	-118.229	11-Jul	1
Bangs Mt.		Polygon	11-Jul	1
10 Mile CG	48.515	-118.739	26-Jul	61
McMann Cr. Rd.	48.566	-118.733	27-Jul	7
Alkali Cr.	48.933	-118.610	27-Jul	54

Table 2. Scientific names of species captured during lepid surveys on the CNF, Summer 2010.

"Orthodes" goodelli	Chlorosea nevadaria	Furcula scolopendrina
"Orthodes" obscura	Clostera apicalis	Glaucopsyche lygdamus columbia
Abagrotis apposita	Coenonympha californica columbiana	Glaucopsyche piasus toxema
Abagrotis duanca	Colias alexandra pseudocolumbiensis	Glena nigricaria
Abagrotis forbesi	Colias philodice eriphyle	Gluphisia septentrionis
Abagrotis placida	Coryphista meadii	Graphiphora augur haruspica
Abagrotis reedi	Cryptocala acadensis	Habrosyne scripta
Abagrotis trigona	Cucullia florea	Hadena ectrapela
Acronicta cyanescens	Cyclophora pendulinaria	Hemaris thetis
Acronicta dactylina	Cycnia oregonensis	Hesperia comma harpalus
Acronicta falcula	Cycnia tenera	Hesperia juba
Acronicta grisea	Datana ministra	Hesperumia sulphuraria
Acronicta impleta	Diarsia rosaria	Homorthodes furfurata
Acronicta impressa	Digrammia californiaria	Horisme intestinata
Acronicta innotata	Digrammia denticulata	Hydriomena furcata
Acronicta radcliffei	Digrammia neptaria	Hydriomena renunciata
Acronicta strigulata ? thoracica	Digrammia setonana	Hyppa contrasta
Aglais milberti milberti	Drasteria adumbrata	Icaricia acmon lutzi
Agrotis antica	Drasteria hudsonica	Icaricia icarioides pimbina
Amblyscirtes vialis	Drasteria ochracea	Idaea demissaria
Amphipyra tragopoginis	Drasteria sabulosa	Idia americanis
Anagoga occiduarua	Drepanulatrix secundaria	Incisalia iroides iroides
Anaplectoides condita	Drepanulatrix unicalcararia	Iridopsis larvaria
Anaplectoides pressus	Dysstroma brunneata	Lacanobia subjuncta
Anavitrinella pampinaria	Dysstroma colvillei	Lacimipolia anguina
Antheraea polyphemus	E. (Euxoa) furtivus	Lacinipolia comis
Anthocharis julia sulfuris	E. (Euxoa) idahoensis	Lacinipolia lorea
Apamea amputatrix	E. (Euxoa) infausta	Lacinipolia olivacea
Apamea antennata	E. (Euxoa) satis	Lacinipolia strigicollis
Apamea cogitata	E. (Euxoa) terrenus	Lacinipolia vicina
Apamea devastator	E. (Euxoa) tessellata	Lasionycta perplexa
Apamea scoparia scoparia	E. (Longivesica) divergens	Leucania farcta
Apamea sora	Ectropis crepuscularia	Leucania insueta
Apamea sordens finitima	Egira perlubens	Limenitis lorquini burrisonii
Apamea spaldingi	Epirrhoe alternata	Lobocleta quaesitata
Aplocera plagiata	Epirrhoe sperryi	Lophocampa maculata
Aseptis binotata	Erebia epipsodea epipsodea	Lycaeides idas atrapraetextus
Autographa ampla	Erynnis persius	Lycena helloides
Autographa mappa	Erynnis icelus	Lycena heteronea heteronea
Besma quercivoraria	Estigmene acrea	Lycena mariposa penroseae
Biston betularia	Euchlaena johnsonaria	Lycena nivalis
Bleptina caradrinalis	Euchlaena madusaria	Macaria banksianae
Boloria bellona toddi	Euchlaena tigrinaria	Macaria brunneata
Boloria epithore chermocki	Euchloe ausonides mayi	Macaria loricaria
Boloria selene astrocostalis	Euclidia ardata	Macaria plumosata
Brachylomia rectifascia cascadia	Eudrepanulatrix rectifascia	Macaria sexmaculata
Cabera erythemaria	Eueretagtrotis perattentus	Macaria signaria
Caenurgina erechtea	Eulithis xylina	Macaria ulsterata
Callizzia amorata	Eumacaria latiferrugata	Malacosoma disstria
Callophrys affinis washingtonia	Euphilotes battoides glaucon	Mamestra configurata
Callophrys sheridanii newcomeri	Euphydryas anicia hopfingeri	Marmopteryx marmorata
Caradrina montana	Euphyia unangulata	Melanchra adjuncta
Caripeta aequaliaria	Euplexia benesimilis	Melipotis jucunda
Caripeta divisata	Eurois astricta	Mesothea incertata
Carterocephalus palaemon magnus	Eusstroma semiatrata	Mitoura rosneri rosneri
Celastrina echo nigrescens	Euthyatira semicircularis	Mythimna oxygala
Cercyonis pegala ariane	Everes amyntula amyntula	Nacophora mexicanaria
Charidryas palla calydon	Furcula occidentalis	Nadata gibbosa

Nemoria darwiniata	Phyciodes tharos pascoensis	Setagrotis pallidicollis
Nemoria unitaria	Phyllodesma americana	Sicya macularia
Neoterpes trianguliferata	Pieris marginalis reicheli	Sideridis maryx
Noctua pronuba	Platarctia parthenos	Smerinthus cerisyi
Nycteola cinereana	Plebejus saepiolus amica	Spaelotis bicava
Nymphalis antiopa	Plusia putmani	Spaelotis clandestina
Nymphalis californica	Polia nimbosa	Spargaloma sexpunctata
Oarisma garita	Polia piniae	Spargania magoliata
Ochropleura implecta	Polia purpurissata	Speyeria callippe semivirida
Oeneis chryxus chryxus	Polites mystic dacotah	Speyeria cybele leto
Pachysphinx modesta	Polites peckius	Speyeria hydaspe sakuntala
Panthea virginaria	Polites themistocles	Sphinx vashti
Paonias myops	Polygonia faunus rusticus	Spilosoma vagans
Paonias excaecatus	Polygonia satyrus	Spilosoma virginica
Papestra invalida	Polygonia zephyrus	Spiramater lutra
Papilio eurymedon	Pontia beckerii	Stenoporopia excelsaria excelsaria
Papilio multicaudatus pusillus	Pontia occidentalis occidentalis	Sympistis amun
Papilio rutulus rutulus	Procherodes forficaria	Sympistis fifia
Parabagrotis exsertistigma	Protitame matilda	Sympistis greyi
Parabagrotis formalis	Protitame virginalis	Sympistis major
Parabagrotis sulinaris	Protoarmia porcelaria	Sympistis stabilis
Paradiarsia littoralis	Protodeltote albidula	Synaxis cervinaria
Parnassius clodius pseudogallatinus	Pyrgus ruralis ruralis	Synchlora aerata
Parnassius smintheus magnus	Pyrrharctia isabella	Thymelicus lineola
Perizoma costiguttata	Raphia frater	Trichodezia albovittata
Pero behrensaria	Sabulodes edwardsata	Xanthorhoe lacustrata
Pero mizon	Schizura ipomoeae	Xanthotype sospeta
Pheosia rimosa	Schizura unicornis	Xestia oblata
Phlogophora periculosa	Scopula junctaria	Zosteropoda hirtipes
Phyciodes campestris	Sericosema juturnaria	

Appendix 1. Survey areas.

