BRUSH-FOOTED BUTTERFLIES OR FOUR-FOOTED BUTTERFLIES

NYMPHALIDAE (RAFINESQUE, 1815)

NATURAL HISTORY SUMMARY BY JACOB EGGE, PHD

Classification

Kingdom: Animalia
Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Nymphalidae

Description

The family Nymphalidae includes some 6,000 species of butterflies. Most species in this family have greatly reduced forelegs and stand on only four legs. The vestigial forelegs have a brush-like set of hairs. Antennae always have two grooves on the underside. Many have brightly colored wings with cryptic undersides that help provide camouflage among leaves and brush. Familiar species in the family include the Monarch (*Danaus plexippus*) and fritillaries (*Speyeria* and *Boloria*).

Distribution

The family Nymphalidae has representative species on all continents except Antarctica, but they are most diverse in the Neotropics (DeVries 1987).

Diet

Nymphalid caterpillars feed exclusively on plants and many are host specific, while others are generalists. Adults generally feed on nectar from flowers they suck through a proboscis. However, some species feed on sap, fermenting fruit, or dung. (Hadley 2016).

Habitat and Ecology

Nyphalids inhabit a variety of habitats ranging from tropical rainforests to tundra environments of high elevation summits. Many species of Nymphalid, including the Monarch, have distasteful body fluids that deter predators. These distasteful

compounds are derived from the plants they feed on as caterpillars. Most species are diurnal, with a few nocturnal species. Caterpillars are typically found associated with a particular host plant species or group of plants. Plant specializations range broadly across the family and include aster, violet, willow, elm, poplar, nettles, thistle, hackberry, and milkweed (Triplehorn and Johnson 2005).

Reproduction and Life Cycle

All butterflies undergo complete metamorphosis with both a larval (caterpillar) and pupal stage. Eggs are laid on foliage of host plants. Young emerge as caterpillars that feed for several weeks before pupating in the chrysalis. Nymphalid caterpillars are often hairy, spiny, or distasteful to deter predators (Hadley 2016).

Conservation Status

The Taylor's Checkerspot Butterfly, *Euphydryas editha taylori,* is perhaps the most notable Nymphalid in need of conservation in the Pacific Northwest. The species became formally listed as an endangered species protected by the Endangered Species Act on Nov. 4 2013. (U.S. Fish and Wildlife Service, 2013). Only 11 populations remain in Washington, one in British Columbia, and two in Oregon. These butterflies require open grassland/native oak woodlands where their larvae rely on plants of the Broomrape family (Orobanchaceae) and Plantaginaceae family, along with a few others, for feeding. The species' Endangered status is the result of dramatic habitat loss due to agriculture and urban development. Captive breeding programs and reintroduction has been shown to potentially effective in recovery efforts (Washington Fish and Wildlife Office n.d.)

Cultural Significance

Nymphalid butterflies comprise an important component of the dead butterfly trade were they are displayed for their beauty. They are also used widely in education and butterfly houses. A few nymphalid groups including *Brassolis* and *Caligo* are pests on coconut palm and banana plantations (Capinera 2008)

Specimen Specific Detail

The case of Nymphalidae on display from the Burton Ostenson Museum of Natural History at Pacific Lutheran University (PLU), contains a number of Nyphalid species from the 'Checkerspot' and 'Crescent' groups, including Taylor's Checkerspot (*Euphydryas editha taylori*). The specimens were collected by Jens Knudsen, a biology professor at PLU, and his wife, Winona Knudsen. Most were collected in the mid 1960's, although some date back to the 1950's. The Arachne Checkerspot (*Polydryas arachne*) specimens from the Grand Canyon date back to the 1930's. The careful identification, preparation, and organization of these specimens represents the dominant methodology for documenting and cataloging biodiversity that would have been common during this era.

Literature Cited

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Hadley, D. 2016. Brush-Footed Butterflies, Family Nymphalidae. ThoughtCo. Available at https://www.thoughtco.com/brush-footed-butterflies-family-nymphalidae-1968189 Accessed on Sept 2, 2017.

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