

# THE GENUS *THEOPE*: FOUR NEW SPECIES AND A NEW SUBSPECIES (LEPIDOPTERA: RIODINIDAE)

JASON P. W. HALL AND KEITH R. WILLMOTT

Dept. of Entomology and Nematology, University of Florida, Gainesville, Florida 32611, USA

**ABSTRACT.**— Four new species and a new subspecies of riodinid in the genus *Theope* Doubleday, 1847, are described from Central and South America: *Theope brevignoni* n. sp., *Theope dabreræ* n. sp., *Theope devriesi* n. sp., *Theope kingi* n. sp., *Theope sisemina tabacona* n. ssp.

**KEY WORDS:** Colombia, Costa Rica, Ecuador, Guyana, hilltopping, Neotropical, Panamá, Peru, *Theope brevignoni* n. sp., *Theope dabreræ* n. sp., *Theope devriesi* n. sp., *Theope kingi* n. sp., *Theope sisemina tabacona* n. ssp.

The genus *Theope* Doubleday, 1847, has always been a bane to the riodinid specialist. The great rarity of some species, combined with their sexual dimorphism and uncanny interspecific similarities, has led to some confusion in the arrangements of most collections and an uncertainty as to exactly how many species there are in the genus. Bates (1868) provided a firm framework for the genus by describing numerous species from the Amazon basin, and this was strengthened by subsequent authors, especially Godman and Salvin (1878, [1886], 1897), working in Central America. Hans Stichel, the most ardent contributor to riodinid systematics this century, added surprisingly little to our knowledge of the genus *Theope*, probably due to the rather small and incomplete collection of this genus with which he worked in the Zoologische Museum at Humboldt University in Berlin, Germany. The latter part of this century has seen little attention focused on the genus (but see Gallard and Brévignon, 1989; D'Abrera, 1994; Willmott and Hall, 1994).

Seitz (1920), in his opus on the Macrolepidoptera of the world, skeptically regarded many of the described species in *Theope* as "deviations of the flying place" or forms. During the course of revisionary work on the genus by the first author, it has become apparent that this statement is amply true and that many names do indeed need to be placed in synonymy. However, at the same time, several rare and unnamed taxa do exist, and as a start in addressing this incompleteness of knowledge we herein describe and name four new species and a new subspecies in the genus *Theope*.

## *Theope kingi* Hall & Willmott, new sp.

Fig. 1a-d; 7

**Description.**— MALE: forewing length 18.5mm. *Dorsal surface:* forewing ground color black; basal area blue extending in a semicircle from base to near tornus, blue extending more towards margin in cell 1A+2A. Hindwing blue with a thin black outer margin, black above M<sub>3</sub> and the discal cell and in the upper half of the discal cell. *Ventral surface:* both wings entirely pale yellow, paler along the anal margin of the forewing. Labial palpi dorsal surface black, ventral surface yellow.

Eyes bare and brown. Frons yellow with a vertical medial brown stripe. Antennae dorsal surface black, ventral surface black and white banded, black clubs, orange tips. Thorax and abdomen dorsal surface black, ventral surface yellow. Genitalia (Fig. 7): tip of uncus extended into two points, valvae projecting upwards and pointed with a very small lower projection; small sclerotized structure within the aedeagus.

**FEMALE:** forewing length 19mm. Similar to male except in the following respects: more rounded wingshape. *Dorsal surface:* blue of almost identical pattern but paler. *Ventral surface:* paler yellow.

**Types.**— *Holotype* ♂: PANAMA.— *Canal Zone:* Gatun, Jun 1971 (G. B. Small) (USNM). *Allotype* ♀: same locality data as above, 9 Feb 1973 (G. B. Small) (USNM).

**Paratypes:** PANAMA.— 2 ♂, same locality data as above, Feb 1973, Jun 1971 (G. B. Small) (USNM). 1 ♂, *Canal Zone:* Piña, 5 Feb 1973 (H. L. King) (AME). 1 ♂, same locality data as preceding, Jun 1971 (G. B. Small) (USNM). 2 ♀, *Panamá Prov.:* 5mi. N. of El Llano (330m), Jun 1978 (G. B. Small) (USNM).

**Etymology.**— This species is named in honor of H. L. King, who amassed invaluable collections of riodinids from Panamá, and who collected the first specimen of this species seen by the authors.

**Diagnosis.**— *T. kingi* n. sp. is a large species which most closely resembles *T. excelsa* Bates, 1868 (Venezuela-Peru, Brazil, Guianas, Trinidad). However, *T. kingi* has a broader wing-shape, with more rounded hindwings that do not end in a bulbous tip at the tornus of the hindwing, and a lighter yellow ventral surface. The color of the dorsal surface is purple rather than blue, and on the forewing it is restricted to a much smaller area along the anal margin, while on the hindwing, half of the cell is black. The shape of the valvae and rami of the male genitalia also differs between the two species. *T. sericea* Bates, 1868, is a smaller species with a more compact wing-shape, darker chrome yellow ventral surface, more blue on the forewing dorsal surface, and often a large black spot in the cell of the hindwing dorsal surface. The male genitalia differ most conspicuously in the shape of the aedeagus, which in *T. sericea* is short and stout, with the lower half extended into a point, and containing a multitude of finger-like spines.

**Discussion.**— All of the locality data for this species indicate that

it is restricted to lowland rainforest habitats, where it is very rare. It is currently only known from Panamá, but is probably more widespread in Central America.

*Theope devriesi* Hall & Willmott, new sp.

Fig. 2a-d; 8

**Description.**—MALE: forewing length 14mm. *Dorsal surface:* forewing ground color black; blue patch in basal third of wing including discal cell and area below and slightly basal to it. Hindwing ground color blue; outer and costal margin black, with broader black at apex. *Ventral surface:* both wings dark "pumpkin" orange, slightly darker around outer margins, lighter along forewing anal margin. Labial palpi dorsal surface black, ventral surface yellow. Eyes bare and brown. Frons yellow with vertical medial brown stripe. Antennae dorsal surface black, ventral surface black and white banded, black clubs. Thorax and abdomen dorsal surface dark grey, ventral surface pale yellow. Legs yellow. Genitalia (Fig. 8): uncus and falci short and compact, valvae broad and rectangular, aedeagus blunt.

**FEMALE:** forewing length 14mm. Similar to male except in the following respects: more rounded wingshape. *Dorsal surface:* paler blue, slightly reduced basally at the anal margin. *Ventral surface:* paler orange.

**Types.**—*Holotype* ♂: COSTA RICA.—*Limón Prov.:* Guapiles (BMNH). *Allotype* ♀: PANAMA.—Colón, 15 Feb 1969 (FSCA).

**Paratypes:** GUATEMALA.—1 ♀, Cuyaga, May (Schaus & Barnes coll.) (USNM). PANAMA.—*Canal Zone:* 1 ♂, Madden Forest, Aug 1968; 1 ♂, La Pita, Jun 1963; 1 ♀, Piña, Mar 1970; 1 ♀, Gatun, Apr 1971; 1 ♀, Cocoli, Jun 1963. *Darién Prov.:* 1 ♀, Cana (400m), Sep 1982. *Panamá Prov.:* 1 ♀, N. of El Llano, Cordillera de San Blas. All collected by G. B. Small (USNM). *Canal Zone:* 1 ♀, Piña (AME).

**Etymology.**—This species is named for Philip J. DeVries, who has considerably increased our knowledge of the biology of Costa Rican riodinids.

**Diagnosis.**—This species is immediately distinguishable from the widespread *T. pedias* Herrich-Schäffer, [1853], by the darker orange coloration of the ventral surface and the reduced blue of the forewing dorsal surface. Genitalic differences also exist in the shape of the valvae, aedeagi, and rami (see Fig. 8-9). *T. devriesi* n. sp. appears to be most closely related to *T. pepo* Willmott & Hall, 1994 (Fig. 3a-d), with which it shares the same wing-shape and unusual "pumpkin" orange ventral surface coloration. *T. devriesi* lacks the marginal purple line of the forewing dorsal surface, and has a black border along the margin of the hindwing dorsal surface. The blue on the hindwing dorsal surface is also of a single shade, rather than the two tone purple/blue coloration found in *T. pepo*. On the ventral surface, the outer margins of both wings in *T. devriesi* are not as dark as those in *T. pepo*. The shape of the aedeagus is also very different in the two species (see Fig. 8, 10).

**Discussion.**—In a previous paper (Willmott and Hall, 1994), in which we described *Theope pepo*, we unfortunately associated the wrong female with the male holotype. Unaware, at the time, of the existence of another very similar undescribed species (*Theope devriesi*), we regarded the slight differences observed in the two sympatric female phenotypes (now both named as *T. pepo* and *T. devriesi*) as variation rather than specific differences. This led to a female *T. devriesi* erroneously being designated as the allotype of *T. pepo*. We take this opportunity to correct the error and illustrate matching pairs of males and females for both species.

*Theope devriesi* is quite widely distributed from Guatemala to western Ecuador, while *Theope pepo* appears to have a much more restricted range, currently only known to be western Ecuador. Due to the aforementioned mistake, a female specimen from the Allyn Museum of Entomology, Sarasota, Florida, USA (AME) from Piña, Panamá, was attributed to *T. pepo* in the discussion of the original description, but it is in fact *T. devriesi*.

*Theope sisemina tabacona* Hall & Willmott, new ssp.

Fig. 4a-b; 11a-b

**Description.**—MALE: forewing length 16mm. *Dorsal surface:* forewing ground color dark brown; pale blue triangular patch below the cell, ending before tornus, some blue scaling basally in cell; thin white line in blue patch extending diagonally from Cu<sub>2</sub> to M<sub>3</sub>. Hindwing ground color pale blue; faint line of submarginal elongate brown spots; margins brown with broader expanse in apex. *Ventral surface:* both wings ground color pale brown; submarginal line of small black dots ringed with white; postdiscal discontinuous thin white line bordered basally by darker brown; dark brown line at cell end. Labial palpi dorsal surface black, ventral surface white. Eyes bare and brown. Frons white with a medial black stripe. Antennae black ringed with white, black clubs, brown tips. Thorax and abdomen dorsal surface black with some pale blue scaling, ventral surface white. Legs white. Genitalia (Fig. 11a-b): valvae long and thin, aedeagus long and thin, ramus bifurcate.

**FEMALE:** unknown.

**Types.**—*Holotype* ♂: PERU.—*Cajamarca:* Río Tabaconas, 6000ft [1830m] (BMNH).

**Etymology.**—This subspecies is named for the Río Tabaconas in north Peru, in the vicinity of which the type specimen was captured.

**Diagnosis.**—This subspecies differs from the nominate subspecies in the almost total absence of the dorsal surface white band, the paler blue coloration, and the more extensive blue on the hindwing. The ventral surface reflects the thinner white band on the dorsal surface. The male genitalia of both subspecies are virtually identical.

**Discussion.**—*Theope sisemina sisemina* Seitz, 1920 (figured in D'Abrera, 1994:1003), was described from Río Dagua, west Colombia, and interestingly, specimens from eastern Ecuador are phenotypically very similar. Thus the differences between specimens from Peru and Ecuador would seem to be attributable to subspeciation rather than simple variation.

*Theope dabreræ* Hall & Willmott, new sp.

Fig. 5a-b; 12a-b

**Description.**—MALE: forewing length 13.5mm. *Dorsal surface:* forewing ground color black; semicircular blue patch extending from wing base up to cell end, down to near tornus. Hindwing entirely blue with very thin black margin. *Ventral surface:* both wings golden yellow with a small black patch at the anal margin of the forewing. Labial palpi dorsal surface dark brown, ventral surface yellow. Eyes bare and brown. Frons yellow. Antennae missing. Thorax and abdomen dorsal surface black with some blue scaling, ventral surface yellow. Legs yellow. Genitalia (Fig. 12a-b): valvae long and slender, ramus large with small lateral projections.

**FEMALE:** unknown.

**Types.**—*Holotype* ♂: ECUADOR.—*Napo Prov.:* km 12 Tena-Puyo, Finca San Carlo, 23 Feb 1995 (J. P. W. Hall); to be deposited in the BMNH.

**Etymology.**—This species is named for Bernard D'Abrera, whose magnificently illustrated books on the world's Lepidoptera are testimony to a lifetime devoted to these insects.





Fig. 1-6. 1. *Theope kingi* Hall & Willmott n. sp., holotype ♂: a) dorsal surface; b) ventral surface. Allotype ♀: c) dorsal surface; d) ventral surface. 2. *Theope devriesi* Hall & Willmott n. sp., holotype ♂: a) dorsal surface; b) ventral surface. Allotype ♀: c) dorsal surface; d) ventral surface. 3. *Theope pepo* Willmott & Hall, holotype ♂: a) dorsal surface; b) ventral surface. Ecuadorian ♀: c) dorsal surface; d) ventral surface. 4. *Theope sisemina tabacona* Hall & Willmott n. ssp., holotype ♂: a) dorsal surface; b) ventral surface. 5. *Theope dabrearae* Hall & Willmott n. sp., holotype ♂: a) dorsal surface; b) ventral surface. 6. *Theope brevignoni* Hall & Willmott n. sp., holotype ♂: a) dorsal surface; b) ventral surface.

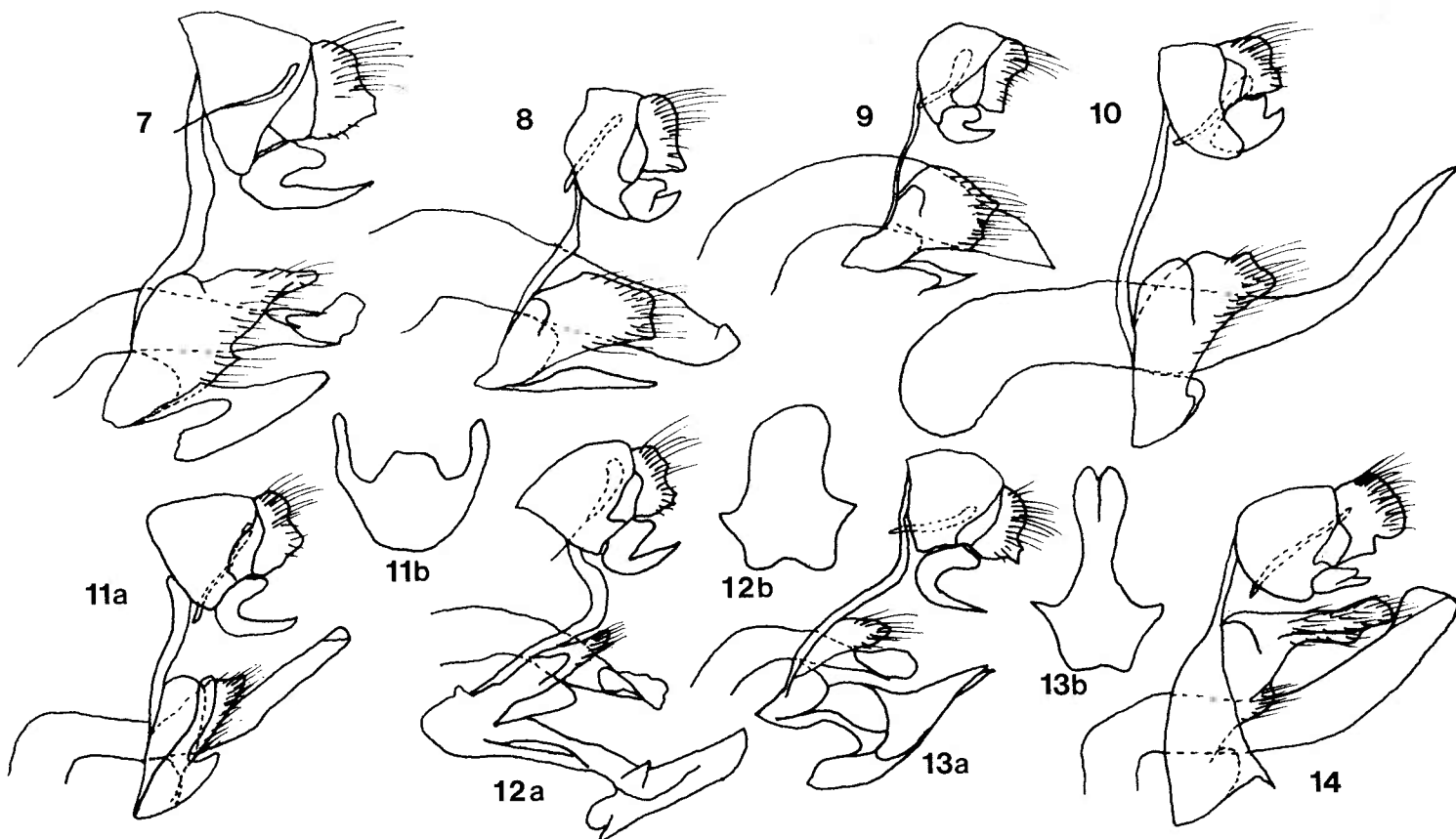


Fig. 7-14. Male genitalia: 7. *Theope kingi* n. sp.: lateral view. 8. *Theope devriesi* n. sp.: lateral view. 9. *Theope pedias* Herrich-Schäffer: lateral view. 10. *Theope pepo* Willmott & Hall: lateral view. 11. *Theope sisemina tabacona* n. ssp.: a) lateral view; b) ventral view of ramus. 12. *Theope dabreræe* n. sp.: a) lateral view; b) ventral view of ramus. 13. *Theope galionicus* Gallard & Brévignon: a) lateral view; b) ventral view of ramus. 14. *Theope brevignoni* n. sp.: lateral view.

**Diagnosis.**— This species is most similar to *Theope galionicus* Gallard & Brévignon, 1989 (Peru, Brazil, Guianas), but differs in the more extensive blue on the hindwing dorsal surface without the small black "notches" at the cell ends. The androconial hairs present on the anal margin of the forewing ventral surface in *T. galionicus* are also absent. The male genitalia show differences, especially in the shape of the ramus, which is bilobed at the tip in *T. galionicus* (see Fig. 13a-b). It is also close in appearance to *T. sericea* Bates, 1868 (Brazil, Guianas), but this is a larger species with more blue on the forewing dorsal surface postdiscally, and less blue on the hindwing dorsal surface along the costal margin. The male genitalia of *T. sericea* has a similarly shaped ramus, but the aedeagus is short and large with the lower half projecting out into a point, and there are a multitude of finger-like projections inside. There is also some resemblance to *T. aureonitens* Bates, 1868, but this species has less blue and a large light brown patch on the forewing dorsal surface, as well as genitalic differences. *Theope dabreræe* n. sp. and *T. aureonitens* are found sympatrically in the lowlands of eastern Ecuador.

**Discussion.**— A single male specimen was captured at approximately 1400h resting beneath a leaf with its wings shut. It was perching on the edge of a light gap at the ridgetop type locality, a site which has recently yielded several new species of riordinids (Hall and Willmott, 1995).

#### *Theope brevignoni* Hall & Willmott, new sp.

Fig. 6a-b; 14

**Description.**— MALE: forewing length 16mm. *Dorsal surface*: forewing ground color black; grey/blue patch in basal third of wing below costa. Hindwing ground color grey/blue, paler along costa; thick, even black margin. *Ventral surface*: forewing ground color brown, margin and basal portion darker brown; submarginal line of small black dots; two crescent shaped white markings, one at cell end, one postdiscally. Hindwing ground color brown, costal and outer margin darker brown; submarginal line of small black dots; three white marks surrounding the cell end. Labial palpi brown. Eyes bare and brown. Frons brown. Antennae white and brown banded, brown clubs. Thorax and abdomen dorsal surface black, ventral surface light brown. Legs light brown. Genitalia (Fig. 14): uncus elongated and rounded, falci small, upper part of valvae long and projecting, aedeagus blunt.

FEMALE: unknown.

**Types.**— *Holotype* ♂: GUYANA.— Río Essequibo, Aunai (BMNH).

**Etymology.**— This peculiar species is named for both Christian Brévignon and Jean-Yves Gallard, in recognition of the extensive work they have been doing on the riordinid fauna of French Guiana.

**Diagnosis.**— The wing pattern of the ventral surface is unusual but the dorsal surface pattern and male genitalic characters are typical of the genus *Theope*. It appears to have closest affinities with *Theope methemona* Bates, 1868, with which it shares a similar wing-shape (although the wings of *T. brevignoni* n. sp. are

slightly more pointed), dorsal surface pattern and coloration, and elements of the genitalia. The ventral surface, however, distinguishes it from all other species in the genus.

**Discussion.**— We have only been able to locate one specimen of this extremely rare species in museums, and Brévignon and Gallard (pers. comm.) report that they have not found this species in French Guiana, where it might be expected to occur, near to the type locality.

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