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SUPPLEMENT 1

A NEW GENUS OF HAIRSTREAK FROM
CENTRAL AND SOUTH AMERICA
(Lycaenidae, Theclinae)

Col. S. S. Nicolay, USMC (Ret.)
1500 Wakefield Drive, Virginia Beach, Virginia

INTRODUCTION

In a recent issue of the Journal of the Lepidopterists' Society appeared a statement that the taxonomic status of the South American "Theclas" is chaotic (Brown and Mielke, 1967). For those familiar with the tropical Theclinae, this statement comes as no surprise. Indeed, it may be expanded to include most of the tropical hairstreaks of the New World. The purpose of this work is to attempt to clarify the taxonomy of one small segment of the Theclinae (Strymonini) of the American tropics.

At infrequent intervals, I have received small shipments of hairstreaks from a few collectors in South and Central America. Among these, three species were of particular interest; each was represented by relatively good series and included both sexes; each bore an unusual resemblance to the other in size and wing shape, if not in color and pattern. The three species were tentatively identified and placed together as a single group, although they were from two different groups in Seitz (1920). A study of the male genitalia confirmed the validity of the single group concept.

During the past six years I have collected four additional species of this new genus in the Republic of Panama, the Canal Zone and in Colombia and Brazil. Recently, representatives were found in the collections of the Smithsonian Institution, the American Museum of Natural History, and the Carnegie Museum. A single female of a new species was found in a series of miscellaneous accessions in the British Museum (Natural History). Analysis of these 10 species indicates they belong to a distinct and narrowly defined genus, characteristic in size, wing shape and general pattern. The male and female genitalia are very distinctive. These, plus other morphological characters, should make recognition of any additional species relatively easy.

The original descriptions of many of the species treated herein are sketchy. Indeed, the descriptions may be applied to any number of species outside this new genus. Therefore, each is here redescribed and figured. The illustrations were made by the author; the photographs, with the very able technical assistance of SSgt. Robert Prisler, U.S. Marine Corps.

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In Brazil, Dr. Keith S. Brown, Rio de Janeiro and Dr. Heinz Ebert, Rio Claro provided me with the opportunity to study their large and interesting collections of Brazilian Lepidoptera. To them go my thanks for their hospitality, their many helpful suggestions and enthusiastic encouragement. With Keith Brown I made an incredibly productive and interesting collecting trip into the Mato Grosso. This unique opportunity to collect and work in such a remote area is gratefully acknowledged.

SYMBIOPSIS Nicolay, new genus

Type species: *Thecla strenua* Hewitson, 1877

Hindwing with two tails, the shorter at end of Cu_1 , the longer at end of Cu_2 . Postmedian line on underside of forewing ending abruptly at vein Cu_2 ; without cell-end streaks or bars on underside of fore- or hindwing. Postmedian line of hindwing, bipartite, uneven, forming posteriorly a broad angular "W" which terminates at 3A very close to inner margin; middle angle of "W" rounded, extending basad in interspace Cu_2 more noticeably than in other interspaces. Male with no scent spot or other secondary sexual characteristics. Frons with appressed scales and many intermixed erect bristle-like scales; eyes densely covered by short erect hairs; antennae with a 15-segmented stalk, 12 segments on the club.

Male genitalia without a saccus; tegumen extended in a horizontal, dorso-lateral plane, vinculum then curved sharply 90° toward ventral surface; falces viewed from ventral surface, large, sharply angular, with terminal arms tapered to a sharp point; viewed laterally, flattened dorsoventrally, appressed rather close to uncus. Valvae long, $4/5$ length of vinculum, relatively narrow, completely separate, with interior surfaces clearly grooved to retain aedeagus; aedeagus stout, evenly tapered to tip, posterior end curved dorsally through approximately 60° in an even sweeping arc, with or without a ventral keel, without cornuti or terminal teeth.

Female genitalia with ductus bursae a complex, stout organ; dorsally composed of two lateral free-moving sclerotized elements, separated almost their entire length, fused into a hollow, sclerotized tube prior to entry into corpus bursae; ventrally composed of a semi-membranous pouch which appears to hold the two dorso-lateral elements together. Ostium guarded dorsally by the two rather heavily spined dorsal plates of ductus bursae; ventrally formed by membranous juncture of seventh and eighth abdominal tergites. Anterior end of ductus bursae rather sharply recurved dorsally through an arc of almost 180° just prior to entry into the corpus bursae; latter a simple, oblong, completely unadorned sac, at least as long as or longer than the ductus bursae.

The name *Symbiopsis* is an arbitrary combination of Latin terms, but without special meaning. I consider it to be of the feminine gender.

Symbiopsis species bear a superficial similarity to many new world tropical hairstreaks. The lack of scent spots and other secondary sexual characteristics, the size, ground color and trace of the postmedian line on the underside of the wings are features common to both *Symbiopsis* and the genus *Calystryma* Field, 1967. Yet there are definite and obvious generic differences between the two. *Symbiopsis* species have no cell-end streaks on the underside of either wing; *Calystryma* species have the cell-end streaks on the underside of both wings. The wing shape of *Symbiopsis* is rounded and full; that of *Calystryma*, more angular, the apex of the primaries more acute, particularly in the male. The male genitalia of *Symbiopsis* has no saccus, the falces are large, sharply angular, the aedeagus is stout with a sweeping dorsal curve, and without cornuti or terminal teeth; that of *Calystryma* always has a saccus, the falces are rather small, not sharply angular and the aedeagus is long, rather slender, usually straight and always with at least a single, spine-like cornutus at or near the terminus. The female ductus bursae of *Symbiopsis* is heavily sclerotized, divided throughout most of its length into two lateral elements and anteriorly recurved dorsally through an arc of nearly 180° , prior to entry into the corpus bursae which is unadorned; that of *Calystryma* is a simple sclerotized tube, not recurved dorsally at the anterior end and with the corpus bursae ornamented by two large, complex signa.

Both male and female genitalia are generically very characteristic but do not offer a panacea for specific determination. The genitalia of both sexes show considerable variation within each species; e.g., the spines of the ostium bursae vary both in size and number in females of the same

species. In this respect, most were found to be markedly asymmetric in the number and shape of the spines on each lateral plate. The size and shape varies in much the same way in the male genitalia of a given species, but to a lesser degree. However, the combination of characters provided by the genitalia of both sexes together with those of wing shape, color and maculation make specific determination of both male and female specimens relatively easy and accurate.

Most species of this genus are intensely local. Those we have taken fly very rapidly along chosen paths or narrow roadways skirting the sunny edge of usually heavily wooded areas. Their rarity in collections is understandable for they are not readily attracted to flowers and rest only briefly on leaves. In many cases, they must be taken on the

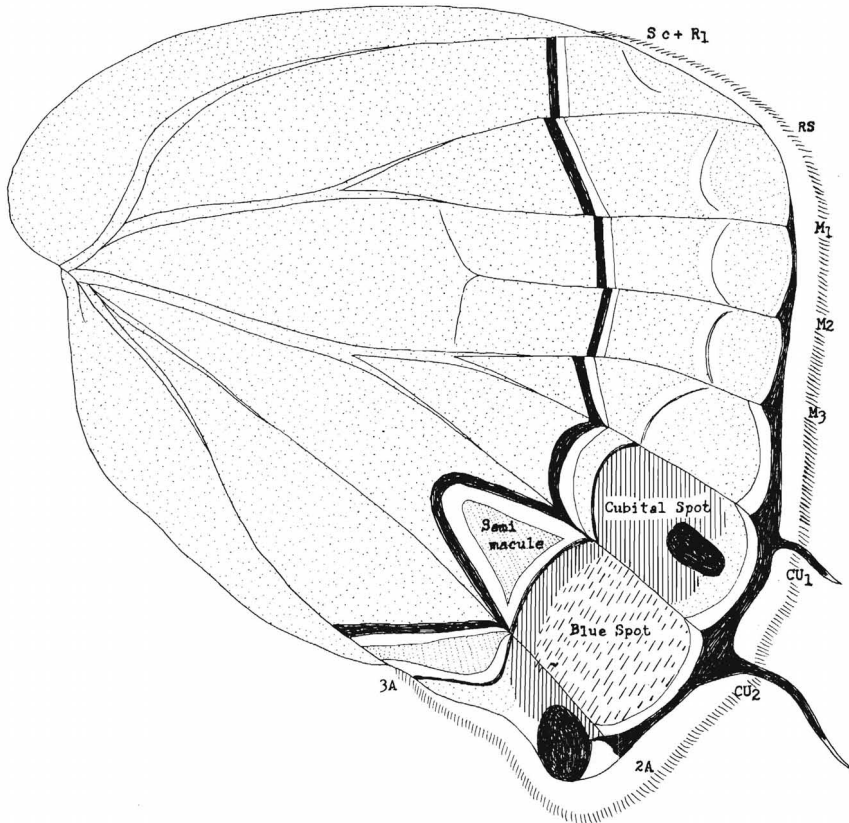


Figure 1. *Symbiopsis* hindwing; stylized sketch of underside maculation pattern

wing. Their swift and erratic flight makes them difficult to see, follow and net.

A stylized sketch of the undersurface pattern of the hindwing of *Symbiopsis* is illustrated in Figure 1. Not all species in the genus have all of the linear features shown, nor do all species follow the exact pattern as illustrated. However, the basic features of the genus are contained in Figure 1 and the nomenclature for the specific macular features is noted on the illustration and used throughout the text and in the key.

Key to *Symbiopsis* species

- 1 Underside of hindwing without red cubital spot..... 2
 - Underside of hindwing with red cubital spot..... 3
- 2 Underside of hindwing without powder blue or grey-blue spot in Cu₂; underside ground color, greyish-white....
.....*lenitas* (Druce)
 - Underside of hindwing with large grey-blue spots in interspaces Cu₁ and Cu₂.....*tanais* (Godman & Salvin)
- 3 Underside ground color light greyish-white; cubital spot orange-red, small.....*nippia* (Dyar)
 - Underside ground color much darker, brown or brownish grey..... 4
- 4 Upperside of male and female forewing blackish-brown..... 5
 - Upperside of male and female forewing with lustrous blue scaling..... 6
- 5 Upperside of forewing and hindwing black-brown with a faint blue-grey tint toward the wing bases; male and female alike.....*pupilla* (Draudt)
 - Upperside of male hindwing shining lustrous blue with wide dark margins; female brown.....*pentas* Nicolay
- 6 Upperside wing color lustrous indigo-blue with wide, dark margins..... 7
 - Upperside wing color greenish steel-blue with narrow black margins..... 9
- 7 Upperside of forewing mostly dark blackish-brown, the blue confined narrowly in the disc along vein 2A.....
.....*pennatus* (Druce)
 - Upperside of forewing with the blue expanded and reaching into the cell..... 8

- 8 Cubital spot of Cu₁ large, red, spilling into space M₃, with a broad bar over the blue spot of Cu₂.....
*smalli* Nicolay
- Cubital spot of interspace Cu₁ small, dull red, crescentic; no red bar over the blue spot.....
*strenua* (Hewitson)
- 9 Cubital spot orange-red confined primarily to Cu₁, the red bar over the blue spot, narrow.....
*panamensis* (Draudt)
- Cubital spot very large, deep red, spilling into interspace M₃ to vein M₃; a broad red bar over the blue spot of Cu₂.....
*morpho* Nicolay

SYMBIOPSIS STRENUA (Hewitson), new combination

Figure 2; Plate I (Fig. 1 and 2)

Thecla strenua Hewitson, 1877, Illustr. Diurnal Lepid; Lycaenidae, 1:207; 2, pl. 82, figs. 689, 690. Draudt, in: Seitz, 1920 Gross-Schmett. der Erde, 5:788, pl. 156, figs. i-9, i-10. Comstock and Huntington, 1963, J. N. Y. Ent. Soc., 71:263.

Type data: "In the collection of W.C. Hewitson, from Brazil".

This species is very similar to many other tropical hairstreaks. The original description is extremely brief and overlooks many features that place *strenua* within this genus. The species is redescribed as follows.

Male: Length of forewing 12.5 mm.

Upperside: Margins of forewings wide and ill-defined, with indigo-blue color confined to discal third of wing, adjacent to inner margin. Margin of hindwings about 1 mm wide, expanded at apex, remainder of wing dull indigo-blue, faintly iridescent; anal lobe spot small, black, centered with orange-red; a marginal black line, inwardly edged in white, beginning at the small tail, tracing outer margin to anal lobe; fringes of same area tipped in white.

Underside: Ground color olive grey-brown; submarginal line of forewing dark brown, lunular and broken at each vein; postmedian line dark brown, distally edged in white, beginning at costal margin and ending abruptly at vein Cu₂. Postmedian line of hindwing dark brown, becoming darker towards anal margin, distally edged in white, rather uneven, beginning at costal margin, then forming a broad angular "W" before terminating at inner margin; submarginal band composed of dark brown crescents between each vein, vaguely bordered on each side by light scaling; cubital spot between tails dull

red, small, crescentic and centered at distal edge with a prominent black spot; the cubital red crescent as wide as ground color between it and the white line proximal to terminal line; the grey-blue spot adjacent in interspace Cu_2 large, quadrate, with a small red bar between it and the small black spot of anal lobe; no other red in interspace Cu_2 except as associated with anal lobe; a marginal black line, inwardly edged in white, beginning at vein M_1 becoming thickest at Cu_2 , tracing outer margin to anal lobe.

Female: Length of forewing 12 mm.

Same as male except some variation in the amount of blue on upperside of forewing; usually the pale blue color narrowly confined to the area along inner margin, leaving forewing almost completely dark brown; in early "spring season" (October), Santa Catarina individuals, the blue of forewing not confined to inner margin, extending as a pale wash far into disc and cell, leaving a relatively narrow, vaguely defined dark margin. The dark margin of hindwing slightly wider than in male. Underside as in male.

Symbiopsis strenua has in the past been confused with *Thecla pisidula* Druce, due probably to the Draudt (in Seitz, 1920) illustration of "*pisidula*"; it is a good reproduction of *strenua*. The series of two males and seven females from which the present diagnosis was made was collected by Mr. Fritz Plaumann in Nova Teutonia, Santa Catarina, Brazil, at an altitude of 300-500 meters. The dates of capture are predominantly January through March. Specimens from this series were compared with the Hewitson type material in the British Museum (Natural History).

A study of series of this species in the Brown and Ebert collections provided material basis for a more accurate appraisal of the geographical distribution. This species is found in the forested mountain localities in the states of Minas Gerais, Sao Paulo, Parana, Santa Catarina and to the west in adjacent areas of Paraguay (Villa Rica). Most likely, *strenua* is basically a southwestern species which reaches the northern limit of its range in Minas Gerais (Belo Horizonte) via the tributaries of the Plate River system.

SYMBIOPSIS LENITAS (Druce), new combination

Figure 3; Plate I (Fig. 3 and 4)

Thecla lenitas Druce, 1907, Proc. Zool. Soc. London, : 603, pl. 36, fig. 5. Draudt, in: Seitz, 1920, Gross-Schmett. der Erde, 5:788, pl. 156, fig. 1-8. Comstock and Huntington, 1961, J. N. Y. Ent Soc., 69:109.

Iaspis violescens Spitz, 1931, Revista de Entomologia, Sao Paulo, 1:48 (new synonymy).

Original description:

"Male. Upper side: fore wing uniform dull brown, paler towards centre of disc, inner margin very narrowly dusted with blue. Hind wing pale violaceous blue, with costa, apex and outer margin rather broadly brown; abdominal fold paler brown. Cilia of fore wing brownish, of hind wing white. Underside ground colour uniform pale grey. Forewing: a linear dark ultra-median band, outwardly bordered with white, from the costa to the lower median nervule, followed by a faint submarginal lunular line. A very fine anteciliary dark line. Cilia yellowish grey, darker at the tips. Hind wing: a median linear band as on fore wing but more sinuous, commencing on the costa and reaching to the abdominal margin, followed by a submarginal faint lunular line which becomes more distinct towards the anal angle. A black anteciliary line from the apex to the anal angle broadest at the base of the tails. Cilia pale grey. Tails blackish tipped with white.

Female: Upperside uniform dull brown. Underside as in male.

Expanse: 1 - 1 1/5 inch.

Habitat: Chapada Campo, Brazil (H.H. Smith); Paraguay (Perrens).

Type, Mus. Godman.

A species with no brand or perceptible patch on the fore wing and not allied to any with which I am acquainted but perhaps belonging to the group which contains *T. dindy-mus* Cr.

Mr. Smith's specimens were captured in January and February."

The original description is excellent. This species is one of the most easily recognized and distinctive of the genus, made so by the lack of typical thecline markings on the underside of the hindwings. There is neither cubital red spot in interspace Cu_1 , nor blue spot adjacent thereto in interspace Cu_2 . Instead, these are replaced by vague patches of grey scales. The anal lobe spot is very small and black.

Male: Length of forewing, 11.5 mm.

Female: Length of forewing, 11.5 mm.

These notes were made from a series of 12 males and 13 females collected by Mr. Fritz Plaumann in Nova Teutonia, Santa Catarina, Brazil, at an altitude of 300-500 meters. Most specimens were captured during the months of March through June. A single female taken at Caviuna, Parana,

Brazil in April is in the American Museum of Natural History. Specimens from this series have been compared with the type series in the British Museum (Natural History), and with the type of *T. violescens* Spitz which is clearly a synonym of *lenitas*.

In the Brown and Ebert collections, I was able to examine an extensive series of this species, taken in numerous localities in southern Brazil and Paraguay. Essentially, *lenitas* seems to be a species of the wooded watercourses of the Brazilian Planalto. Its currently known geographical range includes the states of Minas Gerais, Goiás, Mato Grosso, Parana, Sao Paulo, Santa Catarina and adjacent localities in Paraguay (Villa Rica).

SYMBIOPSIS PUPILLA (Draudt), new combination

Figure 4; Plate I (Fig. 5 and 6)

Thecla pupilla Draudt, in: Seitz, 1920, Gross-Schmett. der Erde, 5:801, pl. 158, figs. 1-4, 1-5. Comstock and Huntington, 1963, J. N. Y. Ent. Soc., 71:46.

Original description:

"... is above black-brown, towards the base with a slight blue-grey tint, on the hindwing with a large red anal spot being bordered at first by black, then by white; beneath brown-grey, the lines like in the preceding (*Th. panamensis*) but finer; the submarginal lunae almost extinct, from the upper median vein to the proximal margin distinct as an entirely straight black line being removed far inward and touching dents of the postdiscal band. The red spot of the tail and the anal spot extremely large, connected by a broad red bridge, the black pupil of the spot of the tail very small, strigiform."

There are no obvious differences between the male and female of this species. Even the size differential (the males average slightly larger) is more individual than sexual. The phrase, "...above black-brown, towards the base with a slight blue-grey tint" is an excellent capsule description of the upper surfaces of both wings. Based on specimens examined during this study, *pupilla* can be further characterized as follows.

Upperside: Anal lobe spot of hindwing small, rather than large, centered with a sprinkling of orange-red; a marginal black line and an inwardly adjacent white line beginning in interspace above the short tail at M_3 , tracing outer margin to anal lobe.

Male: Length of forewing, 12 mm.

Female: Length of forewing, 11 mm.

Underside: Ground color of both wings a light, silky brown-grey, submarginal lunular line of forewings, faint and indistinct; postmedian line narrow, black, distally edged in white, beginning just short of costal margin, ending at vein Cu_2 . Postmedian line of hindwing brown-black, distally edged in white, beginning at costal margin, uneven, then forming a sharply angular "W" before terminating at inner margin; center of "W" mark or semi-macule dark brown; cubital spot between tails large, deep red with a small, strigiform, black pupil at distal center, red scaling of cubital spot often spilling into interspace M_3 ; blue spot adjacent to cubital spot also large, proximally edged with a bridge of red scales, reaching black spot of anal lobe; the submarginal line of vague, indistinct lunae; marginal line black, inwardly edged in white, tracing outer margin from vein M_2 to anal lobe, expanded slightly at each vein terminus; spot of anal lobe black.

The expanded description and illustrations herein have been taken from a series of five males and ten females collected by Mr. and Mrs. Jorge Kesselring in Joao Pessoa, Paraiba, Brazil. The dates cover the period December through June; one female was collected on 31 October. In the National Museum, Rio de Janeiro, Brazil are a male and female of *pupilla* taken at Belem do Para and another male taken at Amapa. Dr. Ebert's collection contains a series of *pupilla* taken in Paraiba. A female from the Oberthur collection in the British Museum carrying the label "Amazonas" is placed here. Major A. Bedford Russell, British Coldstream Guards, collected a single female at Apoteri, British Guiana in September 1963.

Available information (Bailey, 1947) indicates that Draudt's types have been destroyed. It appears advisable that a neotype be designated. A neotype female, BRAZIL, Joao Pessoa, Paraiba, 6 June 1954, is therefore designated from the series described above and placed in the National Museum of Natural History (Smithsonian Institution), Washington, D. C. (USNM Type No. 71451).

Seitz' terse "Guiana to Colombia and Bolivia" covers a very large area. The currently known geographical distribution for *pupilla* is rather restricted, being confined to the Guianas and the adjacent northeastern coastal area of Brazil as far south as the state of Paraiba.

SYMBIOPSIS SMALLI Nicolay, new species

Figure 5; Plate II (Fig. 1, 2, 3 and 4)

Male: Length of forewing, 13 ± 1 mm; holotype, 13 mm.

Upperside: Forewing margin broad, black-brown, reaching well into discal cell; the shining dark blue confined to lower one-third of wing along inner margin, extending

past vein Cu_2 into cell. Hindwing margin narrow, black-brown, slightly expanded at apex; remainder of wing shining dark blue; anal lobe spot black, narrowly edged above and below with pure white; a narrow, vague, white marginal line from small tail at Cu_1 to anal lobe.

Underside: Forewing ground color dark brownish grey; submarginal line vague, indistinct; postmedian line almost straight, black-brown, distally bordered with a few white scales, extending from near costal margin, terminating at Cu_2 . Hindwing ground color dark brownish grey; postmedian line uneven, black, distally edged in white, cleanly broken inward at vein M_3 , terminating at inner margin after tracing a broad deep "W"; submarginal line composed of vague, light grey crescent-shaped lunae; a black marginal line, edged basally in white, beginning at vein M_1 , becoming broader and more definitive at cubital red spot between tails; cubital spot orange-red, large, with a large strigiform black pupil at distal center, spilling unevenly into adjacent interspace M_3 ; a broad red band proximally borders the large grey-blue spot, the two colors almost of the same width; anal lobe spot black, with proximal and distal margins white, and with a connecting red line running costad to red bar of Cu_2 ; a rudimentary black spot at basal margin of large blue spot in Cu_2 , touching the red bar.

Female: Length of forewing, 12 mm.

Upperside: Markings and ground color similar to male; the dark shining blue area less brilliant in forewing, restricted to a small discal and basal area adjacent to inner margin along vein 2A. Hindwing margins narrower, the dark blue thus more extensive in the discal and basal area.

Underside: Ground color brownish grey with a slight lustre; all linear markings similar to male, heavier, the red cubital spot expanded into interspace M_3 .

Holotype male: PANAMA, Los Rios, Canal Zone, 10 December 1967. Allotype female: same locality, 17 December 1964. Paratypes, 41 male (m) and 7 female (f), as follows. From Gordon B. Small's collection: Los Rios, C.Z., 1 m, 31 Oct., 3 m, 11 Nov., 6 m, 13 Nov., 1 m, 14 Nov. 1965; 1 m, 1 Dec., 1 m, 7 Dec., 1 m, 10 Dec., 1 m, 12 Dec., 1 m, 13 Dec., 1 m, 19 Dec., 1964; 3 m, 20 Dec. 1967; 1 m, 12 Feb., 1 m, 23 March 1968; Ft. Sherman, C.Z., 1 m, 21 May 1966; Cerro Campana, Panama Province, 1 m, 10 Jan. 1968; 1 f, 29 May 1964; Turrialba, Cartago Prov., Costa Rica, 1 f, 14 July 1965. From the Nicolay collection: Los Rios, C. Z., 1 m, 11 Dec., 3 m, 13 Dec., 5 m, 14 Dec., 2 m, 15 Dec. 1967; 1 m, 4 Dec., 1 m, 19 Dec., 1 m, 24 Dec., 1964; 2 m, 3 f, 6 Jan. 1969; Colon (Santa Rita) Rep. of Panama, 1 m, 5 Jan., 1 f, 4 Jan., 1 f, 10 Jan. 1969.

The holotype and allotype will be deposited in the Nation-

al Museum of Natural History (Smithsonian Institution), Washington, D. C. (USNM Type No. 71452). Paratypes will be deposited in the American Museum of Natural History, New York, the Carnegie Museum, Pittsburgh, and the British Museum (Natural History), London.

Symbiopsis smalli closely resembles *S. tanais* on the upper surface. The basic blue and dark marginal colors are alike in both; the size and shape of the adults of both sexes are similar. However, the maculation of the under surface of the wings is strikingly different. Here, *smalli* closely resembles *pupilla* in the clarity and color of the linear markings.

Thus far, *smalli* has been found in the Republic of Panama, Costa Rica and Colombia, with a known altitude ranging from sea level to 2000 feet. Its primary flight period appears to be the winter months of November through February although it has been taken in almost all seasons. Examined, but not included in the type series, was a male collected in Jaque, Darien Province, Panama in April and a male in the British Museum, taken in Cundinamarca, Colombia.

It is a distinct pleasure to name this beautiful insect after my good friend and collecting associate, Gordon B. Small, Jr. who collected most of the specimens.

SYMBIOPSIS PENTAS Nicolay, new species

Figure 6; Plate III (Fig. 1, 2, 3 and 4)

Male: Length of forewing, 12 mm \pm 1 mm; holotype, 12 mm.

Upperside: Forewing dark brown with no blue scaling. Hindwing opalescent violet-blue in the disc with wide (2-3 mm) dark brown margins, widest at apex; an inconspicuous white submarginal line, beginning just above the small tail at M_3 tracing wing margin to anal lobe; latter small, black with intermixed bronze colored scales, proximally and distally white fringed.

Underside: Forewing ground color light brown-grey; submarginal lunular line faint, dark brown, broken at each vein; postmedian line dark brown, faintly and distally outlined with light scaling, ending abruptly at vein Cu_2 . Hindwing ground color the same brown-grey; submarginal line faint, dark brown crescents, separated at each vein, distally and proximally edged in faint light scaling; postmedian line dark brown, distally edged in white, beginning at costal margin, rather uneven, becoming black, forming a broad angular "W" beginning at Cu_1 and ending at inner margin; cubital spot at Cu_1 small, orange-red, the black pupil distally centered, prominent; blue spot of Cu_2 proximally bordered by a narrow bridge of red scaling beginning at black anal lobe spot, not reaching vein Cu_2 ; semi-macule dark brown; a mar-

ginal black line, expanded at each vein and inwardly edged in white, beginning at vein M_2 and ending at anal lobe.

Female: Length of forewing, 11 mm \pm 1 mm; allotype, 11 mm.

Upperside: Forewing and hindwing dark brown with no trace of blue; anal lobe spot black; marginal white line from vein M_3 very faint.

Underside: Same as in male.

Holotype male: BOLIVIA, Cuatro Ojos, Nov. 1913. Allotype female: Las Juntas, Bolivia, Dec. 1913. Paratypes, 3 male, 5 female, as follows. In the Carnegie Museum: 1 m, Las Juntas, Bolivia, Nov. 1913, 1 m, Cuatro Ojos, Bolivia (no date); 3 f, Las Juntas, Bolivia, Dec. 1913, 1 f, Cuatro Ojos, Bolivia, Nov. 1913. In the Smithsonian Institution: 1 m and 1 f, "Peru", no date. W.D. Field in his discussion of *Calystryma malta* Schaus, refers to a fourth specimen of the original Schaus series, a female, as not belonging to *Calystryma*. It is this female that is here designated a paratype.

The holotype and allotype are deposited in the Carnegie Museum, Pittsburgh, Pennsylvania.

The complete lack of blue on the upperside of the forewings in the male makes this species relatively easy to distinguish from other members of the genus. However, the female is almost indistinguishable from the female of *pennatus* except by examination of the genitalia. Both are dark brown on the upper wing surfaces and very similar beneath. The most consistent difference between this species and *pennatus*, is in the black pupil of the cubital spot; in *pennatus* this spot is round and prominent, in *pennatus* it is strigiform, ill-defined and almost obsolete in some specimens. In the genitalia, particularly that of the male, there are consistent and easily recognized differences as noted in the appropriate figures.

I have seen no specimens of *pennatus* other than those in the type series. The known range of this species is Bolivia and Peru.

SYMBIOPSIS PANAMENSIS (Draudt), new combination

Figure 7; Plate II (Fig. 5 and 6)

Thecla panamensis Draudt, *in*: Seitz, 1920, Gross-Schmett. der Erde, 5:801, pl. 158, figs 1-1, 1-2. Comstock and Huntington, 1962, J. N. Y. Ent. Soc., 70:101.

Original description:

"... is the most similar to *pisidula*; but it is above of a light greenish steel-blue, with a strong lustre, black margins of the same extent as in *pisidula*; the female is of a duller grey-blue. Beneath more purely grey, with a slight lustre, the linear marking stronger, particularly the white bordering more pronounced, the submarginal lunae more distinct, the red spot of the tail very large, so is the light blue spot beside it."

The sexes are similar in appearance, and the description may be elaborated as follows.

Upperside: Greenish steel-blue lustre accentuated by the narrow black margins, more so than in any other species except *morpho*; margin rather sharply defined in forewing of male, rather vaguely defined and slightly broader in female; black marginal color almost filling primary wing cell in female. Dark margin of hindwing consisting of thin line, slightly expanded at apex, the same greenish steel-blue filling entire hindwing in both sexes; anal lobe spot black set within a sprinkling of white scales.

Underside: Submarginal line of forewing of the same lustrous grey as basic ground color of both wings but darker and distinct, running from subapical area to tornus; postmedian line very dark grey, narrow, distally edged in white, following the same curve as the submarginal but ends abruptly at vein Cu_2 . Postmedian of hindwing a conspicuously black line, distally edged in white, slightly broken, beginning at costal margin, then forming a broad "W" prior to termination at inner margin; semi-macule black; submarginal lunae proximally shaded in light grey; marginal line from M_1 to anal lobe; black, inwardly edged in pure white; cubital spot between tails orange-red, large, with a strigiform black pupil at distal center; a very narrow red bar proximally bridging a large light blue spot adjacent in interspace Cu_2 , almost reaching the small black spot of anal lobe; fringes white-tipped between the short tail at Cu_1 and anal lobe.

The underside pattern of *panamensis* closely resembles *strenua*. All markings are similar but in *panamensis* are more definitive, the spots larger and the ground color greyish with a slight lustre. Males and females are alike, with the ground color of the females generally lighter, almost brownish rather than grey.

The above observations were made from specimens which Gordon Small and I collected at Potrerillos, Chiriqui Province, in western Panama; dates of capture were in the months of December, January, February and July. In addition, Gordon Small has taken a single specimen at Villa Nelly in the adjacent province of Puntarenas, Costa Rica in July.

Available information (Bailey, 1947) indicates that Draudt's types have been destroyed. It appears advisable

that a neotype be designated. A neotype, male, PANAMA, Potrerrillos, Chiriqui Province, 11 Feb. 1966, is therefore designated from the series described above and placed in the National Museum of Natural History (Smithsonian Institution), Washington, D. C. (USNM Type No. 71453).

SYMBIOPSIS MORPHO Nicolay, new species

Figure 8, Plate III (Fig. 5 and 6)

Male: Unknown.

Female: Length of forewing, 15 mm.

Upperside: Forewing costal and outer margins black, narrow with a wide expanse of brilliant greenish steel-blue color filling cell, disc, basal and most of inner marginal area. Hindwing the same shining morpho-like blue; outer margin a thin, black line expanded at apex; abdominal fold dark grey; anal lobe spot large, black, narrowly fringed in white.

Underside: Forewing ground color silky light brown; submarginal line darker brown, faint but distinct; postmedian line narrow, blackish-brown, distally edged in white, ends at vein Cu₂. Hindwing ground color light brown; postmedian line sharply black, distally edged in pure white, displaced outward at interspace Sc + R₁, broken inward at vein M₃, terminating at inner margin after tracing a broad "W"; submarginal line dark brown, consisting of crescent-shaped lunae, distally and proximally edged in light scaling; cubital spot in Cu₁ very large, deep red, proximally spilling into adjacent space, reaching vein M₃; the black pupil centered at distal edge large, strigiform; blue spot of Cu₂ capped by a rudimentary black spot, completely bridged proximally by a red bar extending from cubital spot to the large black spot of anal lobe; latter proximally and distally framed in white.

Holotype female: EQUADOR, Paramba, 3500 ft., March 1897, dry season (Rosenberg); in the British Museum (Natural History), London.

This is the largest and most lavishly colored *Symbiopsis*. The upper surface is of the same shining steel-blue lustre of *panamensis*, the dark margins similarly narrow. Beneath, *morpho* is a rich brown color, rather than greyish. It is more heavily marked than any other species of this genus. I suspect that the male, when found, will be larger than the female, with narrower dark margins on both wings and a larger expanse of brilliant blue color on the upper surfaces.

In response to my request for specific information on the locality Paramba, Mr. Tite of the British Museum very kindly provided the following quote from a paper by Dr. Hartert dealing with the birds collected by W.F.H. Rosenberg:

"Paramba is a farm on the western bank of the river Mira. Its elevation is 3500 feet, and it is still in the forest region, but the open country commences two or three miles higher up the Mira...The city of Ibarra two days ride from Paramba, and about the same distance from Quito..."

SYMBIOPSIS PENNATUS (Druce) new combination

Figure 9; Plate IV (Fig. 1 and 2)

Thecla pennatus Druce, 1907, Proc. Zool. Soc. London, :617-18. Draudt in: Seitz, 1920, Gross-Schmett. der Erde, 5:800. Comstock and Huntington, 1962, J. N. Y. Ent. Soc., 70:106.

Original description:

"Male. Allied to *T. anthora* Hew. Upper side uniform dark brown, with inner margin of fore wing narrowly, and discal and basal areas of hind wing shining opalescent indigo-blue. Under side; ground colour duller; the linear bands narrower, placed further in from the margin and in the hind wing not inwardly bordered with red. The upper red marginal spot with the black pupil of *T. anthora* is absent, and the large red spot contained in the angle of the ultramedian band is replaced by a black, smaller spot.

Female. Upper side uniform dull brown; underside as in male.

Expanse, 1 1/5, 1 1/10 inch.

Hab. Amazonas: Tapajos, Ega, Para (Bates).

Types, Mus. Godman."

The brevity and accuracy of Druce's original description needs little elaboration. The anal lobe spot on the upper hind wing is black, centered with sparse orange-red; the marginal black line from vein M₃ to the anal lobe is inwardly edged in white.

On the underside the cubital spot of the hindwing is relatively small, orange-red and pupiled by a vague, ill-formed almost obsolete black spot. The red bar, beginning at the black anal lobe spot is narrow and, although arched over the proximal edge of the blue spot of Cu₂, is incomplete and does not reach vein Cu₂.

The male genitalia of *pennatus* has a ventral keel on the aedeagus. It is not obvious and is confined to the posterior end. The genitalia of *tanais* and *nippia* are similarly equipped.

Male: Length of forewing, 12-13 mm.

Female: Length of forewing, 11-12 mm.

As stated by Druce, *pennatus* is certainly a distinct species, but it is not related closely to *T. anthora* Hew. In pattern of lines and color it is most similar to *pentas*, the females being almost identical. However, the genitalia reveal a close relationship to *tanaïs* and *nippia*, both of which possess macular patterns beneath which are distinctly different from *pennatus*. The most consistent difference between *pennatus* and other species of similar appearance is in the black pupil of the cubital spot. In *pennatus* it is small, ill-formed, almost obsolete, while in *pentas* and others, it is prominent. The narrow blue scaling along vein 2A in the forewing will readily separate the males from *pentas*, its closest mimic.

The geographical range of this species is large, taking in much of the vast expanse of the Amazon basin. The present data adds Colombia, Peru and Bolivia to the political regions given by Druce. Recorded altitudes are from near sea level to 450 meters.

In addition to examination of the type series in the British Museum, I have studied a male collected in Ega (Brazil), a series of four males and three females from the Rio Surutu and Portachuelo in eastern Bolivia, and a male from Manacapuru, Amazon River, in the Carnegie Museum, and a male and two females which I collected on the Rio Bodoquero, Caqueta, Colombia, in January.

SYMBIOPSIS TANAIIS (Godman & Salvin), new combination

Figure 10; Plate IV (Fig. 3 and 4)

Thecla tanaïs Godman and Salvin, 1887, *Biologia Centrali-Americana*, Lepid.-Rhop., 2:62; 3:pl. 55, figs 27, 28. Draudt in: Seitz, 1920, *Gross-Schmett. der Erde*, 5:800, pl. 158, fig. 1-5. Comstock and Huntington, 1964 *J. N. Y. Ent. Soc.*, 72:121.

This is one of the most distinctive and easily recognized species in the genus. The original description was given in Latin, and the species may be characterized as follows.

Male: Length of forewing, 13-14 mm.

Female: Length of forewing, 11-13 mm.

Upperside: Similar to *smalli*, differing as follows: center of the anal lobe spot in *tanaïs* orange-red, in *smalli* black; blue scaling of forewing more restricted to inner margin (never reaching vein Cu₂) in *tanaïs*, extending past vein Cu₂ into the cell in *smalli*.

Underside: Ground color light grey-brown. The submarginal and postmedian lines of forewing both faintly marked; dark brown scaling filling semi-macule and distal to postmedian line in Cu_1 ; the large powder-blue spot between tails in interspace Cu_1 and an adjacent spot of the same (to slightly larger) size and color in interspace Cu_2 provide the most distinctive identification feature of this species; anal lobe spot black, with a narrow red bar (the only red color on the underside) between it and the blue spot adjacent; an obvious black marginal line, inwardly edged in white and expanded at each vein terminus, beginning at vein M_2 , ending at anal lobe.

Male and female genitalia following basic pattern for genus except aedeagus with a ventral keel.

Many of the specimens from which these observations were made were collected in the Republic of Panama and the Canal Zone by Gordon Small and I. Altitudes from which the Panama specimens were taken range from sea level to 2500 feet. Specimens in Gordon Small's collection were taken as follows: Cerro Campana, Panam Prov., December; Cocoli, C.Z., November; Madden Dam, C.Z., April; Summit, C.Z., April; a rather worn female, from Victoria, Caldas, Colombia, in August. In the Nicolay collection: Cerro Campana, December, January and February; Summit in April; Madden Forest in May and Pina, C.Z. in May.

There are four males in the collection of the Smithsonian Institution, all from various localities in Costa Rica. One altitude notation reads 2500-3500 feet. The dates are Nov. '06, Feb. and March. In the American Museum of Natural History are three males and six females all collected by H.H. and F.M. Brown at Turrialba, Costa Rica on 24 and 27 June. All specimens noted above agree with the types located in the British Museum (Natural History), London.

Godman and Salvin restricted the range of *tanaïs* to the state of Panama; Seitz added the Rio Dagua in Colombia. *Symbiopsis tanais* has thus far been taken in Costa Rica, Panama and Colombia.

SYMBIOPSIS NIPPPIA (Dyar), new combination

Figure 11; Plate IV (Fig. 5 and 6)

Thecla nipppia Dyar, 1918, Proc. U. S. Natl. Mus., 54:337.
 Draudt in: Seitz, 1920, Gross-Schmett. der Erde, 5:824.
 Hoffmann, 1940, An. Inst. Biol., 11:714. Comstock and
 Huntington, 1961, J. N. Y. Ent. Soc., 69:196.

Original description:

"Fore wing blackish, shaded with light blue on the basal third below cell and in cell to its end. Hind wing blue

to vein 6; fringe white; a black terminal line; tail at vein 2 long, white margined and tipped; tail on vein 3 short, white; fore wing with faint whiter outer line, dislocated at the veins. Hind wing with the outer line slender, blackish, edged without by white, forming a shallow W from vein 3 to margin; a faint submarginal line; a red spot in the interspace 2-3 with outer black center; a black and red speck at tornus. Expanse, 25 mm.

Type. -- Female, Cat. No. 21201, U.S.N.M.: Sierra de Guerrero, Mexico, January, 1911 (R. Muller)."

The male, which Dyar did not describe, is similar to the female on the upper surface and identical on the under-surface of the wings. On the upperside the blue of the forewing is not as extensive as in the female, being confined to the discal and basal area of the inner margin; the hindwing has a wider dark margin (3mm at the apex) and the blue of the discal and basal area is darker and more intense. The anal lobe spot is red and a marginal black line with an inner white line begins at vein M_3 and ends at the anal lobe spot.

It is worthy of note that the two species with the lightest ground color on the underside of the wings occur at the southern and northern extremes of the known geographical distribution of the genus, *lenitas* from southern Brazil and Paraguay and *nippia* from the state of Jalisco, Mexico. Both are easily recognized by the greyish-white ground color upon which the linear markings are rather faintly contrasted and by the "W" mark of the postmedian line shallow rather than angular. Dyar's "black and red speck at the tornus" refers to the orange-red bar that lies between the small black spot of the anal lobe and the blue spot of Cu_2 . It is arched partially over the proximal margin of the latter. The cubital spot is small, orange-red with a yellowish proximal margin and centered at the distal edge with a prominent black pupil.

As in *tanais* and *pennatus*, the male aedeagus of *nippia* has a ventral keel. Other small differences in the genitalia can be noted in the appropriate figures.

In the American Museum of Natural History are four males and five females from the C.C. Hoffmann collection taken in April at Colima, Colima, Mexico. In the Carnegie Museum is a male taken by R.G. Wind in May at Comala, Colima, Mexico. The recorded range of *nippia* is the west coastal area of Mexico from the state of Jalisco south to Guerrero.

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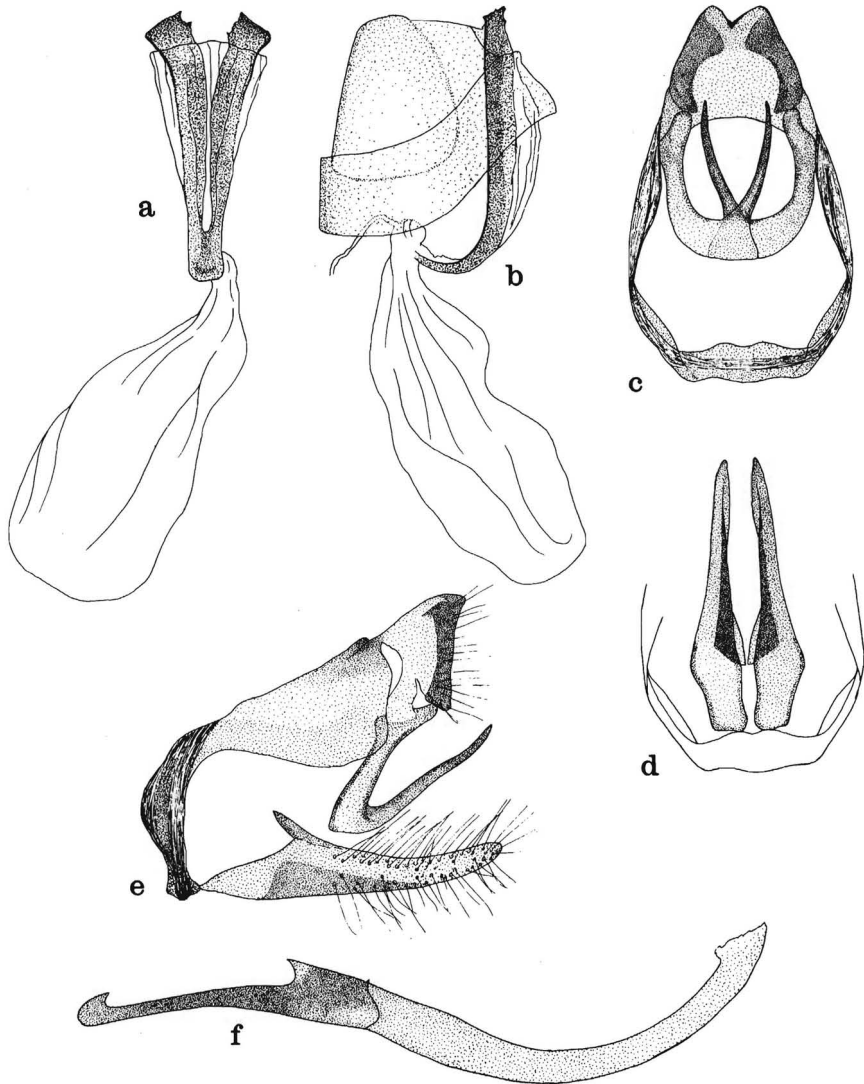


Figure 2. *Symbiopsis strenua* (Hewitson). a, ventral view of female genitalia with ovipositor and tergites removed; b, lateral view of female genitalia without ovipositor, with 8th tergite; c, ventral view of male genitalia with valvae and aedeagus removed; d, ventral view of valvae; e, lateral view of male genitalia with aedeagus removed; f, lateral view of aedeagus.

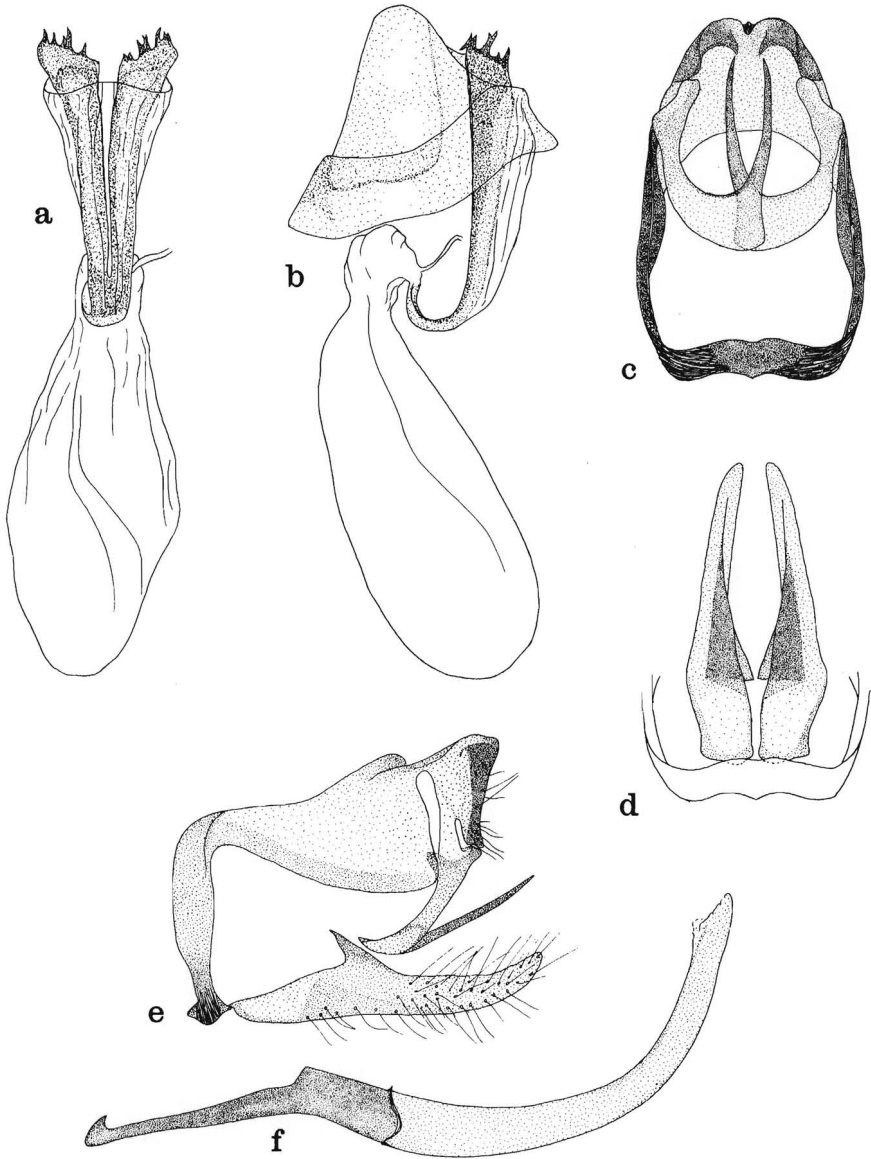


Figure 3. *Symbiopsis lenitas* (Druce). a, ventral view of female genitalia with ovipositor and tergites removed; b, lateral view of female genitalia without ovipositor, with 7th and 8th tergites; c, ventral view of male genitalia with valvae and aedeagus removed; d, ventral view of valvae; e, lateral view of male genitalia with aedeagus removed; f, lateral view of aedeagus.

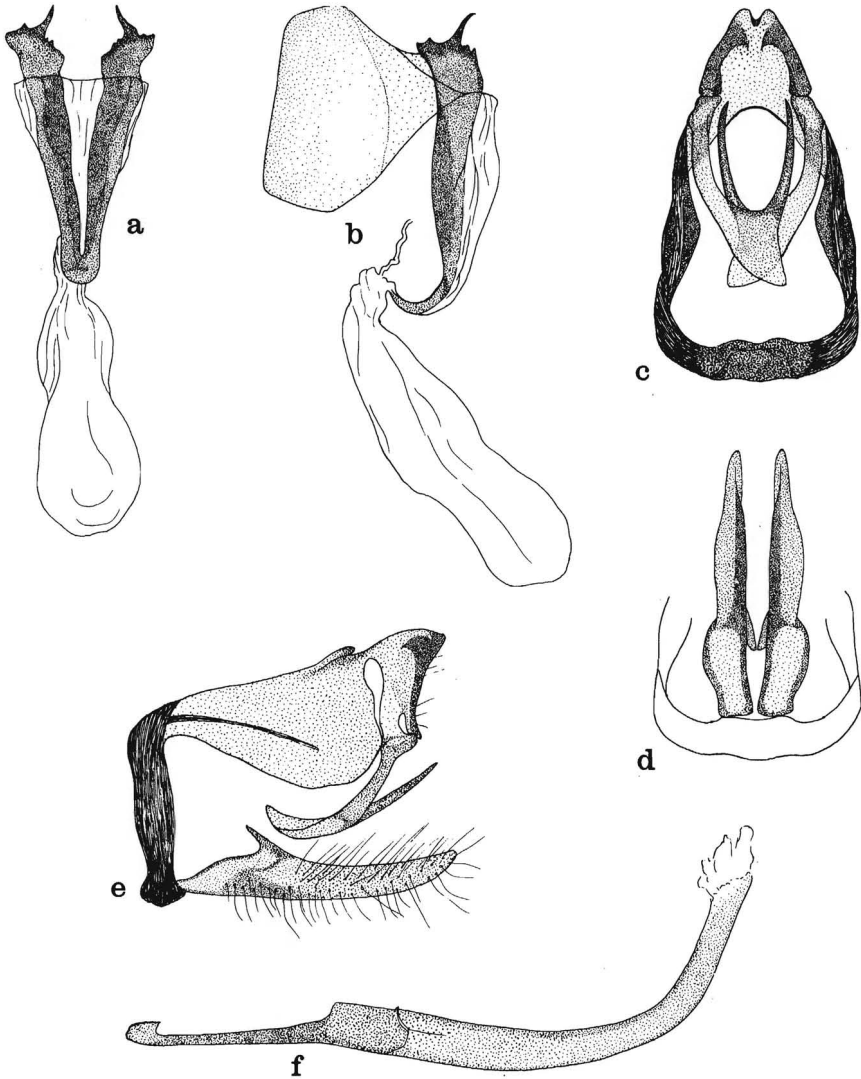


Figure 4. *Symbiopsis pupilla* (Draudt). a, ventral view of female genitalia with ovipositor and tergites removed; b, lateral view of female genitalia without ovipositor, with 8th tergite; c, ventral view of male genitalia with valvae and aedeagus removed; d, ventral view of valvae; e, lateral view of male genitalia with aedeagus removed; f, lateral view of aedeagus.

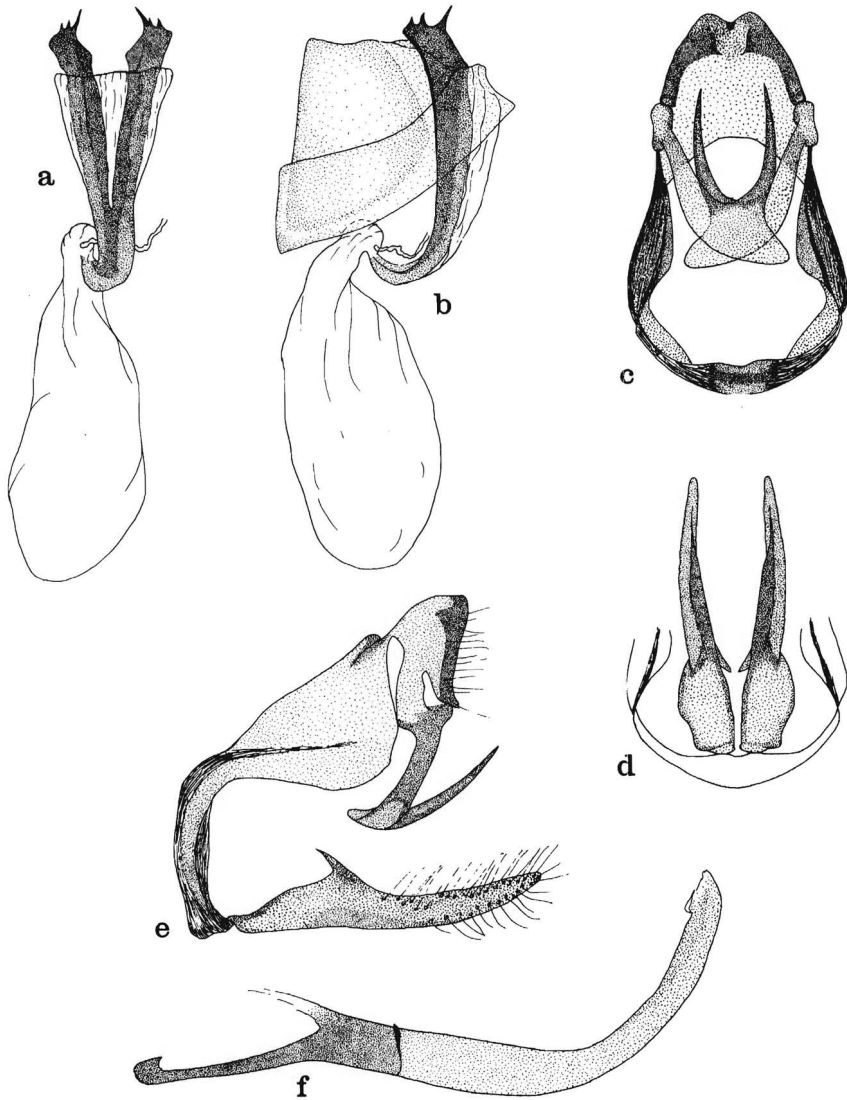


Figure 5. *Symbiopsis smalli* Nicolay. a, ventral view of female genitalia with ovipositor and tergites removed; b, lateral view of female genitalia without ovipositor, with 7th and 8th tergites; c, ventral view of male genitalia with valvae and aedeagus removed; d, ventral view of valvae; e, lateral view of male genitalia with aedeagus removed; f, lateral view of aedeagus.

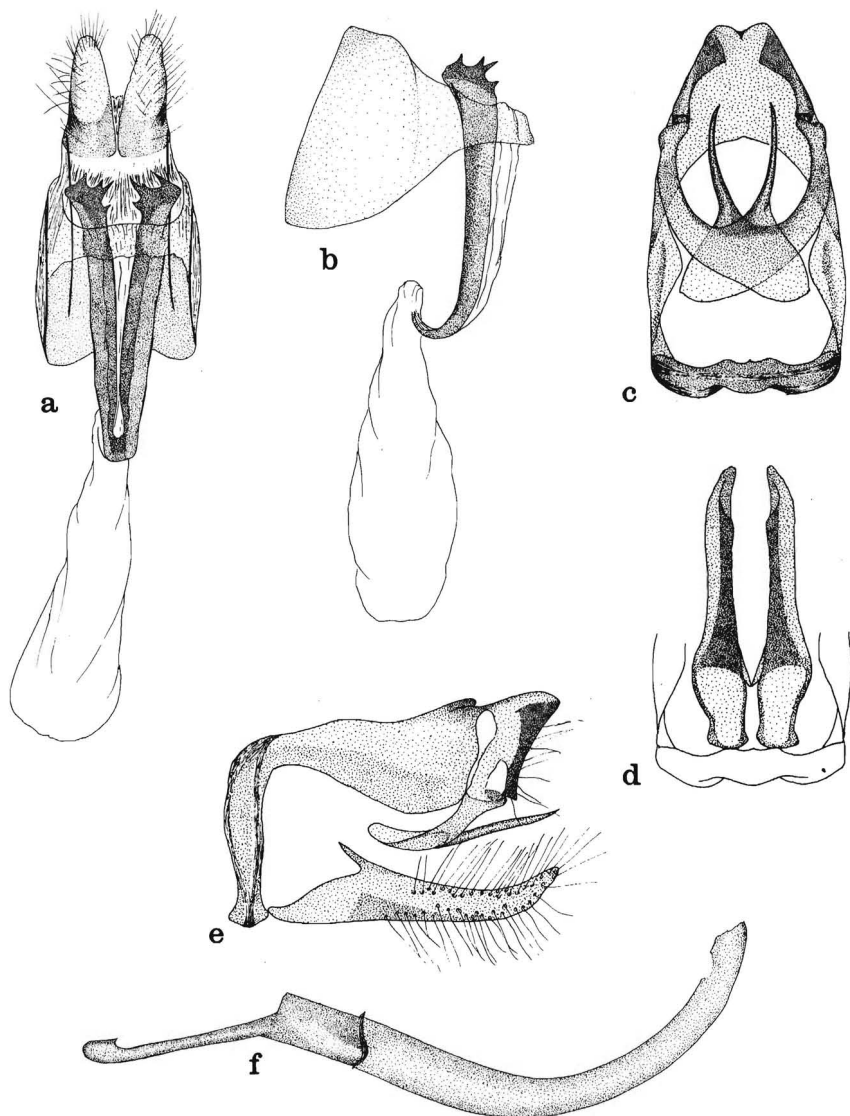


Figure 6. *Symbiopsis pentas* Nicolay. a, ventral view of female genitalia; b, lateral view of female genitalia without ovipositor, with 8th tergite; c, ventral view of male genitalia with valvae and aedeagus removed; d, ventral view of valvae; e, lateral view of male genitalia with aedeagus removed; f, lateral view of aedeagus.

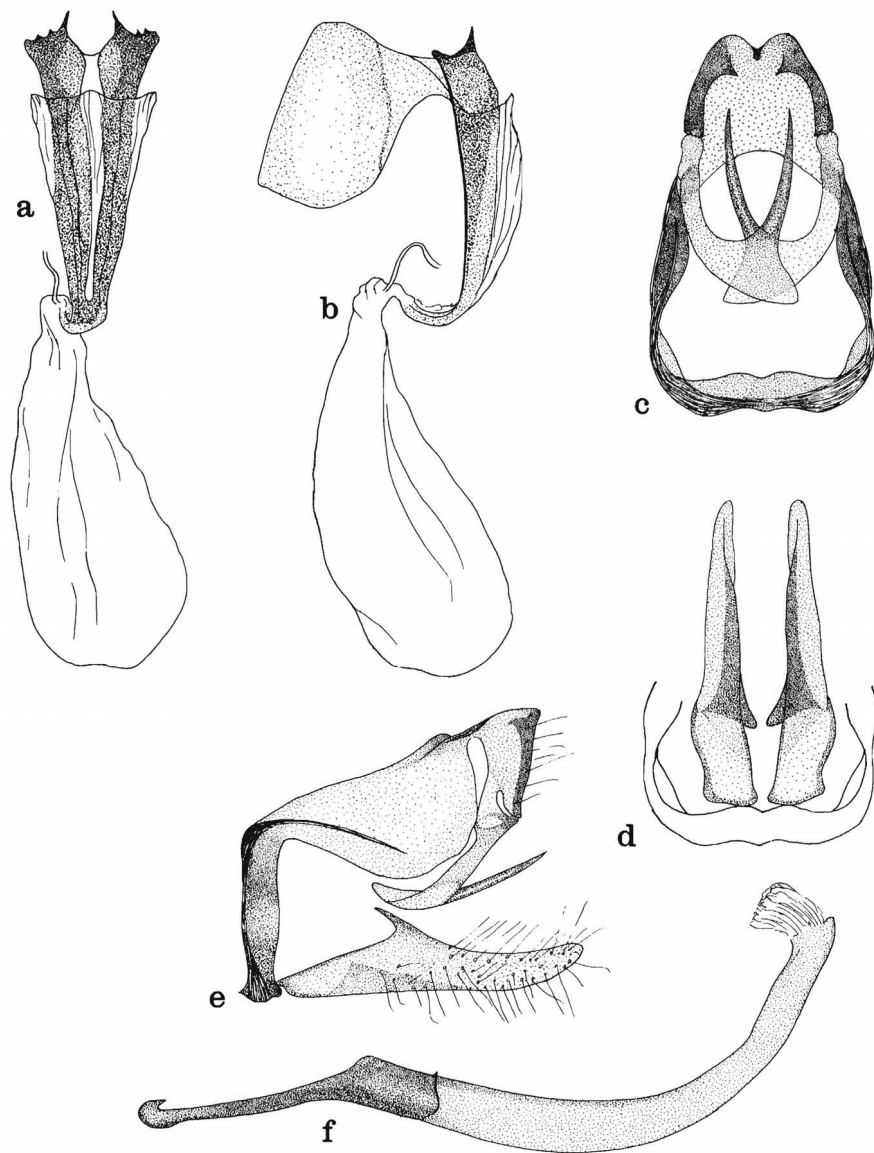


Figure 7. *Symbiopsis panamensis* (Draudt). **a**, ventral view of female genitalia with ovipositor and tergites removed; **b**, lateral view of female genitalia without ovipositor, with 8th tergite; **c**, ventral view of male genitalia with valvae and aedeagus removed; **d**, ventral view of valvae; **e**, lateral view of male genitalia with aedeagus removed; **f**, lateral view of aedeagus.

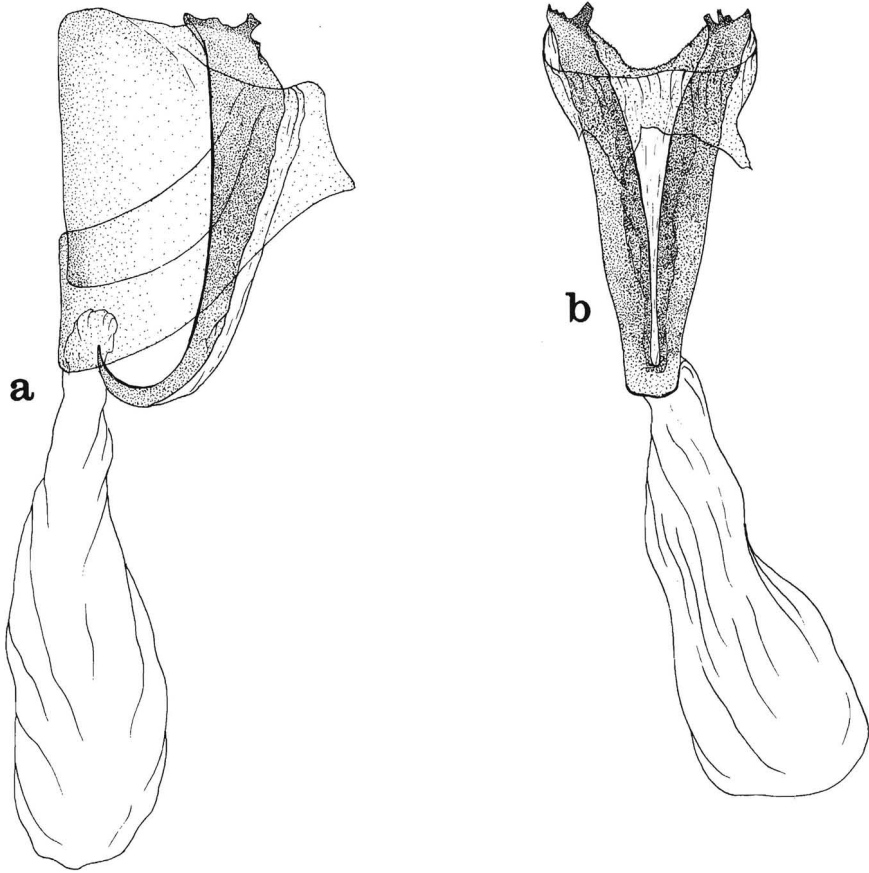


Figure 8. *Symbiopsis morpho* Nicolay. a, lateral view of female genitalia without ovipositor, with 7th and 8th tergites; b, ventral view of female genitalia without ovipositor, with part of 8th tergite.

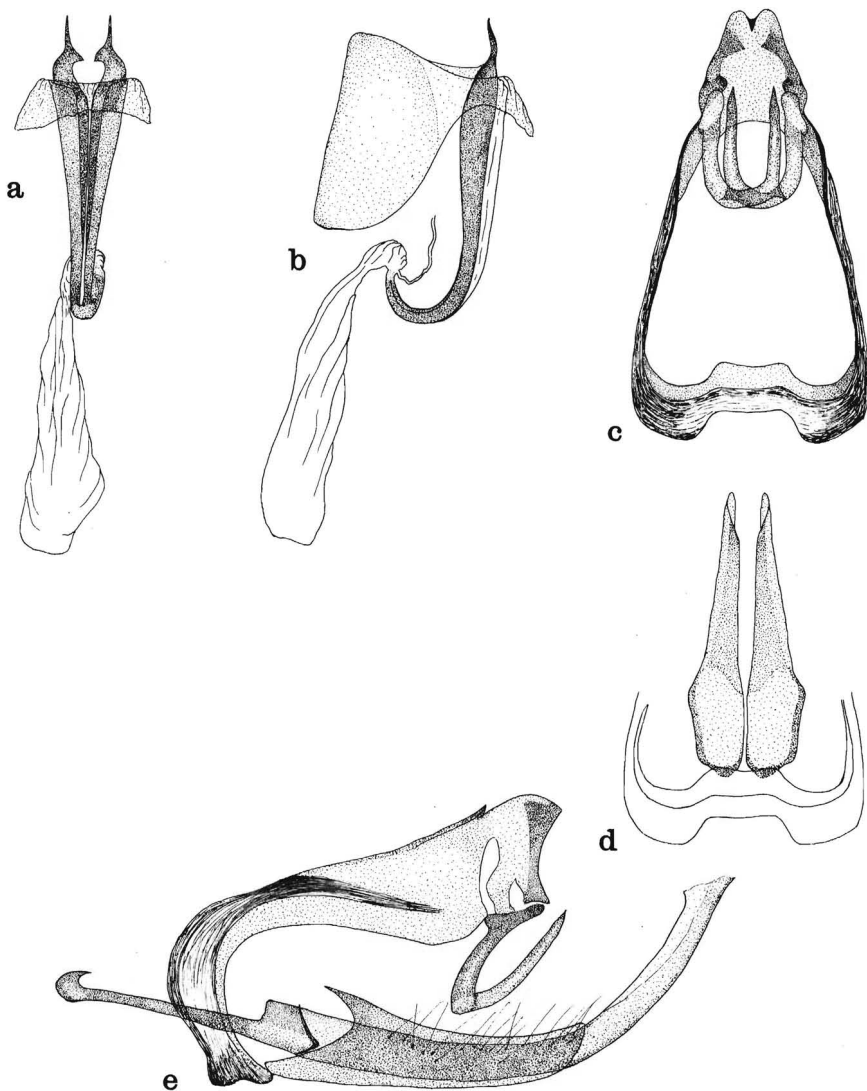


Figure 9. *Symbiopsis pennatus* (Druce). a, ventral view of female genitalia with ovipositor removed, with part of 8th tergite; b, lateral view of female genitalia without ovipositor, with 8th tergite; c, ventral view of male genitalia with valvae and aedeagus removed; d, ventral view of valvae; e, lateral view of male genitalia with aedeagus *in situ*.

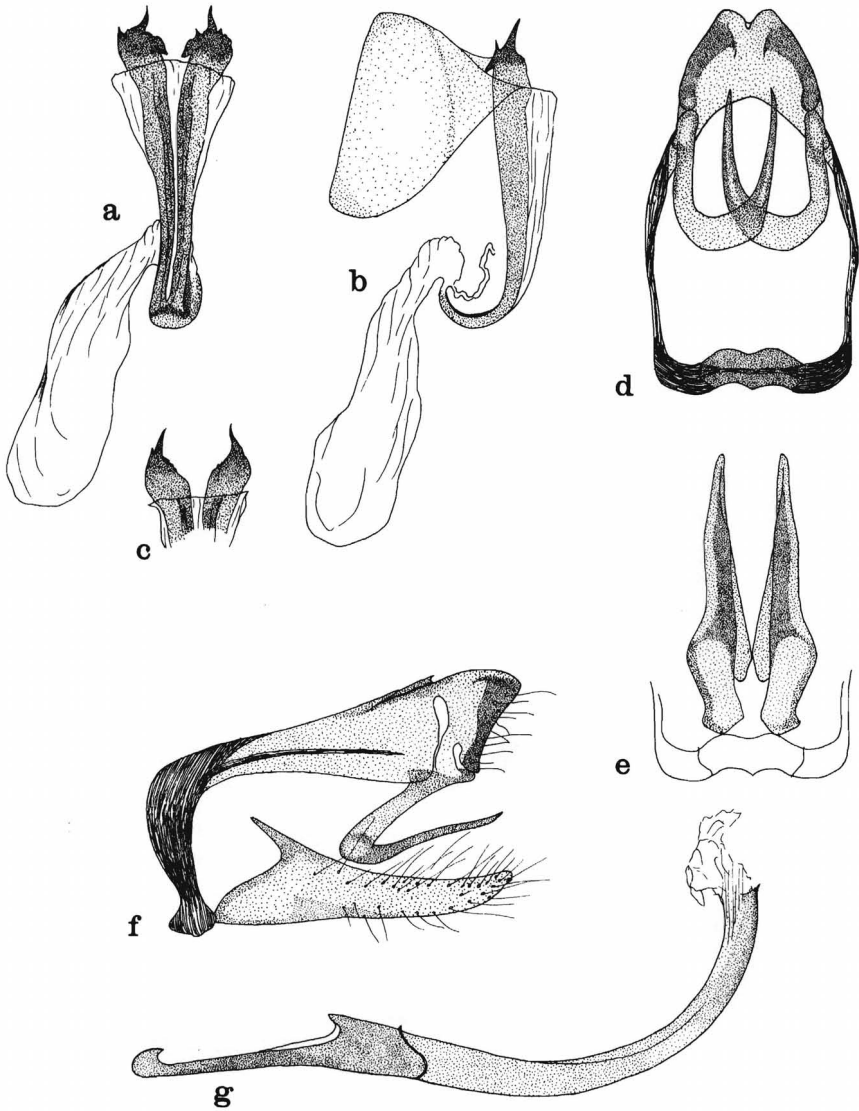


Figure 10. *Symbiopsis tanais* (G & S). a, ventral view of female genitalia with ovipositor and tergites removed; b, lateral view of female genitalia without ovipositor, with 8th tergite; c, variation in spines of ostium; d, ventral view of male genitalia with valvae and aedeagus removed; e, ventral view of valvae; f, lateral view of male genitalia with aedeagus removed; g, lateral view of aedeagus.

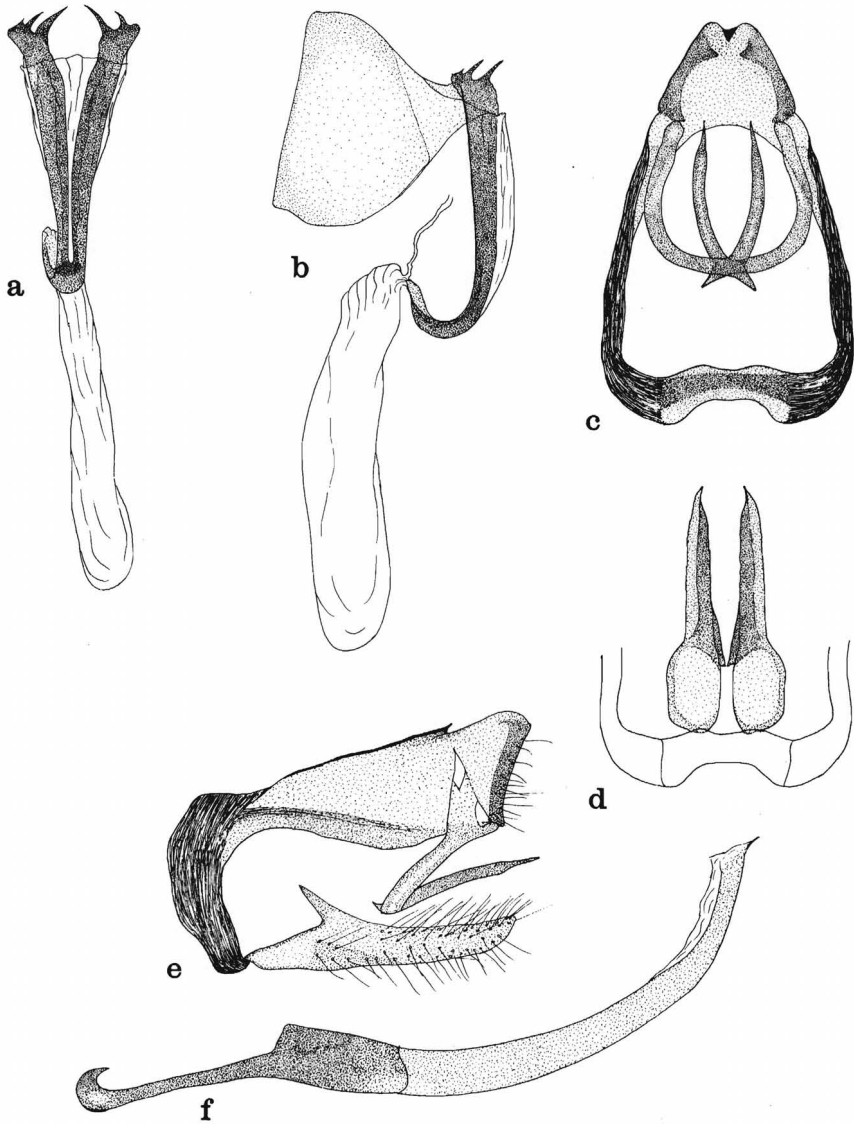
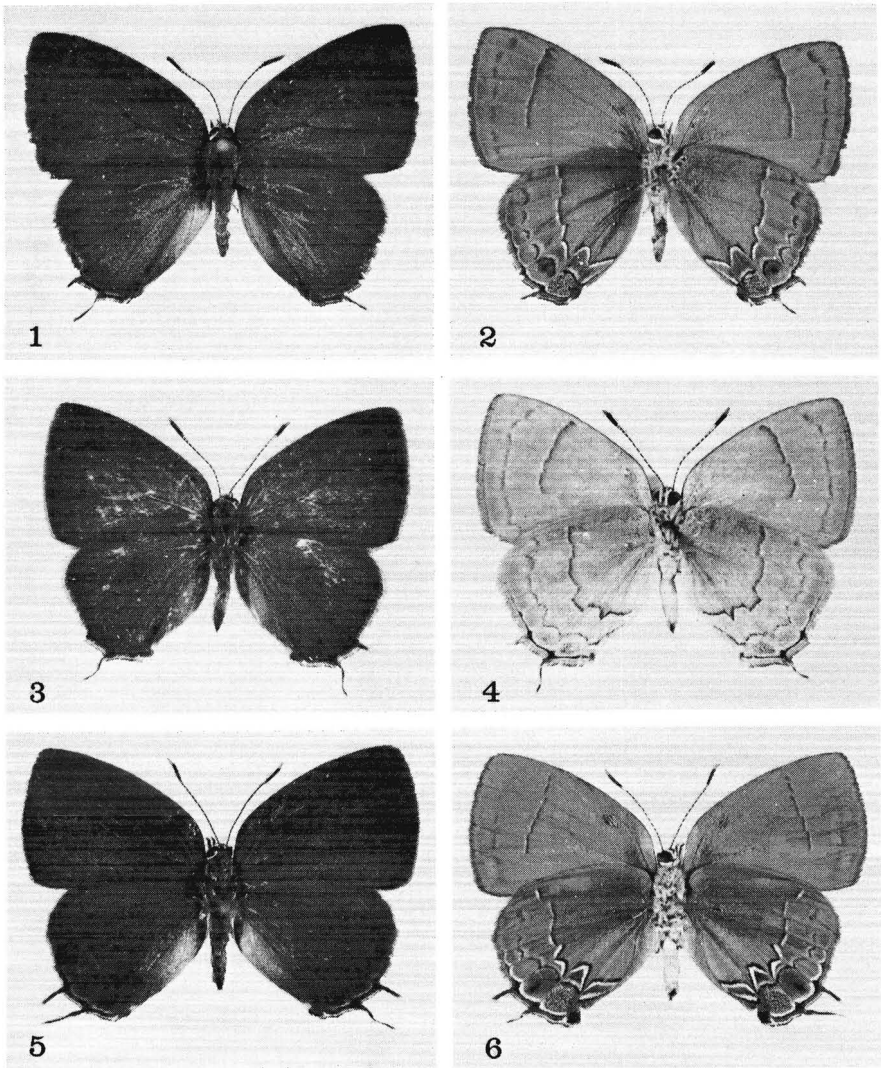
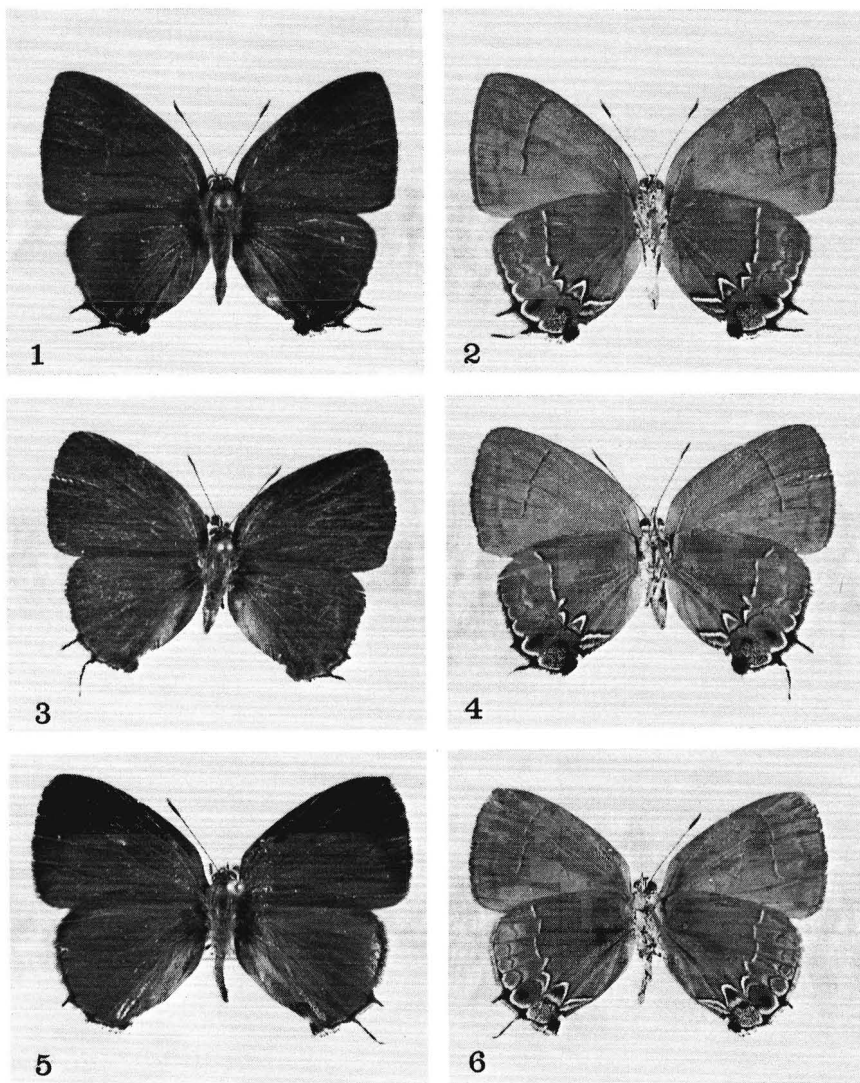


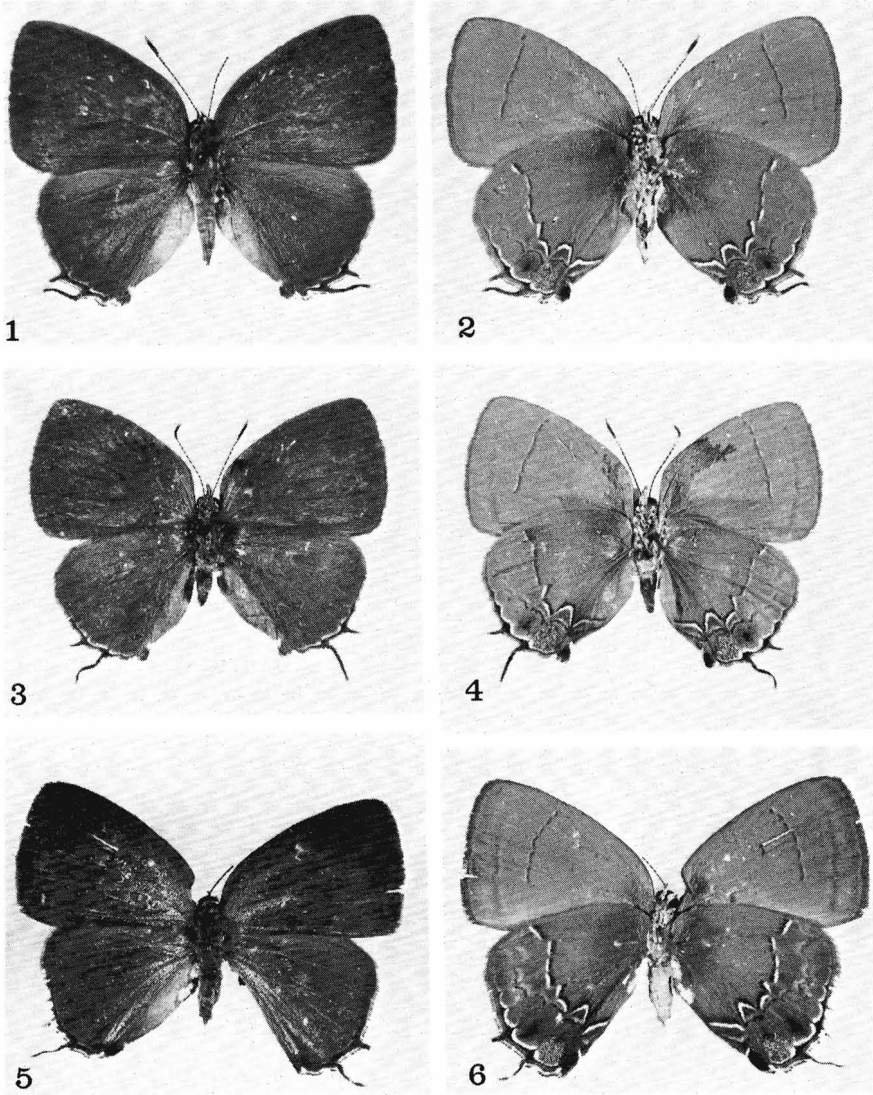
Figure 11. *Symbiopsis nippia* (Dyar). a, ventral view of female genitalia with ovipositor and tergites removed; b, lateral view of female genitalia without ovipositor, with 8th tergite; c, ventral view of male genitalia with valvae and aedeagus removed; d, ventral view of valvae; e, lateral view of male genitalia with aedeagus removed; f, lateral view of aedeagus.



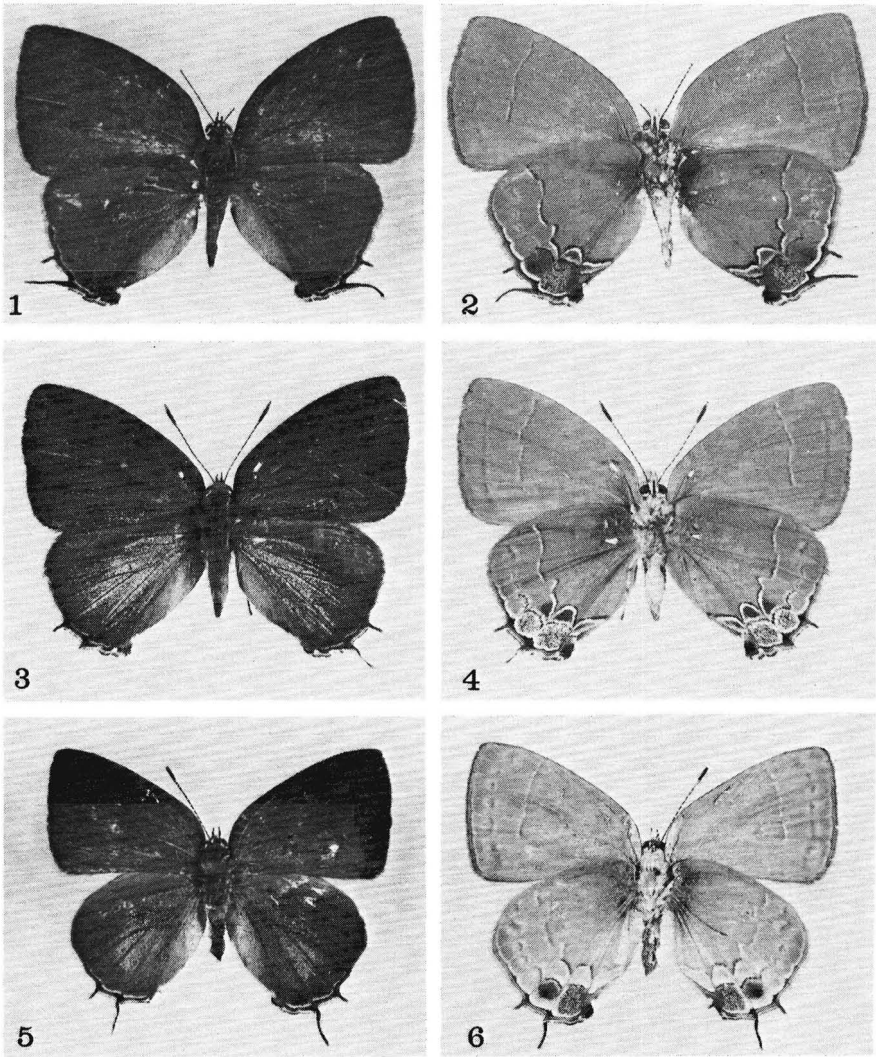
Figures 1, 2, *Symbiosis strenua* (Hewitson) male, Nova Teutonia, Santa Catarina, Brazil; 3, 4, *S. lenitas* (Druce) male, Nova Teutonia, Santa Catarina, Brazil; 5, 6, *S. pupilla* (Draudt) (neotype) male, Joao Pessoa, Paraiba, Brazil.



Figures 1, 2, *Symbiopsis smalli* Nicolay (holotype) male, Los Rios, Canal Zone, Panama; 3, 4, *S. smalli* (allotype) female, Los Rios, Canal Zone, Panama; 5, 6, *S. panamensis* (Draudt) (neotype) male, Potrerillos, Chiriqui Prov., Panama.



Figures 1, 2, *Symbiopsis pentas* Nicolay (holotype) male, Cuatro Ojos, Bolivia; 3, 4, *S. pentas* (allotype) female, Las Juntas, Bolivia; 5, 6, *S. morpho* Nicolay (holotype) female, Paramba, Equador.



Figures 1, 2, *Symbiopsis pennatus* (Druce) male, Ega, "Amazonas", Brazil; 3, 4, *S. tanais* (G. & S.) male, Cerro Campana, Panama; 5, 6, *S. nipia* (Dyar) male, Comala, Colima Mexico.

