

# REVIEW OF AUSTRAL *HEODA*, WITH A NEW SPECIES FROM CHILE (LEPIDOPTERA: LYCAENIDAE: EUMAEINI)

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**ABSTRACT.**— Austral *Heoda* species *H. atacama* Johnson and Miller, *H. nivea*, *H. shapiro* and *H. suprema* (all Johnson, Miller and Herrera) and *H. wagenknechti* (Ureta) are figured in color and their known distributions elaborated from historical and recently acquired material. A remarkably patterned new species, *H. erani*, is described from a narrow belt of Puna vegetation in Tarapacá, Chile. The new species' restricted biotope reemphasizes the diversity of high Andean Lycaenidae known only from habitats of extremely limited distribution. Entomologists sampling depauperate high montane and austral biomes should look for species of this genus; species of *Heoda* are currently known from Patagonia north in the high Andes to Colombia and new species have recently been discovered in Colombia and Ecuador. The Puna vegetation belt in northern Chile harbors six known endemic species of lycaenid butterflies; three others are known from restricted mesic quebradas within the lowland absolute desert. Plant diversity, percentage of plant cover and number of species of butterflies are directly related.

**KEY WORDS:** *Abloxurina*, Andes Mts., Argentina, Asteraceae, Bolivia, Cactaceae, *Chlorostrymon*, Colombia, Compositae, ecology, Ecuador, *Eiseliana*, Gramineae, habitat, *Hemiargus*, *Heoda erani* n. sp., Hesperidae, hostplants, Hydrocotylaceae, *Hylephila*, *Hypsochila*, *Junonia*, keys, Leguminosae, Lycaeninae, *Madeleinea*, Malvaceae, *Ministrymon*, *Nabokovia*, Neotropical, Nymphalidae, Patagonia, *Penaincisalia*, Peru, Pieridae, Polyommatainae, *Pyrgus*, Scrophulariaceae, *Shapiroana*, South America, *Strymon*, Strymonina, *Tatochila*, taxonomy, *Tericolias*, Theclinae, Valdivian, *Vanessa*.

*Heoda* was described by Johnson, Miller and Herrera (1992a) to include a lineage of rather spectacularly marked high Andean and austral South American hairstreak butterflies comprising part of the larger worldwide clade *Strymon* (*sensu lato*) (Johnson, Miller and Herrera, 1992b). *Heoda* is one of several autochthonous South American lineages within the eumaeine infratribe Strymonina (Johnson and Kroenlein, 1993). Because of remote occurrence, *Heoda* species are poorly known to most lepidopterists and seldom represented in butterfly collections.

*Heoda* species occur from Colombia south to Patagonia (Fig. 11) and include some of the most brightly orange and intricately marked South American Theclinae (e.g., *H. wagenknechti* (Ureta), *H. suprema* Johnson, Miller and Herrera). Since the 1992 description of *Heoda*, collecting in remote high Andean and austral areas of South America has about doubled the number of known species. Two new species from northern South America will soon be described by local workers in Colombia and Ecuador. Morphologically, females of *Heoda* have a distinctively modified eighth tergite and the spiral of the genital ductus bursae located remote from the corpus bursae sac, usually near the midpoint of the ductus bursae; males have extremely robust, and sometimes oddly sculptured, genitalia. Contrasting other Strymonina in wing pattern, the Sc+R<sub>1</sub> element of the ventral hindwing medial band is basally displaced (less obvious in some species if obscured by additional ventral pattern elements).

The present paper results from work to locate microhabitats of little-known and recently described lycaenid butterflies in Chile. The paper keys and illustrates in color currently known southern

South American members of *Heoda*, all but one described since 1992. It also describes a new species discovered in a narrow belt of Puna vegetation in Tarapacá Province, northern Chile. This discovery is of particular interest because, consistent with previous work on the biology of butterflies (Benyamini, 1983, 1984, 1988, 1990, 1993, 1995), and contrasting previous work strictly limited to museum specimens of *Heoda*, the biotope of the new species has been studied in detail. The restricted habitat of *H. erani*, along with its extreme divergence from congeners, reemphasizes that innumerable locally endemic species of butterflies may be scattered throughout high Andean and austral regions of the Neotropical Realm (see also Bálint, 1992; Bálint and Johnson, 1992a,b, 1994a,b,c,d; Bálint and Lamas, 1994; Johnson, 1990, 1991, 1992a,b). Biologies of Chilean *Heoda* studied to date indicate distinctive life histories and, in some cases, very peculiar field behaviors (Benyamini, 1995). Because of these complexities, eventual biological study of certain Patagonian entities conservatively treated here as conspecific with widely disjunct Chilean counterparts (see Key below), may actually reveal sibling biological species.

## TAXONOMY

We use the species groups and terminology for *Heoda* employed by Johnson, Miller and Herrera (1992ab), including DFW-DHW and VFW-VHW for dorsal and ventral fore- (FW) and hindwing (HW), respectively.