

## Euchloeini

*Euchloe*—*Barbarea*, *Biscutella*, *Ineris*, *Sisymbrium* (Cruciferae).

*Anthocharis*—*Biscutella*, *Cardamines*, *Sisymbrium*, etc. (Cruciferae).

## Pierini

*Aporia*—*Crataegus*, *Prunus*, *Spiraea* (Rosaceae).

*Pieris*—*Aethionema*, *Alyssum*, *Brassica*, *Iberis*, *Sinapis*, *Sisymbrium* (Cruciferae),  
*Tropaeolum* (Geraniaceae), *Reseda* (Resedaceae).

*Colotis*—*Capparis* (Capparidaceae).

*Zegris*—*Sinapis* (Cruciferae).

*Leptidea*—*Cracca*, *Lathyrus*, *Lotus*, *Vicia* (Papilionaceae).

NORTH AMERICA (after Ehrlich & Ehrlich's "How to Know the Butterflies")

## Coliadini

*Nathalis*—*Stellaria* (Caryophyllaceae), *Bidens*, *Dyssodia*, *Tagetes* (Compositae), *Erodium* (Geraniaceae), *Helenium* (??).

*Colias*—*Vaccinium* (Ericaceae), *Amorpha*, *Astragalus*, *Hedysarum*, *Medicago*, *Parosela* (Papilionaceae), *Salix* (Salicaceae).

*Kricogonia*—No records.

*Eurema*—*Cassia* (Caesalpiniaceae), perhaps *Astragalus* (Papilionaceae) and others.

*Phoebis*—*Cassia* (Caesalpiniaceae).

## Euchloeini

*Anthocharis*—*Arabis*, *Barbarea*, *Cardamines*, *Sisymbrium* (Cruciferae).

*Euchloe*—*Arabis*, *Sisymbrium*, etc. (Cruciferae).

## Pierini

*Pieris*—*Dentaria*, *Isomeria*, *Stanleya*, other Cruciferae and Capparidaceae.

*Ascia*—*Brassica*, *Cleome*, *Polanisia*, other Cruciferae and Capparidaceae.

*Neophastia*—*Pinus* (Coniferae).

Unfortunately, I have no records for South America.

Looking at the foregoing lists as a whole, a fairly coherent pattern emerges. The Coliadini are almost entirely confined to the leguminous subfamilies Papilionaceae and Caesalpiniaceae, with *Gonepteryx* confined to the Rhamnaceae. The other pierine tribes show a decided preference for plants containing mustard oil glucosides, i.e., Cruciferae, Capparidaceae and Salvadoraceae but with a few divergent groups or species; for example, *Delias* and *Mylothris* feeding mainly on Loranthaceae and *Aporia* on Rosaceae, Rubiaceae and Berberidaceae, among others. I am unable to trace any record for Lauraceae apart from Mr. Young's, and, although that does not completely preclude the family as a pierine food-plant, it makes it less likely.

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ANTHOCHARIS LANCEOLATA (PIERIDAE) FEEDING ON A RARE  
ENDEMIC STREPTANTHUS SPECIES (CRUCIFERAE)

*Anthocharis lanceolata* Lucas is recorded on several species of *Arabis* (Cruciferae) in various parts of its range. On 14 July 1983 it was found infesting the rare endemic *Streptanthus howellii* Wats. about 10 km southwest of O'Brien, Josephine County, Oregon. The plants are on and adjacent to a disturbed roadside and power-line cut on a serpentine substrate and are confined to otherwise bare or nearly bare soil. Including

small vegetative individuals, there are at least 100 and possibly 200 plants in the area, making this one of the largest populations of *S. howellii* known.

*Streptanthus howellii* is confined to dry, brushy serpentine exposures between 650 and about 1000 m in the Siskiyou Mountains of Josephine and Curry counties, Oregon and Siskiyou and Del Norte counties, California. It is apparently a short-lived perennial or, perhaps, biennial. It is a candidate species for Federal listing under the Endangered Species Act, Category 2, USFWS (Federal Register 45:82480-82569, Dec. 15, 1980). Further information and figures are available (R. J. Meinke, 1982, Threatened and Endangered Vascular Plants of Oregon, An Illustrated Guide, USFWS, Office of Endangered Species, Region 1, Portland, Ore., pp. 314-315).

At the O'Brien site most of the large plants (about 15% of the population) bore one or more larvae of *A. lanceolata*. The single largest individual seen, a much-branched specimen over 1 m tall, had seven larvae and two eggs. Many of the smaller plants bore one or two eggs, generally on buds or on the axis of the raceme, rarely on leaves. Larvae were feeding actively on buds, flowers, and green fruit, and most of the siliques on the large plants were more or less damaged. A few plants had the entire inflorescence/infertescence destroyed. Oviposition appeared to be correlated with phenophase, such that the most advanced plants bore the largest larvae; plants mostly in flower bore younger larvae and a few eggs; and plants in bud bore either eggs or nothing. No *lanceolata* were flying, and the latest plants to mature appeared likely to escape predation altogether. About a third of the eggs observed were dead, but the cause was not determined. Eight larvae were brought back for rearing; seven pupated and one produced an undetermined braconid parasitoid (Hymenoptera).

Meinke (loc. cit.) speculates that *S. howellii* may have "a poor reproductive capacity." If this is the case, seed predation by pierid larvae, perhaps not limited to *A. lanceolata*, may be an important factor in its biology. At O'Brien up to 75% of the seed crop appeared to be threatened (possibly less if the plants were able to regenerate and reproduce after the pierid feeding season) in 1983. Some other *Streptanthus* species on serpentine soils have evolved butterfly egg-mimics as an adaptation to predation-avoidance (Shapiro, 1981, Amer. Nat. 117:276-294), but *S. howellii* does not have them, and it is not known whether *A. lanceolata* engages in egg-load assessment (though its eggs are typical of species which do). If other pierid-crucifer systems are at all typical, we may expect the impact of predation on *S. howellii* to vary drastically from year to year, depending on how weather modifies the phenology of the plants and insects.

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#### HACKBERRY BUTTERFLIES: DENSE SWARMS INVOLVED IN A LITIGATION IN SOUTHERN LOUISIANA (NYMPHALIDAE: ASTEROCAMPA)

Hackberry butterflies (Nymphalidae, genus *Asterocampa*) are common insects of the central United States, ranging from southern New England westward throughout the mid-central United States to the Gulf of Mexico. They are especially abundant in the southern states of Arkansas, Texas, Mississippi, Louisiana, Alabama and western Tennessee. In this region there are three annual broods beginning about May and extending into July, with the greatest number of insects occurring in June and July (Holland, 1947, *The Butterfly Book*, Rev. Ed., Doubleday and Co., Garden City, NY, 424 pp.; Klots,