

HESPERIIDAE OF RONDÔNIA, BRAZIL: NOTES ON *TALIDES* HÜBNER (LEPIDOPTERA: HESPERIIDAE: HESPERIINAE)

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ABSTRACT.— The species of *Talides* Hübner, [1819] (Hesperiidae: Hesperinae) are characterized and their taxonomy is discussed. The taxa considered as subspecies by Evans (1955) are apparently species in their own right based on differences in genitalia and, often, sympatrics and are herein raised to specific status: *Talides hispa* Evans, 1955, **new status**; *Talides cantra* Evans, 1955, **new status**; *Talides riosa* Evans, 1955, **new status**. Four species occur in central Rondônia: *Talides sergestus* (Cramer, 1775), *T. hispa*, *Talides sinois* Hübner, [1819], and *T. riosa*. The male genitalia are illustrated for all taxa of the genus, as are those for some females.

KEY WORDS: Central America, Colombia, Costa Rica, Ecuador, genitalia, *Hylephila*, Mexico, Neotropical, Panama, South America, taxonomy, Venezuela.

Continuing studies of the hesperiid fauna (Lepidoptera: HesperIIDae) in the Cacaúlândia area of central Rondônia, Brazil, have produced a number of new species and taxonomic insights. This paper presents some comments on the taxonomy and variation of *Talides* Hübner (Hesperinae). The co-occurrence of two putative subspecies of one species prompted a closer examination of these and other taxa of the genus from both Rondônia and elsewhere.

TALIDES Hübner, [1819]

Despite being a small genus, *Talides* has been fraught throughout its history with misidentifications, mistaken synonymies, misbegotten names, misplaced species, misinterpretations of species limits, and, undoubtedly, miscible series. This was due, in part, to the overall similarity between the taxa in both superficial and genital characters. Some of these topics were addressed by Hayward (1939), Bell (1941), Evans (1955), and de Jong (1983); Evans (1955) created yet additional problems by describing subspecies which appear to be specific level taxa. Further, Bridges (1988) retained *Talides basistrigata* Eaton, 1932, within this genus. This is obviously not a taxon of *Talides*, but of *Hylephila* Billberg, 1820, where it had been correctly placed by Evans (1955).

Talides is a compact genus within which Evans (1955) recognized three species and an additional three subspecies. The wings are broad, the forewing has large pale yellow hyaline macules (with sexual dimorphism in their placement) and a large and prominent stigma on the male, the hindwing has a small central hyaline macule, and the ventral hindwing is mottled. *Talides* is characterized by long antennae, broad palpi, a long discal cell on the forewing, and distinctive male genitalia with a long spike extending caudad from the caudal end of the tegumen, an uncus with a prominent row of setae on either side of the tegumen spike, a rather broad and long valva with a curved and serrate harpe, an aedeagus with a pair of flaps on the caudal end which meet mid-dorsad, and a distinctive "bridle"-like juxta. Evans (1955) mentioned spinate mid-tibiae; spines are present, but virtually undetectable without removing the mid-tibial scales.

Females are similar to males with much broader and rounder wings. In some instances, these are tentatively associated herein based on color and pattern similarities to males. Female genitalia have not been previously described. On these, the lamella postvaginalis is generally shallowly V-shaped throughout and usually sloping to a central U-shaped notch. The caudal end of each lateral

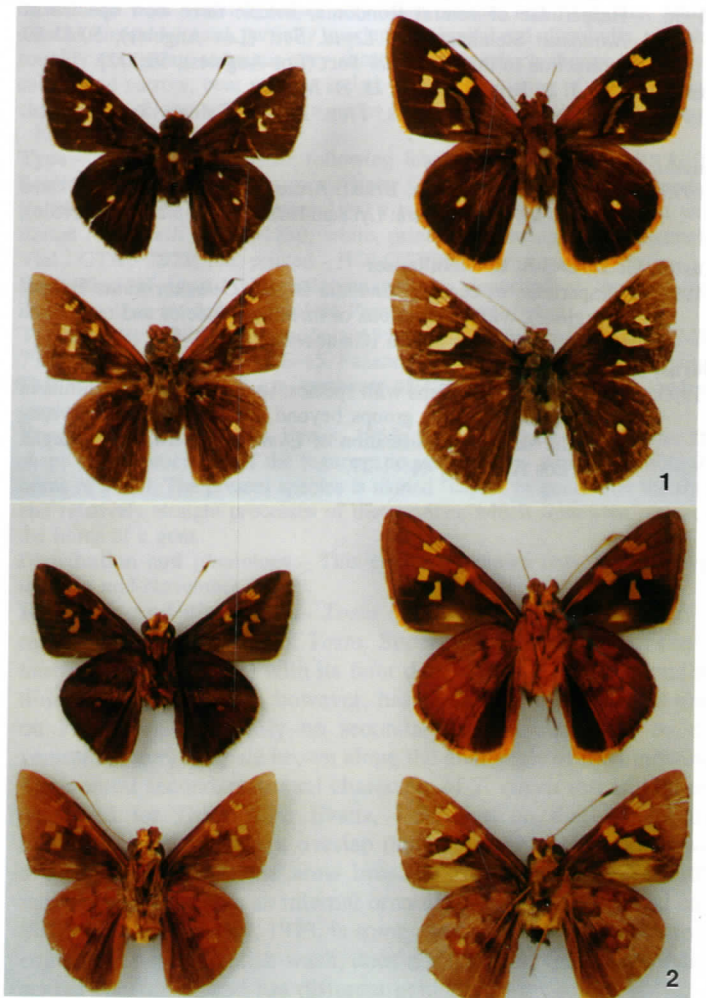


Fig. 1. *Talides* species, dorsal surface. **Upper left** - *T. sergestus*; male, BRAZIL: Rondônia; 5 km S of Cacaúlândia, 14 Nov 1994; **upper right** - *T. alternata*, male, COSTA RICA: Puntarenas Prov.; Monteverde, 25 Sep 1987; **lower left** - *T. cantra*, male, COSTA RICA: Limon Prov.; Playa Bananita, 13 Sep 1986; **lower right** - *T. cantra*, female, COSTA RICA: Heredia Prov.; Chilamate, Finca El Bejuco, 26 Sep 1986.

Fig. 2. *Talides* species, ventral surface. Same specimens as in Fig. 1.



Fig. 3. *Talides* species, dorsal surface (all from BRAZIL: Rondônia; vicinity of Cacaúlândia). **Upper left** - *T. riosa*, male, 21 Mar 1989; **upper right** - *T. riosa*, female, 28 Oct 1996; **center left** - *T. sinois*, male, 25 Sep 1992; **center right** - *T. sinois*, female, 8 Dec 1990; **lower left** - *T. hispa*, male, 21 Sep 1996; **lower right** - *T. hispa*, female, 2 Mar 1995.

Fig. 4. *Talides* species, ventral surface. Same specimens as in Fig. 3.

lobe is rectangular. The lamella antevaginalis is somewhat asymmetrical, offset to the left. The lateral lobes are elongate, expand caudad, and are generally serrate with clusters of short bristles on their inner edges. A shorter and narrow lobe extends between the lateral lobes; this usually tapers caudad. The cephalad 1/3 of the sterigma is covered by a transparent membrane. The ductus bursae is broad, expands gradually cephalad, and joins with a barely broader and globular corpus bursae.

The genus is widespread in the Neotropics, occurring from Mexico to southern Brazil, but the various species never seem to be common and often do not appear on local lists generated from usually relatively short-term surveys (e.g., Monroe and Miller, 1967; Brown and Mielke, 1968; Biezanko and Mielke, 1973; Mielke, 1973; Mielke and Casagrande, 1991; Lamas *et al.*, 1991; Austin *et al.*, 1996). They often are found during longer term or more intensive investigations (e.g., Brown and Mielke, 1967; Steinhäuser, 1975; Emmel and Austin, 1990; Lamas, 1994). The distributions given by Evans (1955) showed potential geographic overlap among some of the described subspecies and these taxa differ, albeit subtly, in their superficial appearance and genital morphology. Four species occur in central Rondônia; all are uncommon.

Talides sergestus (Cramer, 1775)

(Fig. 1-2, 5, 11)

Talides sergestus is easily determined superficially by the triangular gray area at the apex of the ventral forewing (this is represented by a narrower band along the margin on other *Talides* species) and a transverse pale band on the ventral hindwing. The species is distributed from Mexico to southern Brazil (Evans, 1955).

Records for the Rondônia study area are for March through May, October, and November.

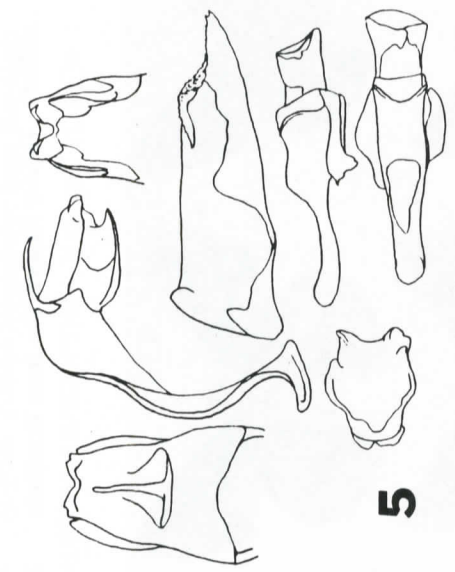
The male genitalia were illustrated by Bell (1941) and Evans (1955); those illustrated as *T. sergestus* by Godman and Salvin (1879-1901) and Hayward (1934) are of *T. cantra* (see below). These (Fig. 5) have a very short process from the tegumen and a very narrow and tapering harpe. The female genitalia (Fig. 11) do not have the quadrate caudal end of the lamella postvaginalis as seen on the other species of the genus and the central process of the lamella antevaginalis is expanded caudad instead of tapering.

Talides alternata Bell, 1941

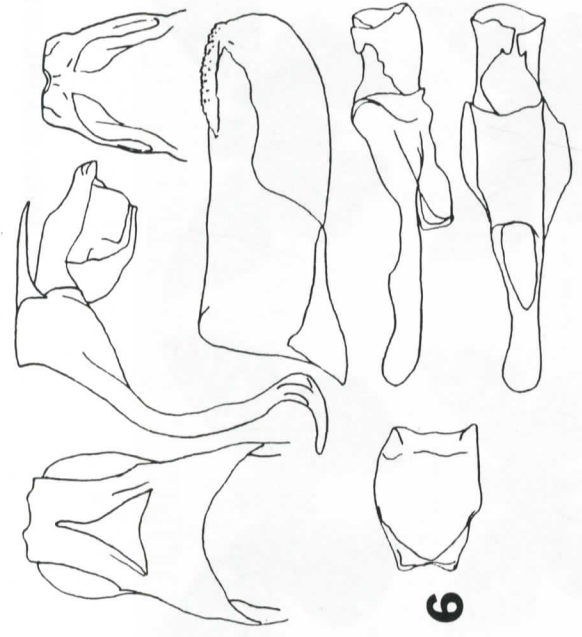
(Fig. 1-2, 6)

Talides alternata is another superficially distinctive species despite the statements by de Jong (1983) that differences between *T. sinois* and *T. alternata* were slight and that Evans' (1955) characters were variable. Part of this confusion may have been due to not recognizing *T. alternata* or that the variation seen was not intraspecific, there being more than one species very similar to *T. sinois* present. The wings of *T. alternata* are distinctively broader and more rounded than other congeners and the fringes of both wings are broadly bright yellow-orange. The species is apparently widely distributed from Mexico to southern Brazil (Bell, 1941; Evans, 1955; Freeman, 1976; de Jong, 1983).

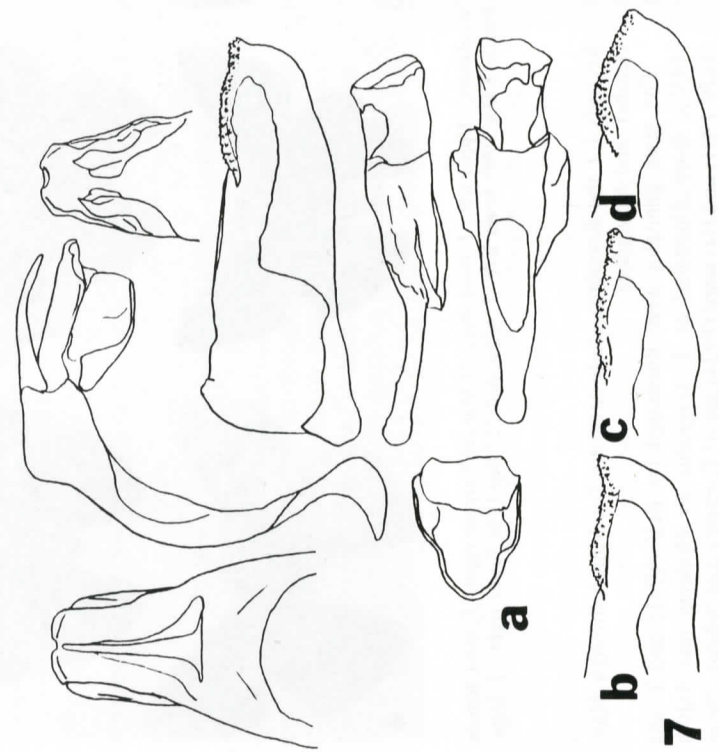
The male genitalia of *T. alternata* (Fig. 6; also illustrated by Bell, 1941; Evans, 1955) have a short tegumen with a central spike obviously not reaching the caudal end of the uncus and a valva with the harpe having a blunt and nearly quadrate caudal end and a relatively short and dentate dorsal edge.



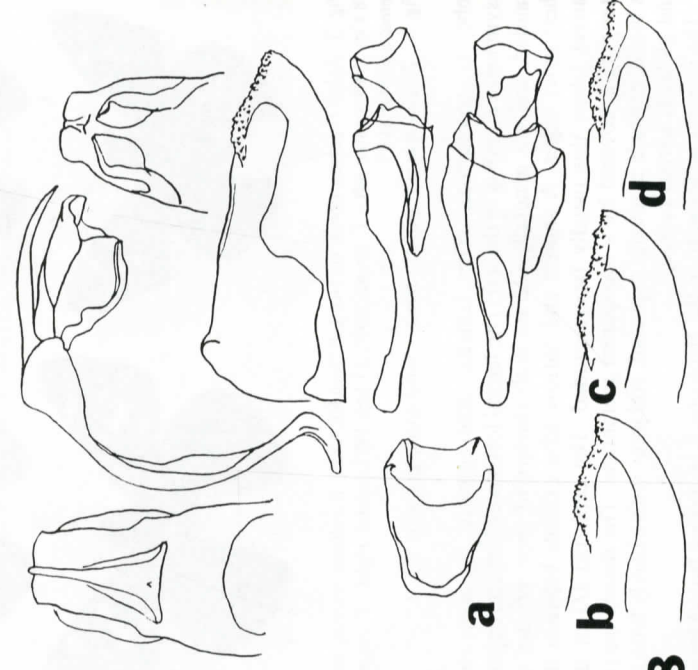
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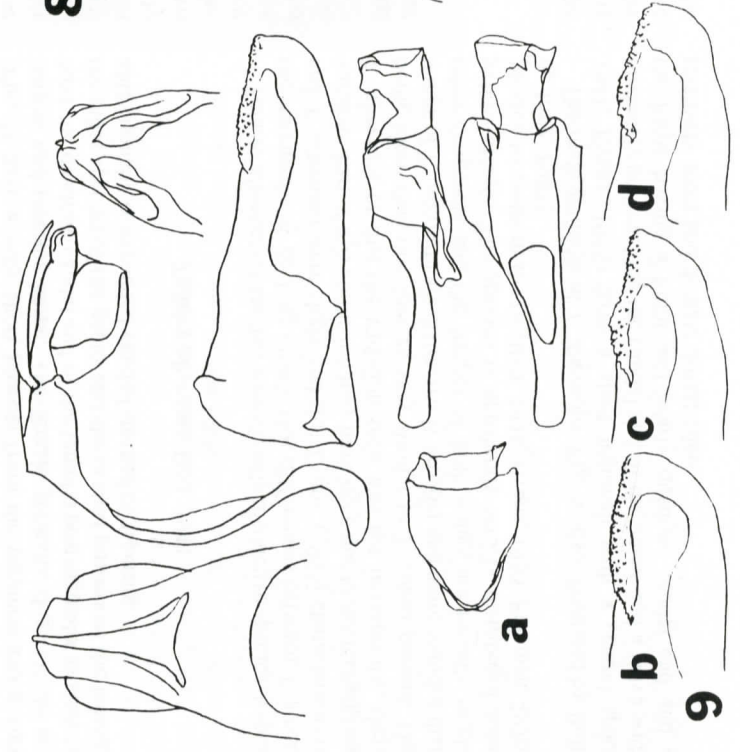
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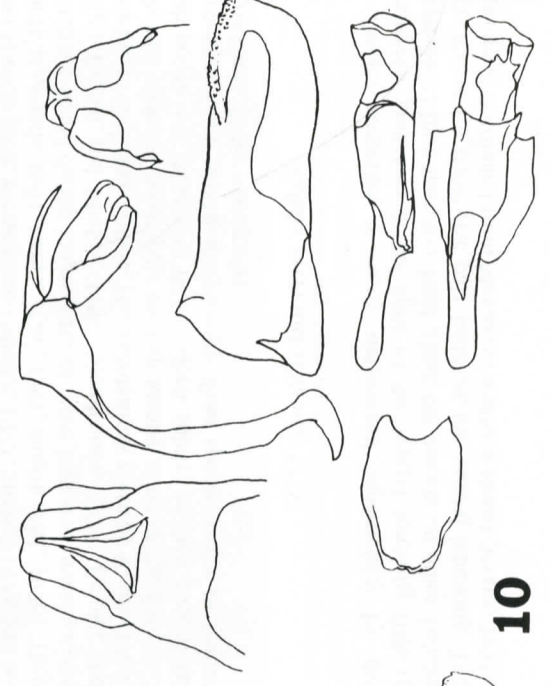
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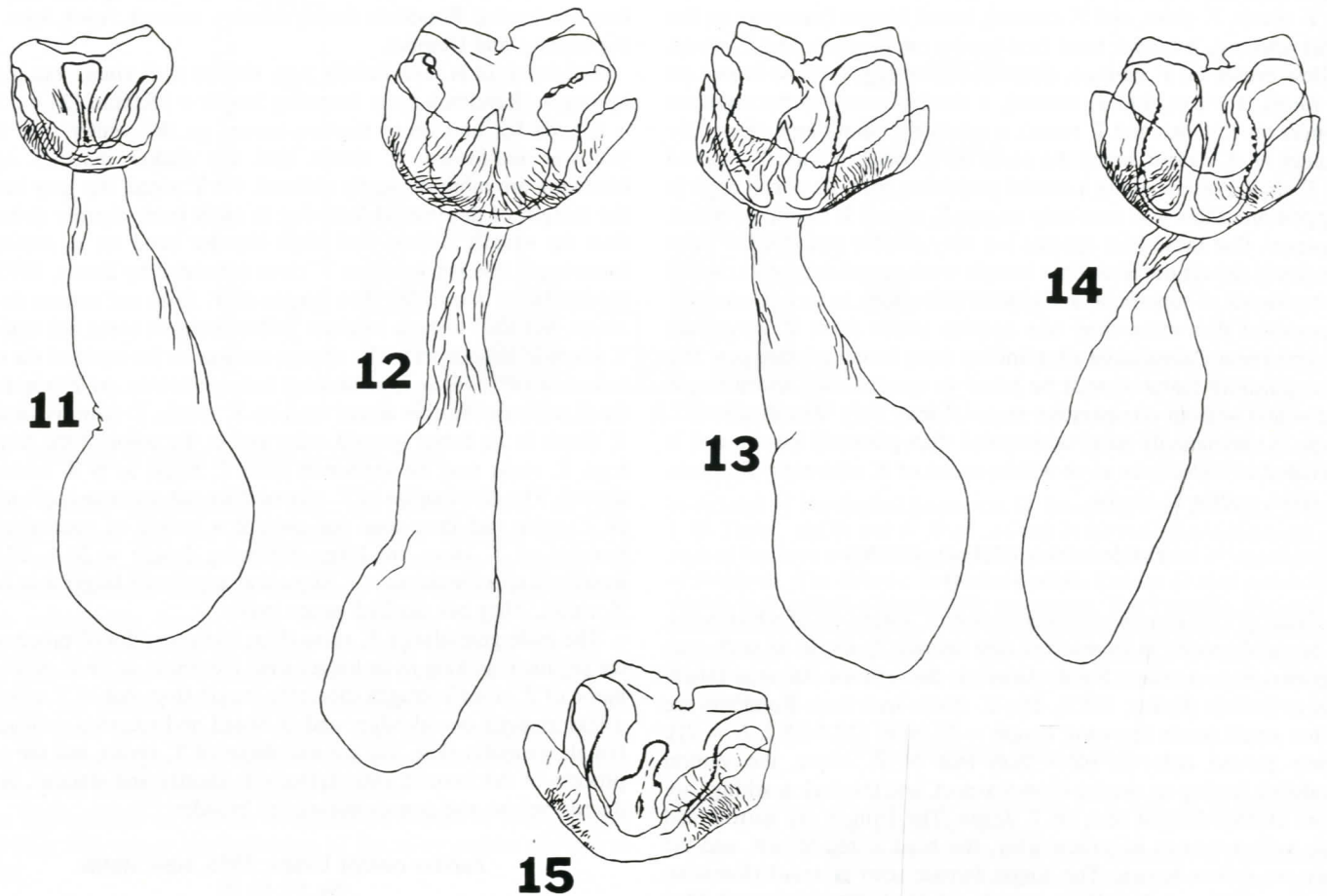


Fig. 11-15. Female genitalia (ventral view) of *Talides* species (all from BRAZIL: Rondônia; vicinity of Cacaúlândia, unless noted). 11. *T. sergestis*, COSTA RICA: Guanacaste Prov.; 1.6km S Las Juntas, 17 Sep 1986 (GTA #7272). 12. *T. hispa*, 2 Mar 1995 (GTA #7271). 13. *T. riosa*, 8 Jul 1993 (GTA #7270). 14. *T. sinois*, 8 Dec 1990 (GTA #7269). 15. *T. cantra*, COSTA RICA: Heredia Prov.; Chilamate, 26 Sep 1986 (GTA #7268; ductus and corpus bursae missing).

***Talides hispa* Evans, 1955, new status**

(Fig. 3-4, 7, 12)

Talides alternata hispa Evans, 1955

Evans (1955) described *T. hispa* as a subspecies of *T. alternata* and gave the distribution as Panama, Colombia, and Venezuela, thus indicating potential sympatry with *T. alternata* in at least the latter two countries. This and the differences between the two taxa in superficial appearance strongly suggest that they are separate species. This is reinforced by additional material of *T. hispa* being seen during this study from Costa Rica, Ecuador, and western Brazil and by differences in the genitalia. The taxon is here raised to specific status. Evans (1955) apparently included *T. hispa* as a subspecies of *T. alternata* based on the "dark orange" fringes and the genitalia (short process from the tegumen, broad harpe that is "not sinuous"). The species has been recorded in central Rondônia in January through April, September, and November.

Fig. 5-10. Male genitalia of *Talides* species (all from BRAZIL: Rondônia; vicinity of Cacaúlândia, unless noted). 5. *T. sergestus*, 26 Mar 1994 (GTA #7243). 6. *T. alternata*, COSTA RICA: Puntarenas Prov.; Monteverde, 25 Sep 1987 (GTA #7246). 7. *T. hispa*, a. 18 Nov 1991 (GTA #1618), b. 30 Jan 1994 (GTA #7258), c. 30 Jan 1994 (GTA #7259), d. 18 Apr 1995 (GTA #7238). 8. *T. sinois*, a. 19 Nov 1991 (GTA #1698), b. 31 May 1994 (GTA #7239), c. 12 Sep 1994 (GTA #7236), d. 15 Aug 1993 (GTA #3949). 9. *T. riosa*, a. 24 Apr 1991 (GTA #7241), b. 20 Mar 1991 (GTA #7240), c. 30 Sep 1993 (GTA #7255), d. 21 Mar 1989 (GTA #395). 10. *T. cantra*, COSTA RICA: Heredia Prov.; Chilamate, 29 Sep 1987 (GTA #7245).

Talides hispa is relatively large (male forewing length in Rondônia = 25.1mm [24.3-25.7, N = 4]), dark, with a dull red-brown costa on the dorsal forewing, relatively broad (but not as broad as on *T. alternata*) yellow-orange to orange-gray fringes on the hindwing, and pale brown fringes on the forewing (note that *T. alternata* has prominent yellow-orange fringes on both wings). The head of *T. hispa* is brown and the legs are chestnut-brown. On some individuals of *T. hispa*, as well as on *T. sinois* and *T. riosa*, there is a smaller hyaline macule adjacent to that typical of the genus; there is nearly invariably a small pale macule in this position on the venter. The single female of *T. hispa* from Rondônia is large (forewing length = 27.7mm), has a broad yellow-orange fringe on the hindwing, and an indistinct ventral pattern.

The male genitalia of *T. hispa* (Fig. 7) have a longer tegumen than do those of *T. alternata*; the spike from the tegumen, while shorter than the uncus (occasionally nearly as long as the uncus), is longer than on *T. alternata*; the uncus is thinner (dorsal view); and the valva is more elongate. On the valva, the harpe is less quadrate and the dentate dorsal edge is longer than on *T. alternata* and is often somewhat produced caudad. The female genitalia (Fig. 12) are characterized by a broad central process of the lamella antevaginalis and a rather elongate ductus bursae and corpus bursae.

Talides hispa is easily confused with the three following species, but usually may be identified by a combination of relatively large size (at least *T. cantra* and possibly *T. sinois* appear to be smaller), dark overall aspect (the other three species are paler), relatively

vague mottling on the ventral hindwing (somewhat more well-defined on *T. sinois*, *T. riosa*, and *T. cantra*), broad fringes (narrower on the other species), a brown head (red-brown on *T. sinois* and *T. riosa*, yellow brown on *T. cantra*), chestnut-brown legs (yellow-brown on *T. sinois*, *T. riosa*, and *T. cantra*), a short process on the tegumen (longer on *T. sinois* and *T. riosa*), a relatively blunt harpe (generally blunter on *T. cantra*, about the same on *T. riosa*, obviously tapered on *T. sinois*) often having a caudal projection from its dorsal edge (a suggestion of this was seen only on one *T. riosa*). It should be noted, however, that these four species are very similar and that the three species in the central Rondônia sample were sorted only after careful comparisons of superficial and genital characters; in fact, it was only recognized that more than one species (aside from *T. sergestus*) occurred near Cacauplandia after finding three female phenotypes. The distinguishing features must be taken in combination and a single individual without comparative material may defy identification. *T. hispa* is undoubtedly more widespread than presently known and is included in collections as or within series of *T. alternata*, *T. sinois*, *T. riosa*, and/or *T. cantra*.

***Talides sinois* (Hübner, [1819])**

(Fig. 3-4, 8, 14)

Evans (1955) recognized three taxa of *T. sinois*, all of which seem to be valid species in themselves (see below). *T. sinois*, as such, was reported from northern South America, through the Amazon Basin, and to Bolivia (Evans, 1955). The *T. sinois* seen from Rondônia are rather small (male forewing length = 23.9mm [22.4-25.2, N = 7]). Their ground color is paler than that of *T. hispa*, the ventral hindwing having an orange-brown aspect, and the dark markings are more clearly defined than on *T. hispa*. The fringes are narrow and pale yellow-orange to yellow-gray, the head is red-brown, and the legs are yellow-brown. The single female seen is small (forewing length = 25.1mm). Rondônia records are for February through May and August through December.

The male genitalia of *T. sinois* (Fig. 8) have a long process of the tegumen which is the length of the uncus or slightly longer. The valva is long with the long harpe having a somewhat sinuous dorsal edge and a gradually tapered caudal end. The genitalia illustrated by Godman and Salvin (1879-1901) and Hayward (1934) as *T. sergestus* were attributed to *T. sinois* by Bell (1941) and Evans (1955). These are not that taxon, but of *T. cantra* (see below). The female genitalia (Fig. 14) have a relatively long, narrow, and straight central process of the lamella antevaginalis and the ductus bursae and corpus bursae are shorter than on *T. hispa*.

Talides sinois may usually be readily identified by its long and tapering harpe with a sinuous upper edge. Occasional *T. riosa* approach this in the shape of their harpe, but superficial characters usually aid in their identification (see below). *T. hispa* may also have a somewhat tapered harpe, but are identified by their dark color, the shorter tegumen process, and the elongation of the upper edge of the harpe.

***Talides riosa* Evans, 1955, new status**

(Fig. 3-4, 9, 13)

Talides sinois riosa Evans, 1955

Talides riosa was described as a subspecies of *T. sinois* by Evans (1955) and has been so retained (e.g., Bridges, 1988). The two have different superficial (wings of *T. riosa* less produced, fringes more orange) and genital characters (harpe broad and rounded instead of tapered) which suggested that they may be separate species. Confirming this is the occurrence of both in the vicinity of Cacauplandia, and *T. riosa* is here raised to specific status. The distribution of *T. riosa* was reported by Evans (1955) as "Maranhm,

Matto Grosso, and southern Brazil (Rio)". The species has been found in central Rondônia during January through April, June, July, September, and October.

Talides riosa is superficially very similar to *T. sinois*, but tends to be larger (Rondônia male forewing length = 25.0mm [24.4-25.7, N = 8]), darker and more maroon-brown on the venter than is the yellower red-brown *T. sinois*, and the darker macules on the hindwing are more distinctly defined. On *T. riosa*, the gray band on the margin of the ventral forewing is often more sharply delineated than the usually diffuse and often broader band on *T. sinois*. The forewing is less produced on *T. riosa* (as stated by Evans, 1955) and the hindwing is broader. The fringes of *T. riosa* are narrow as on *T. sinois*, but tend to be a brighter yellow-orange; some are similar to *T. hispa* in this respect. The orange scaling on the costa of the dorsal forewing of *T. riosa* is red-brown (orange-brown on *T. sinois*) and tends to extend further distad than on *T. sinois*. *T. riosa* is similar to *T. sinois* in its dorsal ground color and in the color of the head and legs. *T. riosa* may be separated from *T. hispa* as is *T. sinois* (see above). The distribution of *T. cantra* does not seem to approach that of *T. riosa* and thus does not present a source of confusion. The females of *T. riosa* are large (forewing length = 26.4, 27.6mm, Rondônia specimens) as is *T. hispa* and apparently larger than female *T. sinois*. They are marked as are males.

The male genitalia of *T. riosa* (Fig. 9) have a dorsal process from the tegumen as long as or longer than the uncus as on *T. sinois*. The harpe of *T. riosa* averages shorter in length than that of *T. sinois*, has a less sinuous dorsal edge, and is broad and rounded caudad. The female genitalia (Fig. 13) are like those of *T. sinois*, but the central process of the lamella antevaginalis is shorter and sinuous, and the ductus bursae and corpus bursae are broader.

***Talides cantra* Evans, 1955, new status**

(Fig. 1-2, 10, 15)

Talides sinois cantra Evans, 1955

Talides cantra was also described as a subspecies of *T. sinois* by Evans (1955) with a distribution from Mexico to Colombia and Venezuela. The genitalia of this taxon exhibit more differences from *T. sinois* than does *T. riosa* and, in spite of their apparent allopatry, *T. cantra* is here considered a recognizable species. Sympatry should be looked for in northern South America.

The male genitalia of *T. cantra* (Fig. 10) have the process from the tegumen obviously not reaching the caudal end of the uncus. The valva is shorter than that of *T. sinois*, the harpe being short with a blunt and rounded caudal end. The genitalia of *T. cantra* were illustrated by Godman and Salvin (1879-1901) and Hayward (1934, obviously copied from the Godman and Salvin figure) as *T. sergestus*. These were identified by Bell (1941) as *T. sinon* (Stoll, [1781]) (a homonym of *Papilio sinon* Poda von Neuhaus, 1761), but no taxonomic significance was attached to the differences between these illustrated genitalia and those he illustrated as *A. sinon*. Evans (1955) illustrated the valva of *T. cantra*, recognized (as subspecific) the differences between *T. sinois* and *T. cantra*, but identified the Godman and Salvin figure as *T. sinois*.

The female genitalia (Fig. 15) leave no doubt that *T. cantra* is a good species. The sterigma is somewhat narrower than are those of *T. hispa*, *T. sinois*, and *T. riosa* and the central process of the lamella antevaginalis tapers abruptly to a rounded (rather than sharply pointed) caudal end.

DISCUSSION

The recognition of the three taxa of *T. sinois* (*sensu* Evans, 1955) as specific level taxa presents yet another example of species replac-

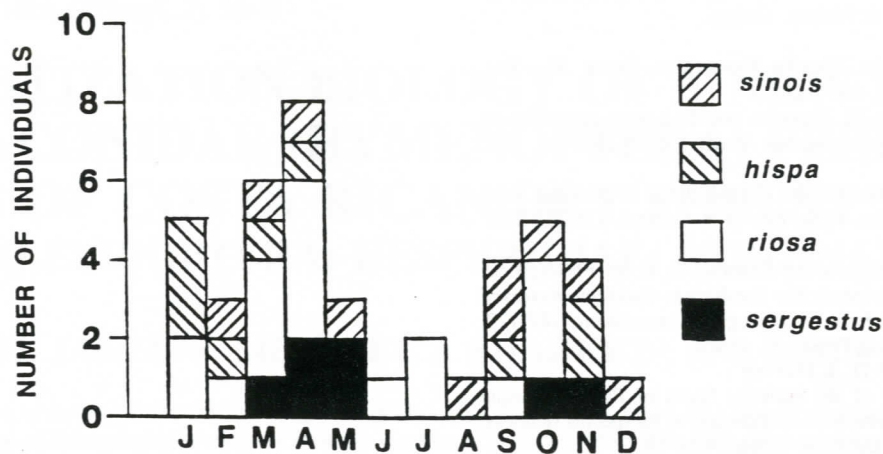


Fig. 16. Phenology of *Talides* in central Rondônia, Brazil.

ing one another geographically (e.g., see Burns, 1996). In such instances, where taxa are superficially nearly identical and very similar in their genitalia, it is difficult, without sympatry, to differentiate between allopatric species or geographical replacement at the subspecific level. Only with samples from within the "appropriate" geographic locales of potential sympatry (as for *T. sinois* and *T. riosa* in central Rondônia) can there be hope of providing the answer to the proper taxonomic level for the taxa involved. Such questions will remain into the foreseeable future within the relatively poorly studied Neotropics and luck, more than anything, will slowly resolve these problems.

The flight period of *Talides* in Rondônia occurs in two apparent peaks (Fig. 16), one at the beginning of the rainy season and one at the end.

Key to the Species of *Talides*

1. Ventral forewing with triangular gray area apically, ventral hindwing with pale transverse band *sergestus*
 Ventral forewing with relatively narrow gray band along outer margin, ventral hindwing without pale transverse band 2
2. Wings broadly rounded, fringes of both wings broad and bright yellow-orange, male with tegumen process very short . . . *alternata*
 Wings not broadly rounded, fringes narrower and not bright yellow-orange (if yellow-orange, this pale or mixed with gray especially on the forewing), male with tegumen process longer . . . 3
3. Male with tegumen process short, usually not reaching end of uncus 4
 Male with tegumen process long, usually reaching or exceeding end of uncus 5
4. Wings dark, ventral hindwing with relatively vague mottling, hindwing fringe usually with yellow at least at tornus, head brown, legs chestnut-brown, male with harpe broad but not quadrate with upper edge often somewhat elongated caudad *hispa*
 Wings paler, ventral hindwing with mottling better defined, hindwing fringe usually without yellow, head and legs yellow-brown, male with harpe more quadrate without upper edge elongated caudad . . . *andra*
5. Male with harpe gradually tapered, venter somewhat yellower *sinois*
 Male with harpe broadly rounded, venter darker *riosa*

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