

Volume 2015 Number 4
Winter 2015/2016

Bulletin of the
**Oregon
Entomological
Society**

Moths of the South Fork of Mill Creek (Wasco County, Oregon)

Dana Ross

Personnel Involved

Terry Stoddard of The Dalles, Oregon, first recommended the South Fork of Mill Creek for a moth study due to its high quality oak-bunchgrass habitat and abundant Lepidoptera based on his years of collecting there. Terry also provided a moth trap for the study.

Dick Stentz, a technician at the Wicks Water Treatment Plant (The Dalles water supply), conducted all of the moth sampling over the two year period (2012–2013) of the project and submitted the site photo for use in this report.

Dana Ross provided project oversight and sampling supplies, processed/identified moth samples, created the electronic database and mounted most of the voucher material.

Paul Hammond helped with moth processing, identified the more difficult moths and mounted some of the rarer species for their timely accession into the Oregon State Arthropod Collection (OSAC).

Method

Moths were sampled from the vicinity of the Wicks Water Treatment Plant (Photo 1) over the course of two years (2012 and 2013) using a UV blacklight bucket trap. Samples provided single-night moth species richness and relative abundance data that was combined over the course of the study for a reasonably complete description of the macromoth fauna and the documentation of some microlepidoptera at the site. Each sample was placed in a sealed plastic baggy, labeled with the date of collection and frozen until transport to Corvallis/OSAC for processing. Processing entailed sorting, counting and identifying all macromoths for each sample. Selected specimens were retained for deposit in OSAC as voucher material. Sample data was entered into an EXCEL file that included fields for family, taxon, date of collection and abundance. Project data is being made available to the PNW Moths website (<<http://pnwmoths.biol.wvu.edu>>),

with a subset (rare moths, range extensions and important distributional confirmations) forwarded to the Lepidopterists' Society PNW Season Summary coordinator Jon Shepard.

Results

More than 2,700 moths representing at least 170 species were sampled over 52 nights during this study. A total of 67 macromoth species were documented for the first time in Wasco County while many others were collected for just the 2nd or 3rd time, according to the PNW Moths website (records for the Geometridae are not available yet). A checklist of documented species, including total number sampled and flight period by month, is presented in Table 1.

Acknowledgements

This Project was supported by the Harold E. and Leona M. Rice Endowment Fund, Oregon State University.



Photo 1. Wicks Water Treatment Plant on the South Fork Mill Creek. Habitats include undisturbed oak, bunchgrass and riparian plant communities. Photo by Dick Stentz.

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Table 1. Moths (and butterflies) sampled from the Wicks Water Treatment Plant on South Fork Mill Creek during 2012–2013. Macromoth species are presented alphabetically by family and taxon (* = micromoth or butterfly species).

Family	Taxon	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Totals	Notes
*Crambidae	<i>Evergestis funalis</i>					1						1	
*Crambidae	<i>Pyrausta semirubralis</i>				1			1				2	
*Hesperiidae	<i>Erynnis propertius</i>							1				1	
*Hesperiidae	<i>Ochlodes sylvanoides</i>										1	1	
*Nymphalidae	<i>Cercyonis pegala</i>				1							1	
*Nymphalidae	<i>Coenonympha tullia</i>				1							1	
*Oecophoridae	<i>Ethmia marmorea</i>				2							2	
*Pyrilidae	<i>Toripalpus trabalis</i>					3						3	
Drepanidae	<i>Ceranemota tearlei</i>							1	3	1		5	Wasco County Record
Drepanidae	<i>Euthyatira lorata</i>		8									8	Wasco County Record
Drepanidae	<i>Euthyatira semicircularis</i>			1	5							6	Wasco County Record
Erebidae	<i>Catocala abolibab</i>					6						6	
Erebidae	<i>Catocala verrilliana</i>					2	3	9				14	
Erebidae	<i>Cissusa indiscreta</i>	1	146	1								148	3rd most abundant species
Erebidae	<i>Drasteria adumbrata</i>				1							1	Wasco County Record
Erebidae	<i>Drasteria edwardsii</i>				1							1	
Erebidae	<i>Drasteria sabulosa</i>				4							4	
Erebidae	<i>Grammia nevadensis</i>		16	3			1	12				32	
Erebidae	<i>Grammia ornata</i>		15									15	
Erebidae	<i>Hemeroplanis historialis</i>				1							1	
Erebidae	<i>Idia americalis</i>					1						1	Wasco County Record
Erebidae	<i>Idia occidentalis</i>					3						3	Wasco County Record
Erebidae	<i>Lophocampa maculata</i>				2							2	Wasco County Record
Erebidae	<i>Lygephila victoria</i>					2	1					3	Wasco County Record
Erebidae	<i>Mycterophora longipalpata</i>						1					1	Wasco County Record
Erebidae	<i>Spilosoma vestalis</i>		1	1	1							3	
Erebidae	<i>Zale lunata</i>			1								1	
Geometridae	<i>Aplocera plagiata</i>							1	1			2	
Geometridae	<i>Cyclophora dataria</i>					1	1					2	
Geometridae	<i>Digrammia muscariata</i>		1	1	27	34	27	1				91	
Geometridae	<i>Digrammia neptaria</i>				2							2	
Geometridae	<i>Drepanulatrix falcataria</i>	6	35									41	
Geometridae	<i>Drepanulatrix foeminarum</i>		7	3								10	
Geometridae	<i>Drepanulatrix unicalcararia</i>				3		3	8				14	
Geometridae	<i>Dysstroma ?colevillei</i>				16							16	
Geometridae	<i>Ennomos magnaria</i>							7	2			9	
Geometridae	<i>Enypia packardata</i>							1				1	
Geometridae	<i>Erannis tiliaria</i>									2		2	
Geometridae	<i>Eudrepanulatrix rectifascia</i>		6	1	1	6						14	
Geometridae	<i>Eupithecia misturata</i>		2									2	
Geometridae	<i>Eupithecia nevadana</i>		16									16	
Geometridae	<i>Eupithecia segregata</i>		12									12	

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Family	Taxon	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Totals	Notes
Geometridae	<i>Eupithecia zelmira</i>	2	5									7	
Geometridae	<i>Eustroma semiatrata</i>							4				4	
Geometridae	<i>Hesperumia sulphuraria</i>				4	4						8	
Geometridae	<i>Hydriomena edenata</i>		65									65	
Geometridae	<i>Macaria adonis</i>					1						1	
Geometridae	<i>Melanolophia imitata</i>			1								1	
Geometridae	<i>Neocalcis californiaria</i>							9				9	
Geometridae	<i>Nepytia phantasmaria</i>								1			1	
Geometridae	<i>Operophtera danbyi</i>									13		13	
Geometridae	<i>Perizoma costiguttata</i>		1		3		11	1				16	
Geometridae	<i>Pero mizon</i>				1	2		1				4	
Geometridae	<i>Phigalia plumogeraria</i>	5	2									7	
Geometridae	<i>Philedia punctomaculata</i>								1			1	
Geometridae	<i>Protitame matilda</i>					2						2	
Geometridae	<i>Sabulodes edwardsata</i>						2					2	
Geometridae	<i>Sericosema juturnaria</i>				3	14						17	
Geometridae	<i>Sicya crocearia</i>				3							3	
Geometridae	<i>Stenoporpia dejecta</i>							2				2	
Geometridae	<i>Synchlora aerata</i>						1					1	
Geometridae	<i>Tetracis cervinaria</i>		1	2	3							6	
Geometridae	<i>Tetracis jubararia</i>								4	1		5	
Geometridae	<i>Tetracis pallulata</i>							1				1	
Geometridae	<i>Triphosa haesitata</i>	1	1									2	
Geometridae	<i>Venusia pearsalli</i>		30	1								31	
Geometridae	<i>Xanthorhoe defensaria</i>		1									1	
Geometridae	<i>Zenophleps lignicolorata</i>							26	5			31	
Lasiocampidae	<i>Malacosoma californicum</i>				3							3	
Lasiocampidae	<i>Malacosoma constrictum</i>				102							102	Wasco County Record
Lasiocampidae	<i>Phyllodesma americana</i>	1	40	6								47	Wasco County Record
Lasiocampidae	<i>Tolyte distincta</i>						3	2				5	
Noctuidae	<i>Abagrotis forbesi</i>				1	5		4				10	
Noctuidae	<i>Abagrotis placida</i>							1				1	Wasco County Record
Noctuidae	<i>Abagrotis reedi</i>				1							1	
Noctuidae	<i>Abagrotis scopeops</i>				1	3						4	
Noctuidae	<i>Acerra normalis</i>	7	37									44	
Noctuidae	<i>Acronicta dactylina</i>				3							3	Wasco County Record
Noctuidae	<i>Acronicta impleta</i>			1								1	Wasco County Record
Noctuidae	<i>Acronicta marmorata</i>			2	12							14	
Noctuidae	<i>Agrochola purpurea</i>								3	1		4	
Noctuidae	<i>Amphipyra pyramidoides</i>							1				1	Wasco County Record
Noctuidae	<i>Anagrapha falcifera</i>							1				1	Wasco County Record
Noctuidae	<i>Apamea "nr tahoeensis"</i>				27							27	
Noctuidae	<i>Apamea amputatrix</i>					1						1	Wasco County Record

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Family	Taxon	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Totals	Notes
Noctuidae	<i>Apamea antennata</i>				1							1	
Noctuidae	<i>Apamea cinefacta</i>		2	7								9	
Noctuidae	<i>Apamea cuculliformis</i>				1							1	
Noctuidae	<i>Aseptis binotata</i>				10	3						13	
Noctuidae	<i>Behrensia conchiformis</i>		9									9	Wasco County Record
Noctuidae	<i>Brachylomia rectifascia</i>				1							1	Wasco County Record
Noctuidae	<i>Caradrina meralis</i>						11	20				31	Wasco County Record
Noctuidae	<i>Cosmia calami</i>				1	36	6					43	Wasco County Record
Noctuidae	<i>Cosmia elisae</i>				1	2						3	Wasco County Record
Noctuidae	<i>Cosmia praeacuta</i>					2						2	Wasco County Record
Noctuidae	<i>Cryphia cuerva</i>						2	8				10	Wasco County Record
Noctuidae	<i>Cucullia eulepis</i>						1					1	
Noctuidae	<i>Dargida procinctus</i>									1		1	Wasco County Record
Noctuidae	<i>Dichagyris variabilis</i>							2				2	Wasco County Record
Noctuidae	<i>Egira crucialis</i>	5	44									49	
Noctuidae	<i>Egira curialis</i>		28									28	
Noctuidae	<i>Egira februalis</i>	32	13									45	
Noctuidae	<i>Egira hiemalis</i>	4	1									5	Wasco County Record
Noctuidae	<i>Egira perlubens</i>		54	1								55	
Noctuidae	<i>Egira rubrica</i>		8									8	
Noctuidae	<i>Egira simplex</i>		2		1							3	Wasco County Record
Noctuidae	<i>Epidemas obscurus</i>							3	2			5	Wasco County Record
Noctuidae	<i>Euxoa "nr simulata"</i>					15						15	
Noctuidae	<i>Euxoa aequalis</i>							1				1	Wasco County Record
Noctuidae	<i>Euxoa atomaris</i>							1				1	Wasco County Record
Noctuidae	<i>Euxoa difformis</i>							1				1	Wasco County Record
Noctuidae	<i>Euxoa henrietta</i>							3				3	
Noctuidae	<i>Euxoa hollemani</i>					1						1	Wasco County Record
Noctuidae	<i>Euxoa infausta</i>				2	76						78	
Noctuidae	<i>Euxoa satis</i>					11		1				12	
Noctuidae	<i>Euxoa terrenus</i>			1	6							7	Wasco County Record
Noctuidae	<i>Euxoa tocoyae</i>			1	1							2	Wasco County Record
Noctuidae	<i>Feltia jaculifera</i>						4	14				18	Wasco County Record
Noctuidae	<i>Fishia discors</i>									1		1	Wasco County Record
Noctuidae	<i>Fishia yosemitae</i>									1		1	Wasco County Record
Noctuidae	<i>Homorthodes communis</i>					1		3				4	Wasco County Record
Noctuidae	<i>Homorthodes furfurata</i>				8	70						78	Wasco County Record
Noctuidae	<i>Homorthodes hanhami</i>				2							2	Wasco County Record
Noctuidae	<i>Hydraecia medialis</i>							1				1	Wasco County Record
Noctuidae	<i>Ipimorpha viridipallida</i>					1						1	Wasco County Record
Noctuidae	<i>Lacanobia subjuncta</i>				1							1	Wasco County Record
Noctuidae	<i>Lacinipolia comis</i>					1						1	Wasco County Record
Noctuidae	<i>Lacinipolia cuneata</i>			3	1							4	
Noctuidae	<i>Lacinipolia pensilis</i>					9	8	3				20	

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Family	Taxon	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Totals	Notes
Noctuidae	<i>Lacinipolia stricta</i>					1	1	48	1			51	
Noctuidae	<i>Lacinipolia strigicollis</i>					126	17	2				145	4th most abundant species
Noctuidae	<i>Leucania dia</i>			4								4	Wasco County Record
Noctuidae	<i>Leucania farcta</i>				1			1				2	
Noctuidae	<i>Leucania oregona</i>			2			6	13				21	
Noctuidae	<i>Litholomia napaea</i>		1									1	Wasco County Record
Noctuidae	<i>Lithophane dilatocula</i>	1										1	Wasco County Record
Noctuidae	<i>Mesogona olivata</i>							14				14	
Noctuidae	<i>Nephelodes minians</i>							10				10	
Noctuidae	<i>Noctua pronuba</i>				11	4	1	16	1			33	
Noctuidae	<i>Oligia divesta</i>					129	30	5				164	2nd most abundant species
Noctuidae	<i>Orthosia ferrigera</i>	2	9									11	
Noctuidae	<i>Orthosia hibisci</i>		22									22	
Noctuidae	<i>Orthosia pacifica</i>		121									121	5th most abundant species
Noctuidae	<i>Orthosia praeses</i>		5									5	Wasco County Record
Noctuidae	<i>Orthosia pulchella</i>		1									1	Wasco County Record
Noctuidae	<i>Parabagrotis exertistigma</i>							2				2	Wasco County Record
Noctuidae	<i>Parabagrotis formalis</i>		1	1	13	5	1	3				24	
Noctuidae	<i>Parabagrotis insularis</i>				1	1						2	
Noctuidae	<i>Perigonica tertia</i>		227									227	1st most abundant species
Noctuidae	<i>Pleromelloida bonuscula</i>		4									4	Wasco County Record
Noctuidae	<i>Pleromelloida cinerea</i>								4			4	
Noctuidae	<i>Pleromelloida conserta</i>	9	21	1								31	Wasco County Record
Noctuidae	<i>Properigea albimacula</i>				24	15						39	
Noctuidae	<i>Protorthodes curtica</i>						6	15				21	Wasco County Record
Noctuidae	<i>Pseudorthodes irrorata</i>					1						1	Wasco County Record
Noctuidae	<i>Raphia frater</i>			2	3	1						6	
Noctuidae	<i>Spaelotis bicava</i>								1			1	Wasco County Record
Noctuidae	<i>Spodoptera praefica</i>				2							2	Wasco County Record
Noctuidae	<i>Sympistis greyi</i>				1	1						2	Wasco County Record
Noctuidae	<i>Tholera americana</i>							1				1	Wasco County Record
Noctuidae	<i>Trichordestra liquida</i>				1							1	Wasco County Record
Noctuidae	<i>Ufeus satyricus</i>									1		1	
Noctuidae	<i>Xestia infimatis</i>							5	1			6	
Noctuidae	<i>Xylena cineritia</i>		2									2	
Nolidae	<i>Meganola minuscula</i>		8									8	
Notodontidae	<i>Furcula occidentalis</i>			1								1	Wasco County Record
Notodontidae	<i>Gluphisia severa</i>	1	28	3								32	
Notodontidae	<i>Nadata gibbosa</i>			1	45		1					47	
Notodontidae	<i>Nadata oregonensis</i>			4	38							42	
Notodontidae	<i>Schizura unicornis</i>			1	3							4	Wasco County Record
Saturniidae	<i>Antheraea polyphemus</i>			2	1	1						4	Wasco County Record
Saturniidae	<i>Hyalophora euryalus</i>			1								1	Wasco County Record
Sphingidae	<i>Hyles lineata</i>				1							1	Wasco County Record

Family	Taxon	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Totals	Notes
Sphingidae	<i>Proserpinus lucidus</i>	2										2	
Sphingidae	<i>Smerinthus ophthalmica</i>			1	2	1						4	
Sphingidae	<i>Sphinx perelegans</i>				1							1	
Sphingidae	<i>Sphinx vashti</i>				1							1	Wasco County Record
Uraniidae	<i>Callizzia amorata</i>					1						1	Wasco County Record

Funding Opportunities

Pacific Northwest Lepidopterists' Fund in Honor of Harold Rice

“In honor of Mr. Rice, we [the Oregon State Arthropod Collection (OSAC)] have allocated funds to support the community of Pacific Northwest lepidopterists to which Harold belonged. In particular, we hope the fund will encourage and facilitate the valuable research, work and contributions made each year by individuals, who like Mr. Rice, were not employed fulltime as lepidopterists, yet spend much of their personal time and resources collecting and studying these amazing creatures.”

– excerpted from the Fund’s write-up

This fund, which provides one or two awards for up to \$500 each, is given annually to encourage activities directly related to PNW Lepidoptera and/or activities related to the improvement of OSAC’s Lepidoptera collection. Past awards have gone to:

- Dana Ross to survey moths near The Dalles (see page 1);
- Terry Stoddard for equipment to be used at schools; and
- Matthew Campbell for equipment for the school lepidopterists’ club.

More information, as well as directions for how to apply, can be found at [http://osac.oregonstate.edu/PNW LepidopteristsFund](http://osac.oregonstate.edu/PNWLepidopteristsFund). For full consideration, applications must be received by January 31; late applications will be considered if funds are still available.

If you have any questions (e.g. am I eligible?, would this project qualify?) or need some advice on writing your proposal (e.g. how specific do I need to be?), please contact Chris Marshall at OSAC, Christopher.Marshall@oregonstate.edu.

US Fish and Wildlife Service Section 6 Opportunity—Oregon

The US Fish and Wildlife Service and the Oregon Parks and Recreation Department have requested proposals for rare invertebrate research projects to be funded under their section 6 program for fiscal year 2016. Funds will be available to study federally listed, proposed, and candidate invertebrate species, and conduct status surveys for species of special concern in Oregon. Project budgets need to show 25% non-federal matching funds. The money from these grants will be used for projects in the 2017 field season, and projects are expected to be completed by December 31, 2017. Proposals, with estimated costs and match amounts, need to be submitted to Eleanor Gaines at the Oregon Biodiversity Information Center by January 22, 2016. If you are interested in submitting a proposal, please contact Eleanor at egaines@pdx.edu for information on the proposal format and the funding timeline.

Leona’s Little Blue Butterfly Status

The US Fish and Wildlife Service has ruled that listing *Philotiella leona* (Leona’s Little Blue) is not warranted at this time. The findings are laid out in a 16 page document available as a pdf file from the Federal Register website. Go to <https://www.federalregister.gov/> and search for document 2015-15296. This brings up the 12-month finding on Leona’s Little Blue which you can read online or download.

“Dragonfly ID”—an App for your Phone

The Dragonfly ID app allows users to identify and learn more about the species they see, in the places where these species perch, patrol, and mate. Each species entry includes the common and scientific name, a photo gallery, a distribution map showing individual records, and an abundance chart that shows the frequency of sightings by month within a specified radius of the user’s location. Additional features include the

option to search for recently sighted species nearby, to find local dragonfly hotspots, and to generate a life list of species sightings. This app, available in English and Spanish, currently only works on iOS systems (an Android version is coming).

For more information or to download the iOS version, please visit <http://www.birdseyebirding.com/apps/dragonfly-id-app/>. The app can also be downloaded from the iTunes App Store.

Flora of Oregon—Volume 1 Available



The Oregon Flora Project (<<http://oregonflora.org>>) announces that Volume 1 of the *Flora of Oregon* is now available. The *Flora of Oregon* is a 3 volume reference that will be the only illustrated floristic work that exclusively addresses Oregon, and the first such reference published in over fifty years. Volume 1 presents treatments of the ferns, gymnosperms, and monocots (grasses, lilies, sedges, and others) —1,054 taxa, or 23% of all native and naturalized

vascular plants of Oregon. Accompanying each plant description is a distribution dot map with ecoregions that host the taxon highlighted. There are pen and ink illustrations of 521 taxa, including 86 new works by artist John Myers. The “Ecology of Oregon” chapter describes the state’s 11 ecoregions and predominant habitats. A complementary chapter describes 50 sites—organized by ecoregion—to explore; these are accompanied by 73 beautiful color photographs. Additional chapters address

biographies of notable Oregon botanists and the history of the Oregon Flora Project. Five appendices emphasize plant taxa of interest to conservationists. Valuable to ecologists, native plant gardeners, land managers, and explorers of all stripes, this beautiful book is a must-have for anyone who values Oregon’s natural resources. (The targeted publication dates for volumes 2 and 3 are late 2017 and late 2019 respectively.)

For a more extensive write-up on this effort see Linda Hardison’s article on pages 1–2 in the July 2015 issue of the the Bulletin of the Native Plant Society of Oregon the PDF of which can be downloaded from <http://www.npsoregon.org/bulletin/2015/NPSO_1507.PDF>

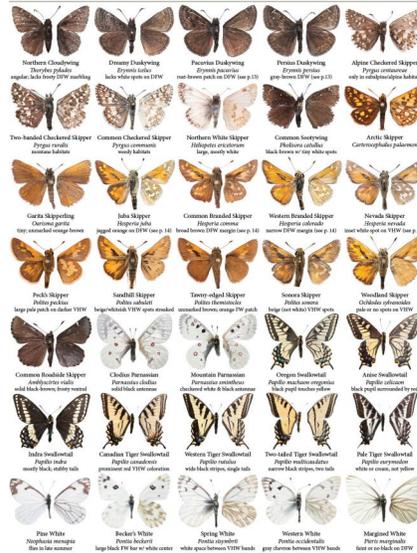
Specifications: 7.5” x 10.5” hardback, 608 pp., 520+ b/w illustrations, 1000+ distribution maps, 73 natural landscape color photos. \$75.

Order online at <<http://shop.brit.org>> or by email at <orders@brit.org>.

Butterfly Guides for Okanogan County Washington

Caitlin LaBar is working on a 260+ page self-published book, *Butterflies of the Sinlahekin Wildlife Area*, which is expected to be finished in early 2016. The Sinlahekin Wildlife Area, north of Omak, WA, boasts an unusual diversity of plant and butterfly species. This book will contain range maps, species photos (specimens, live adults, some immatures), and habitat information for all 88 Sinlahekin butterflies, as well as full species descriptions and tips on identification for them and the remaining 35 butterfly species recorded in Okanogan County. A 20 page quick-reference version of this book, *Field Guide to Okanogan County Butterflies*, is currently available for \$15 + \$2 shipping. It contains thumbnail photos of all 123 Okanogan County butterflies (sample plate and individual image from the plate shown on right), keys to difficult species groups such as fritillaries and blues, and maps of Okanogan County and the Sinlahekin Wildlife Area. For more information or to order the field guide, contact Caitlin at <caitlinlabar@gmail.com> or visit her blog at <<http://northwestbutterflies.blogspot.com>>

Quick Reference Guide



Juba Skipper
Hesperia juba
jagged orange on DFW (see p. 14)

North American Butterfly Association (NABA) Upcoming Meetings in Eugene

Meetings of the Eugene–Springfield Chapter are free and open to interested members of the general public.

Meeting place: Eugene Garden Club, 1645 High St., Eugene. Doors open at 7:00 pm; the presentation begins at 7:30 pm.

Monday, February 8, 2016

Activities of a Contract Lepidopterist—Dana Ross

Monday, April 11, 2016—TBA

For more information on the Chapter and its activities please visit their website, <<http://www.naba.org/chapters/nabaes/>>.

Northwest Lepidopterists' Workshop 2015

On 17-18 October 2015, over 50 people gathered in Cordley Hall on the campus of Oregon State University for the 37th annual workshop meeting of lepidopterists of the Pacific Northwest. The meeting was hosted by Drs. Paul Hammond and David McCorkle and sponsored by the Oregon State Zoology Department and the Oregon State Arthropod Collection (OSAC).

Oral presentations were made by David Maddison, Chris Marshall, Paul Hammond, David McCorkle, Dave Specht, Robert Fernau, and David Lee Myers. Mark Hitchcox and Richard Worth led a special workshop on microlepidoptera.

David Maddison—Welcome

David Maddison, director of the Oregon State Arthropod Collection (OSAC), formally welcomed the group on behalf of OSU and OSAC.

David and Chris Marshall now teach an insect biodiversity survey course for undergraduates and graduate students at Oregon State (course number Z 475/Z 575—Insect Biodiversity Survey). The course begins with a week long field trip to the HJ Andrews Forest in the Cascades in early September just before school starts. In the field, the students collect specimens using various methods and benefit from some personal interaction time with the instructors.

When asked by the students what his dream species to collect would be, David, a carabid beetle expert, replied without hesitation *Nototylus fryi* (pictured at http://tolweb.org/Nototylus_fryi/50), an unusual carabid species known, at the time, only from a single damaged specimen collected in Brasil's coastal rain forest in 1860. The specimen, housed in the British Museum, had been the subject of a lot of speculation about its place in carabid phylogeny. In any event, two weeks after the field trip, a second *Nototylus* specimen, still damaged but in somewhat better shape, collected this time from French Guiana, was received at the Smithsonian. This specimen is David's favorite carabid specimen of 2015, but it is also his favorite lepidopteran specimen since a lepidopteran wing scale is attached to it. David indicated that he frequently interacts with Lepidoptera in this fashion.

David encouraged the participants to consider applying for funding from the Pacific Northwest Lepidopterists' Fund in Honor of Harold Rice (see the funding opportunity on page 6).

In the pages that follow I (Ron Lyons) have summarized the various presentations, as well as some of the other business discussed. The summaries have been looked over and enhanced and/or corrected as necessary by the various speakers. Robert Fernau rewrote his summary. Resources (in print and online) mentioned at the meeting are included with the relevant material.

The groups of Lepidoptera for emphasis this year were:

- Butterflies: White Admirals and Green Hairstreaks (*Callophrys*)
- Moths: general moths especially *Catocala*, Saturniidae and microlepidoptera

Previous awards have gone to:

- Dana Ross for a survey of moths in an oak woodland near The Dalles (see report beginning on page 1);
- Terry Stoddard for equipment to introduce Lepidoptera to school children;
- Matthew Campbell for the purchase of equipment for the Pendleton High School Lepidopterists' Club (members pictured below).

David also invited everyone to attend the open house in the collection later.



Members of the Pendleton High School Lepidoptera Club. Back row left to right: Walker Paullus, Mollee Alan, Alex (David) Gear, Madison Drake, Matthew Campbell (Advisor). Front Row: Evan Miller, Lincoln Johnson, Logan Miller. Photo by Andrew Wegner.

Northwest Lepidopterists' Workshop 2015 (cont.)

Chris Marshall—Collection Update

Chris Marshall, Curator and Collection Manager of the Oregon State Arthropod Collection (OSAC), detailed the changes to the collection since the last meeting.

Last year OSAC collaborated with a number of national and regional institutions to seek NSF funds to produce digital records for North American Lepidoptera housed in the various collections and make them available online. The proposal was not funded during that funding cycle, (not surprising since current NSF funding rates are less than 10%). It is not unusual for large complex proposals to be submitted several times, each time incorporating comments from reviewers, before being funded. A newly written (and improved) version of the proposal was submitted again this year, and the participants should know early in 2016 whether this version of the proposal is funded. If funded, the proposal will allow OSAC to record and share specimen records for its North American butterflies and moths.

Chris indicated that OSAC received a number of donations during the year. Notable among these was Washington lepidopterist Bob Hardwick's sizeable collection donated by his family (see note opposite). Bob's collection was worldwide in coverage but particularly strong in western Washington material. Chris thanked the family for their generous donation and invited all the participants to check out some of Bob's material during the open house later in the meeting. (Only a portion of this material was on display because there was too much to display it all.) In addition to that collection, the museum also received an outstanding collection of *Papilio indra* (Indra Swallowtail) from Dave McCorkle as well as numerous butterflies from Jon Shepard. Outside of Lepidoptera, the museum was gifted a moderately large

and well curated collection of midwestern and eastern forest insects donated by Darrell Ross. The material, mostly Coleoptera, Hymenoptera and Diptera, are excellent additions to the museum's already substantial holdings of forest insects from the Western United States.

Jon Shepard noted that Paul Hammond had been working intensely all summer curating material. The Papilionidae (Swallowtails and Parnassians) are almost completely curated now. Jon indicated that, for *Parnassius*, OSAC has all the species in the world except one that is endemic to the highest habitat in the world, Mount Everest. In North America, OSAC has every recognized and synonymized subspecies except the ones in western Alaska. This provides an idea of how broad the coverage OSAC has worldwide.

Bob Hardwick (1942-2014)

Washington high school teacher, Bob Hardwick developed his interest in butterflies early in life. Bob was a member of the Washington Butterfly Association and wrote the *Butterflies of Washington* published in 2010. His extensive collection of over 7000 butterfly specimens was donated to the Oregon State Arthropod Collection.

For more information on Bob, see page 7 of the Washington Butterfly Association's newsletter G'num September 2014 issue available at <http://wabutterflyassoc.org/wp-content/uploads/2015/02/GnumVol15No3.pdf>.

Activity Reports—Washington

At the time of the workshop, Ann Potter had received 2 county records for Washington: *Erynnis persius* (Persius Duskywing) was new for Wahkiakum County and *Pieris marginalis* (Margined White) was new for San Juan County. In addition, Monarchs had been reported from multiple sites in western Washington. Ann thanked everyone for getting outside, documenting, and sharing their observations. She especially thanked the people who took the time to look at photos and specimens and help identify them. Ann reminded people that observations posted in various places do not necessarily get incorporated into other data sets.

Jon Shepard indicated that despite the fact that it was a drought year there were still county and state records to be had. In a visit to the new John Day State Park in Sherman County all 15 species he collected were county records! There was also one moth species, a state record, from the ongoing Colville National Forest survey.

John Baumann, president of the Washington Butterfly Association (WABA, <http://wabutterflyassoc.org/>), indicated that WABA had separated itself from NABA this year and became a 501 C3 non-profit with a membership of ~140 people spread around Washington. This year he conducted a butterfly class for seniors through Spokane Falls Community College. The season in eastern Washington came early and ended early with lots of heat, fires and smoke. Despite this John was able to find over 100 butterfly species in his area. He found *Euphyes vestris* (Dun Skipper) in southern Pend Oreille County and northern Spokane County, the latter a county record. Of particular interest was the finding of *Boloria bellona* (Meadow Fritillary) in Bonner County, Idaho near the Washington border.

Commenting on the *Boloria bellona* finding, Jon Shepard noted that the first record of this species in Washington came from the

Northwest Lepidopterists' Workshop 2015 (cont.)

North Trans-Continental Survey conducted in 1882. The survey found *B. bellona* along the Colville River south of Colville. This is the only record in Stevens County of this species at low elevations; other known populations of this species in Stevens and Ferry Counties are found at higher elevations. The low elevation population that John Baumann reported gives credence to the 1882 survey record.

Asterocampa in the Pacific Northwest

Bob Pyle again looked for *Asterocampa celtis* (Hackberry Emperor) in Asotin county, southeastern Washington, first reported along the Snake River by Ray Stanford a couple of years ago. Bob searched for evidence of the butterfly for a couple of days but had

Activity Reports—Oregon

As usual, people were still compiling their records for the year at the time of the meeting so some additions to the list submitted to the Lepidopterists' Society can be expected.

Dana Ross noted that some of the butterflies on the coast, normally not around until late February or March, were flying in late January and that seemed to be the trend early on. Ron Lyons found *Callophrys eryphon* (Western Pine Elfin) flying on February 23 in North Bend (Coos County) over 4 weeks early according to Warren (*Lepidoptera of North America 6: Butterflies of Oregon Their Taxonomy, Distribution and Biology*. 2005. p. 142). Lois and David Hagen found *Papilio zelicaon* (Anise Swallowtail) along the coast, also in February. Inland, Dana found that *Euphydryas editha taylori* (Taylor's Checkerspot), which normally starts flying about the second week in April and peaks in late April, was flying on March 19, had peaked by about the second week in April and then petered out quickly.

Lori Humphreys reported a county record for *Agriades podarce klamathensis* (Gray Blue, Sierra Blue). She found it at Bristow Prairie in the Umpqua National Forest on the southern edge of Lane County on June 16. Lori was aided in this discovery by Tanya Harvey who reported that she had seen them flying just south of the county line.

Mike Raschko was out on April 10 looking for little day-flying moths in the genus *Annaphila* in Santiam Canyon about 30 miles east of Salem. While walking through a patch of *Arctostaphylos uva-ursi* (kinnikinnick) he came across a small population of *Callophrys polios* (Hoary Elfin). This is a county record for Marion County, the nearest known populations being along the coast and in the Ochocos.

A large migration of *Vanessa cardui* (Painted Ladies) and *Vanessa atalanta* (Red Admiral) came up through Oregon early in the year.

only one possible sighting in a hackberry grove. While Bob suspects the butterfly is present in small numbers along the Snake River in Washington, Oregon and Idaho, no photographs or specimens have yet been obtained. Bob indicated that he would search again next year, hopefully enjoying a bit cooler weather. A full report of the field trip may be on pages 3-4 of the Washington Butterfly Association's newsletter G'num November 2015 issue available at <http://wabutterflyassoc.org/wp-content/uploads/2015/11/GnumVoll16No3.pdf>.

Bob did find out that the location reported by Ray is actually on the Oregon side of the border, not on the Washington side as previously thought.

(See <http://vanessa.ent.iastate.edu> for a couple of reports.)

Dana Ross's survey at Crater Lake National Park yielded a number of noctuid moth species that appear to be records for Klamath County, among them: *Abagrotis pulchrata*, *Brachylochia rectifascia*, *Euros cervina*, *Euxoa trifasciata*, *Hydraecia*, if it is the species *obliqua*, *Mesogona rubra*, *Protolampra rufipictis*, *Protoperigea anotha* (also the 3rd Oregon location according to the PNW Moths website), *Sideridis maryx*, *Sympistis poliochroa*, and *Sympistis sandaraca* (pictures of all of these moths can be seen on the PNW Moths website, <http://pnwmoths.biol.wvu.edu/>).

Lois Hagen—NABA Eugene-Springfield Chapter Activities

Lois Hagen, president of the Eugene-Springfield Chapter of the North American Butterfly Association (NABA), reported on the group's activities.

Over the summer, the group completed its 26th 4th of July count in the Eugene area and the 14th for the Browder Ridge-Iron Mountain area. This year the group added a new survey site for the city of Eugene along the ridgeline area, beginning in late March and continuing as late as possible. This is the 7th year the group has carried out surveys for local government entities, all provided free of charge. A lot of data has been collected over the years; it has been interesting to see the yearly changes.

Two lectures on Monarchs generated a lot of interest among the general public. In response, the group is providing milkweed seeds to the general public so people can cultivate more host plants.

For more information on the group including their meeting schedule and count records, please visit their website at <http://www.naba.org/chapters/nabaes/>.

Northwest Lepidopterists' Workshop 2015 (cont.)

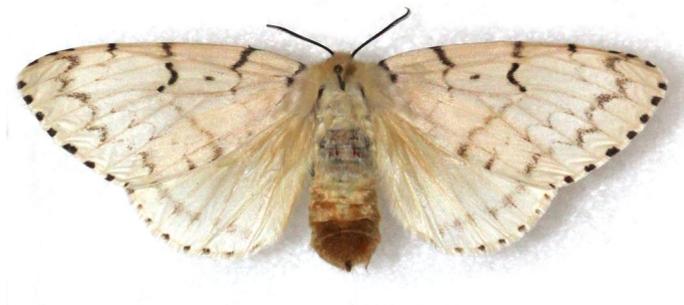
The Asian Gypsy Moth in the Pacific Northwest 2015

Mark Hitchcox reported that several Asian Gypsy Moths had been collected in the Pacific Northwest this year as part of the cooperative monitoring program between the USDA, Oregon Department of Agriculture (ODA), Oregon Department of Forestry (ODF), Washington State Department of Agriculture (WSDA), and the USFS. Three moths were caught in the Portland area and several more in the Puget Sound area. All the moths were caught near the water close to trade routes. More intensive work will be carried out to determine whether or not the moths are established or in the process of becoming established. There are plans for eradication treatments next year with BtK spray. Some concern was expressed about the impact of the Bt spraying on non-target species and efforts to mitigate this were mentioned.

Asian Gypsy Moths were found in similar areas of Washington and Oregon in 1991. A short note on the eradication program carried out at that time can be found at http://www.fs.usda.gov/detail/rb/forest-grasslandhealth/invasivespecies/?cid=fsbdev2_027210.

The Asian Gypsy Moth looks much like the European Gypsy Moth so separation of the two species is done using mitochondrial DNA. Unlike the females of the European Gypsy Moth those of the Asian Gypsy Moth can fly. Hence the Asian Gypsy Moth has the potential to spread much faster and farther than the European Gypsy Moth. The Asian Gypsy Moth also has a much wider range of host plants than the European Gypsy Moth. While surveys are regularly done for both species neither is yet known to be established in our area.

For more information on the Asian Gypsy Moth download the USDA-APHIS Factsheet https://www.aphis.usda.gov/publications/plant_health/content/printable_version/fs_phasiangm.pdf.



Female Asian Gypsy Moth. Laboratory raised specimen deposited in the Oregon State Arthropod Collection (OSAC). Photo by Ron Lyons.

Publication News

Flora of Oregon

Proper identification of vegetation is important for host plant records and sometimes for the identification of the butterfly species itself. Stephen Meyers from the OSU Department of Botany announced the publication of the first of 3 volumes of the *Flora of Oregon*. See the note on page 7 for more details on this publication.

Field Guide to Okanogan County Butterflies

Caitlin LaBar passed around a copy of her short publication *Field Guide to Okanogan County Butterflies*. She is working on a longer version titled *Butterflies of the Sinlahekin Wildlife Area*. See the note on page 7 for more details and ordering information.

Timber Press Field Guide to PNW Butterflies

The standard guide for the butterflies of our area, *The Butterflies of Cascadia*, published by the Seattle Audubon Society, has been out-of-print for several years now. Bob Pyle updated the audience on the status of its replacement. He hopes the new book, called the *Timber Press Field Guide to PNW Butterflies*, will be available for the 2017 field season. He is being ably assisted in his efforts by Washington lepidopterists Caitlin LaBar and Dave Nunnallee.

New Book on Monarch Biology

Monarchs in a Changing World: Biology and Conservation of an Iconic Butterfly edited by renowned Monarch experts Karen Oberhauser, Kelly Nail, and Sonia Altizer is an account of the Monarch Biology and Conservation Meeting in 2012, hosted by the University of Minnesota Monarch Lab. Visit <http://www.cornellpress.cornell.edu/book/?gcoi=80140100672610> for details. One chapter called "Monarchs in the Mist: New Perspectives on Monarch Distribution in the Pacific Northwest" was written by Washington writer and lepidopterist Bob Pyle.

Butterfly Big Year 2015

Chris Tenney is doing a second Butterfly Big Year this year. You can read about his experience online at <http://www.butterflybigyear.net/>. Bob Pyle did the first big year in 2008, writing about it in his book *Mariposa Road*.

Northwest Lepidopterists' Workshop 2015 (cont.)

Oregon Silverspot Status

Paul Hammond reported on the status of *Speyeria zerene hippolyta* (Oregon Silverspot), a federally listed rare and endangered species found in a few small areas along the northern Oregon coast. This fritillary is well adapted to cool coastal environments but it hasn't been doing very well lately.

Mt Hebo, site of the largest population, is a high rocky escarpment in Tillamook County that would be very dry if not for all the coastal rainfall. Paul and others have surveyed this population since 1984. During a normal year the population generally runs between 3000 and 4000 butterflies. In 2012 the cool rainy conditions resulted in a high larval survival rate and the adult population soared to an estimated 14000 butterflies. The numbers in the next 2 years were much more typical. In 2015, because of the very hot temperatures in western Oregon throughout July and August, Mt Hebo totally dried out and the butterfly population crashed. It was estimated that 400 butterflies were present, restricted to two small moist sites.

This butterfly is also found in small numbers at Cascade Head and Big Creek (part of the Siuslaw National Forest), but these are not particularly good habitats. The possibility of establishing a satellite population from Mt Hebo on top of Saddle Mountain has been discussed but Saddle Mountain, much like Mt Hebo, is rocky and would also be dry without regular rainfall.

The response of the butterfly on Mt Hebo illustrates the importance of habitat heterogeneity/diversity for maintaining populations in dry versus wet years. If the weather conditions we had in 2015 are indicative of warming climatic conditions over the long term, a lot of butterflies adapted to cool coastal environments or high mountain habitats may be in big trouble.



Oregon Silverspot underside. Specimen deposited in the Oregon State Arthropod Collection (OSAC). Photo by Ron Lyons.

Dave Specht—Powell Butte Lepidoptera 2015

Dave Specht has been monitoring Lepidoptera, particularly butterflies, at the Powell Butte Nature Park (<http://friendsofpowellbutte.org/>) in Portland since 2005. Dave noted that the weather this year was very warm and unusually dry with few cloudy days during his monitoring period, March 30 through September 24.

Dave noted that this was a big year for *Vanessa atalanta* (Red Admiral, Alderman Butterfly), over 80 being seen. A lot of these were probably migrants since this was a big migration year. The prior year with comparable numbers was 2005. It was also a big year for *Vanessa cardui* (Painted Lady), 61 being seen. Dave counted 9 *Colias occidentalis* (Western Sulphur) this year; the last time he had seen these was again in 2005 when 4 were seen. This year was the first time he had found *Polites sonora* (Sonoran Skipper).

Last year, Dave created a checklist for the public listing the species he had identified (24) arranged in order by the average date of first appearance. Based on the checklist, most of the species for which there were sufficient records appeared an average of 41 days (range 12–103) earlier than expected this year. In addition, the observed flight period of these species was smaller than the average determined from prior years. Dave concluded that these data demonstrate the regional effect of climate changes on the fauna at Powell Butte.

Dave Specht—Some California Monarch Sites

During the first half of February, Dave and Carol visited 17 Monarch over-wintering sites between Ventura and Santa Cruz in central, coastal California. Ten of these had roosting clusters. Dave commented on the problems photographing the Monarch clusters. Many were often high up in the trees, and when the butterflies' wings are folded the clusters are difficult to spot. At one site a light rain or heavy fog overnight had left the uncut grass under the roosting trees loaded with water droplets sparkling in the sun; many Monarchs were on the grass drinking this up. Monarchs mate before they leave their roosting sites and Dave witnessed a small male mating with a large female on the ground. The male was too small to carry the female up into the trees as is customary. The advantage of this trip towards the end of the roosting season was that most clusters contained unfolded individuals, making them easier to spot. On the other hand at the Pacific Grove site, the Monarchs were there when Dave and Carol first visited but were gone two days later when they returned. At another site, Natural Bridges, most of the Monarchs had left 2 days before their visit.

Northwest Lepidopterists' Workshop 2015 (cont.)

Paul Hammond and Dave McCorkle—Hybridization Study of Fritillaries (*Speyeria*)

The presentation outlined the contributions of Bill Bergman, Dave McCorkle and Paul Hammond to the hybridization studies discussed in the paper Hammond, McCorkle and Bergman (2013).

Bill Bergman began crossing different species of *Speyeria* in the early 1980s. He used a tedious hand-pairing technique to interbreed all the various specimens used in this study. Many pairings failed to produce fertile eggs whether species or hybrids. He attributed this failure to the formation of massive mating plugs (after a bit of discussion there was general agreement that he meant something like the sphragis found in *Parassians*). In a letter read in part by Dave, Bergman wrote “There is something about the way I care for the butterflies that induces this tendency to form these plugs. I do not see mating plugs often in nature but since I observe them in the lab I have paid more attention. I think I have seen them very rarely in wild *cybele* but I have not preserved evidence.”

Dave McCorkle also began work on the fritillaries back in the early 1980s, but in his case, helping to raise them but not hybridize them.

Dave's unique contribution was getting the hatched larvae through the winter. His outlined his nurturing technique:

- 1) Eggs: The eggs are kept in a baby food jar until they hatch. A thick leaf that doesn't produce toxic fumes is placed in the jar to control the humidity. Dave noted that if you put water in, then things get moldy.
- 2) Larvae: When the larvae first emerge, Dave puts them on a Petri dish lined with filter paper rinsed with water. As a substrate, the filter paper is free of toxic chemicals. The larvae remain on the wet filter paper for an hour or so allowing them to hydrate by drinking. Just hatched larvae probably don't need much water but this time period allows larvae that have been out for a while to become fully hydrated.

Using a little paint brush, Dave transfers the hydrated larvae into hollowed out hardwood blocks, in his case alder. Unlike conifers, alder seems relatively free of toxins. A piece of cloth is stapled over the opening of the block and the block is placed in the refrigerator. The larvae are removed regularly (about once a month) and allowed to rehydrate while still inside the wetted blocks.

After a month or so, up to a year later, the larvae are removed

from the refrigerator and allowed to develop in jars where fresh leaves are added as needed. Dave lines each jar with a little slip of tissue paper that can be easily removed when it gets full of droppings to clean the jars.

- 3) Pupation: Once the larvae are mature Dave puts a tissue lining over the top of the jar. The larvae will generally hang from the tissue to pupate. When the adult is ready to emerge, the pupa is placed on the bottom of a container because the newly-emerged adult wants to crawl around and climb.

Dave distributes the pupae or the adults depending on how they will be used in the study.

As an aside, Dave addressed the need to get permits for the transport and rearing of plant pests when they are not native to the state.

Paul Hammond explained the reason for conducting these experiments and presented the results.

This group is widely distributed throughout the temperate regions of both Eurasia and North America. Paul presented a family tree to show one view of the genealogy of the fritillary butterflies of the world. The most primitive living fritillary is *Fabriciana niobe*, a Eurasian species that has a lot of checkerspot characteristics and appears intermediate between the fritillaries and the checkerspots. It gave rise to the Eurasian genera *Argynnis* and *Mesoacidalia*. The theory is that a species of *Mesoacidalia*, *M. aglaja* from central Asia, crossed into North America and underwent an adaptive radiation, resulting in the North American genus *Speyeria*. The most primitive *Speyeria*, *S. mormonia*, is almost identical to *M. adlaja* except for some genitalic differences.

Hybrid studies are a way to test the relationship hypothesis expressed by the family tree. When you combine individuals from different species, there are different levels of genetic compatibility between their genomes. If the individuals are very closely related and have very good genetic compatibility, they are completely interfertile and there are no genetic problems. When the parents are sufficiently diverse, no hybrids are produced and there is not even any hybrid development. In between you get different levels of viability. Problems with the heterozygotic sex, usually the females in Lepidoptera, arise before problems with the homozygotic sex, in this case the males (see “Haldane's rule”).

The first step in testing this hypothesis was to cross the North American *Speyeria* with representatives of each of the 3 Eurasian genera. The crosses with *Argynnis* failed to produce any viable

Northwest Lepidopterists' Workshop 2015 (cont.)

hybrids; the *Fabriciana* stock was too weak to work with. However a couple crosses between *Mesoacidalis* with *Speyeria* did produce hybrids. Although incomplete, these tests support the idea *Mesoacidalis* is more closely related to *Speyeria* than the other Eurasian genera, at least *Argynnis*. (Since the USDA no longer grants permits to import exotic Lepidoptera, you can't really do tests like this anymore.)

The next step was to cross the various *Speyeria* species. Rather than summarize the presentation of the results of these crosses here, the reader is referred to the discussion in Hammond, McCorkle and Bergman (2013), where the resulting hybrids are discussed and pictured.

In terms of the biological species concept, the species of *Speyeria* are distinct. They have very strong reproductive isolating mechanisms that seem to be the result of different male and female sex pheromones that keep the species from interbreeding in the wild. In the laboratory, however, all the species of *Speyeria* turned out to be interfertile. Excluding the crosses between *S. idalia* and *S. diana* which resulted in sterile hybrids, all the other species of *Speyeria* retained some inherent potential for gene exchange through fertile males and, at least in some cases, fertile females. Since *Speyeria* can trade genes in the laboratory, why shouldn't they be able to do that in the wild, if only by accident? In fact they can—a female *Speyeria idalia* collected by Paul in South Dakota one summer produced offspring which were natural hybrids of a pairing with a male *Speyeria cybele*. Paul noted that it

is often hard to identify *Speyeria* individuals found in the field. He suggested that this occurs because there is a lot more hybridization going on in nature than we realize.

Hybridization may be a means by which species can interchange specific genes that are valuable for particular adaptations—that doesn't mean the entire genomes becomes hybridized but rather just that a few selective genes go through some kind of filter or genetic bottleneck to get into another species. Paul suggested that in *Speyeria* the sharing of genes between species has been an evolutionarily significant phenomenon.

Reference

Hammond, P.C., D.V. McCorkle and W. Bergman. 2013. Hybridization Studies of Genomic Compatibility and Phenotypic Expression in the Greater Fritillary Butterflies (Nymphalidae: Argynnini). *Journal of the Lepidopterists' Society* 67(4): 263–273. (download the PDF <<http://images.peabody.yale.edu/lepsoc/jls/2010s/2013/2013-67-4-263.pdf>>

(Editor's Note: The color plates Paul showed during this presentation were published in the paper. If you are unfamiliar with the different species of *Speyeria*, you might want to find a book that shows typical representatives of the various species so you can compare these with the results of the hybridization experiments which are shown in the plates.)



Male hybrid cross (above) between male *Speyeria cybele cybele* (top right – typical examples) and female *Speyeria diana* (bottom right – typical examples). No female hybrids were produced in this cross. All specimens deposited in the Oregon State Arthropod collection (OSAC). Photos by Ron Lyons.



Northwest Lepidopterists' Workshop 2015 (cont.)

Robert Fernau—Biological monitoring to better understand climate change in the Marble Mountain Wilderness

Dr. Rob Fernau is a Research Associate at the Department of Plant Sciences at the University of California, Davis.

In 1984, Rob began a long-term study monitoring the butterflies in the Marble Mountain Wilderness, a rugged area in Northern California's Siskiyou County in the Klamath National Forest about 30 miles SW of Yreka. The wilderness covers 378 square miles and ranges in altitude from 640 feet to 8299 feet above sea level. Rob chose this area because its extraordinarily high environmental heterogeneity is packed into a small area, thereby forming an ideal biogeographical setting for monitoring research. The wilderness contains a high variety of habitats with a range of soil types from basic (marble rocks) to acidic (granitic batholiths), from nutrient rich (meta-volcanic rocks) to nutrient poor (old, weathered meta-sedimentary rocks). Serpentine soils are also present with their biologically challenging attributes.

After an initial reconnaissance and pilot project period of several years, he selected 45 monitoring sites (which vary in area from ca. 0.5–3.0 acres), to sample the full altitudinal range on a variety of geological substrates. He has sampled these sites throughout the seasons, spending 6 man hours at each long-term monitoring site for each visit. Monitoring sites have been visited ca. 6–8 times. The perimeter of each site is fixed. For each site he has described the vegetation using the relevé method (see http://files.dnr.state.mn.us/eco/mcbs/releve/releve_single_page.pdf). Since the beginning of the study, he has amassed about 10000 observations of butterflies, over 100 species.

Lately he has been using this data set to look for ecological changes in the butterfly community in response to climate change.

Rob will continue his monitoring work in 2016 and welcomes butterfly and plant enthusiasts to join him.

Idie Ulsh

Idie Ulsh, a prominent member of the Washington butterfly community and a regular workshop participant, passed away this year. A tribute to her can be found on pages 1–2 of the July 2015 issue of *G'nium*, the publication of the Washington Butterfly Association. Download <http://wabutterflyassoc.org/wp-content/uploads/2015/07/GnumVol11bNo2.pdf>.



David Lee Myers—A Couple of Recent Images

In late August, David hiked along the Cape Alava Trail on the Olympic Peninsula in NW Washington looking for the Makah Copper (see the *Butterflies of Cascadia* p. 186). While he hiked out on two days, he only found one butterfly, probably because it was towards the end of the flight season. Even then his encounter was very brief. Bob Pyle pointed out that the pallor of the female butterfly shown in David's picture was a real feature, not an artifact of the butterfly's age. Bob is working on a description of this species. For some interesting reading and pictures of the area download *The Ozette Prairies of Olympic National Park: Their Former Indigenous Uses and Management*, a PDF available from the National Park Service at http://www.nrcs.usda.gov/wps/PA_NRCSCconsumption/download/?cid=stelp_rdb1045270&ext=pdf.

David showed another picture which he called "Embrace from Hell" which showed a praying mantis eating a skipper. A second skipper which landed on the same flower escaped a quick grab by the mantis.

Some of David's work can be found on his website, <http://www.davidleemyersphoto.com>.

Next Year: Northwest Lepidopterists' Workshop 2016

In 2016 the groups of emphasis will be:

Butterflies: Satyrinae (Satyrs, Ringlets and Wood Nymphs)

Moths: mimicry, day-flying moths and mimicry, and *Hemileuca*

Acknowledgements

I would like to extend my many thanks to all the presenters for their comments, corrections, and changes to the various summaries I prepared from the meeting record. I know all the feedback improved the accuracy and usefulness of the material.

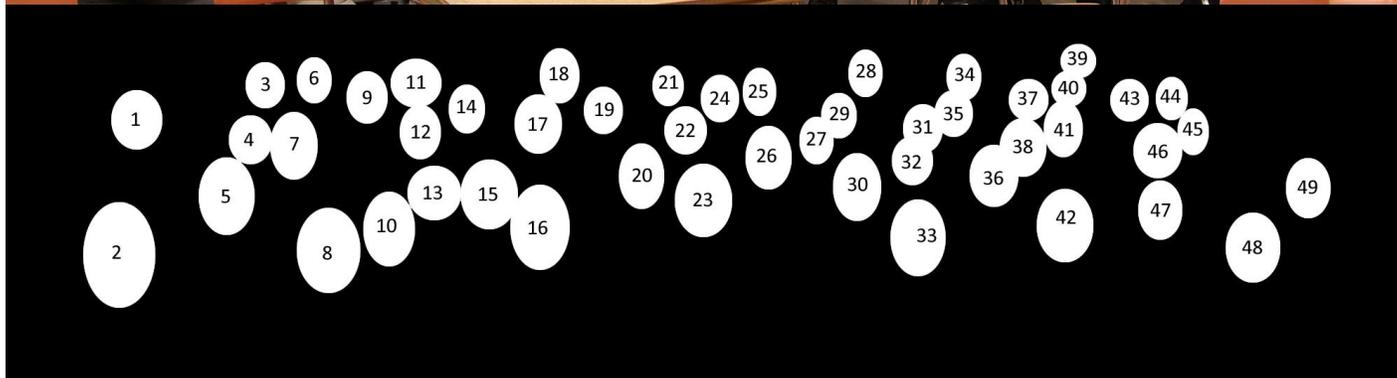
Thank you all very much.

Ron Lyons

Northwest Lepidopterists' Workshop 2015 (cont.)



Ron Lyons



Northwest Lepidopterists' Workshop 2015—Participants Photo Key

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|--------------------|---------------------|-------------------|
| 1 David Lee Myers | 18 Bob Pyle | 35 Bill Neill |
| 2 Ray Stanford | 19 Lori Humphreys | 36 Gary Pearson |
| 3 John Baumann | 20 Terry Stoddard | 37 Ross Tewksbury |
| 4 Robin Cushman | 21 Richard Worth | 38 TJ O'Hanlon |
| 5 Scott Harrington | 22 David Hagen | 39 Ron Lyons |
| 6 Mark Hitchcox | 23 Jim Reed | 40 Steve Weitz |
| 7 Dave McNeese | 24 Rick Ahrens | 41 Jon Shepard |
| 8 Dan Thackaberry | 25 Lars Crabo | 42 Vern Covlin |
| 9 Carol Specht | 26 Matthew Campbell | 43 Susan Gold |
| 10 Jake Forgey | 27 Lois Hagen | 44 Alison Center |
| 11 Steve Northway | 28 Jonathan Pelham | 45 Mike Raschko |
| 12 Dave McCorkle | 29 Dennis Deck | 46 Evan Miller |
| 13 Trevor McNeese | 30 Dana Ross | 47 Linda Kappen |
| 14 Dave Specht | 31 Ed Schmitt | 48 Paul Hammond |
| 15 Chad Pyle | 32 Madison Drake | 49 Rob Fernau |
| 16 Gary Lindberg | 33 Ann Albright | |
| 17 Caitlin LaBar | 34 Alex Wright | |