2018 ANNUAL REPORT

MOTHS & BUTTERFLIES OF GRIZZLY PEAK PRESERVE:

Inventory Results from 2018

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SUMMARY

The Grizzly Peak Preserve was sampled for butterflies and moths during May, June and October, 2018. A grand total of 218 species were documented and included 170 moths and 48 butterflies. These are presented as an annotated checklist in the appendix of this report. Butterflies and day-flying moths were sampled during daylight hours with an insect net. Nocturnal moths were collected using battery-powered backlight traps over single night periods at 10 locations during each monthly visit.

While many of the documented butterflies and moths are common and widespread species, others - that include the Western Sulphur (*Colias occidentalis primordialis*) and the noctuid moth *Eupsilia fringata* - represent more locally endemic and/or rare taxa. One geometrid moth has yet to be identified and may represent an undescribed ("new") species.

Future sampling during March, April, July, August and September will capture many more Lepidoptera that have not been recorded. Once the site is more thoroughly sampled, the combined Grizzly Peak butterfly-moth fauna should total at least 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 Grizzly Peak will help to describe the complexity of the local ecosystem and how it varies across the landscape within and between various plant communities.

Grizzly Peak Preserve is located within an area of high biodiversity and endemicity 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 valuable county, state and regional distribution and range data.

This study proposes to inventory the butterflies and moths of the Grizzly Peak Preserve by sampling regularly throughout the spring through fall months over the next few years. Results from visits during May, June and October, 2018 are presented in this report.

METHODS

Field sampling was conducted at Grizzly Peak 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 within the middle and upper portions of the preserve. The lower areas (via Pompadour Drive) were not included. Each field sampling session was timed to coincide with the new moon to half-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 forested and open habitats were accessed from the Shale City Road area (via electric ATV) and the mid-elevation driveway access points. Oak habitats with abundant *Quercus garyanna* and *Q. kelloggii* were particularly well represented, with additional conifer, hardwood, pasture, prairie and riparian habitats also included.

Nighttime sampling entailed the deployment of 12 volt battery powered blacklight traps for single-night periods at 10 unique locations (typically 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 (and some micro-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.

RESULTS & DISCUSSION

A total of 218 species of Lepidoptera were documented at Grizzly Peak Preserve in 2018 (see Appendix). Of these, 48 species were butterflies and 170 species were moths. While significantly more sampling will be required to record the entire butterfly-moth fauna present there, these results are evidence of a rich insect assemblage.

<u>Common & Widespread Species</u>. As is typical within many terrestrial ecosystems, about one-half of the butterflies and a majority of the moths represent common and widespread species that tend to occur wherever habitats include their caterpillar hostplants. Many of these species, such as the Acmon Blue (*Plebejus acmon*), Common Ringlet (*Coenonympha tullia*) and Anise Swallowtail (*Papilio zelicaon*) are generalists whose larval stage can feed on a number of different plant species. Others are more wide-ranging

seasonal migrants that arrive from the south as influx species, and include the Monarch (*Danaus plexippus*), Painted Lady (*Vanessa cardui*) and Northern Buckeye (*Junonia coenia*).

Regional Endemics. Grizzly Peak Lepidoptera include those known only from limited portions of the southern Oregon Cascades, such as the recently described Western Sulphur (*Colias occidentalis primordialis*). Others are more typically "Californian" species whose Oregon range is limited to adjacent areas in the southwest portion of the state , and include 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 2018 that can be considered rare include the dayflying sphinx moth *Hemaris thysbe*, and the noctuid moths *Apamea albina* and *Eupsilia fringata*.

Oregon State and Jackson County Distribution Records. The noctuid moth *Eupsilia fringata* was documented for the first time in the state of Oregon during this study. All previous PNW records were from Washington and British Columbia. The sphinx moth *Hemaris thysbe* was documented for the 3rd time in Jackson County and is also a species with very few Oregon records. An unfamiliar yet rather conspicuous geometrid moth has yet to be identified and may prove to be a "new" species to science. Other distribution records are likely.

The Need for Additional Sampling. In addition to the more intensive sampling required to record the rarer species which undoubtedly occur at Grizzly Peak Preserve, virtually no sampling has taken place there during the months of March, April, July, August and September. Many species are active at those times and have yet to be recorded.

Photo 1. View of Mt Ashland from Grizzly Peak Preserve.

Areas Sampled at Grizzly Peak Preserve

Most sampling occurred within the upper portions of the preserve (via Shale City Road access) along the existing primitive roads and adjacent open areas of the preserve. Additional middle elevation habitats were sampled via the Dead Indian Memorial Highway driveway access. Various conifer and hardwood forest edges and gaps, open pastures and prairies, rocky ridges, shrub communities and riparian areas were surveyed. Figure 1 indicates areas where butterflies were targeted. Figure 2 shows the locations of moth traps that were placed at various elevations and within a variety of plant communities.

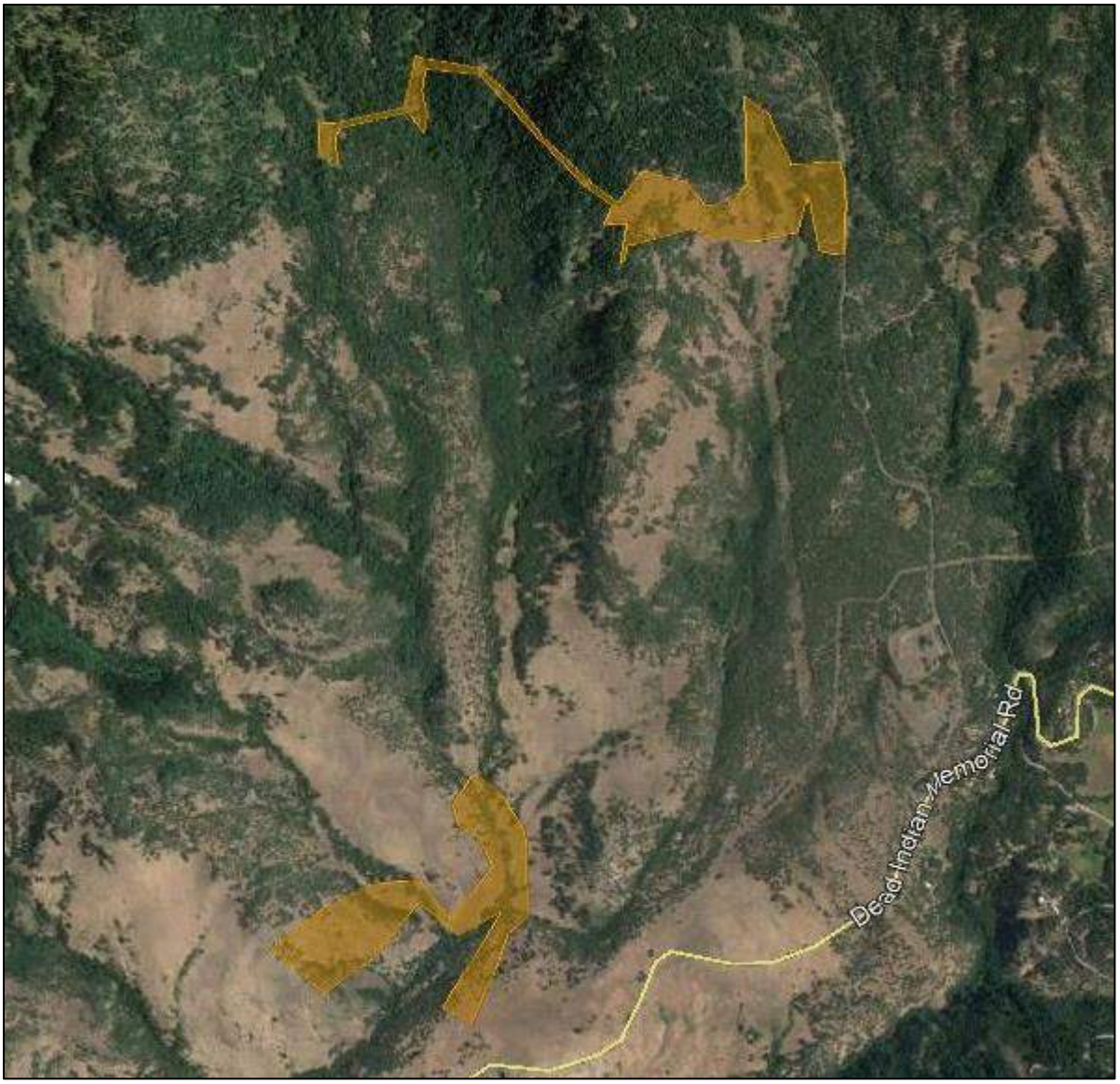

Figure 1. Butterfly areas sampled at Grizzly Peak Preserve in 2018.

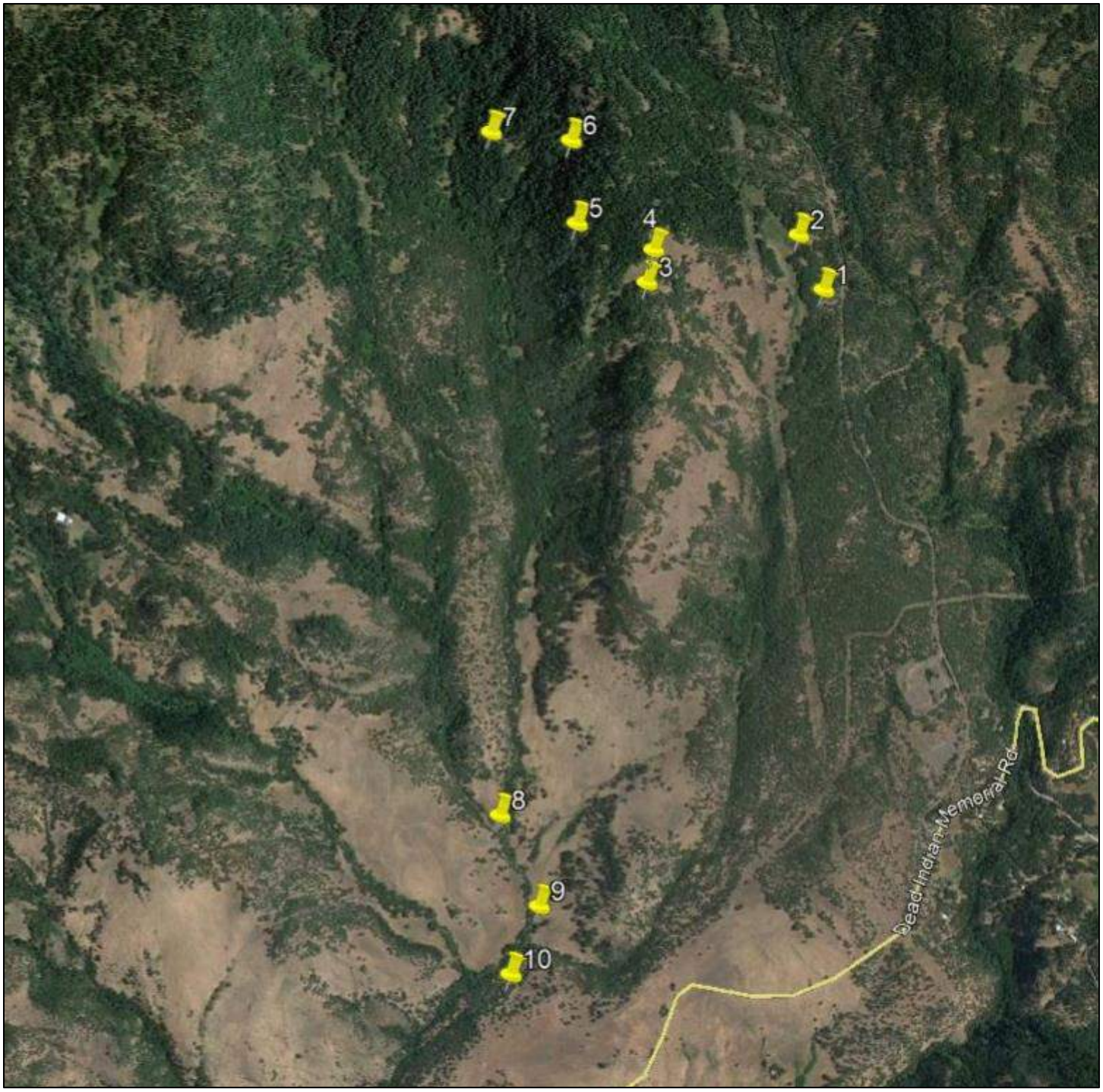

Figure 2. Placement of blacklight traps used to sample Grizzly Peak moths in 2018.

Photo 2. Oak woodland habitat (Moth Site #1) near Shale City Road.

Photo 3. Male blues taking moisture and minerals from mud (driveway access).

Photo 4. Rocky ridgetop habitat (Moth Site #4) west of Shale City Road.

Photo 5. Diverse tree-shrub-forb site (Moth Site #6) within the upper area.

Photo 6. Middle elevation seasonal creek/riparian habitat (along driveway access).

Photo 7. Oak woodland/savanna habitat.

Photo 8. Moth trap and 12 volt battery used to sample nocturnal moths.

APPENDIX. Checklist of Grizzly Peak Preserve Lepidoptera documented in 2018.

LEPIDOPTERA – 218 species (?-What follows is uncertain and is a "best guess" at present).

BUTTERFLIES - 48 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) – 5 species

Orange Sulphur	*Colias eurytheme* Boisduval, 1832
Western Sulphur	*Colias occidentalis primordialis* Hammond & McCorkle, 2017
Gray Marble	*Anthocharis lanceolata lanceolata* Lucas, 1852
Margined White	*Pieris marginalis* Scudder, 1861 ssp.
Large Marble	*Euchloe ausonides transmontana* Austin & J. Emmel, 1998

Family Lycaenidae (Blues, Coppers & Hairstreaks) – 12 species

Western Pine Elfin	Callophrys eryphon eryphon (Boisduval, 1852)
Nelson's Cedar Hairstreak	*Callophrys gryneus nelsoni* (Boisduval, 1869)
?Sheridan's Hairstreak	*Callophrys ?sheridanii* (W.H. Edwards, 1877) ssp.
Eastern Tailed-Blue	*Cupido comyntas sissona* (W. G. Wright, 1905)
Pacific Azure	*Celastrina echo echo* (W. H. Edwards, 1864)
?Glaucon Blue	*Euphilotes ?glaucon* (W. H. Edwards, 1871) ssp.
?Enoptes Blue	*Euphilotes ?enoptes* (Boisduval, 1852) ssp.
Silvery Blue	*Glaucopsyche lydgamus incognitus* Tilden, 1974
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 Nymphalidae (Brushfoots) – 17 species

Monarch	*Danaus plexippus plexippus* (Linnaeus, 1758)
Pacific Fritillary	*Boloria epithore chermocki* E. Perkins & S. Perkins, 1966
Callippe Fritillary	*Speyeria callippe elaine* dos Passos & Grey, 1945
Lorquin's Admiral	*Limenitis lorquini lorquini* Boisduval, 1852
California Sister	*Adelpha californica* (Butler, 1865)
American Lady	*Vanessa virginiensis* (Drury, 1773)
California tortoiseshell	*Nymphalis californica* (Boisduval, 1852)
Mourning Cloak	*Nymphalis antiopa antiopa* (Linnaeus, 1758)
Green Anglewing	*Polygonia faunus rusticus* (W. H. Edwards, 1874)

Edith's Checkerspot *Euphydryas editha* (Boisduval, 1852) ssp.

Family Nymphalidae (Brushfoots) (continued)

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)
Field Crescent *Phyciodes pulchella* (Boisduval, 1852) ssp.
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) – 10 species

Silver-spotted Skipper *Epargyreus clarus californicus* MacNeill, 1975
Northern Cloudywing *Thorybes pylades indistinctus* Austin & J. Emmel, 1998
Propertius Duskywing *Erynnis propertius* (Scudder & Burgess, 1870)
Two-banded Checkered-Skipper *Pyrgus ruralis ruralis* (Boisduval, 1852)
Arctic Skipperling Cartercephalus palaemon skada (W. H. Edwards, 1870)
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
Sonoran Skipper *Polites sonora sonora* (Scudder, 1872)

<u>MOTHS – 170 species</u>.
(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 Crambidae – 4 species

Mecyna mustelinalis
Pyrausta unifascialis
Sitochroa chortalis……..Possible **STATE RECORD**
Saucroboys fumoferalis

Family Drepanidae – 2 species

Ceranemota tearlei
Euthyatira semicircularis

Family Erebidae – 13 species

Apantesis ornata
Caenurgina caerulea
Caenurgina erechtea
Drasteria adumbrata
Gnophaela latipennis
Euclidea ardita

Idia americalis
Leptarctia californiae
Scoliopteryx libatrix
Spilosoma vagans
Zale lunata
Zale rubi
Zale termina

Family Geometridae – 52 species

Anavitrinella occularia
Aplocera plagiata
Apodrepanulatrix litaria
Caripeta aequaliaria
Chlorosea banksaria
Cladara limitaria
Coryphista meadii
Cyclophora dataria
Digrammia burneyata
Digrammia curvata
Digrammia muscariata
Digrammia neptaria
Drepanulatrix foeminaria
Drepanulatrix hulstii
Drepanulatrix monicaria
Drepanulatrix unicalcararia
Ennomos magnaria
Eudrepanulatrix rectifascia
Eupithecia behrensata
Eupithecia graefii
Eupithecia misturata
Eupithecia ravocostaliata
Eupithecia segregata
Eupithecia subapicata
Eupithecia unicolor
Eustroma semiatrata
Horisme intestinata
Hydriomena irata
Hydriomena marinata
Hydriomena perfracta
Macaria adonis
Melanolophia imitata
Nemoria darwiniata
Neoalcis californiaria
Neoterpes trianguliferata
Perizoma costiguttata
Perizoma curvilinea
Pero behrensaria

Pero occidentalis
Phaeoura mexicanaria
Plagodis occiduaria
Protitame subalbaria
Sabulodes edwardsata
Scopula species
Sicya morsicaria
Tetracis cervinaria
Tetracis jubararia
Tetracis pallulata
?"*Tetracis* n. sp."……May be a **"new species" to science (?).**
Venusia pearsalli
Xanthorhoe defensaria
Zenophleps lignicolorata

Family Lasiocampidae – 2 species

Phyllodesma americana
Tolype distincta

Family Noctuidae – 79 species

Abagrotis baueri
Abagrotis forbesi
Abagrotis mirabilis
Abagrotis scopeops
Acronicta impleta
Acronicta marmorata
Acronicta perdita
Agrochola pulchella
Agrochola purpurea
Agrotis ipsilon
Agrotis venerabilis
Amphipyra pyramidoides
Andropolia theodori
Annaphila diva
Apamea albina
Apamea alia
Apamea amputatrix
Apamea antennata
Apamea anteoclara
Apamea centralis
Apamea cinefacta
Apamea cuculliformis
Apamea digitula
Apamea siskiyou
Apamea sordens
Apamea vultuosa
Autographa californica

Axenus arvalis……**5th State Record/2nd Jackson County Record**
Behrensia conchiformis
Condica mersa
Dryotype opina
Egira perlubens
Egira rubrica
Egira simplex
Epidemas obscurus
Eupsilia fringata……**STATE RECORD**
Euxoa aequalis
Euxoa bochus
Euxoa comosa
Euxoa declarata
Euxoa difformis
Euxoa obeliscoides
Euxoa satis
Euxoa septentrionalis
Euxoa tocoyae
Feltia jaculifera
Fishia discors
Hadena siskiyou
Heliothodes diminutivus
Homoglaea carbonaria
Homorthodes hanhami
Lacinipolia cuneata
Lacinipolia quadrilineata
Lacinipolia stricta
Leucania dia
Leucania farcta
Leucania oregona
Lithophane pertorrida
Lithophane ponderosa
Mesogona olivata
Mesogona subcuprea
Noctua pronuba
Oligia divesta
Orthosia mys
Orthosia transparens
Panthea virginarius
Parabagrotis cupidissima
Parabagrotis exsertistigma
Parabagrotis formalis
Parabagrotis insularis
Perigonica angulata
Perigonica tertia
Platypolia contadina
Pleromelloida cinerea
Spaelotis bicava

Ufeus satyricus
Xestia infimatis
Xylena cineritia
Zosteropoda hirtipes

Family Nolidae – 2 species

Meganola miniscula
Nycteola frigidana

Family Notodontidae – 4 species

Clostera apicalis
Nadata gibbosa
Nadata oregonensis
Pheosia rimosa

Family Oecophoridae – 1 species

Ethmia discostrigella

Family Saturniidae – 2 species

Antheraea polyphemus
Hyalophora euryalus

Family Sessiidae – 1 species

Unidentified species (red & black)

Family Sphingidae – 7 species

Hemaris thysbe
Paonias excaecatus
Proserpinus clarkiae
Smerinthus ophthalmica
Sphinx perelegans
Sphinx sequoia
Sphinx vashti

Family Tortricidae – 1 species

Archips argyrospila

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Maia Black & Bo Steinert – Helpful and accommodating in so many ways, I equally appreciate their enthusiasm for discovering insects. Hanging out at the campsite, spending time together chasing butterflies through a meadow with a net, or seeing what the moth lights brought in after dark are all pleasant personal memories.

Linda Kappen – Great company and always on "Monarch Watch". Linda once again also netted something that I did not…a perfect specimen of the rare clearwing sphinx moth *Hemaris thysbe*. Well done, Linda!

Dr. Paul Hammond – Paul simply makes sorting and identifying moths fun! His regular assistance in this task is unequaled and greatly appreciated.

Drs. Christopher Marshall & David Maddison – For providing me with an open door policy and the ability to make use of the fine Lepidoptera collection at the Oregon State Arthropod Collection. Thank you both!

David Lee Myers – David and his wife Alex graciously provided me with good food, fine company and a warm bed during my much delayed third sampling trip in chilly October. You guys saved me!


Yes, my equine friends……..you enriched my experience as well.