MOTHS & BUTTERFLIES OF THE SAMPSON CREEK PRESERVE:

Inventory Results from 2016

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SUMMARY

The Selberg Institute's Sampson Creek Preserve was sampled for butterflies and moths during June, July and September, 2016. A grand total of 252 species were documented and included 194 macro-moths, 9 micro-moths and 49 butterflies. They are presented here as an appendix in this report. Butterflies and day-flying moths were pursued during the midday hours with an insect net. Nocturnal moths were sampled over single night periods at 10 locations during each monthly visit using battery-powered backlight traps.

While many of the butterflies and moths found were common and widespread species, some can be considered quite rare. Of particular note, are several species of moths that represent first-time records for Jackson County and others that may be new species for the state of Oregon.

Additional sampling during the next few years – to include the months of April, May, August and October, as well as additional mid-season effort – will help to establish a robust butterfly-moth species baseline for the site. Ultimately, the total number of butterflies and moths documented at Sampson Creek Preserve is expected to be in the range of 450-500 species.

INTRODUCTION

The Order Lepidoptera (butterflies and moths) is an abundant and diverse insect group that performs essential ecological functions within terrestrial environments. As a group, these insects are major herbivores (caterpillars) and pollinators (adults), and are a critical food source for many species of birds, mammals (including bats) and predacious and parasitoid insects. With hundreds of species of butterflies and moths combined occurring at sites with ample habitat heterogeneity, a Lepidoptera inventory can provide a valuable baseline for biodiversity studies. Future comparisons can then be made over the long or short term to reflect the response of these insects to changes in the local environment.

The adults of many butterflies and moths are quite colorful and conspicuous. As such, they have become increasingly popular with wildlife observers and are excellent organisms for both field and lab based citizen science. And while the butterflies of the Pacific Northwest have been reasonably well documented, there remains much to be learned about the majority of moth species. Documenting the diversity of moths at Sampson Creek will help to describe the complexity of the local ecosystem and how it varies across the landscape within and between various plant communities.

The Sampson Creek Preserve is located within an area of high biodiversity and likely hosts species of moths, in particular, which are little known for the region as a whole. As such, with thorough sampling a significant number of rare or otherwise poorly documented species are likely to be discovered and in doing so would contribute important county, state and regional distribution and range data.

This study proposes to inventory the butterflies and moths of the Sampson Creek Preserve by sampling regularly throughout the spring through fall months over the next few years. Preliminary results from visits during June, July and September, 2016 are presented in this report.

METHODS

Field sampling was conducted at Sampson Creek Preserve over 3 day/2 night periods during three separate monthly visits. An effort was made to collect butterflies and moths throughout the range of accessible habitat types and elevations. Each visit was timed to coincide with the new moon period to maximize the effectiveness of light traps for sampling nocturnal moths, and sunny daytime weather for good diurnal sampling. During each visit, both the relatively lush riparian habitats along lower Sampson Creek and the more mixed conifer-hardwood habitats of higher elevations (accessed via Cove Road) were included. Oak habitats with abundant *Quercus garyanna* and *Q. kelloggii* were well represented given their predominance throughout much of the preserve.

Nighttime sampling entailed the deployment of 12 volt battery powered blacklight traps for single-night periods at 10 unique locations (5 per night over 2 nights) on each visit. Each trap contained a fresh fumigant strip that served to quickly kill moths as they entered the trap. Each trap sample was collected as soon as was possible the following morning, placed in a plastic baggy with a trap site-date label, and kept cool in an ice chest until transported from the field. Each sample was then frozen until it could be processed. Processing entailed the sorting and identification of all macro-moths to species, with the transfer of data to a formal database. Representative voucher specimens were retained and mounted with collection data before being deposited into the Oregon State Arthropod Collection (OSAC) at Oregon State University in Corvallis.

Butterflies and day-flying moths were sampled on foot using an insect net (see photo below) during mid-day hours. An effort was made to sample all species observed, although doing so was not always possible. Virtually all butterflies were identified by sight while on the wing or were netted and identified in hand. Occasional individuals could not be identified with certainty and were not included. As for nocturnal moths, voucher specimens of diurnal species were retained, vouchered and placed in the OSAC collection.

Photo 1. Sampling diurnals.

RESULTS & DISCUSSION

A total of 252 species of Lepidoptera were documented at the Sampson Creek Preserve in 2016 (see Appendix). Of these, 49 species were butterflies and 203 species were moths. While significantly more sampling will be required to record the entire butterfly-moth fauna present there, these results strongly suggest that the Sampson Creek Preserve hosts a high diversity of these insects.

Common & Widespread Species. About one-half of the butterflies and a majority of the moths represent common and widespread species that are generally found wherever habitats include their larval hostplants. Many of these species are generalists, where caterpillars feed on a number of different plant species or feed on plants that are also common and widespread. Others are wide-ranging species that are either true migrants, such as the Monarch (*Danaus plexippus*), or enter Oregon from the south each spring as influx species - such as the Painted Lady (*Vanessa cardui*)) - which then breed temporarily but are generally incapable of tolerating the colder PNW winters and functionally die out each year to "re-invade" the next.

Regional Endemics. Sampson Creek Lepidoptera include species or subspecies known only from limited portions of the southern Oregon Cascades (Western Sulphur (*Colias occidentalis* "SW Oregon segregate") or small areas within the adjacent Siskiyou Mountains (the noctuid moth *Apamea albina*). Others are functionally "Californian" and reach the limits of their northward range in southern Oregon, such as the Gray Marble (*Anthocharis lanceolata*) and Lindsey's Skipper (*Hesperia lindseyi*).

Rare Species. The number of rare species documented at a site generally correlates to sampling intensity. Uncommon species are less likely to be sampled due to their low abundance over the landscape. Some may only occur in the vicinity of rare or localized larval hostplants or may have small populations with adults active for a very short period of time each year. Some species sampled in 2016 that can be considered rare include the moths *Hemaris thysbe* (a day-flying sphinx moth) and *Apamea albina* (also mentioned above).

Oregon State and Jackson County Records. While a more intensive search of national and regional databases will be required for confirmation, a number of moths appear to represent the 1st, 2nd or 3rd record for the species in Jackson County or are rarely documented species for Oregon or the Pacific Northwest. Candidates currently include the sphinx moth *Hemaris thysbe* (2nd county record and 4th or 5th Oregon record), the tiger moth *Cycnia oregonensis* (Jackson County record), and the geometrid moths *Eumacaria madopata* (Jackson County record, range extension to south) and *Drepanulatrix nevadaria* (possibly the 2nd record ever for Oregon). Another geometrid moth *Eusarca falcata* appears to be the first Oregon record for that genus. At present, the latter species is uncertain and may prove to be a closely related undescribed species.

The Need for Additional Sampling. In addition to the more intensive sampling required to record the rarer species which undoubtedly occur at Sampson Creek Preserve, virtually no sampling has taken place there during the months of March, April, May, August or October. The spring months of April and May, in particular, will reveal many species that were not active during the months sampled in 2016. The summer months (June-August) are often the time of greatest moth activity and additional sampling then will also continue to add many species to the list.

Sampson Creek Preserve Areas Sampled

Butterflies were sampled along lower Sampson Creek to a maximum distance of 1.7 miles east of the lower access gate and along the upper access road on each visit (Figure 1). During early June, use of the gas-powered ATV allowed for additional sampling at middle elevations, not accessed since then due to fire restrictions in place during July and September. Figure 2 shows the locations of moth traps from all visits combined. Traps were placed at various elevations and within a variety of plant communities (photos below).

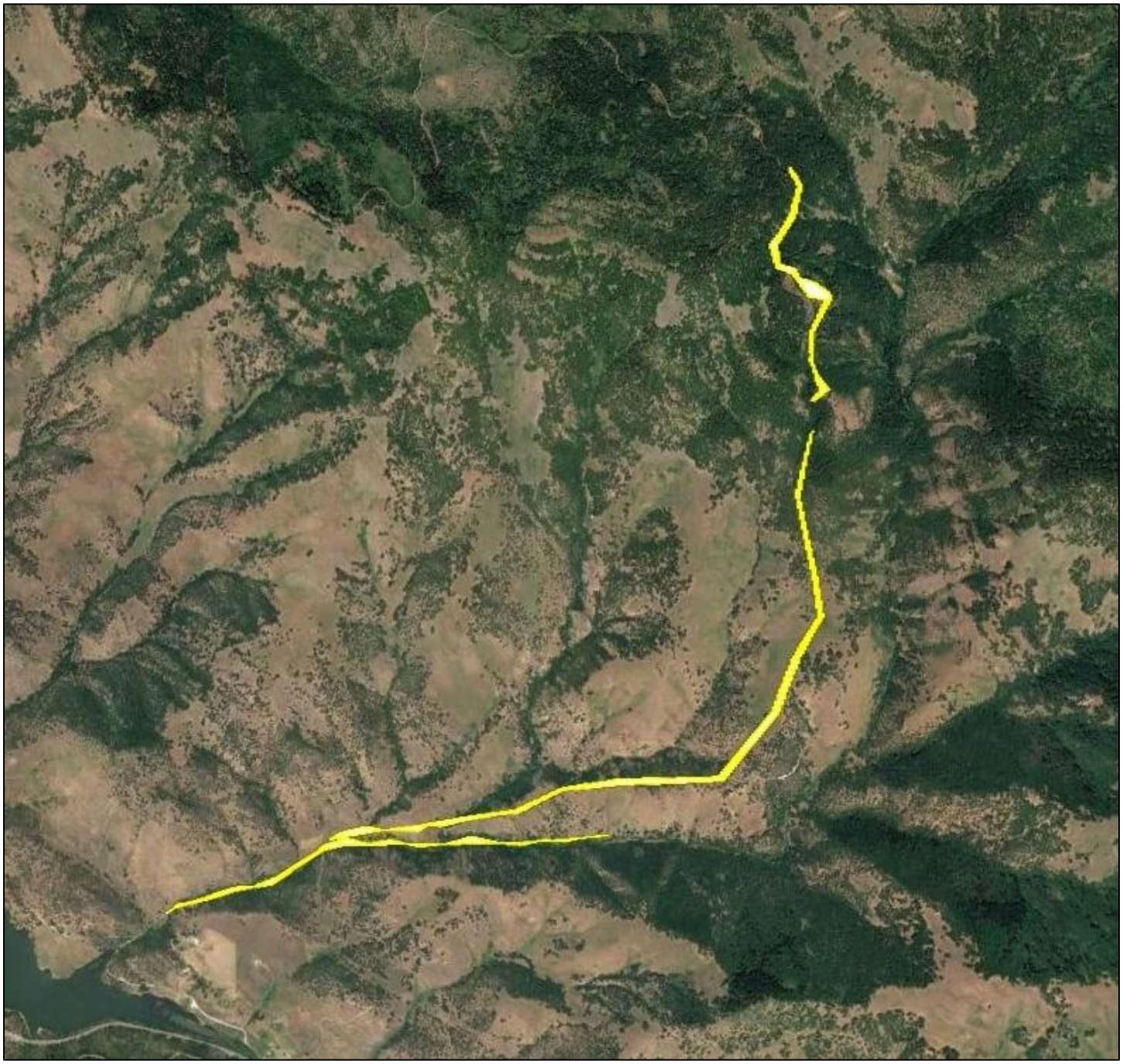

Figure 1. Transects used to document butterflies in 2016.

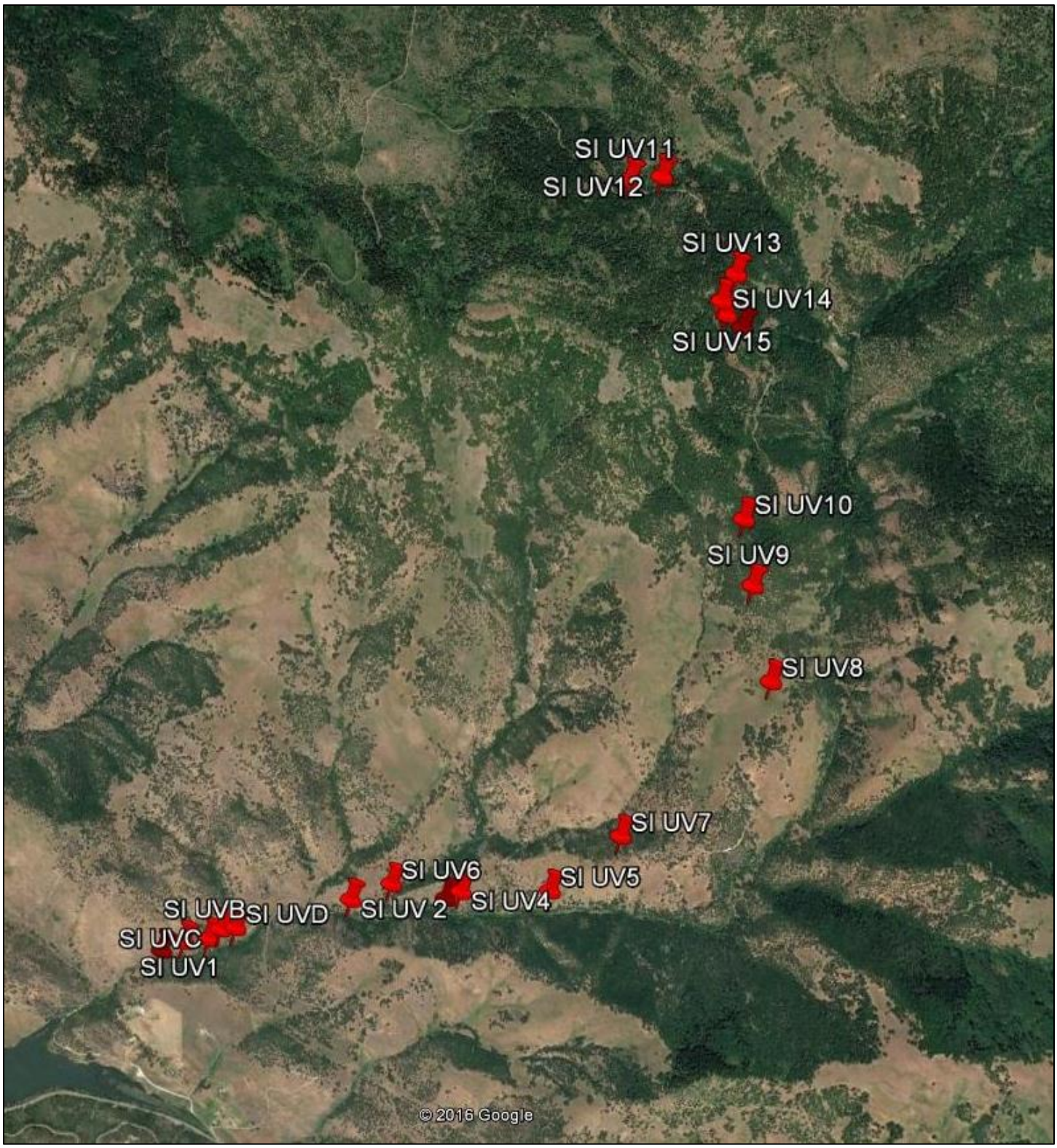

Figure 2. Placement of blacklight traps used to sample nocturnal moths in 2016.

Photo 2. Oak habitat along lower Sampson Creek (September 2016).

Photo 3. The Aholibah Underwing Moth (Erebidae) is associated with oak habitats.

Photo 4. Riparian edge habitat along lower Sampson Creek (September 2016).

Photo 5. Riparian understory habitat along lower Sampson Creek (September 2016).

Photo 6. Conifer forest understory habitat along the upper access road (September 2016).

Photo 7. Mixed semi-open conifer forest habitat along the upper access road (September 2016).

APPENDIX. Checklist of Sampson Creek Lepidoptera documented in 2016.

LEPIDOPTERA – 252 species

BUTTERFLIES - 49 Species

Family Papilionidae (Swallowtails & Parnassians) – 4 species

Anise Swallowtail	*Papilio zelicaon* Lucas, 1852
Western Tiger Swallowtail	*Papilio rutulus* Lucas, 1852
Pale Tiger Swallowtail	*Papilio eurymedon* Lucas, 1852 (1805)
Two-tailed Tiger Swallowtail	*Papilio multicaudata pusillus* Austin & J. Emmel, 1998

Family Pieridae (Whites & Sulphurs) – 8 species

Orange Sulphur	*Colias eurytheme* Boisduval, 1832
Western Sulphur	*Colias occidentalis* Scudder, 1862 (SW Oregon segregate)
Gray Marble	*Anthocharis lanceolata lanceolata* Lucas, 1852
Pine White	*Neophasia menapia menapia* (C. Felder & R. Felder, 1859)
Margined White	*Pieris marginalis* Scudder, 1861 ssp.
Cabbage White	*Pieris rapae rapae* (Linnaeus, 1758)
Becker's White	*Pontia beckerii* (W. H. Edwards, 1871)
Western White	*Pontia occidentalis occidentalis* (Reakirt, 1866)

Family Lycaenidae (Blues, Coppers & Hairstreaks) – 10 species

Great Blue Hairstreak	*Atlides halesus corcorani* Clench, 1942
Hedgerow Hairstreak	*Satyrium saepium saepium* (Boisduval, 1852)
Sylvan Hairstreak	*Satyrium sylvinus* (Boisduval, 1852) ssp.
Nelson's Cedar Hairstreak	*Callophrys gryneus nelsoni* (Boisduval, 1869)
Gray Hairstreak	*Strymon melinus* Hübner, 1818 ssp.
Pacific Azure	*Celastrina echo echo* (W. H. Edwards, 1864)
Greenish Blue	*Plebejus saepiolus rufescens* (Boisduval, 1869)
Boisduval's Blue	*Plebejus icarioides ?icarioides* (Boisduval, 1852)
Acmon Blue	*Plebejus acmon* (Westwood, [1851])
"Lupine" Blue	*Plebejus lupini* (Boisduval, 1869) (Siskiyous/W OR Cascades)

Family Riodinidae (Metalmarks) – 1 species

Mormon Metalmark	*Apodemia mormo mormo* (C. Felder & R. Felder, 1859)

Family Nymphalidae (Brushfoots) – 18 species

Monarch	*Danaus plexippus plexippus* (Linnaeus, 1758)
Callippe Fritillary	*Speyeria callippe elaine* dos Passos & Grey, 1945
Hydaspe Fritillary	*Speyeria hydaspe rhodope* (W. H. Edwards, 1877)
Lorquin's Admiral	*Limenitis lorquini lorquini* Boisduval, 1852
California Sister	*Adelpha californica* (Butler, 1865)

Family Nymphalidae (Brushfoots) (continued)

American Lady	*Vanessa virginiensis* (Drury, 1773)
Painted Lady	*Vanessa cardui* (Linnaeus, 1758)
Red Admiral	*Vanessa atalanta rubria* (Fruhstorfer, 1909)
California tortoiseshell	*Nymphalis californica* (Boisduval, 1852)
Mourning Cloak	*Nymphalis antiopa antiopa* (Linnaeus, 1758)
Northern Buckeye	*Junonia coenia grisea* Austin & J. Emmel, 1998
Edith's Checkerspot	*Euphydryas editha colonia* (W. G. Wright, 1905)
Snowberry Checkerspot	*Euphydryas colon colon* (W. H. Edwards, 1881)
Northern Checkerspot	*Chlosyne palla ?eremita* (W. G. Wright, 1905)
Mylitta Crescent	*Phyciodes mylitta mylitta* (W. H. Edwards, 1861)
Common Ringlet	*Coenonympha tullia eryngii* Hy. Edwards, 1877
Great Arctic	*Oeneis nevadensis nevadensis* (C. Felder & R. Felder, 1867)
Common Wood-Nymph	*Cercyonis pegala ariane* (Boisduval, 1852)

Family Hesperiidae (Skippers) – 8 species

Northern Cloudywing	*Thorybes pylades indistinctus* Austin & J. Emmel, 1998
Propertius Duskywing	*Erynnis propertius* (Scudder & Burgess, 1870)
Common Checkered-Skipper	*Pyrgus communis* (Grote, 1872) (W Oregon segregate)
Common Roadside-Skipper	*Amblyscirtes vialis* (W. H. Edwards, 1862)
Juba Skipper	*Hesperia juba* (Scudder, 1874)
Western Branded Skipper	*Hesperia colorado oregonia* (W. H. Edwards, 1883)
Lindsey's Skipper	*Hesperia lindseyi septentrionalis* J. Emmel, T. Emmel & Mattoon, 1998
Woodland Skipper	*Ochlodes sylvanoides sylvanoides* (Boisduval, 1852)

(MOTHS continued next page)

MOTHS – 203 species.
(Note – Since many moths do not have common names, only Latin names are presented here. Any recent taxonomic changes, authors and years of description will be included at the end of the multi-year inventory).

Family Cossidae – 1 species

Acossus populi

Family Crambidae – 3 species

Mecyna mustelinalis
Pyrausta nicalis
Saucroboys fumoferalis

Family Drepanidae – 1 species

Euthyatira semicircularis

Family Erebidae – 21 species

Caenurgina erechtea
Catocala aholibah
Catocala ilia
Ctenucha rubroscapus
Cycnia oregonensis
Dasychira grisefacta
Drasteria adumbrata
Drasteria edwardsii
Drasteria sabulosa
Grammia ornata
Idia americalis
Idia occidentalis
Lophocampa argentata
Lophocampa maculata
Lygephila victoria
Orgyia pseudotsugata
Phobolosia anfracta
Pseudohemihyalea edwardsii
Spilosoma vagans
Zale minerea
Zale termina

Family Geometridae – 55 species

Anavitrinella pampinaria
Aplocera plagiata
Campaea perlata
Caripeta aequaliaria
Chlorosea banksaria
Coryphista meadii
Cyclophora dataria

Family Geometridae (continued)

Digrammia muscariata
Digrammia neptaria
Drepanulatrix bifilata
Drepanulatrix foeminaria
Drepanulatrix hulstii
Drepanulatrix monicaria
Drepanulatrix nevadaria……Potential 2nd State Record for Oregon
Drepanulatrix unicalcararia
Dysstroma mancipata
Elpiste lorquinaria
Enypia packardata
Euchlaena johnsonaria
Euchlaena tigrinaria
Eudrepanulatrix rectifascia
Eumacaria madopata
Eupithecia misturata
Eusarca ?falcata……..First documentation of this genus in Oregon
Eustroma semiatrata
Gabriola dyari
Hesperumia latipennis
Hesperumia sulphuraria
Hydriomena perfracta
Hydriomena renunciata
Idaea dimidiata
Iridopsis emasculatum
Leptostales rubromarginaria
Macaria adonis
Melanolophia imitata
Nematocampa resistaria
Nemoria darwiniata
Nepytia umbrosaria
Perizoma costiguttata
Pero mizon
Pero occidentalis
Phaeoura mexicanaria
Protitame subalbaria
Pterotae albescens
Sabulodes edwardsata
Scopula junctaria
Sericosema juturnaria
Sicya crocearia
Sicya morsicaria
Speranza quadrilinearia
Stamnoctenis pearsalli
Stenoporpia pulmonaria
Tetracis cervinaria
Xanthorhoe defensaria

Zosteropoda hirtipes

Family Lasiocampidae – 3 species

Malacosoma californica
Malacosoma constrictum
Tolype distincta

Family Limacodidae – 1 species

Tortricidea testacea

Family Noctuidae – 98 species

Abagrotis apposita
Abagrotis erratica
Abagrotis forbesi
Abagrotis placida
Abagrotis scopeops
Abagrotis trigona
Acronicta impleta
Acronicta marmorata
Acronicta perdita
Acronicta radcliffei
Acronicta strigulata
Adelphagrotis indeterminata
Agrotis ipsilon
Amphipyra brunneoatra
Amphipyra pyramidoides
Amphipyra tragopoginis
Anarta oregonica
Andropolia diversilineata
Apamea albina
Apamea alia
Apamea amputatrix
Apamea antennata
Apamea centralis
Apamea cinefacta
Apamea cogitata
Apamea cuculliformis
Apamea siskiyou
Apamea sordens
Aseptis adnixa
Aseptis binotata
Aseptis ethnica
Aseptis fanatica
Brachylomia thula
Caradrina meralis
Cosmia calami
Dichagyris variabilis

Family Noctuidae (continued)

Egira rubrica
Euxoa atomaris
Euxoa bicollaris
Euxoa brunneigera
Euxoa infausta
Euxoa obeliscoides
Euxoa satis
Euxoa septentrionalis
Euxoa tocoyae
Feltia jaculifera
Homorthodes communis
Homorthodes furfurata
Homorthodes hanhami
Lacinipolia comis
Lacinipolia cuneata
Lacinipolia pensilis
Lacinipolia quadrilineata
Lacinipolia stricta
Lacinipolia strigicollis
Lacinipolia vicina
Lasionycta perplexa
Leucania dia
Leucania farcta
Leucania oregona
Mesogona olivata
Mesogona subcuprea
Noctua comes
Noctua pronuba
Oligia divesta
Oligia rampartensis
Orthodes noverca
Panthea virginarius
Parabagrotis cupidissima
Parabagrotis exsertistigma
Parabagrotis formalis
Parabagrotis insularis
Parabagrotis sulinaris
Peridroma saucia
Polia pinae
Properigea albimacula
Protolampra rufipectus
Protorthodes alfkeni
Protorthodes curtica
Pseudobryomima muscosa
Pseudorthodes irrorata
Raphia frater
Spaelotis bicava

Family Noctuidae (continued)

Sympistis goedeni
Sympistis greyi
Sympistis youngi
Syngrapha celsa
Viridiseptis marina
Xestia cinerascens
Xestia finatimis
Xestia infimatis
Xestia mustelina
Xestia smithii
Xestia xanthographa
Zale minerea
Zale termina
Zosteropoda hirtipes
Zotheca tranquila

Family Notodontidae – 6 species

Clostera apicalis
Furcula cinerea
Furcula scolopendrina
Nadata gibbosa
Nadata oregonensis
Schizura unicornis

Family Oecophoridae – 1 species

Ethmia discostrigella

Family Saturniidae – 2 species

Antheraea polyphemus
Hemileuca eglanterina

Family Sphingidae – 7 species

Hemaris thetis
Hemaris thysbe
Paonias excaecatus
Smerinthus ophthalmica
Sphinx chersis
Sphinx drupiferarum
Sphinx perelegans

Family Tortricidae – 4 species

Archips argyrospila
Choristoneura rosaceana
Eucosma siskiyouana
Hedya ochroleucana

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The author and “friends”.