

Introduction to the Natural World

Butterflies

Order Lepidoptera



Maureen Traxler
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Butterflying

- Catch and release
- Nets are specially designed.
- Examination jar has magnifier in cap
- Try not to touch legs and antennae
- Wings are tough



Butterfly Watching

- Butterflies like warmth
65 deg + and UV
- Movement causes them to
fly off
- Use binoculars!
- Photography
- Focus camera on antennae
and proboscis



Anatomy



Head

- Antennae
- Compound Eyes
- Proboscis (coils up when not in use)

Wings

- Forewings are larger than the hind wings

Abdomen

Thorax

Butterfly Life Cycle - Eggs

- Eggs laid on larval host plant
- Many different egg-laying patterns; forms of egg





Butterfly Life Cycle - Larva



- Caterpillars have one purpose: eat so they can grow into adult.

Instars

- Larva's skin has limited elasticity.
- As larva grows, it has to shed the skin.
- Each molting stage is called an "instar"
- Most Washington butterflies have 5 instars.



Butterfly Life Cycle - Pupa



- The final instar transforms into a pupa (chrysalis)
- Covering is made of hardened protein
- Pupae often look like a twig or leaf, or hidden in duff
- Moths make cocoon spun from silk

Metamorphosis happens inside



At end of pupation wings become visible



Butterfly Life Cycle - Emergence



Emerging butterfly pumps fluid from abdomen into wings.

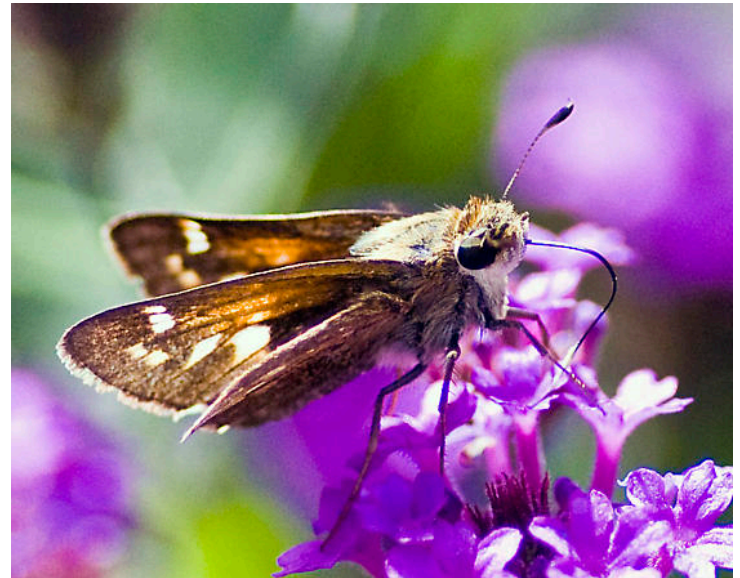
Fluid flows thru veins to shape the wings

Butterflies & Plants

Butterflies depend on

- Host plants—for larvae
- Nectar plants—for adult

Adult lays eggs on/near larval host plants



Some species rely on one species of plant for food, are vulnerable to habitat loss.

Others are generalists that will feed on variety of plants.

Butterfly Defenses

Butterflies and caterpillars use many protective techniques.

Caterpillars may have fierce-looking horns.



Butterfly Defenses

Eyespots trick predators into attacking the wrong body part

Butterflies can fly with remnants of wings



Butterfly Defenses

Camouflage

Pupae, or underside of wings look like leaves or bark.



Butterfly Defenses

Bright colors can send “I’m poisonous” messages.

Some butterflies and caterpillars are toxic or distasteful to predators.



Butterfly or Moth?

Butterfly or Moth?

- Time of day is a clue
 - But many moths fly during the day (diurnal)
 - Moths can be colorful



Butterflies

- Butterflies rest with wings up or in “jet fighter” position



- Butterflies bask with wings spread



Moths

Moths often rest with wings against the body or in “V”



Butterfly or Moth?

- Butterfly: Slender antennae with clubbed end
- Moth: Feathery or pointed end



Butterfly or Moth?

- Watch where they go when disturbed
 - Butterflies fly upward
 - Moths fly down and often disappear



Washington Butterfly Species

Main groups found in WA:

Skippers

- Spreadwing skippers
- Grass skippers

“True Butterflies”

- Swallowtails and parnassians
- Pierids—Whites and sulphurs
- Lycaenids—Coppers, hairstreaks, blues
- Nymphalids—Checkerspots, fritillaries, monarch, anglewings
- Satyrids—Wood nymphs, ringlet, alpines, arctics

Spreadwing skippers



- Dark gray or brown
- Stay close to the ground

Grass skippers

Small and brown/tawny

Larvae eat grasses



Most common skipper in Washington: Woodland skipper

- July & August
- Common in yards, parks in town



SWALLOWTAILS



Western Tiger Swallowtail

Anise Swallowtail



- More black on front wing edge
- Orange eyespot with round black center near tail.

Photo by Dave Shema

Parnassian



Photo by Dave Nunnallee

Whites & Sulphurs: Pierids



Cabbage White

- White upperside with black tips
- Two (female) or One (male) spots
- Very common butterfly in town

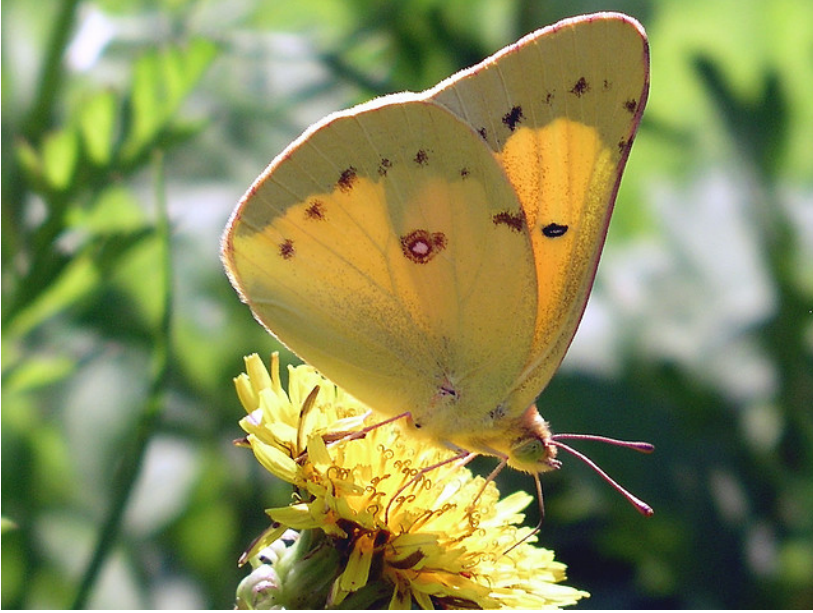


Sara Orange Tip

- Orange wing tips
- White (or yellow) wings with black
- Males are white; females yellow

Photo by Dave Nunnallee

Sulphurs



Coppers, Blues, Hairstreaks: Lycaenids



- Males are blue on the upperside; females brownish
- White with black spots and small orange spot near tail underside.

Western Tailed Blue

Photo by Dave Nunnallee

Coppers



Hairstreaks



Brush-foot butterflies: Nymphalids



Lorquin's Admiral

- black on dorsal (upper) side
- Band of white rectangular spots
- Orange-brown wing tips

Photo by Dave Nunnallee

Mourning Cloak



- Chocolate brown
- Light border on trailing edge of wings
- Iridescent blue spots at inner edge of border

“Greater” and “Lesser” Fritillaries



Coronis fritillaria (“greater fritillary”)

Large spots on ventral
(underneath) side of wings

Some have silvered or opalescent
spots



Western meadow fritillary (“lesser
fritillary”)

Ventral pattern of mottled lavender
and russet

Checkerspots



Photo by Dave Shema

- White spots on black or orange
- No spots on trailing edge of wing
- Yellow or red antennae
- Several very similar species

Painted Lady



Photo by Dave Nunnallee

- Orange center, black wing edges.
- White wing bars outside edge of wings
- Trailing end blue/black spots
- Occasional population explosions in Mexico cause massive northward migrations--this may be the year!

Ochre Ringlet



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Butterfly ID Practice

Butterfly 1

Western Tiger Swallowtail



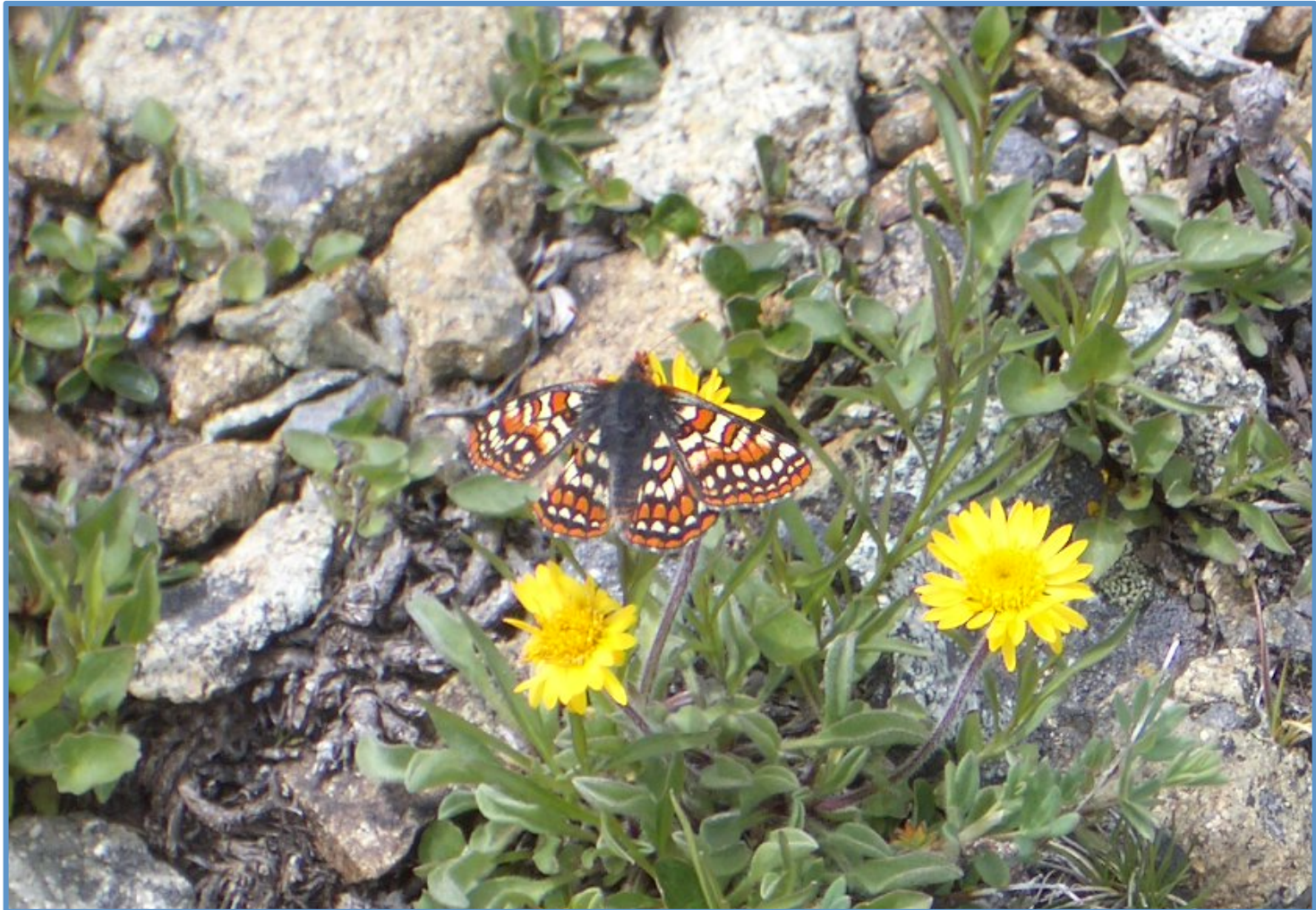
Butterfly 2

Western Meadow Fritillary



Butterfly 3

Checkerspot



Butterfly 4

Lorquin's Admiral



Butterfly 5

Mourning Cloak



Butterfly 6

Coronis Fritillary



Butterfly 7

Blue



Butterfly 8

Anise Swallowtail



Butterfly 9

Painted Lady



Butterfly 10

Cabbage White (Male – 1 spot)



Stay involved

Washington Butterfly Association

Field trips and presentations

Novices welcome

Beginner-oriented group

<http://wabutterflyassoc.org>

Stay involved

- Cascade Butterfly Project needs volunteers, no experience necessary.
 1. Help NPS monitor butterflies and hike beautiful trails. Weekdays.
 2. Upload your photos of butterflies to *Butterflies and Moths of North America*. Experts will ID the bugs.
www.butterfliesandmoths.org
 3. Help make You Tube videos on how to do butterfly monitoring or how to identify butterfly species

Contact Regina Rochefort at

regina_rochefort@nps.gov or 360-854-7202

RESOURCES

- Butterflies of America—identification and photos <http://butterfliesofamerica.com>
- Butterflies and Moths of North America—identification and photos
<http://www.butterfliesandmoths.org>
- N. American Butterfly Ass'n <http://www.naba.org>
- Pacific NW Moths—identification tool
<http://pnwmoths.biol.wvu.edu>
- Podcast about butterfly pupation
<http://www.radiolab.org/story/goo-and-you/>

BOOKS

- *Butterflies of Cascadia*, Robert Michael Pyle
best guide to butterflies of Washington and Oregon
- *Life Histories of Cascadia Butterflies*, David James and David Nunnallee. Magnificent, awesome book with fantastic photos of every life stage of every butterfly found in Washington and Oregon; informative section about bf life history
- *Butterflies of North America*, Jim Brock and Kenn Kaufman
- *Butterflies Through Binoculars*, Jeffrey Glassberg

Questions?

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