

A vibrant meadow of wildflowers in a mountain landscape. The foreground is filled with a dense field of purple lupines, yellow wildflowers, and white daisies. The background features a line of tall evergreen trees under a bright blue sky with scattered white clouds. The overall scene is a lush, natural setting.

NATIVE PLANTS & NATIVE BUTTERFLIES

David Nunnallee
October 10, 2012

Every butterfly
species is dependent
on plants.

Most are
dependent on
native plants.



Fritillaries on asters

Most adult butterflies require nectar

Many take nectar indiscriminately
on native or introduced flowers



Woodland Skipper nectaring in garden

Proboscis length can affect choice of nectar plant

Scarlet Gilia requires a long proboscis.

Only swallowtails or skippers can easily obtain this nectar



Every butterfly species requires a larval host plant
Most require native host plants
Some are dependent on a single plant species



A “buckwheat blue” laying an egg on *Eriogonum heracleoides*

Larvae usually feed on a specific part of a plant

This may be the leaf, bud, flower, fruit, stem or even the pollen

Multiple species may share a plant, feeding on different parts, or at different times

Silvery Blue larva feeding on *Lupinus wyethii* peas



Depending on the species, butterflies overwinter as eggs, larvae, pupae or adults

The overwinter stage controls the life history timing, which in turn dictates which plants are available in the spring



Hoffmann's Checkerspot larval nest on (Leafybract?) Aster

Euchloe ausonides – Large Marble



Overwinters as a pupa



Adults eclose in early
spring but cannot oviposit
until *Boecheera* (*Arabis*) is
available

Larvae hatch early
and feed on early
sprouting *Sedum*



Parnassius smintheus – Mountain
Parnassian



Overwinters
as an egg



Overview of Larval Host Plants

SWALLOWTAILS

(9 species)

- umbellifers (carrots)
- poplar
- birch
- willow
- alder
- *Prunus* (cherry, plum)
- maple
- serviceberry
- *Ceanothus*
- sage
- bleedingheart
- stonecrop



Two-tailed Swallowtail

WHITES (10 species)

- crucifers (mustards)
- pine & fir



Pine White male

SULPHURS (7 species)

- legumes
- peas
- *Astragalus*
- lupine
- clover
- willow
- *Vaccinium*



Western Sulphur on thistle

COPPERS (7 species)

- dock
- sorrel
- cinquefoil
- knotweed
- buckwheat
- *Vaccinium*



Purplish Copper on asters

HAIRSTREAKS (18 species)

- cherry
- rose
- vetch
- clover
- serviceberry
- bitterbrush
- lupine
- salal

- *Ceanothus*
- buckwheat
- dwarf mistletoe
- *Vaccinium*
- kinnikinnick
- ocean spray
- stonecrop
- chinquapin
- oak
- cedar
- juniper
- willow
- pine



California Hairstreak

BLUES (20 species)

- buckwheat
- lupine
- *Ceanothus*
- dogwood
- *Spiraea*
- manzanita
- *Vaccinium*
- pea
- vetch
- clover
- saxifrage



Lupine Blue

GREATER FRITILLARIES (9 species)

- violets



Zerene Fritillary
on knapweed

LESSER FRITILLARIES (6 species)

- violets
- *Vaccinium*
- kinnikinnick
- saxifrage
- bistort
- willow



Silver-bordered
Fritillary

CHECKERSPOTS (10 species)

- aster
- rabbitbrush
- thistle
- penstemon
- paintbrush
- plantain
- snowberry
- monkeyflower
- snapdragon
- *Collinsia*



Snowberry Checkerspot

“TRUE” BRUSHFOOTS (15 species)

- nettle
- willow
- alder
- serviceberry
- *Ribes*
- birch
- *Rhododendron*
- *Populus*
- *Ceanothus*
- hawthorn
- *Spiraea*
- pearly everlasting
- *Artemisia*
- mallow
- hops
- *Prunus*
- oak
- ocean spray



American Lady

SATYRS (9 species)

- grasses
- sedges



Vidler's Alpine

SPREADWING SKIPPERS (12 species)



- willow
- aspen
- birch
- locust
- oak
- *Ceanothus*
- lotus
- vetch
- strawberry
- cinquefoil

- clover
- lupine
- *Astragalus*
- mallow
- alfalfa
- goosefoot

Persius Duskywing

GRASS SKIPPERS (18 species)

- **grasses**
- **sedges**



Woodland Skipper on knapweed

“SUPER PLANTS”

Ceanothus velutinus (Mountain Balm)



Ceanothus velutinus (Mountain Balm)



Lotus crassifolius (Big Deervetch)



Lotus crassifolius (Big Deervetch)



Viola (Violets)



Eriogonum (Desert Buckwheats)

16 perennial species

5 annual species

Eriogonum thymoides



Butterflies which use buckwheats as larval hostplants

green hairstreaks (*Callophrys* spp.)

5 buckwheats



Blue Copper (*Lycaena heteronea*)
7 buckwheat hosts



Gray Hairstreak (*Strymon melinus*)
2 buckwheat hosts



Lupine & Acmon Blues (*Plebejus* spp.)
13 buckwheat hosts



buckwheat blues (*Euphilotes* spp.)
10+ buckwheat hosts



Mormon Metalmark (*Apodemia mormo*)
7 buckwheat hosts



Total butterfly-buckwheat
hostplant associations in
Washington:

44

Eriogonum umbellatum at Quartz Mtn

Eriogonum sphaerocephalum - Round-headed Buckwheat



Butterfly Use

An important nectar plant. Larval host for *Lycaena heteronea* (Blue Copper), *Callophrys affinis* (Western Green Hairstreak), *Plebejus lupini* (Lupine Blue), *Apodemia mormo* (Mormon Metalmark) and *Euphilotes* sp. (a buckwheat blue).

Preferred habitat is very rocky areas, often on steep slopes, at low to mid elevations.

Leaves are forest green on upper surface, whitish under.

Notes:

A large, solitary cushion plant to 3+ feet in diameter, the interior of this buckwheat is woody and stiff, the leaves and flowers confined to the outer several inches.

These spherical shrub-steppe plants bloom after *E. thymoides* and a little earlier than *E. heracleoides*, standing out prominently in the spring, covered with yellow flowers.

Unbranched flower stems are short (1-3"), with a single open flower axil. Flower stem has 3 sets of leafy bracts, one just under the flower axil, one at mid stem, and one at the stem base.





Eriogonum sphaerocephalum habitat
Vantage, Washington

Euphilotes (battoides) on *E. sphaerocephalum*
Ellensburg Viewpoint, WA



Eriogonum sphaerocephalum - Burns, Oregon





Euphilotes ancilla on *E. sphaerocephalum*

Eriogonum marifolium - Marumleaf Buckwheat



Butterfly Use

Larval host plant in Oregon for *Euphilotes battoides*, which oviposits on flowers of female plants.

Plants in spreading mats in very granular volcanic cinderfield soils; male plants (right) with compact yellow flowers, female plants (left) with more open red flowers.

Basal leaves spoon-shaped, glossy olive-green above, whitish and hairy under. Leaf petioles approx. same length as leaves.

Notes:

A dioecious (sexually dimorphic) spreading plant growing 4-16" tall. Range includes much of OR, and reported by James Reveal in Yakima Co, WA. Grows at high elevations, over 6,000 ft.

Flowers branch only once; stems hairy, naked in male but with leafy bracts under flowers in female. Involucre tips point stiffly upward (unlike *E. umbellatum* in which they reflex outward or downward).



Female plant flowers pistillate, bright red & yellow, with leafy bracts under flower head.

Male plant flowers staminate, bright yellow, stems shorter than in female plants.



Eriogonum marifolium, F (It) and M plants
Dutchman Flats, Deschutes Co, OR





Eriogonum marifolium cinderfield habitat
Dutchman Flats, Deschutes Co, OR

Euphilotes on *E. marifolium*
Dutchman Flats, Deschutes Co, OR



Euphilotes ovipositing on *E. marifolium*
Dutchman Flats, Deschutes Co, OR



Eriogonum nudum - Barestem Buckwheat



Notes:

A tall, openly branched plant of very restricted range in Washington. This higher elevation species can be confused only with *E. elatum*, but is separated by its much smaller basal leaves. In Washington it is usually a little smaller than *E. elatum*.

Flowers are tiny, smaller than in *E. elatum*, and very openly branched. Leafy bracts below flower stem forks are miniscule, all true leaves are basal.

The preferred habitat is steep talus slopes, such as along road cuts.




Butterfly Use

In Washington this is a larval host for *Euphilotes enoptes* (Dotted Blue), *Plebejus acmon* (Acmon Blue) and probably *Lycaena heteronea* (Blue Copper). In Oregon it also hosts *Callophrys perplexa* (Bramble Hairstreak) and *Apodemia mormo* (Mormon Metalmark).

Flower stems slender, green, with multiple branches as in *E. elatum*

Basal leaves small (~1") and oval, senescing early while the plant is still in flower.



A photograph of a steep, rocky hillside. In the foreground, there is a rocky slope with sparse, dry grasses and some small, green plants. A wooden retaining wall runs across the middle ground, separating the slope from a dense forest of evergreen trees. The background features a large, rugged rock face with vertical fissures and a thick forest of tall evergreen trees. The sky is clear and blue.

Eriogonum nudum habitat
nr White Pass, Yakima Co, WA

Eriogonum nudum
Nr White Pass, Yakima Co, WA



Euphilotes enoptes on *E. nudum*
White Pass, Yakima Co, WA



Plebejus acmon on *Eriogonum nudum*
White Pass Yakima Co, WA



HABITATS



Forested Areas



Forest Openings

Shrub-steppe





Mid elevation meadows

Sub-alpine Meadows



Alpine high country



Life Histories of Cascadia Butterflies

Slate Peak

DESCRIPTION of the BOOK

A New Kind of Book about
Immature Butterfly Stages



A product of more than 15 years
of field work and rearing

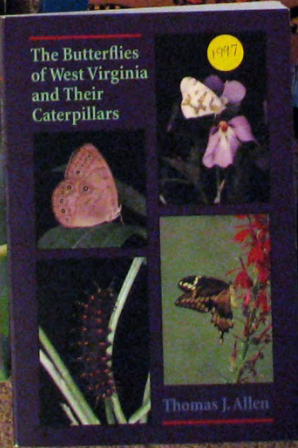
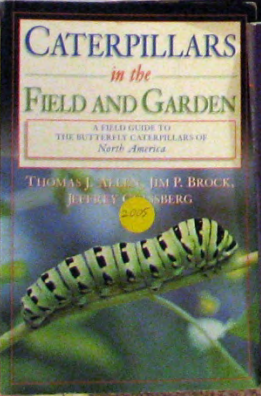
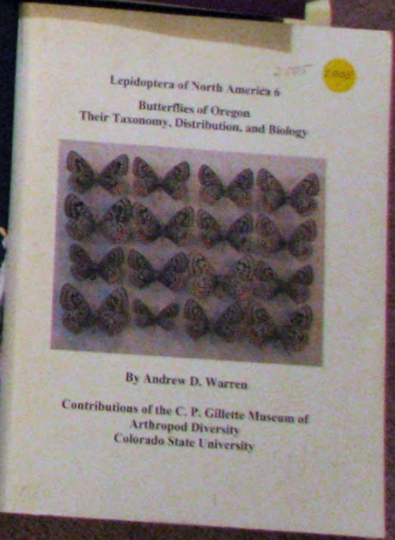
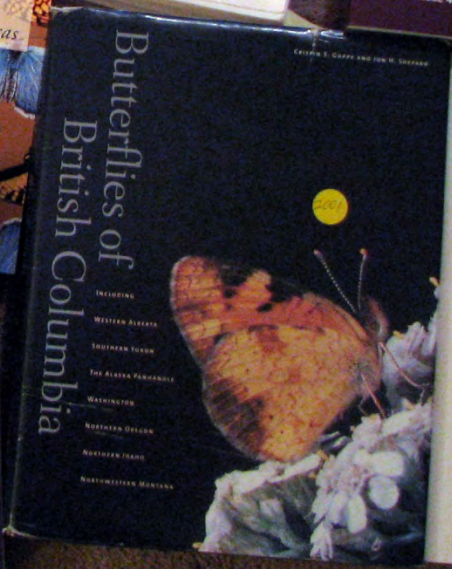
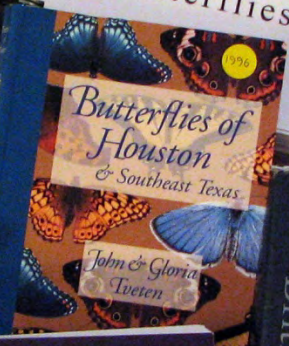
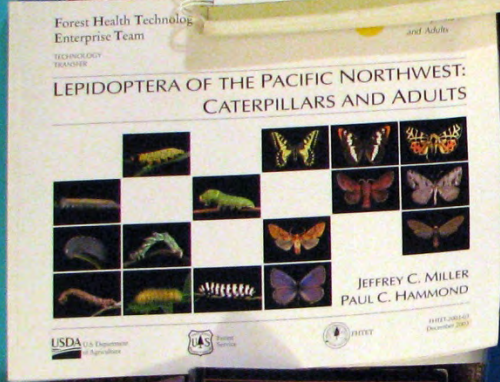
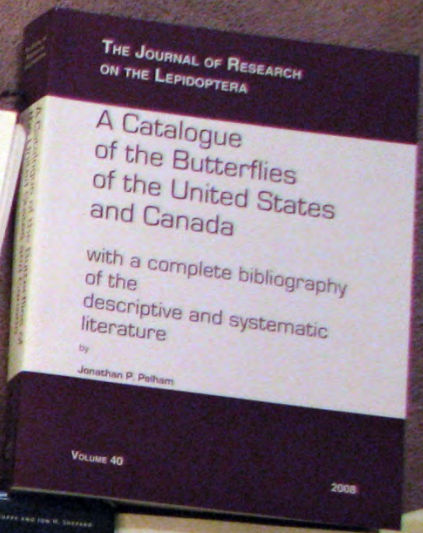
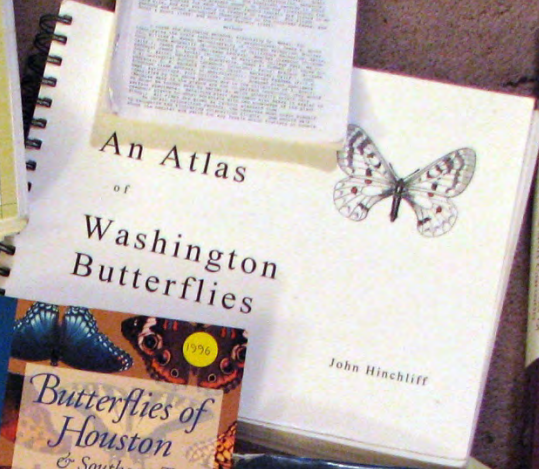
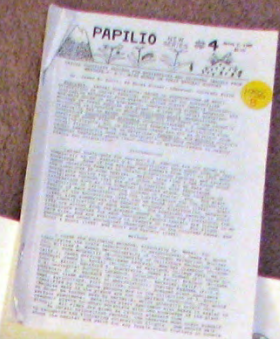
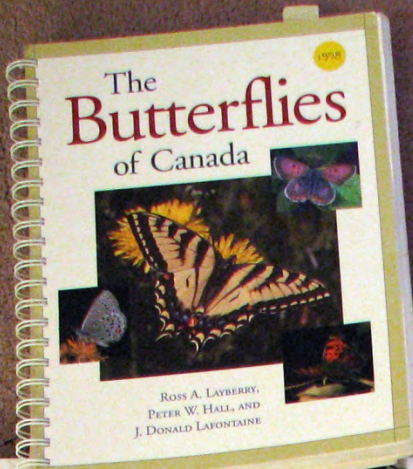
Mourning Cloak eggs on willow

Prior State of our Knowledge



Euphilotes enoptes on *Eriogonum nudum*

Literature



WASHINGTON STATE BUTTERFLIES

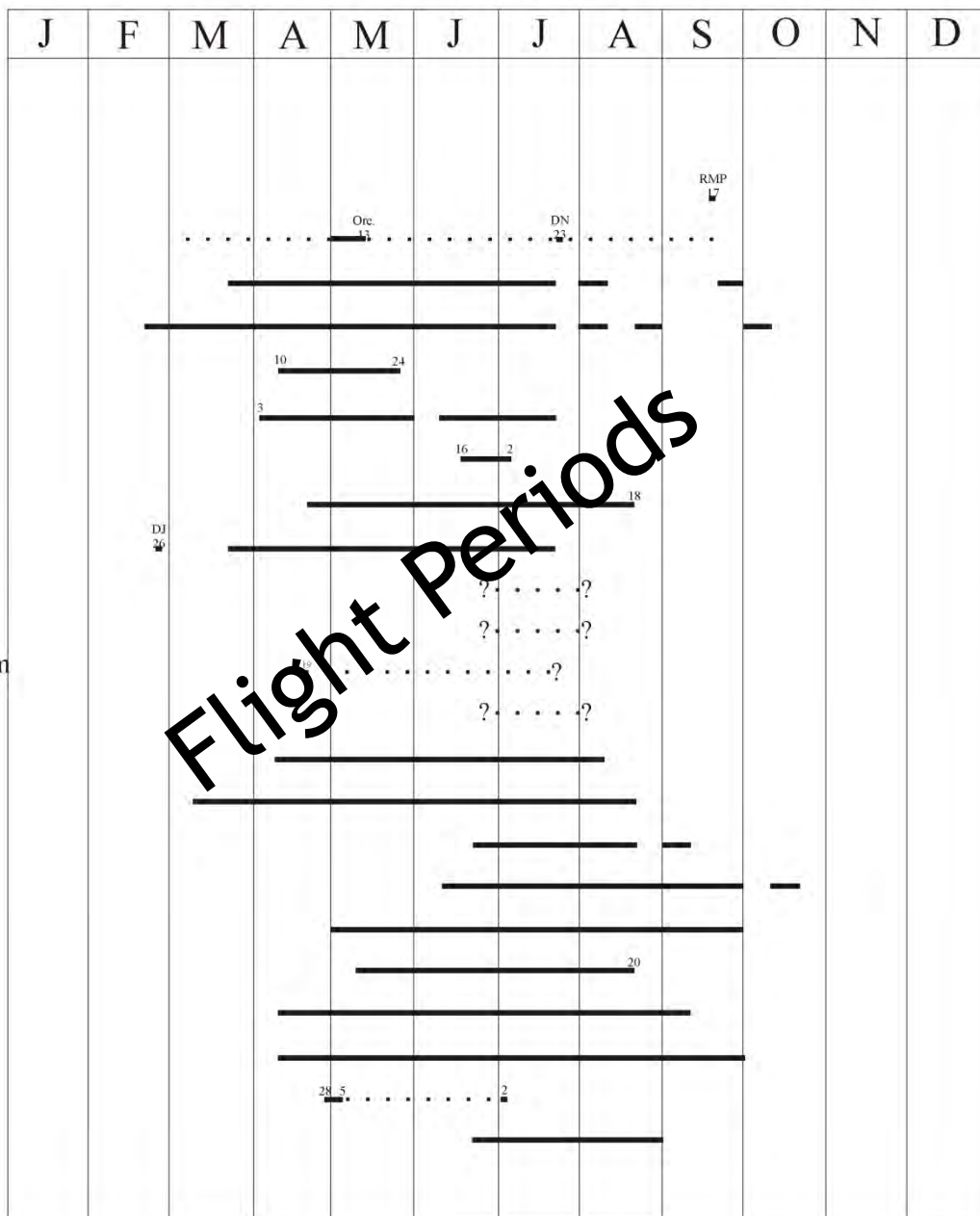
Observed Flight Period Charts



WASHINGTON BUTTERFLY ASSOCIATION

BLUES

LYCAENIDAE - BLUES



Flight Periods

- Brephidium exile
- Everes comyntas
- Everes amyntula
- Celastrina echo
- Celastrina nigrescens
- Celastrina lucia
- Euphilotes enoptes s.s.
- Euphilotes columbiae
- Euphilotes unnamed sp.
- Euphilotes ?glaucous
- Euphilotes ?baueri
- Euphilotes "incertae sedis"
- Euphilotes "unknown"
- Glaucopsyche piasus
- Glaucopsyche lygdamus
- Plebejus idas
- Plebejus anna
- Plebejus melissa
- Plebejus saepiolus
- Plebejus icarioides
- Plebejus lupini
- Plebejus acmon
- Agriades glandon

LISTING OF PHOTOS OF IMMATURE WASHINGTON BUTTERFLIES

ENGLISH NAME	LATIN NAME	Overwinter Stage	Notes	Stages Photographed							P	Ad
				Egg	L-1	L-2	L-3	L-4	L-5			
LYCAENIDAE: GOSSAMER WINGS - HAIRSTREAKS, ELFIN:												
Golden Hairstreak	Habrodais grunus	E		X	X		X	X			X	X
Coral Hairstreak	Satyrium tilus	E	F	X	X	X	X	X			X	X
Behr's Hairstreak	Satyrium behrii	E		X	X	X	X	X			X	X
Halfmoon Hairstreak	Satyrium semiluna	E	F	XJ	XJ	XJ	XJ	XJ			XJ	XJ
California Hairstreak	Satyrium californica	E		X	X	X	X	X			X	XJ
Sylvan Hairstreak	Satyrium sylvinum sylvinum	E		X	X	X	X	X			X	X
	Satyrium sylvinum nootka	E?	U2	X	X	X	X	X			X	X
Hedgerow Hairstreak	Satyrium saepium	E	F	X	X	X	X	X			X	X
Bramble Hairstreak	Callophrys perplexa	P		X	X	X	X	X			X	X
Western Green Hairstreak	Callophrys affinis	P		XJ	XJ	XJ	XJ	XJ			XJ	X
Sheridan's Hairstreak	Callophrys sheridanii	P		XJ	XJ	XJ	XJ	XJ			XJ	XJ
Thicket Hairstreak	Mitoura spinolorum	P	M	X	X	X	X	X			X	XJ
Johnson's Hairstreak	Mitoura johnsoni	P	M?	X	X	X	X	X			X	X
Cedar Hairstreak	Mitoura grynea	P		X	X	X	X	X			X	X
Rosner's Hairstreak	M. grynea rosneri	P	U2	X	X	X	X	X			X	X
Barry's Hairstreak	M. grynea barryi	P		XJ	XJ	XJ	XJ	XJ			XJ	X
Brown Effin	Incisalia augustinus	P	F	X	X	X	X	X			X	X
Moss' Effin	Incisalia mossii	P		X	X	X	X	X			X	X
Hoary Effin	Incisalia polia	P		XJ	XJ	XJ	X	X			XJ	XJ
Western Pine Effin	Incisalia eryphon	P	F, M	XJ	XJ	XJ	XJ	XJ			XJ	XJ
Gray Hairstreak	Strymon melinus	P		XJ	XJ	XJ	XJ	XJ			XJ	XJ
LYCAENIDAE: GOSSAMER WINGS - BLUES:												
Western Pygmy Blue	Brephidium exile	P	N, M	X	X	X	X	X			X	X
Eastern Tailed Blue	Cupido comyntas	L5	F, M?	X	X	X	X	X			X	X
Western Tailed Blue	Cupido arctantilla	L5	F, M?	XJ	XJ	XJ	XJ	XJ			X	X
Echo Blue	Celastrina echo	P	F, M	XJ	XJ	XJ	XJ	X			XJ	XJ
"Nigrescens Blue"	Celastrina nigrescens	P	F, M	X	X	X	X	X			X	X
Lucia's Blue	Celastrina luciae	P	F	XJ	XJ	XJ	XJ	XJ			XJ	XJ
Euphilotes enoptes Complex	Euphilotes enoptes s.s.	P		X	X	X	X	X			X	X
Dotted Blue (on E. nudum)	Euphilotes columbiae	P		XJ	X	X	X	X			X	X
Euphilotes battoides Complex	Euphilotes on heracleoides	P	F	X	X	X	X	X			X	X
Cascadia Blue	Euphilotes glaucon	P		X	X	X	X	X			X	X
Summit Blue	Euphilotes on sphaerocera	P	U2	X	X	X	X	X			X	X
unnamed new blue?	Euphilotes on sphaerocera	P		X	X	X	X	X			X	X
Arrowhead Blue	Glaucopsyche cyzicus	P	F	XJ	XJ	XJ	X	X			X	XJ
Silvery Blue	Glaucopsyche madama	P	F	XJ	XJ	XJ	XJ	XJ			XJ	XJ
Northern Blue	Plebejus idas	E	F	X	X	X	X	X			X	X
Anna's Blue	Plebejus anna	E	F	XJ	XJ	XJ	XJ	XJ			XJ	XJ
Melissa Blue	Plebejus melissa	E or L1	F, M	XJ	XJ	XJ	XJ	XJ			XJ	XJ
Greenish Blue	Plebejus saepiolus	L2-3		XJ	XJ	XJ	X	X			X	X
Boisduval's Blue	Plebejus icaroides	L2-3	F	XJ	XJ	XJ	XJ	XJ			XJ	XJ
Lupine Blue	Plebejus lupini	L2-3	F, M	XJ	J	J	XJ	X			X	XJ
Acmon Blue	Plebejus acmon	L2-3	F, M?	XJ	XJ	XJ	X	X			X	X
Arctic Blue	Agnades glandon	L1/L2		X	X	X	X	X			X	XJ
LYCAENIDAE: RIODINIINAE: METALMARKS:												
Mormon Metalmark	Apodemia mormo	E	ae	XJ	XJ	X	X	X	X?		X	X
NYMPHALIDAE: BRUSHFOOTS - GREATER FRITILLARIES:												
Great Spangled Fritillary	Speyeria cybele	L1		XJ	XJ	XJ	XJ	XJ	XJ	L6/P	XJ/XJ	XJ
Coronis Fritillary	Speyeria coronis	L1		XJ	XJ	XJ	XJ	XJ	XJ		XJ/XJ	XJ
Zerene Fritillary	Speyeria zerene	L1		XJ	XJ	XJ	XJ	XJ	XJ		XJ/XJ	XJ
Callippe Fritillary	Speyeria callippe	L1		X	X	X	X	X	X		X/X	XJ
Great Basin (Egleis) Fritillary	Speyeria egleis	L1		J	J	J	J	J	J		J/J	XJ
Northwestern Fritillary (unsilvered)	Speyeria hesperis dodgei	L1		J	J	J	J	J	J		J/J	(X)J
Northwestern Fritillary (silvered)	Speyeria hesperis brico	L1	U2	XJ	XJ	X	X	X	X		XJ	XJ
Atlantis Fritillary	Speyeria atlantis	L1		XJ	XJ	J	J	J	J		J/J	XJ
Hydaspe Fritillary	Speyeria hydaspe	L1		XJ	XJ	XJ	XJ	XJ	XJ		XJ/XJ	XJ
Mormon Fritillary	Speyeria mormonia	L1		XJ	XJ	XJ	XJ	XJ	XJ		XJ/XJ	XJ



BUTTERFLY English Name	Latin Name	Host Plants
Hydaspe Fritillary	Speyeria hydaspe	Stream Violet (Viola labellata); Blue Violet (Viola adunca); Nuttall's Violet (Viola nuttallii); Evergreen Violet (Viola sempervirens);
Mormon Fritillary	Speyeria mormonia	Marsh Violet (Viola palustris); Blue Violet (Viola adunca); Nuttall's Violet (Viola nuttallii); Evergreen Violet (Viola sempervirens);
Silver-bordered Frit.	Boloria selene	Marsh Violet (Viola palustris); Northern Bog Violet (Viola nephrophylla); Stream Violet (Viola labellata);
Meadow Fritillary	Boloria bellona	Canada Violet (Viola canadensis);
West. Meadow Fritillary	Boloria epithore	Blue Violet (Viola adunca); Stream Violet (Viola labellata); Evergreen Violet (Viola sempervirens);
Freija Fritillary	Boloria freija	Dwarf Bilberry (Vaccinium caespitosum); Kinnikinnick (Arctostaphylos uva-ursi); Crowberry (Empetrum nigrum);
Astarte Fritillary	Boloria astarte	Spotted Saxifrage (Saxifraga bronchialis);
Arctic Fritillary	Boloria chariclea	American Bistort (Polygonum bistortoides); Willows (Salix); possibly Violets (Viola); <i>Cascade Blueberry (Vaccinium deliciosum) (D. Jones)</i>
Northern Checkerspot	Chlosyne palla	Common Rabbit-brush (Chrysothamnus nauseosus); Green Rabbit-brush (Chrysothamnus viscidiflorus); Showy Aster ("Aster conspicuus" = Eurybia conspicua); Western Mountain Aster ("Aster" = Symphyotrichum campestris); Western Mountain Aster ("Aster occidentalis" = Symphyotrichum spatulatum); Hoary Fleabane (Erigeron speciosus); Goldenrod (Solidago);
Sagebrush Checkerspot	Chlosyne acastus	Green Rabbit-brush (Chrysothamnus viscidiflorus);
Hoffmann's Checkerspot	Chlosyne hoffmanni	Cascades Aster ("Aster" = Eucephalus ledophyllus); Showy Aster ("Aster conspicuus" = Eurybia conspicua); other asters;
Northern Crescent	Phyciodes corytaea	Allegheny Aster (Aster frondosus); Philadelphia Fleabane (Erigeron philadelphicus); other asters (Aster, Machaeranthera);
Field Crescent	Phyciodes pulchella	Showy Aster ("Aster" = Eurybia conspicua); Cascades Aster ("Aster" = Eucephalus ledophyllus);
Pale Crescent	Phyciodes pallida	Wavy-leaved Thistle (Cirsium undulatum); other native Thistles (Cirsium);
Myliatta Crescent	Phyciodes myliatta	Canadian Thistle (Cirsium arvense); Bull Thistle (Cirsium vulgare); Wavy-leaved Thistle (Cirsium undulatum); Mountain Thistle (Cirsium callilepis); Edible Thistle (Cirsium edule); White Thistle (Cirsium hookerianum); Milk Thistle (Silybum marianum);
Anicia Checkerspot	Euphydryas anicia	Beardtongue (Penstemon); Indian Paintbrush (Castilleja); Plantain (Plantago); Borage (Boraginaceae); Fine-toothed Penstemon (Penstemon subseratus);
Chalcedon Checkerspot	Euphydryas chalcedona	Common Snowberry (Symphoricarpos albus); Mountain Snowberry (Symphoricarpos oreophilus); Snapdragon (Antirrhinum); Honeysuckle (Lonicera); Monkey-flower (Mimulus); Paintbrush; Fine-toothed Penstemon (Penstemon subseratus); Plantains including Common Plantain (Plantago major);
Edith's Checkerspot	Euphydryas editha	Common Plantain (Plantago major); Lousewort (Pedicularis); Beardtongue (Penstemon); Paintbrush (Castilleja); Owl-clover (Orthocarpus); Fine-toothed Penstemon (Penstemon subseratus); Small-flowered Blue-eyed Mary (Collinsia parviflora) in spring; <i>Veronica scutellata on BC (Dorson Is.) = Marsh Speedwell</i>
Satyr Comma	Polygona satyrus	Stinging Nettle (Urtica dioica); Elm (Ulmus); Hops (Humulus lupulus);

Overwinter Stage
Number of Broods
Host Plants

5-23-06 Larvae have virtually stopped feeding. Both still appear healthy, but seem to have entered a summer diapause. Still in L4@9mm. Not sure how to break this diapause, or what caused it.

5-30-06 Larvae appear dead, but will wait to see for sure. (Larvae were later confirmed dead in L4 stage).

7-22-08 Slate Peak, big meadows nr horse trailhead. No *B. chariclea* yet flying. This is a very late year, however meadows are in early-prime condition, lots of flowers, *Erubia vidleri* reasonably common. (Note: in 2002 both species were collected on 7-27, and both oviposited then.)

8-5-08 Whistler Meadows nr Rainy Pass. Collected 2 ♀s, somewhat worn, here and at Washington Pass meadows. By 8-7-08 both had died, producing only 2 eggs. On 8-4-08 there had been a few at Slate Peak but I failed to catch any ♀s there.

8-15-08 The 2 eggs hatched about 8-12-08. The larvae were offered *Vaccinium* ~~deliciosum~~, *Viola glabella* and *Vaccinium caespitosum*, but ate nothing. Then I remembered that they overwintered as L1's. On 8-12-08 I collected another ♀ at Slate Peak; it had died, but had produced ~30 eggs.

8-21-08 The later batch of eggs began hatching today, with 20 new larvae. They are being kept in the Petri dish with the hatching eggs.

8-22-08 The hatch is virtually complete now, only one egg remaining. The larvae completely consumed their eggshells. Will probably wait 7-10 days before we begin the unfed rearing.

8-30-08 Larvae (L1's) overwintered today in 2 petri dishes. Total larvae = 32. Condition appears excellent. Larvae are unfed, save for egg cases which they have consumed.

Field Notes
Rearing Notes

Thousands of Photographs



Organization of Book

160 Species and Subspecies fully covered
including 1,600 photographs

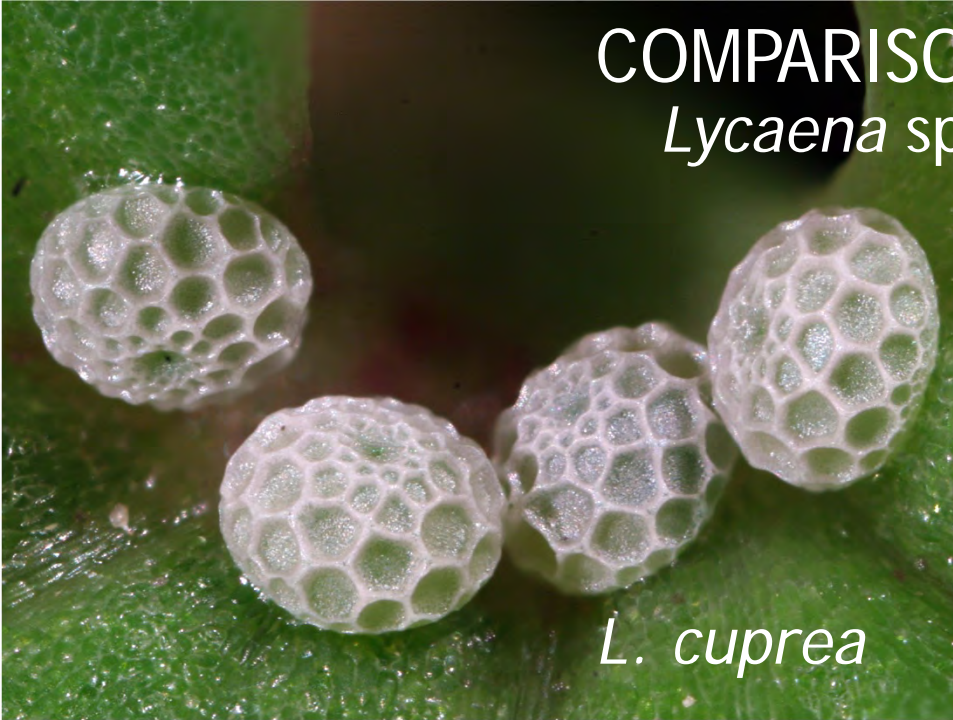
Accompanying text with researched literature
review plus new field and rearing information

All of Washington State's species (except one);
30% of species are also found on East Coast

Virtually full coverage of adjacent fringe areas of
Oregon, Idaho panhandle and Southern B.C.

Additional text chapters on related topics

COMPARISON of EGGS
Lycaena spp. (Coppers)



L. cuprea



L. editha

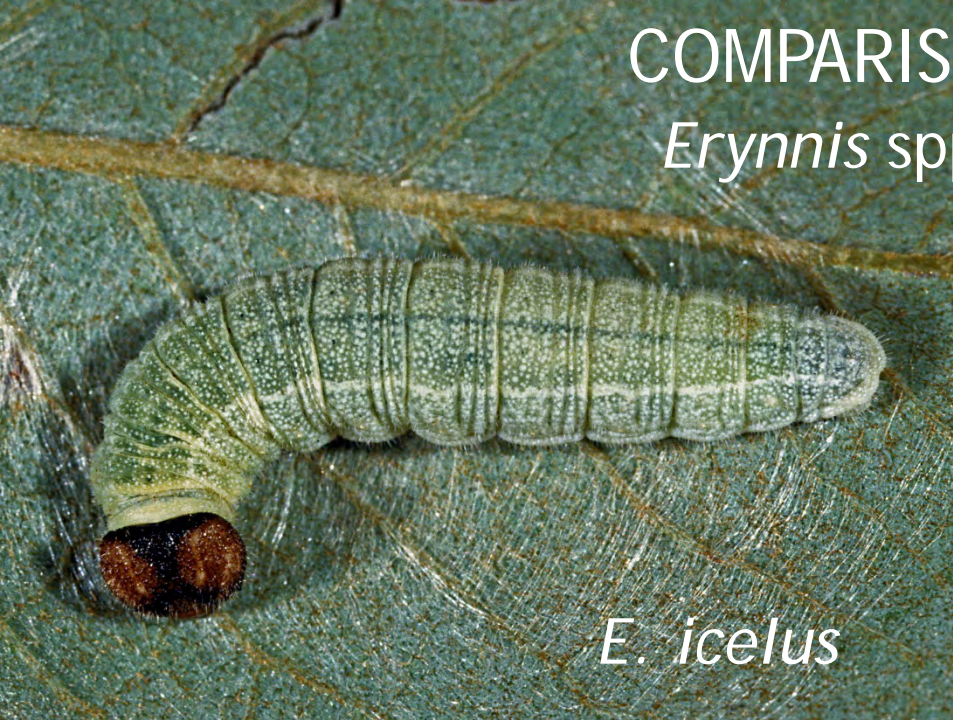


L. heteronea



L. rubida

COMPARISON of LARVAE
Erynnis spp. (Duskywings)



E. icelus



E. pacuvius



E. persius



E. propertius

COMPARISON OF PUPAE

Polygonia spp. (Anglewings)



P. oreas



P. satyrus



P. gracilis



P. faunus

Quick Photo Guide



Parnassians
Parnassius clodius



Swallowtails
Papilio eurymedon



Pine White
Neophasia menapia



Whites & Sulphurs
Colias alexandra



Coppers
Lycaena nivalis



Hairstreaks (Some)
Callophrys mossii



Hairstreaks & Blues
Satyrium californica



Buckwheat Blues
Euphilotes on heracleoides



Metalmark
Apodemia mormo



Fritillaries
Argynnis hesperis



Checkerspots & Crescents
Phyciodes pallida



Brushfoots (Many)
Nymphalis l-album

Butterfly Eggs



Admirals & Sisters
Limenitis lorquini



Wood Nymphs
Cercyonis pegala



Alpines & Ringlets
Erebia epipsodea



Arctics
Oeneis chryxus



Cloudywings
Thorybes pylades



Duskywings
Erynnis pacuvius



Checkered Skippers
Pyrgus communis



White-Skipper
Heliopetes ericetorum



Sootywing
Pholisora catullus



European Skipperling
Thymelicus lineola



Grass Skippers (Most)
Hesperia colorado



Dun Skipper
Euphyes vestris

Quick Photo Guide



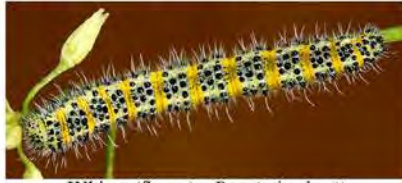
Parnassians - *Parnassius smintheus*



Parsley Swallowtails - *Papilio machaon*



Tiger Swallowtails - *Papilio multicaudata*



Whites (Some) - *Pontia beckerii*



Sulphurs, Some Whites - *Colias interior*



Coppers & Blues - *Icycaena editha*



California Hairstreak - *Satyrium californica*



Mistletoe Hairstreaks - *Callophrys spinetorum*



Cedar Hairstreak - *Callophrys gryneus*



Elfs (Some) - *Callophrys mossii*



Buckwheat Blues - *Euphyllotes columbiae*



Blues (Many) - *Plebejus idas*

Butterfly Mature Larvae



Arctic Blue - *Plebejus glandon*



Metalmark - *Apodemia mormo*



Fritillaries - *Argynnis atlantis*



Checkerspots - *Euphydryas colon*



Brushfoots (Typical) - *Vanessa cardui*



Admirals & Sisters - *Limenitis archippus*



Monarch - *Danaus plexippus*



Satyr - *Cercyonis oetus*



Silver-spotted Skipper - *Epargyreus clarus*



Duskywing Skippers - *Erynnis propretius*



Skipperlings - *Thymelicus lineola*



Skippers (Many) - *Hesperia comma*

Quick Photo Guide



Swallowtails
Papilio rutulus



Some Pontia (Whites)
Pontia beckerii



Pontia & Pieris
Pieris marginalis



Marbles, Orangetips
Anthocharis sara



Sulphurs
Colias alexandra



Greater Fritillaries
Argynnis zerene



Lesser Fritillaries
Boloria bellona



Crescents & Checkerspots
Chlosyne palla



Checkerspots (Part)
Euphydryas colon



Brushfoots (Many)
Polygona gracilis



Brushfoots (Many)
Nymphalis californica



Admirals & Sisters
Limnitis lorquini

Butterfly Pupae



Monarch
Danaus plexippus



Satyrs (All)
Cercyonis pegala



Parnassians - *Parnassius smintheus*



Pine White - *Neophasia menapia*



Coppers, Hairstreaks, Blues - *Strymon melinus*



Tailed Blues - *Cupido comyntas*



Coppers, Hairstreaks, Blues - *Celastrina echo*



Arctic Blue - *Agriades glandon*



Metalmark - *Apodemia mormo*



Skippers (Most species) - *Pyrgus communis*



Skipperlings - *Oarisma garita*



Dun Skipper - *Euphyes vestris*

TEXT TOPICS



- **Adult Biology**
- **Immature Stage Biology**
- **Description of Immature stages**
- **Discussion**

Two-tailed Swallowtail

ADULT BIOLOGY



Flight Period
Courtship
Oviposition behavior
Larval Host Plants
Number of Broods

Buckwheat blues
Cowiche Cyn.

IMMATURE STAGE BIOLOGY

Describe development
Nests & shelters
Habits, behavior

Overwinter stage
Feeding notes
Ant associations
Number of instars



Haney Mdws - Photo by Idie Ulsh

DESCRIPTIONS of IMMATURES

Descriptions of all stages
Compared w/ similar species
Compared w/ published accounts



Brown Elfin larva on
Ceanothus velutinus

DISCUSSION

Rearing suggestions
How to find in the wild

Parasitoids
Predators
Research needs

Crab spider & Spring White on fiddle neck



Predators & Parasitoids



Minute Pirate Bug Stalking a Juba Skipper larva

Potential Uses of the Book



Potential Uses of the Book

- Compare similar stages of sibling species
- Compare local species with those of other areas
- A field guide for gardeners, botanists and naturalists
- Information useful for conservation
- A tool to assist taxonomists in sorting out difficult taxa

Other Chapters

Life history
Life strategies
Overwintering
Habitats
Defense

Natural Enemies
Fieldwork
Rearing
Photography
Variation



Sheridan's Hairstreak larva

New Information

New host plant information

Species variation

Life histories of rare, endangered
and new species



Burch Mountain nr Wenatchee

Species using Tall Buckwheat



Sheridan's Hairstreak



Eriogonum elatum



Gray Hairstreak



Immaculate Green Hairstreak



Mormon Metalmark



Columbia Blue

Documenting Variation

Callophrys sheridanii - Sheridan's Hairstreak



Lion Rock nr Ellensburg

Documenting Variation

Strymon melinus - Gray Hairstreak



Documenting Species New to the State

Thymelicus lineola
European Skipperling



Brephidium exile
Western Pygmy Blue



Documenting Rare Species

Boloria astarte
Astarte Fritillary

Boloria freija
Freija Fritillary



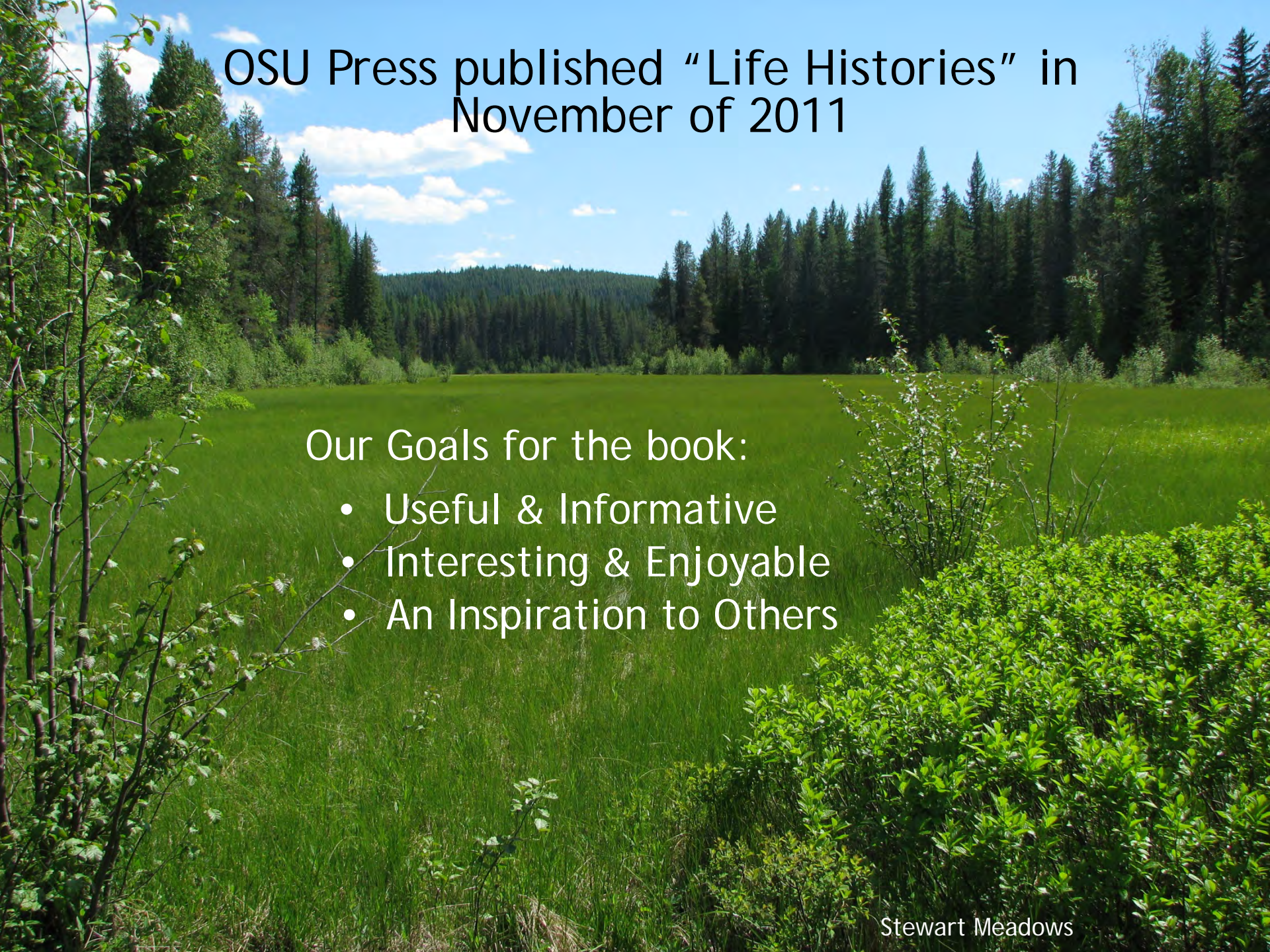
Documenting Listed Species

Callophrys (Mitoura) johnsoni
Johnson's Hairstreak



Polites mardon
Mardon Skipper





OSU Press published “Life Histories” in November of 2011

Our Goals for the book:

- Useful & Informative
- Interesting & Enjoyable
- An Inspiration to Others

QUESTIONS?

