

NYMPHALIDAE OF RONDÔNIA, BRAZIL: VARIATION AND PHENOLOGY OF *AGRIAS* (CHARAXINAE)

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Abstract - Two species of *Agrias* (Nymphalidae: Charaxiinae), *A. claudina* and *A. amydon*, are known from central Rondônia, Brazil. Their phenology and variation are discussed and illustrated.

Key words: *Agrias*, Lepidoptera, neotropical, phenology, variation.

The genus *Agrias* (Nymphalidae: Charaxiinae) includes between four (Barselou, 1983) and nine (Späth in D'Abrera 1987; see also Fruhstorfer in Seitz 1907-1924, Rebillard 1961, Descimon 1977, Neild 1996, Lamas 2004) spectacularly magnificent species of neotropical butterflies. As a consequence of their large size and beauty and their often local variability (e.g., Le Moult 1926a, Neild 1996), *Agrias* are prized by collectors and numerous names have been applied to them (e.g., Le Moult 1926b, 1931, 1933), most of which are worthless taxonomically (Neild 1996, see also Lamas 2004).

Two species of *Agrias*, *Agrias claudina* (Godart, [1824]) and *Agrias amydon* Hewitson, 1852, are known from the vicinity of Cacaúlândia in central Rondônia, Brazil, where intensive studies of the butterfly fauna have been conducted since 1989 (Emmel and Austin 1990). That site, of variously disturbed typical lowland tropical rainforest, has a distinctly seasonal environment with a well-defined wet season extending from October to April. This paper examines relative abundance, phenology, and variation of *A. claudina* and *A. amydon* at the study site. Males of these species are readily attracted to traps baited with putrid fish (e.g., Austin and Riley 1995), but are apparently less attracted to rotting fruits. Most individuals examined occurred in traps placed 1.5-2.5m above the ground and adjacent to light gaps in both primary and second growth forests. Voucher specimens are deposited at the Universidade Federal do Paraná, Curitiba, Brazil and the McGuire Center for Lepidoptera and Biodiversity.

Agrias claudina sardanapalus H. W. Bates, 1860
(Figs. 1-20, 25-28)

Agrias claudina is by far the most frequently encountered *Agrias* near Cacaúlândia (see Fig. 33). It has been recorded in every month, but appears most common from the end of the dry season through the height of the wet season (August to February, Fig. 33). Annual fluctuations in abundance may also exist, but the data are too few to document this.

Phenotypic variability within populations of *A. claudina* has been noted (e.g., see Barselou, 1983, plate 12) and this is also observed in central Rondônia. The dorsal forewing varies in color from red to magenta, with or without a band of iridescent blue distad. The dorsal hindwing varies from those individuals with a large blue patch to those with a smaller blue area, those with various mixes of blue and red (with red often confined to the veins, Figs. 17-18), and those with a large red patch, these enveloping nearly the entire range of variation illustrated by

Barselou (1983). The population at Cacaúlândia seems best referred to *A. c. sardanapalus*, but exhibits apparent phenotypic intermediacy towards *Agrias claudina croesus* Staudinger, 1896. Of the male individuals closely examined, 26 were typical *A. c. sardanapalus* with a large blue area on the dorsal hindwing and a blue band distad to the red on the dorsal forewing (Figs. 1-2); 19 were similar, but without blue on the forewing (Figs. 3-4); 12 were near *A. c. croesus* with extensive red on the hindwing (Figs. 5-7); 11 were intermediate (with both blue and red on the hindwing) and had distal blue on the forewing (Figs. 17-18); and 23 were intermediate without blue on the forewing (Figs. 19-20). Three of these males had black extending along the anal margin of the dorsal forewing towards its base as typical of *Agrias claudina lugens* Staudinger, 1886. The one female seen was like *A. c. croesus* with a large red patch on the dorsal hindwing (Fig. 8). There is no obvious seasonal pattern in this variation. Central Rondônia thus seems to be a region of intermediacy between the phenotype that ranges northward and eastward from this site (*A. c. sardanapalus*) and those occurring to the south and west (*A. c. croesus* and, to some extent, *A. c. lugens*).

Agrias amydon ferdinandi Fruhstorfer, 1895
(Figs. 21-24, 29-32)

Agrias amydon is much rarer near Cacaúlândia than is *A. claudina* (see Fig. 33), yet has been recorded in every month except December. No seasonal pattern in phenology is immediately apparent except that 9 of 19 records are from February to May (late wet to early dry seasons, Fig. 33).

The color of the dorsal forewing and its whitish subapical markings on *A. amydon* from central Rondônia (only males examined) are uniform except for one individual on which the red is replaced by yellow (Figs. 24, 32; this individual resembling *Agrias amydon aurantiaca* Fruhstorfer, 1897). DeVries (1980) noted geographical alternation of yellow- and red-banded *A. amydon* from Mexico southward. There is some variation in the amount of black on the anal margin of the dorsal forewing. The dorsal hindwing is entirely black on most individuals examined (13 of 16; Figs. 21, 23-24); the remaining three had variable amounts of diffuse iridescent blue posteriorly (Fig. 22).

Some authors have separated *Agrias pericles* H. W. Bates, 1860, from *A. amydon* at the species-level based upon markings in the discal cell of the ventral hindwing (e.g., D'Abrera 1987). Of the *A. amydon* examined from central Rondônia, 15 had



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Figs. 1-8. *Agrias claudina* from BRAZIL: Rondônia; vicinity of Cacaulândia (Figs. 1-7 males, Fig. 8 female; dorsal surface). Fig. 1. 22 Sep 1992; Fig. 2. 25 Apr 1993; Fig. 3. 16 Oct 1992; Fig. 4. 13 Aug 1993; Fig. 5. 26 Nov 1996; Fig. 6. 7 Feb 1995; Fig. 7. 3 Mar 1994; Fig. 8. 9 May 1993.



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Figs. 9-16. *Agrias claudina* from BRAZIL: Rondônia; vicinity of Cacaulândia (same specimens as Figs. 1-8, ventral surface).



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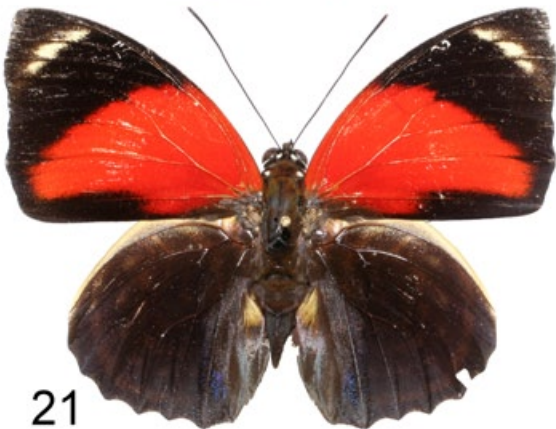
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Figs. 17-24. *Agrias* from BRAZIL: Rondônia; vicinity of Cacaulândia (all males, dorsal surface). Figs. 17-20. *A. claudina*, Fig. 17. 21 Sep 1996; Fig. 18. 20 Feb 1997; Fig. 19. 27 Mar 1994; Fig. 20. 23 Jan 1996; Figs. 21-24. *A. amydon*, Fig. 21. 1 Mar 1995; Fig. 22. 5 Jan 1994; Fig. 23. 12 Mar 1997; Fig. 24. 21 Feb 1995.



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Figs. 25-32. *Agrias* from BRAZIL: Rondônia; vicinity of Cacaulândia (same specimens as Figs. 17-24, ventral surface).

the black markings fused as supposedly typical for *A. pericles* (Figs. 29-30, 32) and one had a yellow wedge separating the black elements as typical of *A. amydon* (Fig. 31). This latter male additionally differs from the remainder by the submarginal band of macules on the ventral hindwing being entire and evenly curved (*vs.* this band composed of macules narrowly separated and with the posteriormost offset distad), the medial black lines evenly curved into cell Sc+R₁-Rs (*vs.* sharply angled), and relatively extensive and continuous black in ventral forewing cell CuA₂-2A (*vs.* the proximal portion separated from the distal portion). The male genitalia also seem to differ between the phenotypes (proportions of the valvae, etc.), but the sample from Rondônia is too small to assess the considerable variation seen in the morphology of these structures. Neild (1996) included *A. pericles* (northeastern South America and the Amazon Basin) as a subspecies of *A. amydon* (Mexico, Central America, and the Andean foothills) citing the lack of information on potential sympatry and intergradation; Lamas (2004) embedded the taxa of the former within several subspecies of *A. amydon*. The only known area of potential sympatry and interaction is in southeastern Peru, based on specimens without reliable data (Descimon 1977, Neild 1996). The additional occurrence of the two phenotypes in central Rondônia suggests that the status of these taxa requires reexamination.

In conclusion, the two species of *Agrias* known from central Rondônia, Brazil, exhibit considerable intraspecific variation. Neild (1996) noted considerable variability of the pattern on the dorsal hindwing of both *A. amydon* and *A. claudina* in Venezuela. This was attributed to intraspecific variability in the former and to intergradation between subspecies of the latter. This seems also to apply to species in Rondônia, but it should be noted that there are few data available assessing non-commercial series of individuals from single localities.

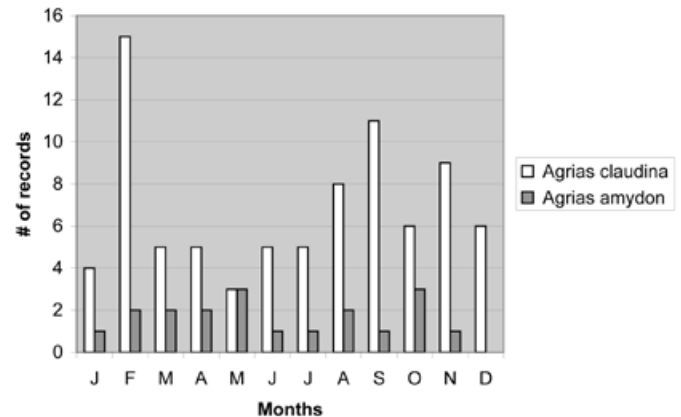
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Fig. 33. Phenology of *Agrias* in the vicinity of Cacaulândia, Rondônia, Brazil.



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