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## THE "HAIRSTREAK BUTTERFLIES" (LYCAENIDAE, THECLINAE) OF NORTHWESTERN ARGENTINA II. *Strymon*, *sensu stricto*

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### INTRODUCTION

This paper is the second in our series concerning northwestern Argentine Theclinae and includes Argentine members of the large and widely distributed genus *Strymon* Hübner. We chose *Strymon* as the fifth subject genus of our study for several reasons. Among eumaeine genera, *Strymon* is one of the most well known and popular with collectors. Thus, in contrast to our work on *Calycopis*, *Calystryma*, *Tergissima* and *Femniterga* (which was based largely on our own recent samples of taxa otherwise poorly known) *Strymon* specimens from Argentina were available in substantial numbers, both in our own and institutional collections. It was apparent that a distinctive fauna of *Strymon* occurs in the Andean region south of 23° South Latitude (Jujuy Province, Argentina, Fig. 1) as well as in less frequently collected montane and lowland regions from 28° to 46° South Latitude (La Rioja Province to Chubut and Santa Cruz provinces [Patagonia], Figs. 2, 3). Earlier workers (Berg, 1896; Hayward, 1949) described some distinctive endemics but the systematic status of these remained uncertain because the taxa were not illustrated, dissected, or further elucidated in the scientific literature. Initial surveys for this study indicated that numerous southern South American *Strymon* remained undescribed. Of these, some appeared related to the taxa described by Berg and Hayward but others appeared akin to other *Strymon* species found in farflung regions of South America. With a number of these assemblages, important synonymic problems remained to be solved. In this study, type specimens of the southern South American *S. eurytulus* complex (*Thecla tucumana* Druce, *T. nigra* Lathy, *T. sapota* Hewitson, *T. argona* Hewitson and *T. americensis* Blanchard, Fig. 4) are examined critically for the first time. We make

four new synonyms in this complex and designate a lectotype for *T. americanus*. In addition, type specimens of taxa described by Berg and Hayward are reviewed.

Having assembled the necessary types and additional material, we felt a major study of southern South American *Strymon* could be undertaken as part of our northwest Argentine faunal survey.

### Materials and Methods

Materials and Methods follow Part I (Johnson, Eisele and MacPherson, 1988, hereafter "Part I"), except (1) "new combination" and "revised status" are used only when such citation constitutes the first change since literature cited in Bridges (1988); (2) taxa are considered sexually dimorphic only when genders differ in wing characters other than general wing shape and presence or absence of forewing androconia. Regarding format, Part II follows the collecting locality list of Part I (Part I, Appendix I). Additions to the lists are included at the end of this paper as "Appendix I, Supplement A". We also refer to the maps from Part I (Figs. 1, 2) and update these to include the new collecting localities (herein Figs. 1-3, 45-51).

### TAXONOMIC TREATMENT

#### STRYMON Hübner

New World *Strymon*, *sensu lato* and *Strymon*, *sensu stricto* of this study

Within the Eumaeini (Eliot, 1973), *Strymon*, *sensu lato* is peculiar because, as generally construed (Clench, 1961; Klots, 1951; Miller and Brown, 1981, 1983; Opler and Krizek, 1984; Pyle, 1981; Riley, 1975; Scott, 1986; Ziegler, 1960 [1961]) it is one of a few assemblages exhibiting remarkable stability in general morphological ground plan while including numerous taxa marked either by (a) distinctive characters of the wing or sexual androconia, or (b) structural innovations in certain parts of the genital morphology. Consequently, species of *Strymon* are often easy to identify but very difficult to cluster as intrageneric groups.

Wing pattern in *Strymon* is usually characterized by prominent forewing androconia in males (though some taxa distinctly lack these) and an undersurface pattern dominated by a postmedian forewing band and a well-defined, continuous or slightly broken, medial band variously complemented by basal or submarginal elements. Based on the morphology of the type species (*Strymon melinus* Hübner 1806-1838 [1818]) and common usage, *Strymon*, *sensu lato* includes species sharing a distinctive spiral-shape in the ductus bursae of female genitalia (Figs. 18-45) and a simple male genitalia characterized generally by (i) unsculptured, evenly tapered, valvae; (ii) asymmetrical saccus usually of moderate length; (iii) generally straight and elongate aedeagus with a prominent cephalic caecum, some caudo-terminal undulation of the shaft, and two terminal cornuti and (iv) small brush organs abutting the dorso-terminal one-half of the vinculum and adjacent labides (Figs. 14-45). However, numerous species often associated with *Strymon* lack one or more of these major features.

Morphological study of *Strymon*, *sensu lato* in the New World indicates that, within the common taxonomic usage cited above, there are several assemblages with distinctive characters and further work on these groups may indicate the appropriateness of more than one generic name. Four distinctive *Strymon*-like groups occur in southern South America. One closely resembles the type species (*S. melinus*) and related taxa, while the other three are divergent. Considering the undescribed taxa, all four groups have relatively high species diversities. Two of these groups, which diverge from the type species of *Strymon*, are high Andean and presently under study by other workers (Johnson, L. D. Miller and J. Herrera). Consequently, we do not include these groups here in *Strymon*, *sensu stricto*. We summarize them below and await the results of the above-mentioned studies before enumerating the Argentine taxa:

(1) *Eiseliana* Ajmat de Toledo (1978) [type locality Tilcara, Cerro Negro, Jujuy Province, Argentina (herein, locality 51A)]. Compared to *Strymon*, *sensu stricto*, members of this group always lack hindwing tails (and in some cases male forewing androconia), share a characteristic postbasal under surface wing pattern and, in the female genitalia, have a wider spiral in the female ductus bursae. Males have a generally rounded vinculum and valvae of moderate length. *Eiseliana* taxa are restricted to the high Andes and Patagonia. Along with type species *koehleri* Ajmat de Toledo, the group includes "*Thecla*" *punona* Clench, *T. bicolor* Phillipi, *T. quadrimaculata* Hewitson, *T. flavaria* Ureta and one undescribed species.

(2) The *Thecla wagenknechti* Ureta/*T. heodes* Druce assemblage. In females of this group the spiral in the ductus bursae is located comparatively remote from the corpus bursae and the eighth tergite is specialized; in males the valvae and saccus are unusually robust. This group is comprised of poorly known high Andean species, including the above mentioned and three undescribed species.

In related studies these groups are being defined by revisionary work and thus warrant distinction here from *Strymon*.

In addition to the above diverse groups, some specimens associated with *Strymon basilides* (Geyer) have a ductal spiral and some have, instead, a ventrally declined ductus attached to a large "hood" at the distal end of the corpus bursae (Figs. 14, 15). These latter conditions also occur in some other "*Strymon*" taxa. *Tmolus basilides* Geyer (1832-1837 [1837]) lacks an extant type and has an ambiguous type locality ("Brazil"). Resolving the identity of this species relative to the above morphological variation will probably require eventual action through the International Commission on Zoological Nomenclature. However, the variable occurrence of the ductal spiral does not appear to obviate including taxa without this structure in *Strymon*, *sensu stricto* as a monophyletic group. We have discovered one species (see *S. barbara*, below and Fig. 45) which exhibits both the ductal spiral and the bursal hood, and another (see *S. amphyporphyra*, below and Fig. 17) in which the spiral occurs only as a cephalic declination.

For purposes of this study, we use the name *S. basilides* for *basilides*-like populations occurring in Argentina. This is prudent since the same morph occurs in Brazil and Argentine records represent its southern range extreme. *Strymon* is under study by other workers (S. S. Nicolay, pers. comm.) and the problem of *S. basilides* can probably be resolved therein.

In the meantime, there appears to be no problem with recognizing *Strymon*, *sensu stricto* (hereafter "*Strymon*") as a monophyletic group with a distinctive fauna occurring in Argentina.

*Strymon*, *sensu stricto* in Argentina.

Diversity in Argentine *Strymon* reflects the areas of endemism characterized by us for the "Northwestern Region" (1988, Figs. 1 and 2). Because of this, and the large samples of *Strymon* available from diverse sources, we provide herein for the first time distribution maps from the ten additional northwestern Argentina provinces (1988, Figs. 1B, 2B; herein Fig. 2) along with the adjacent areas of Patagonia (Fig. 3). These additional localities are listed in Appendix I, Supplement A. For localities where we lack first hand familiarity with the habitats, we limit additional comments to compass coordinates, and site descriptions recorded in I.M.G. (1968). The Argentine *Strymon* are subdivided into several species groups based primarily on diagnostic criteria. Since we are not using species groups previously established in revisionary work (as in *Calycopis*, Part I), we provide a brief definition of each group beneath its name along with remarks.

#### STRYMON Hübner, *sensu stricto*

The *basilides* Group:

*Characters.* Female genitalia with ductus bursae not spiral (instead, joining cervix bursae at a sclerotized "hood"); male with forewing brands; upper surface usually without

structural color; under surface with broken, patchy, orange or brownish bands; male genitalia with vinculum laterally angled.

**Remarks.** Lack of a ductal spiral, and presence of a large bursal hood, suggest the group (above-listed species and other Neotropical members) probably represent a major phylogenetic lineage within *Strymon sens. lat.* It is possible that the peculiar species *S. baptistorum* (described under section "Species Group Unknown") belongs in this group; however, its female is unknown.

***Strymon basilides* (Geyer)**

Figures 5A,B, 14

*Tmolus basilides* Geyer 1832-1837 [1837], vol. 5: 42, pl. 168, fig. 977, 978. Hayward, 1973: 161.

**DIAGNOSIS.** Both sexes brown above, males with prominent black androconial brand. Beneath, in addition to an orangish to red-orange medial band (edged distally with black and white), prominent postbasal markings (usually two orange to red-orange slashes or spots). Female ductus lacking spiral; joined to cervix bursae at sclerotized "hood".

**DESCRIPTION.** *Adult.* Male (Fig. 5A): forewing 10.0-15.5 mm. Female (Fig. 5B): forewing 10.0-18.0 mm. *Male Genitalia* (Fig. 14). In lateral view, labides caudally pronounced; adjoining vinculum laterally angled and thin cephalad the base of falces, brush organs thinly abutting this margin; saccus widely parabolic. In ventral view valvae widely parabolic in bilobed area, caudally constricted and very thin in the caudal extension. Aedeagus elongate (length exceeding rest of genitalia by at least one-third) with shaft only slightly recurvate; caecum comprising about one-third of length. *Female Genitalia* (Fig. 14). Ductus bursae elongate and conical, ventrally declined in the cephalic one-third adjoining cervix bursal hood; terminal lamellae parabolic. Corpus bursae with two elongate signa. Papillae anales robust with slightly bulbous termini; apophyses short (length equalling only about two-thirds ductus length).

**TYPES.** Status and location of types unknown (Bridges, 1988); type locality: "Brazil" (see Remarks).

**DISTRIBUTION.** Spatial (Fig. 46A): in neotropics from central Mexico southward through South America (in eastern South America from Trinidad southward to eastern Argentina; in the west to Peru, southeastern Bolivia and northwestern Argentina). In northwestern Argentina known to us only from BMNH Salta specimens (see Remarks). Hayward (1973) listed Tucuman. Temporal: monophenic [sexually monomorphic]; northwestern Argentine specimens lack collection dates other than year (see Remarks).

**REMARKS.** As noted above, systematic status of this species is uncertain because specimens matching wing characters of *Tmolus basilides* include females with and without a spiral ductus. We use the name *basilides* for northwestern Argentina since the spiral-less morph occurs in Brazil and northwestern Argentine specimens would represent a southern range extreme. We include the species based on Hayward's (1973) report, BMNH specimens with Argentine data and the frequent occurrence of the species in samples from Bolivia just north of the study area. Conspicuous absence of this species (and *S. megarus* (Godart), see later entry) from recent samples warrants some comment on the historical data. Early BMNH staff removed original labels on many Lepidoptera specimens and replaced them with printed ones. At BMNH, specimens attributed to Steinbach lack collection data other than year with most noted as incorporated from the Rothschild bequest in 1931. CMNH Steinbach specimens have two labels, one with locality and one with date (latter often complete). At BMNH, specimens attributed to Steinbach fall into three different time periods during the first two decades of the 20th Century. Junior authors note that only trails existed connecting the regions at that time and they question how many times Steinbach actually visited Argentina. Steinbach's travel to northwest Argentina for ornithological specimens is documented at CMNH for 1914 indicating a route from Bolivia to Orán, Tucumán, closer to the mountains than "Rio Bermejo".



Similarly, there is a "Rio Bermejo" in Bolivia on the border with Salta, Argentina. Its hydric yungas ecology is more characteristic of *S. basilides* and *S. megarus* than the xeric habitats of Rio Bermejo, Salta. However, occurrence at Rio Bermejo, Bolivia would be immediately adjacent and continuous with Argentine hydric woodland habitats like that characterized by us in habitat entry 24A.

MATERIAL EXAMINED. Miscellaneous other leg.—22B, 1 ♂, 2 ♀, \*\*\*"1903", leg. Steinbach (BMNH). Note: there are additional specimens from the Steinbach localities in adjacent southeastern Bolivia (BMNH, CMNH, IML).

*Strymon diaguita* (Hayward), new combination

Figures 5C,D, 15

*Thecla diaguita* Hayward 1949: 576, fig. 4; 1973: 161.

DIAGNOSIS. Brown above, with prominent black androconial scent brand in males. Beneath, in both sexes, under surface with brown ground color and orange-brown medial and postbasal bands formed from patchy marks in each cell. This pattern is similar only to that in related species which are brilliant blue above. Female without spiral ductus; joined to cervix bursae with prominent sclerotized "hood".

DESCRIPTION. *Adult*. Male (Fig. 5C): forewing 13.5-15.5 mm. Female (Fig. 5D): forewing 14.0-16.5 mm. *Male Genitalia* (Fig. 15). In lateral view, labides caudally pronounced; adjoining vinculum laterally angled and thin cephalad the base of falces; brush organs thinly abutting this margin; saccus parabolic, elongate (length exceeding bilobed area of valvae). In ventral view, valvae with parabolic bilobes, then caudal constriction to a thinly tapered caudal extension. Aedeagus elongate (length exceeding rest of genitalia by at least one-third) with terminus only slightly recurvate; caecum comprising just under one-third of aedeagal length. *Female Genitalia* (Fig. 15). Ductus bursae robust with without ductal spiral; rather, ductus declined in cephalad one-fifth before juncture with large bulblike cervix bursae; terminal lamellae short and parabolic; corpus bursae with two elliptical signa of moderate size; papillae anales robust and parabolic; apophyses relatively short, length equalling about three fifths that of ductus.

TYPES. Holotype male (Fig. 5C), labelled "Villa Nougues, 21 Enero 1931" [46A], "*Thecla diaguita* Hayw. Holotipo, male, K. J. Hayward Det.", "Type", "Holotipo", "Preparacion genitalia male No. 4000, K. J. Hayward, Det.", "Coleccion Inst. Fund. M. Lillo (4000), S. M. Tucuman, Tucuman, Argentina".

DISTRIBUTION. Spatial (Fig. 46A): known primarily from mesic to hydric forest habitats in Jujuy, Salta and Tucumán provinces, Argentina. Temporal: Monophenic [sexually monomorphic]; known from December to April.

REMARKS. Though distinctive, *S. diaguita* has been poorly known because of its limited distribution in seldom collected mesic to hydric forest biomes. Prior to frequent recent collections by the junior authors, the species was known only from small samples taken along humid forest margins. Hayward's (1949) genitalic drawing included the tightly clustered brush organs as part of the vinculum and thus differs from our Fig. 15. We illustrate a recently caught specimen since little can be construed from the original genitalic slide of the type (IML # 4000) which was either poorly prepared or subsequently damaged.

MATERIAL EXAMINED. leg. Eisele—160A, 1 ♂, 4. i. 1988 (MZPC), 1 ♂, 4. i. 1988 (MPM), 1 ♂, 4. i. 1988 (LACM), 1 ♂, 4. i. 1988 (MNH), 1 ♂, 4. i. 1988 (AME); 3 ♂, 4. i. 1988 (AMNH), 2 ♂, 6. i. 1988 (CRE), 2 ♂, 16. ii. 1988 (CRE), 2 ♀, 15. ii. 1988 (AMNH), 3 ♀, 16. ii. 1988 (CRE); 160B, 1 ♀, 18. ix. 1987 (CRE); 160C, 1 ♂, 20. i. 1987 (CRE), 1 ♀, 31. xii. 1987 (CRE); leg. MacPherson—5A, 2 ♀, iv. 1979, 1 ♂, \*\*29. xii. 1980; 17A, 1 ♀, \*7. ii. 1976, 1 ♂, \*v. 1978 (AMNH); 4A, 1 ♂, \*14. i. 1961; miscellaneous other leg.—38A, 1 ♂, ii. 1947, leg. Golbach (IML); 46A, 3 ♀, 1M, \*\*21. i. 1931 (IML), 2F, ii. 1928 (all IML); 158A, 1 ♂, 15. ii. 1954, leg. Garcia (IML); 45B ["Quebrada Cainzo"], 1 ♀, 18. xii. 1950, leg. Golbach (IML); no data, 1 F (IML); no data but 1. 1929, 1 F (IML); 45A, 1 ♀, leg. Steinbach (BMNH).

### The oreala Group:

*Characters.* Female genitalia with ductus bursae robust and generally spiral shaped; male with forewing brands and prominent structural color; under surface pattern made up of prominent medial and/or postbasal orange or brown patches, sometimes complemented by basal and discal elements; species generally very large (FW to 18.0-19.0 mm); male genitalia with vinculum laterally angled.

*Remarks.* For purposes of this study, this grouping is based primarily on diagnostic criteria. Given the species diversity of similar large *Strymon* species in the neotropics it may not be monophyletic.

### *Strymon oreala* (Hewitson), new combination

Figures 5E, F, 16

*Thecla oreala* Hewitson 1868: 27.

**DIAGNOSIS.** An extremely large species (FW 16.5-19.0 mm), upper surface brilliant silvery blue in both sexes over entire wings except for crisp fuscous apices and margins (latter more restricted in females). Beneath with orange-brown patch-like marks in basal, postbasal, discal, and medial areas (pronounced postbasally, females); thus, far more bespeckled than any similar congener (see *S. amphyporphyra*, *S. basilides*, *S. megarus*).

**DESCRIPTION.** *Adult.* Male (Fig. 5E): forewing 16.5-18.5 mm. Female (Fig. 5F): forewing 17.0-19.0 mm. *Male Genitalia* (Fig. 16). In lateral view, labides caudally pronounced; vinculum ventrally tapering toward saccus, dorsally angled toward area of brush organ attachment (brushes extend to base of labides); saccus triangular, rather elongate. In ventral view, valvae with parabolic bilobes and evenly tapered, elongate caudal extension. Aedeagus length exceeding rest of genitalia by about one-third, terminus only slightly recurvate, if at all; caecum comprising about one-fourth aedeagal length. *Female Genitalia* (Fig. 16). Ductus bursae robust, spiral occurring in cephalic one-fifth; terminal lamellae pronounced and spatulate; cervix bursae cuplike; corpus bursae with two elliptical signa of moderate size; papillae anales elongate and parabolic with slightly bulbous terminus; apophyses equal length of ductus caudad the ductal spiral.

**TYPES.** Syntype female labelled "Rio, Hewitson Coll. 79-69. *Thecla oreala* - 6." [indicating there are five other syntypes (Johnson, 1989b,c)], "*Thecla Type oreala*"; syntype male labelled "B.M. TYPE Lep. Rh. 1024", "Type", "oreala", "Godman-Salvin Col. 1911.-93. Bahia Brazil" [question mark added subsequently to "Bahia"], "male, Bahia?", both BMNH. Type locality: generally cited as "Bahia" (Bridges, 1988).

**DISTRIBUTION.** Spatial (Fig. 46A): in neotropics known primarily from eastern coastal and southeastern Brazilian localities, reaching southern limit in northwestern Argentina (single specimen from Tucumán Province, see Remarks). Temporal: monophenic [sexually dimorphic, females with much wider areas of upper surface structural color and more profuse postbasal patching on under surface hindwing]; known only from June.

**REMARKS.** This species has been widely associated with *Strymon* in curatorial usage but not in the literature. Because of its size and profuse upper surface structural coloration, it is not confusable with any other congener. The single NW Argentine specimen (not reported by Hayward, 1973) appears to be the southernmost record, after which the species is replaced by the Argentine endemic described below. The latter is large like *S. oreala* but differs from it in the wing pattern of both surfaces and genitalia. R. Golbach (IML) remembered acquiring the single representative and made the notations marked with quotation marks below.

**MATERIAL EXAMINED.** Miscellaneous other leg.—45B ["Mountains near Tucuman"], "i.d. Hayward", 1 F, \*10. vi. 1936, "leg. Schreiter".

*Strymon amphyporphyra*, new species

Figures 6A,B, 17

**DIAGNOSIS.** Large (FW 18.5 mm), male purplish over entire wings, fading to fuscous apices and margins and with prominent black forewing brands; female brown. Both sexes beneath more like *S. diaguia* than *S. oreala*, orange-brown patches occurring in medial band and across the postbasal area. Along with wings, genitalia of both sexes unique: male (Fig. 17) with large downward pointing vincular spur at area abutting brush organs; aedeagus with terminally bifurcate caecum (see below); female (Fig. 17) ductus bursae elongate, declined caudad the corpus bursae with a slight rotation, not a spiral.

**DESCRIPTION.** *Male* (Fig. 6A). Upper surface of wings: Margins and apices diffuse fuscous; rest of wing powdered brightly violet purple. Forewing with large black brands covering upper one-half of the discal cell. Hindwing with large black patches along submargin. Under surface of wings (Fig. 5A): Ground color gray; forewing with postmedian band of orange-red spots, costa to vein CuA<sub>1</sub>. Hindwing with median line of scattered red-orange spots, outlined first with black, then white. Postmedian area with light white blotches in the cells along submargin. "Thecla"-spot at cell CuA<sub>1</sub>, large, orange with black center. Long tail at terminus, vein CuA<sub>2</sub>, shorter one at terminus, vein CuA<sub>1</sub>; anal lobe with black fringe. Length of forewing: 18.5 mm (holotype).

*Female* (Fig. 6B). Similar to male but brown above and without scent brands. Length of forewing: 18.5 mm (allotype). *Male Genitalia* (Fig. 17). Dorso-lateral surface of vinculum extremely large (length from labides terminus to dorso-cephalic margin of vinculum nearly equal to that from latter to tip of saccus); protruding spur along dorso-cephalic margin where brush organs abutt. Aedeagus with caecum widely bifurcate. *Female Genitalia* (Fig. 17). Ductus bursae elongate with caudal area near corpus bursae declined and slightly rotated (not spiral); terminal lamellae pronounced and spatulate; papillae anales robust and rather blunt-ended; length of apophyses papillae anales about equal to that of ductus bursae caudad its ventral declination.

**TYPES.** Holotype male, allotype female, Mosconi, Salta Province (17A), \*\*6. vii. 1977, leg. B. MacPherson, deposited AMNH.

**DISTRIBUTION.** Spatial (Fig. 46A): known only from the type locality. Temporal: known only from the type data.

**REMARKS.** Like other butterflies recently described from Mosconi (Johnson et al., 1986, 1988; Johnson, 1988; 1989a,b,d,e) this species appears to be a chaco endemic. The chaco biomes of northwestern Argentina and adjacent Bolivia and Paraguay (see Part I, Introduction) harbor a distinctive endemic fauna; *S. amphyporphyra* probably derived therein from ancestral *S. oreala*/ *S. amphyporphyra* stock.

**ETYMOLOGY.** The Greeks prefix "amphi" and the noun "porphyra" mean "large and lavender" referring to the appearance of the wings.

*Strymon megarus* (Godart), new combination revised status

Figures 6C,D, 18

*Polyommatus megarus* Godart 1819-1824 [1824]: 638.

**DIAGNOSIS.** We use this name for the *Strymon* species somewhat similar to *S. basilides* on the under surface but with prominent chromatic azure blue on the upper surface (see Type and Remarks). *S. megarus* is smaller than *S. oreala* and *S. amphyporphyra* (forewing to 14.5 mm) and only slightly resembles (in quite different ways) the species *S. amphyporphyra* and *S. golbachii* described herein as new. The upper surface is colored brilliant iridescent azure blue from base to submargin (as in *S. golbachii*, see below), not lavender as in *S. amphyporphyra*. The male has prominent black scent brands. Both sexes beneath exhibit a brilliant red-orange medial hindwing spot-band, discal slash and one to three postbasal spots (differing from patchlike orange-brown medial and postbasal

markings of *S. amphyporphyra* and scattered blood-red medial orbs of *S. golbachii*). Remarks summarize relationship of *S. megarus* to frequently used Neotropical name *Strymon arola* (Hewitson).

**DESCRIPTION.** *Adult.* Male (Fig. 6C): forewing 11.0-14.5 mm. Female (Fig. 6D): forewing 11.0-14.5 mm. *Male Genitalia* (Fig. 18). In lateral view, labides caudally pronounced; adjoining vinculum laterally angled and thin cephalad the base of falces; brush organs thinly abutting this margin. In ventral view, valvae with parabolic bilobes and slight caudal constriction to an evenly tapered caudal extension. Aedeagus relatively short (exceeding rest of genitalia by only about one-fourth), terminus ventrally declined; caecum large, comprising at least two-fifths of aedeagal length. *Female Genitalia* (Fig. 18). Ductus bursae conical but with terminus near lamellae bulbous; ductal spiral occurring in cephalic one-fourth with cervix bursae area dorsally inclined; cervix bursae small, cuplike. Corpus bursae with two small signa. Papillae anales robust with bulbous termini; apophyses relatively long (equalling length of ductus caudad ductal spiral).

**TYPE.** Holotype male labelled "P. Megarus, Godt. [sic], echion, Linn., basalides [sic], Hubn., megarus, Godt. type" (handwritten); "TYPE, Museum Paris" (typeset); MNHN (see Johnson 1990). Long considered a subjective synonym of *Tmolus basilides* (Geyer) 1832-1837 [1837] (Bridges 1988) prior to location of the type.

**DISTRIBUTION.** Spatial (Fig. 46A): by virtue of *S. megarus* usage herein, current noted as including northwestern Argentina and adjacent Bolivia. Status of other chromatic blue taxa in neotropics, distributed from northern South America (including Trinidad) southward through the Amazon region, remains to be determined. In northwestern Argentina known only from Salta (see Remarks). Temporal: seasonal phenism undetermined (extreme variation in degree of upper surface blue structural color in males of many Neotropical areas) [sexually dimorphic, males with upper surface iridescent blue, females brown]; northwestern Argentine specimens lack data other than year (see Remarks under *S. basilides*).

**REMARKS.** Our species usage here appears to be the first since the original description and results from examination of the type (MNHN). In many museum collections, specimens identified here by us as *S. megarus* have often been associated with the name *Strymon arola* (Hewitson) [holotype female, BMNH, labelled "arola Hewitson Thecla 392.393", "Arolus. Boisd. M.S.", "arolus, Brazil", "Type", "B. M. TYPE No. Rh. 1030"; type locality of original description: Brazil]. Study of types of both taxa indicates *megarus* applies to northwestern Argentine and southeastern Bolivian specimens. The type of *T. arola* is a bright blue female (female brown in *S. megarus*) with the bright blue in solid patches (not flecked as in *S. megarus*) and the under surface red-orange markings wide, continuous and bandlike. Dissection of *S. arola* suggests it may be a southeastern Brazilian coastal forest endemic and the "*S. arola, sens. lat.*" of common usage a complex of several Neotropical species with upper surface chromatic blue. As noted below, *S. golbachii* somewhat resembles *S. megarus* on the upper surface but it is markedly distinct on the wing under surface and in structural characters. Remarks under *S. basilides* concerning veracity of specimens attributed by BMNH to "Rio Bermejo, Argentina" also pertain to Argentine records of *S. megarus*.

**MATERIAL EXAMINED.** Miscellaneous other leg. 22B, 1 M, \*"1903", leg. Steinbach (BMNH) (there are additional Steinbach specimens from sites in southeastern Bolivia in CMNH, BMNH).

### *Strymon golbachii*, new species

Figures 6E,F, 19

**DIAGNOSIS.** Upper surface similar to *S. megarus* but under surface of hindwing without medial spot-band, discal slash and postbasal markings; instead marked with large blood-red medial orbs (one each in cells 2A, CuA<sub>1</sub>, CuA<sub>2</sub> and two conjoined distad in discal cell) and a red line edged with black and white extending from cell CuA<sub>2</sub> to the anal margin. Genitalia with distinctive, spade-like valval termini, unique among *Strymon*.

**DESCRIPTION.** *Male* (Fig. 6E): Upper surface of wings: Ground color brilliant iridescent azure blue from wing bases to submargin; submargin and apices black. Forewings with black brands in distal one-third of discal cell. Hindwings with two tails, short at terminus of vein  $CuA_1$ , longer,  $CuA_2$ . Under surface of wings (Fig. 5F): Ground color gray-white. Forewing with band of lunular blood-red orbs, costa to cell  $CuA_1$ . Hindwing with large blood-red orbs (encircled first with black and then with white), one each in cells 2A,  $CuA_1$  and  $CuA_2$ , and two conjoined at distal end of discal cell. Limbal area with cell interspaces darker gray; Thecla-spot orange with central black spot; cell  $CuA_2$  suffused black and orange; anal lobe black. Length of forewing: 14.5 mm (holotype). *Male Genitalia* (Fig. 18). Labides rather flat; vinculum ventrally tapering toward saccus with produced central area; dorsal surface of vinculum slightly produced toward area of brush organ attachment (brushes extending to base of labides); saccus triangular. Valvae with widely parabolic bilobes and distinctive, spade-shaped, termini to caudal extension. Aedeagus relatively short, exceeding length of remaining genitalia by circa one-fourth.

**TYPES.** Holotype male, Mendoza (206A), \*28. xii. 1906, C. S. Larsen Collection (deposited MNHN).

**DISTRIBUTION.** Spatial (Fig. 46A): known only from type locality. Temporal: known only from the type data.

**REMARKS.** As noted in Johnson (1989a,b,c,d) the largely unsorted and unincorporated Larsen collection at MNHN includes numerous austral South American Theclinae. Lathy (1926, 1930, 1936) began describing some of these and curating them into the MNHN collection. Unfortunately, except for occasional notes on some localities, data on Larsen specimens is limited to a date and generalized locality (usually "Argentina" and name of Province). In cases where specimens were acquired from other workers, this is also noted.

**ETYMOLOGY.** This species is named for the pioneer Argentine entomologist Rodolfo Golbach.

#### The crosssoea Group:

*Characters.* Female genitalia with ductus bursae thin, elongate and spiral shaped; males with scent brands; upper surface often with prominent structural color on caudal portion of hindwing; under surface with tightly clustered patchwork-like patterns, sometimes coalesced into large spots or bands; male genitalia with vinculum laterally tapered or with slight angle near brush organs.

*Remarks.* Overall diagnostic features in some taxa included by us in this group (e.g. *S. crosssoea*, *canitus*, *faunalia*, *mulucha*), in conjunction with some other Neotropical *Strymon*, suggest a probable monophyletic group. However, considering the diversity of *Strymon* species resembling these species, the group is probably very large and contains a number of sublineages requiring individual study before the group can be fully elucidated. After our treatment of northwestern Argentine species below, we describe two other new species (respectively from Patagonia and Chile) important to understanding the Austral fauna of this group.

#### *Strymon crosssoea* (Hewitson), revised status

##### Figures 7A,B, 20

*Thecla crosssoea* Hewitson [1874] 1863-1878 (1): 158, (2): pl. 63 f. 427. Hayward 1973: 161 (misspelled as "crosssaea").

*Thecla mulucha* [not *Thecla mulucha* Hewitson 1863-1878 [1867] (1): 89, (2): pl. 38, f. 117]; Bridges 1988: I.94 (synonymy in error, see Remarks).

**DIAGNOSIS.** Male above with compact black androconial brand, both sexes prominently silvery blue over the caudal one-half of the hindwing. Beneath, both sexes with forewing only slightly marked along postmedian area of costa and hindwing with slight medial and postbasal bands formed by closely aligned patches of orange-brown

each circumferenced with black and white. Somewhat similar to *S. canitus* (lunular bands on under surface of both wings, see below); lacking under surface forewing discal spot typifying *S. mulucha* (see Remarks).

**DESCRIPTION.** *Adult. Male* (Fig. 7A): forewing 9.0-13.0 mm. Female (Fig. 7B): forewing 9.0-13.5 mm. *Male Genitalia* (Fig. 20). Labides caudally pronounced; vinculum ventrally tapering toward saccus, dorsally angled toward area of brush organ attachment (brushes extending to base of labides); saccus rather triangular. Valvae elongate, with bilobes thinly parabolic, caudal extension thinly tapered. Aedeagus elongate (length exceeds rest of genitalia by at least one-third) with shaft nearly straight; caecum large, comprising one-third or more of aedeagus length. *Female Genitalia* (Fig. 20). Ductus bursae conical and of moderate length, spiral occurring in cephalic one-fifth; terminal lamellae thin and steeply pointed; cervix bursae ventrally small, dorsally with lightly sclerotized hood covering distal end of corpus bursae; corpus bursae with two, extremely large, signa (their length comprising about one-half that of the bursae); papillae anales elongate, nearly equalling length of ductus caudad the cervix bursae.

**TYPES.** Holotype female, labelled "Thecla Type crossoea Hew.", "B.M. TYPE" No. Rh. 1053", "Hewitson Coll. 79-69. Thecla crossoea. 1.", BMNH.

**DISTRIBUTION.** Spatial (Fig. 46B): in neotropics from northern South America (Trinidad and Guyana Shield) westward to Peru and southeastward to Paraguay and northwestern Argentina. In northwestern Argentina known from Jujuy, Tucumán, Salta, La Rioja and Mendoza provinces. Temporal: Diphenic [sexually monomorphic], summer and winter forms, latter with more blue on hindwing upper surface and with under surface markings darker and more produced; known from every month of the year.

**REMARKS.** This species has been commonly misspelled as "crossoea" (see Hayward, 1973, p. 161; Bridges 1988, pp. 1.94, II.100). Bridges confusingly placed *S. crossoea* in synonymy with *Strymon mulucha*, probably because of uncertainty about the types and common taxonomic usages of these species. Bridges' synonymy appears odd since *S. crossoea* superficially resembles *S. canitus* more than *S. mulucha*. Examination of types, and other specimens, indicates *S. crossoea* is distinct both in wing and genital characters. Aiding ready identification, *S. crossoea*, *S. canitus* and *S. faunalia* all differ from *S. mulucha* by lacking the bright white under surface forewing discal spot prominent in the latter species. In addition, upper surface blue is more pronounced in *S. crossoea* and it therefore lacks the contrasting white fringe and brown ground typical of the upper surface hindwing in *S. mulucha*. In *S. mulucha* the under surface hindwing medial elements usually form a band.

**MATERIAL EXAMINED.** leg. Eisele— 31B, 1 ♀, 13. v. 1985 (AME); 31D, 1 ♀, 5. v. 1985 (MPM), 112A, 1 ♂, 20. xii. 1985 (MZPC), 2 ♀, 7. xii. 1985 (AMNH); 1 ♀, 4. v. 1985 (MPM), 1 ♀, 10. v. 1985 (LACM), 2 ♀, 10. v. 1985 (AMNH), 3 ♂, 23. v. 1985 (CRE); 54A, 1 ♂, 18. i. 1988 (CMNH); 160C, 1 ♂, 9. vi. 1987 (AME), 1 ♂, 11. xi. 1986 (MNHN); 160A, 1 ♀, 20. ix. 1985, 1 ♂, 16. x. 1985, 1 ♂, 2 ♀, 20. xi. 1985 (all CRE); 160B, 1 ♂, 19. vii. 1985 (LACM); 160E, 1 ♀, 13. ii. 1987 (AMNH); 160 ♀, 1 ♀, 26. vi. 1987 (AMNH); 161A, 1 ♀, 22. vi. 1987 (BMNH); 32B, 1 ♀, 16. x. 1987; 7A, 1 ♂, 17. iii. 1978 (AME); 7E, 1 ♂, 3. iv. 1978 (CRE); 7D, 1 ♂, 17. v. 1979 (CRE); 9B, 1 ♂, 30. vii. 1979 (CRE); 27B, 2 ♂, 26. iv. 1973 (AME), 1 ♂, 28. iv. 1973 (AME); 15A, 1 ♂, 26. ix. 1977 (AME); 27A, 1 ♂, 15. iv. 1974 (AME), 1 ♂, \*24. vi. 1969, 1 ♂, 7. xi. 1971, 1 ♀, \*2. iii. 1968 (all IML), 1 ♂, 26. ix. 1977 (CRE); 27B, 4 ♂, 15. iv. 1974, 1 ♀, 16. iv. 1974, 3 ♂, 1 ♀, 17. iv. 1974, 4 ♂, 17. iv. 1974, 1 ♂, 26. ii. 1975, 1 ♂, 9. iii. 1975, 1 ♂, 29. xii. 1976, 1 ♂, 25. iv. 1973, 2 ♂, 1 ♀, 26. iv. 1973, 1 ♂, 1 ♀, 28. iv. 1973, 1 ♂, 22. x. 1968, 1 ♂, 28. xi. 1971, 1 ♂, 20. i. 1972, 1 ♂, 1 ♀, 28. iv. 1973, 1 ♂, 20. i. 1972, 1 ♂, 29. xii. 1976, 1 ♂, 28. iv. 1973, 1 ♀, 26. iv. 1973 (all CRE), 1 ♂, 22. x. 1968, 1 ♀, 22. x. 1968 (all IML); 27G, 1 ♀, 15. xii. 1973 (CRE); 21A, 1 ♀, 4. xi. 1974 (CRE); 52A, 1 ♀, 30. x. 1976 (CRE); 24D, 1 ♀, 29. i. 1973 (CRE), 1 ♀, 29. ix. 1972 (IML), 1 ♂, 5 ♀, 29. ix. 1972 (CRE); 1A, 1 ♂, 20. xi. 1968 (CRE), 1 ♂, \*20. xi. 1968 (IML); 31A, 1 ♀, 1. ix. 1969 (CRE), 1 ♀, 28. xii. 1972 (CRE), 1 ♀, \*1. xi. 1969 (IML); 3A, 1 ♂, 18. i. 1980 (CRE), 1 ♂, 24. i. 1968 (IML); 27B, 1 ♀, 15. i. 1961 (IML), 1 ♂, 24. i. 1968 (CRE); leg. MacPherson— 16A, 1 ♀, 4. v. 1976 (AME); 17A, 1 ♂, 7. v. 1976 (AME), 1 ♂, \*4. xi. 1985 (AMNH); 5A, 1 ♂,



\*11. xii. 1976 (MPM), 1 ♂, 1 ♀, \*\*i. 1980 (CMNH), 1 ♂, \*12. xii. 1976, 1 ♂, \*12. xii. 1976, 1 ♂, 1 ♀, \*\*30. xii. 1985 (all AMNH); 19A, 1 ♂, 22. xi. 1982 (AMNH); 24C, 1 ♂, 20. xi. 1979 (AMNH), 1 ♂, 1 ♀, 20. xi. 1979 (MZPC); 52A, 1 ♀, 30. x. 1976 (AMNH); 17A, 1 ♂, \*3. vii. 1975 (BMNH), 1 ♂, \*26. viii. 1977 (MNHN), 1 ♀, \*26. vii. 1977 (AMNH); 15A, 1 ♀, \*7. xi. 1977 (LACM); 18A, 1 ♀, \*6. xi. 1986 (AMNH); miscellaneous other leg.—45A, 1 ♂, 16. xi. 1950, leg. Hayward (IML); 45B ["La Grania del Cambo"], 1 ♂, 9. vi. 1932 (IML); 47A, 1 ♂, 1947, leg. Garcia (IML); 104A, 1 ♂, x. 1967, leg. Golbach (IML); 206A, 1 ♂, 31. x. 1906 (MNHN); 229A, 1 ♀, leg. Giacomelli (BMNH); 54A, 1 ♂, ii. 1920 (BMNH); 45A, 2 ♂, 25. v. 1922 (BMNH), 1 ♂, ix. (BMNH), 1 ♂, ii. 1905 (BMNH), 1 ♀, 4. vi. 1922 (BMNH), 1 ♀, 13. v. 1922 (BMNH), 1 ♀, 9. vi. 1922 (BMNH).

*Strymon canitus* (H. H. Druce), new combination

Figures 7C,D, 21

*Thecla canitus* Druce 1907 (3): 604, pl. 38, f. 8. Hayward 1973: 160.

DIAGNOSIS. Somewhat similar to *S. crossoea* (both with upper surface of hindwing in males silvery blue over the caudal one-half) but larger (FW to 14.0-14.5 mm) and with under surface pattern elements markedly lunular forming band-like series, postmedial on forewing and postbasal and medial on hindwing. Lacking the under surface forewing white discal slash typifying *S. mulucha* (see below).

DESCRIPTION. *Adult*. Male (Fig. 7C): forewing 10.0-14.0 mm. Female (Fig. 1D): forewing 10.0-14.5 mm. *Male Genitalia* (Fig. 21). Labides small and flat; vinculum laterally tapered toward saccus, brush organs abutting dorso-caudal margin (brushes extending to labides); saccus funnel-shaped. Valvae caudal extension elongate, thin; juncture to bilobed area slightly shouldered. Aedeagus elongate and not terminally undulate, caecum comprising about one-fourth of length. *Female Genitalia* (Fig. 21). Ductus bursae elongate and conical, small spiral in cephalic one-fifth to one-sixth; terminal lamellae elliptical, elongate; cervix bursae diminutive but with rounded, bulblike, sclerotization extending inside the distal end of corpus bursae; corpus bursae with two, small, elongate signa; papillae anales elongate and terminus bulbous, apophyses moderate in length, about equal to length of ductus from spiral to lamellar juncture.

TYPES. Syntype male, labelled "T. canitus male TYPE, H. H. Druce", "ex coll. Hamilton Druce, 1919.", "J. J. Joicey Coll. B.M. 1929-435", "Paraguay", "Type", "B.M. TYPE No. Rh. 1026"; syntype female, labelled "T. canitus female TYPE, H. H. Druce", "J. J. Joicey Coll., B.M. 1929-435", "Paraguay", both BMNH. Type locality: "Paraguay".

DISTRIBUTION. Spatial (Fig. 47A): in neotropics, known from eastern coastal and southeastern Brazil, westward to Peru and southwest to northwestern Argentina; in Argentina occurring in Jujuy, Tucumán and Salta provinces and not seen by us (or by Hayward, 1973) southward. Temporal: diphenic [sexually monomorphic], summer (primarily xii-iii.) and winter (primarily v.-vii.) forms, latter with more blue on hindwing upper surface and with under surface markings darker and more produced.

REMARKS. Curators have recognized this species as belonging to *Strymon* but it has not been mentioned in the literature. Examination of the type, and other specimens, indicates *S. canitus* is a valid species. See Remarks under *S. crossoea* concerning superficial similarity of taxa in this species group.

MATERIAL EXAMINED. leg. MacPherson—5A, 1 ♂, \*30. xii. 1985 (AMNH); leg. Eisele—3A, 1 ♀, 17. i. 1968 (CRE), 1 ♀, 28. i. 1968 (CRE), 1 ♂, 22. i. 1980 (CRE); 7B, 1 ♀, 7. v. 1979 (CRE); 7E, 3 ♀, \*17. v. 1979 (IML); 15A, 1 ♂, 13. iii. 1978 (CRE); 27A, 1 ♀, 5. vii. 1969 (CRE), 1 ♀, \*5. vi. 1969 (CRE); miscellaneous other leg.—159A, 1 ♂, \*9. i. 1954, leg. P. Arnau (IML); 39A, 1 ♂, \*iii. 20., leg. A. Teran (IML), 1 ♀, \*ii. 1954, leg. P. Arnau (IML).

*Strymon mulucha* (Hewitson)

Figures 7E,F, 22

*Thecla mulucha* Hewitson 1863-1878 [1867] (1): 89, (2): pl. 38, f. 117.

*Thecla crossoea* [not *Thecla crossoea* Hewitson [1874] 1863-1878 (1): 158, (2): pl. 63, f. 427]; Bridges 1988: I.94 (synonymy in error, see Remarks).

**DIAGNOSIS.** Under surface of forewing with marked white discal spot lacking in other group members. Blue above more reduced than on *S. crossoea* and *S. canitus* (often not present at all), hindwing thus with prominent white fringe contrasting hindwing ground; wing under surface with medial pattern elements nearly always forming prominent white lineal band framed by outlines of brown and black suffusion (not with patchy under surface pattern of *S. crossoea* or lunular patterns of *S. canitus*). *Strymon larioyoja* (see *valentina* Group below) also has a prominent under surface forewing white discal slash; however, this species has a beige hindwing band, displaced in a "V"-shape at vein CuA<sub>2</sub> and broken into a lunular spot in cell 2A, and dark beige limbal coloration.

**DESCRIPTION.** *Adult.* Male (Fig. 7E): forewing 10.0-15.0 mm. Female (Fig. 7F): forewing 10.0-15.5 mm. *Male Genitalia* (Fig. 22). Labides caudally produced; vinculum ventrally tapering toward saccus, dorsally angled toward area of brush organ attachment (brushes extending to base of labides); saccus parabolic and elongate (length at least one-half valval length). Valvae elongate, bilobes thickly parabolic, caudal extension tapering abruptly to thin termini. Aedeagus elongate (exceeding two-times length of vincular arc) with shaft undulate in the terminal one-fourth; caecum small, comprising one-fourth to two-fifths aedeagal length. *Female Genitalia* (Fig. 22). Ductus bursae elongate and conical, spiral occurring in cephalic one-fourth to one-fifth; terminal lamellae thin and spatulate; cervix bursae ventrally crenate, dorsally with lightly sclerotized hood covering distal end of corpus bursae; corpus bursae with two elongate signa (their length comprising about one-half that of the bursae); papillae anales of moderate length, apophyses nearly equalling length of ductus caudad of the spiral.

**TYPES.** Holotype female BMNH labelled "Type", "mulucha", "B.M. TYPE No. Rh. 1036", "Godman-Salvin Coll. 1912.-23. B.C.A. Lep. Rhop. Thecla mulucha Hew.", "Costa Rica, Van Patten, Druce Coll." Type locality: "Venezuela" listed in original description not in agreement with type labels; however, species occurs in both areas and original description is unambiguous.

**DISTRIBUTION.** Spatial (Fig. 47B): in neotropics known from Guatemala southward to South America (Trinidad westward to Peru and southeastward to Brazil and northwestern Argentina; in northwestern Argentina known from Jujuy, Tucumán, Salta, La Rioja, Mendoza and Santa Fe provinces. Temporal: monophenic (variability of upper surface hindwing blue appears unrelated to season) [sexually monomorphic]; recorded primarily from November to July with few specimens from intervening months of August to October.

**REMARKS.** Bridges (1988) incorrectly listed this species as conspecific with *crossoea* Hewitson (see above under *S. crossoea*). Study of the type, and other specimens, of *S. mulucha* shows that, along with its genitalic characters, it has several diagnostic wing characters readily separating it from similar species *S. crossoea*, *S. canitus* and, to a lesser degree, *S. faunalia* (see Remarks under *S. crossoea* and *S. canitus*).

**MATERIAL EXAMINED.** leg. Eisele—160F, 1 ♀, 20. vi. 1987; 7C, 1 ♀, 27. vi. 1979 (CRE), 1 ♂, 29. vi. 1979 (CRE); 7D, 1 ♀, 10. v. 1979 (CRE), 1 ♀, 22. v. 1979 (CRE); 7E, 1 ♀, 21. x. 1977 (CRE), 1 ♀, 15. iii. 1978 (CRE); 7 ♀, 1 ♂, 1 ♀, 3. iv. 1972, 1 ♂, 3. iv. 1972 (all CRE); 15A, 1 ♀, 31. x. 1977 (AME), 1 ♂, 1 ♀, 31. x. 1977 (CRE); 27B, 1 ♂, 1 ♀, 15. iv. 1974 (MZPC), 1 ♂, 16. iv. 1974 (LACM), 1 ♂, 28. iv. 1974 (MPM), 1 ♂, 1 ♀, 4. v. 1974 (CMNH), 1 ♂, 1 ♀, 4. vi. 1974 (BMNH), 1 ♂, 10. iv. 1970 (MNHN), 1 ♂, 2. v. 1972, 2 ♂, 1 ♀, 9. v. 1972, 1 ♂, 13. v. 1972, 2 ♀, 14. v. 1972, 1 ♂, 17. v. 1972, 2 ♀, 24. v. 1972, 1 ♀, 17. xi. 1971 (all CRE), 1 ♂, 15. iv. 1974, 1 ♀, 3. iv. 1978, 1 ♂, 28. iv. 1974 (all AME); 1 ♀, \*29. xii. 1967 (IML), 1 ♀, \*12. x. 1967 (IML), 1 ♀, 9. vi. 1969, 1 ♂, \*31. v. 1970 (IML); 27A, 1 ♀, 14. v. 1972, 1 ♀, 9. v. 1972, 1 ♀, 24. v. 1972, 1 ♀, 14. v. 1972, 1 ♀, 24. vi. 1972, 1 ♂, 17. vi. 1972, 1 ♂, 9. v. 1972, 1 ♂, 13. v. 1972, 1 ♂, 9. v. 1972, 1 ♀, 4. vi. 1974, 1 ♀, 15. iv. 1979, 1 ♀, 16. vi. 1974 (all AME), 1 ♂, 5. vii. 1969, 1 ♀, 31. v. 1970, 1 ♀, 12. iii. 1968, 1 ♂, 20. vi. 1969 (all AMNH); 27 ♀, 1 ♀,

10. vii. 1968 (CRE); 15C, 1 ♂, 31. x. 1977 (AME); 27G, 1 ♂, 1 ♀, 31. v. 1970, 1 ♂, 29. v. 1972, 1 ♀, 19. xi. 1973, 1 ♂, 3. vii. 1973, 1 ♂, 11. vi. 1972, 2 ♀, 15. xii. 1973, 1 ♀, 9. iii. 1974, 1 ♀, 17. iv. 1974, 1 ♀, 3. v. 1974 (all CRE), 1 ♀, 6. v. 1973, 1 ♀, 12. xi. 1967, 1 ♀, 29. xii. 1967, 1 ♀, 12. iii. 1968, 1 ♂, 11. vi. 1972, 1 ♂, 11. vii. 1972 (all AME); 27E, 1 ♀, 3. v. 1973, 1 ♀, 5. v. 1973, 1 ♀, 6. v. 1973, 1 ♀, 3. vi. 1973, 1 ♀, 12. xi. 1967, 1 ♀, 29. xii. 1967, 1 ♀, 12. iii. 1968, 1 ♀, 10. vii. 1968 (all CRE); 3A, 1 ♂, 19. i. 1968 (CRE), 1 ♂, \*14. i. 1968 (IML); 4A, 1 ♀, 10. i. 1961 (CRE), 1 ♀, 15. i. 1961 (CRE), 1 ♂, \*10. i. 1961 (IML), 1 ♀, \*15. i. 1961 (IML); 21A, 1 ♀, 5. iii. 1974, 1 ♂, 5. xi. 1974, 1 ♀, 6. xi. 1974 (all CRE); 34A, 1 ♂, 28. i. 1977 (CRE); 30B, 1 ♀, 19. vi. 1972 (CRE); leg. MacPherson—17A, 1 ♂, 1 ♀, \*\*6. v. 1976 (MZPC), 1 ♂, 1 ♀, \*\*11. v. 1978 (LACM), 1 ♂, \*8. vii. 1977, 1 ♂, 7. v. 1976 (AMNH); 16A, 1 ♂, \*23. i. 1981 (MPM); 18A, 1 ♂, 1 ♀, \*\*2. vi. 1986 (AMNH); 5A, 1 ♂, \*11. vii. 1976, 1 ♂, \*i. 1980 (AMNH); miscellaneous other leg.—22B, 3 ♂, 2 ♀, v. 1914, leg. Steinbach (CMNH); 204A, 1 ♀, 24. iii. leg. Hayward (IML), 1 ♀, 24. ii. leg. Hayward (IML); 152A, 1 ♂, 13. iv. 1967, leg. Golbach (IML); 30A, 1 ♀, i. 1950, leg. Golbach (IML); 45A, 1 ♂, xii. 1946 (IML); 229A, 1 ♂, 1 ♀, leg. Giacomelli (BMNH); 206A, 1 ♀, 2. ii. 1907 (MNHN); 1 ♂, 1 ♀, 11. xii. 1906 (MNHN); 233A, 1 ♂, 20. iii.-8. iv. 1927, leg. Hayward (BMNH); 204A, 1 ♀, vi. 1926, leg. Hayward (BMNH).

### *Strymon faunalia* (Hewitson)

Figures 8A,B, 23

*Thecla faunalia* Hewitson 1868: 3. Hayward 1973: 161.

**DIAGNOSIS.** Very small (FW usually 8.5-10.0 mm) with upper surfaces generally dull brown and hindwing tail diminutive. Beneath marked somewhat like *S. crossoea* but with patchlike markings extremely small and densely packed, elements in postmedial and submarginal areas causing pattern to appear rather concentric over the entire hindwing under surface.

**DESCRIPTION.** *Adult.* Male (Fig. 8A): forewing 8.5-10.0 mm. Female (Fig. 8B): forewing 8.5 - 10.5 mm. *Male Genitalia* (Fig. 23). Labides caudally produced; vinculum laterally angled and thin cephalad the base of falces; brush organs thinly abutting this margin; saccus elongate. Valvae caudal extension elongate and tapered, with slight latero-terminal flare; bilobed area widely parabolic; aedeagus robust and relatively short (exceeding length of rest of genitalia by only one-fourth to one-third); caecum comprising at least two-fifths of length; shaft caudally undulate. *Female Genitalia* (Fig. 23). Ductus bursae elongate and conical, compact spiral occurring in cephalic one-fourth; terminal lamellae parabolic and spatulate; cervix bursae hardly apparent; corpus bursae with two extremely large shieldlike signa (their length comprising about one-half that of the bursae); papillae anales elongate and bulbous ended; apophyses relatively short, length equaling barely two-thirds that of ductus.

**TYPES.** Holotype male BMNH labelled "Type, B.M. TYPE No. Rh. 1035", "Caracas, Hewitson Coll. 79-69. *Thecla faunalia* 1." Type locality: "Amazon" of original description does not agree with type labels but description is otherwise unambiguous.

**DISTRIBUTION.** Spatial (Fig. 47C): in neotropics recorded primarily from Venezuela southward to eastern coastal and southeastern Brazil and northwestern Argentina; in northwestern Argentina known to us only from Salta Province (Hayward, 1973, lists Tucumán). Temporal: diphenic, light and dark forms correlating, respectively, more to xeric/warm and more hydric/cool habitats than to seasons [sexually monomorphic]; known from disparate months (i, iii, vi, x, xi) suggesting broods may span the year.

**REMARKS.** This species has appeared distinctive to most workers and only been confused with *Thecla deborrei* Capronnier (1874). Johnson (in press) has studied the types of Neotropical Eumaeini at the MNHN but the type was apparently not deposited there. Bridges (1988) considers *T. deborrei* a junior synonym of *T. faunalia*; given the type locality of the former (Botafogo, Brazil), this seems reasonable. However, given the diversity of Eumaeini and their complex taxonomy, location and comparison of these types would

be useful to determine if *T. deborrei* is distinct.

MATERIAL EXAMINED. leg. MacPherson— 17A, 1 ♂, 1 ♀, \*\*9. vi. 1975; (AMNH); 15A, 1 ♀, \*7. xi. 1977 (AMNH); leg. Eisele— 15B, 1 ♂, \*13. iii. 1978, 1 ♂, \*31. x. 1977 (CRE); 27A, 1 ♂, 10. i. 1968, 1 ♂, 28. xi. 1971 (both CRE); 27C, 1 ♂, \*10. i. 1968 (CRE); 27B, 1 ♀, \*28. xi. 1971 (CRE); 24A, 1 ♂, 6. iii. 1970, 1 ♀, 6. iii. 1972 (CRE), 1 ♀, 6. iii. 1972 (CRE).

*Strymon bazochii* (Godart)

Figures 8C,D, 24

*Polyommatus bazochii* Godart 1819-1824 [1819]: 681. Köhler 1923: 31. Hayward 1973: 163.

DIAGNOSIS. Easily distinguished by the upper surface silvery blue in the distal sector of the hindwings and the finely mottled brown and yellowish-white hindwing under surface (pattern occasionally coalescing into variable medial or postmedial bands, or occasional transverse bars, see Remarks). Extremely sexually dimorphic, female with brilliant blue across most of hindwing, male blue more reduced with forewings blackish. Some Argentine populations exhibit white spots within the otherwise black forewing apex usually typifying the species (see Remarks).

DESCRIPTION. *Adult*. Male (Fig. 8C): forewing 9.0-13.5 mm. Female (Fig. 8D): forewing 9.0-13.5 mm. *Male Genitalia* (Fig. 24). Labides dorsally pronounced; vinculum laterally sculptured and thin cephalad the base of falces; brush organs widely abutting this margin; saccus parabolic. Valval caudal extension elongate and tapered, slightly recurved inward at termini; bilobed area widely parabolic. Aedeagus thin and relatively long (exceeding length of rest of genitalia by at least one-third); caecum comprising at least two-fifths of length; shaft terminally undulate. *Female Genitalia* (Fig. 24). Ductus bursae elongate and undulate; spiral rather open, occurring in cephalic one-fifth; terminal lamellae parabolic and spatulate; cervix bursae hardly apparent; corpus bursae with two elongate signa, their length comprising nearly one-half that of the bursae; papillae anales elongate and somewhat bulbous ended; apophyses relatively long, length equally three-fourths that of ductus caudad the spiral.

TYPES. Holotype male labelled "T. Basochii [sic], God. [sic], thus, Hubn/ basochii Godt. type, Bresil, Delalande" (handwritten); "Museum Paris, Bresil, Delalande" (typeset), MNHN (see Johnson, 1990).

DISTRIBUTION. Spatial (Fig. 48A): widespread throughout the neotropics, including the Antilles, the southern Nearctic and also in Hawaii (though not often locally common). In northwestern Argentina known to us from Jujuy, Salta, Tucumán and Formosa provinces. Hayward (1973) included La Rioja, disparity undoubtedly resulting from the low density of this species. Temporal: throughout its range extremely variable, some morphs probably correlating with seasonal broods (see Remarks); data from northwestern Argentina (see below) suggests occurrence in every month of the year.

REMARKS. Worldwide, this species is one of the most widespread hairstreak butterflies, though not often common. It is extremely variable over its range, though always distinctive by the upper surface pattern and under surface mottling. Two common under surface wings morphs include one in which lunular markings approximate concentric bands (Fig. 8D) and another in which pattern contrast forms a transverse, or oblique, bar across the wing (Fig. 8C). At first glance *S. bazochii* might appear unlike members of the *crossoea* Group. However, elements of the under surface pattern, and the genitalia, clearly place it here, along with another oddly marked species, *S. crambusa*. Numerous specimens of *S. bazochii* from Argentina exhibit white spots within the forewings' otherwise black apex. Clench (notes at CMNH and pers. comm. to Eisele) suspected these represented a new species. However, we find no structural characters that support this hypothesis and note also that similarly spotted apices occur in other populations (AMNH specimens from Venezuela [Puerto Cabello] and southeastern Brazil [Blumenau and Rio Grande do Sul]).

MATERIAL EXAMINED. leg. Eisele— 31B, 1 ♂, 4 ♀, 8. v. 1985, 1 ♀, 15. v. 1985

(all AMNH); 31D, 1 ♀, 10. v. 1985, 1 ♂, 1 ♀, 15. v. 1985, 1 ♂, 2 ♀, 23. v. 1985; 112A, 1 ♂, 13. vii. 1987; 34A, 1 ♂, 24. ii. 1979 (all CRE), 1 ♀, \*12. vi. 1977 (AMNH); 7E, 1 ♂, \*6. viii. 1978 (AMNH); 3A, 1 ♂, 27. i. 1989, 1 ♂, 17. i. 1968 (CRE), 1 ♂, 21. ii. 1968 (CRE), 2 ♂, 27. i. 1968 (CRE), 2 ♀, 28. i. 1968 (CRE), 1 ♀, \*1. i. 1968, 2 ♀, 28. i. 1968, 1 ♂, \*22. i. 1968, 1 ♀, 21. i. 1968 (all IML); 16A, 1 ♂, 24. xi. 1982, 1 ♂, 20. v. 1986; 18A, 1 ♂, 2. vi. 1986, 1 ♀, 26. v. 1986 (all IML); 7B, 1 ♂, 2. v. 1979 (CRE); 7C, 1 ♂, 1 ♀, 2. v. 1979 (CRE); 7E, 1 ♂, 6 viii. 1978 (CRE); 7 ♀, 1 ♂, 3 iv. 1972 (CRE), 1 ♂, 3. iv. 1972 (AME); 24A, 1 ♀, 20. i. 1977 (CRE); 24B, 2 ♀, 22. iv. 1977 (CRE); 31A, 1 ♂, 28. xii. 1972 (CRE); 31C, 1 ♀, 20. ii. 1969 (IML), 1 ♀, 20. ii. 1969 (CRE); 27A, 1 ♀, 17. v. 1972, 1 ♀, 15. v. 1972 (CRE); 27B, 1 ♂, 20. i. 1972, 1 ♂, 15. v. 1972, 1 ♀, 17. v. 1972, 1 ♀, 28. ii. 1975, 1 ♂, 1 ♀, 10. iii. 1975, 1 ♂, 20. i. 1972 (all CRE); 27G, 1 ♀, 23. iv. 1968, 1 ♀, 4. x. 1968 (both CRE); 27H, 1 ♂, 23. iv. 1968 (IML), 1 ♂, 4. x. 1968 (IML); 5B, 1 ♂, 14. xii. 1977 (CRE); 52A, 2 ♂, 1. ii. 1970 (CRE); leg. MacPherson—5A, 1 ♀, \*14. i. 1987, 1 ♂, \*21. xii. 1977, 1 ♂, \*1. i. 1980 (AMNH); 19A, 2 ♂, \*\*22. xi. 1982 (AMNH, CMNH); 5B, 1 ♀, \*9. xii. 1980 (AMNH); 27D, 1 ♂, 28. iii. 1975 (IML); 1A, 1 ♂, 21. ii. 1977 (IML); 17A, 1 ♂, 7. vi. 1975, 1 ♀, 4. xi. 1985 (LACM); 34A, 1 ♀, 26. iii. 1977 (MPM); 16A, 1 ♂, 31. v. 1982 (MZPC); miscellaneous other leg: 16A, 1 ♂, ii.-iii. 1946, leg. Willink (IML); 45B ["Padre Monti"], 1 ♂, 7. ii. 1948, leg. Golbach (IML); 217A, 1 ♀, xi. 1947 (IML).

*Strymon crambusa* (Hewitson), new combination

Figures 8E, 25

*Thecla crambusa* Hewitson 1874: 20. Hayward 1973: 149.

DIAGNOSIS. Easily distinguished by the dull brown upper surface, irregular wing margins and thickened hindwing tail. Otherwise distinctive in the hindwing under surface pattern by a pronounced white patch medial in cell Sc+R<sub>1</sub>.

DESCRIPTION. *Adult*. Male (Fig. 8E): forewing 10.5–12.5 mm. Female: Not available for study (see Remarks). *Male Genitalia*. Fig. 25. Labides rounded dorsally; vinculum laterally sculptured and thin cephalad of base of falces; brush organs widely abutting dorsal vincular margin; saccus extremely broad, parabolic, and asymmetrical; valval caudal extension robust and unevenly tapered, termini blunt; bilobed area somewhat shouldered. Aedeagus generally straight, thin and relatively long (exceeding length of rest of genitalia by at least one third); caecum prominent, comprising nearly one-third aedeagal length. *Female Genitalia*. Not available for study (see Remarks).

TYPES. Holotype male, labelled "Thecla crambusa, Bolivia, Hewitson Coll. 79-69.", "Thecla crambusa", "B.M. TYPE No. Rh. [610]", BMNH.

DISTRIBUTION. Spatial (Fig. 48A): In South America poorly known because of few specimens but including western Brazil, Bolivia, Argentina and Chile (new record, see Material Examined). In NW Argentina reported by Hayward (1973) from Salta but his specimens not located by us; collected in Salta chaco habitat only recently by MacPherson. Temporal: known only from ii and x.

REMARKS. Based on a recent collection, this species was incorporated into our list only as we went to press; additional specimens available to us for study did not include a female. We also located the first specimen known from Chile (see below).

MATERIAL EXAMINED. leg. MacPherson—17A, 1 M, 19. ii. 1977 (AMNH). New Chilean record: 1 M, 20 km. S. Caldera, Atacama, Chile, 16. x. 1957, E. Pena, deposited AMNH.

*Strymon rhapsos*, new species

Figures 8F, 26

DIAGNOSIS. A small species (FW 9.5 mm) known only from montane central Patagonia; upper surface variegated brown with forewing small, angled, and with

prominent black elliptical male androconial brand; under surface speckled with large reddish-brown spots occurring as in no other species: hindwing medial spots in each cell (particularly pronounced in cell 2A), postbasal spots extremely large at vein 2A and in the discal cell. Darkening of the Thecla-spot and under surface area of forewing androconial brand enhances the speckled appearance. Genitalia distinctive as noted below.

**DESCRIPTION.** *Male* (Fig. 8F). Upper surface of wings: ground color mottled brown throughout; forewing with black brand at distal end of discal cell; hindwing with short tail at terminus of vein CuA<sub>2</sub>. Under Surface of Wings: ground color drab gray brown; forewing with postmedian band of brownish black spots from costa to cell 2A. Hindwing with prominent medial band of seven large drab brown spots (spot in cell 2A particularly large) and dark discal slash; postbasal area with three drab brown spots, two each very large at vein 2A and in the discal cell, smaller near the anal margin. Length of forewing: 9.5 mm (holotype). *Female*. Similar to male except lacking forewing brand. Length of forewing: 9.5 mm (allotype). *Male Genitalia* (Fig. 26). Typical of genus, but with labides terminally serrate; valvae with bilobed area parabolic, caudal extension abruptly tapered, elongate and gradually recurved inward at their tips. Vinculum robust, lateral surface sculptured and dorso-laterally angled, brush organs abutting centrally along this margin; saccus parabolic, asymmetrical, displaced lateral to the vincular plane. Aedeagus elongate, exceeding length of remaining genitalia by more than one-third; caecum comprising about one-third of aedeagus length. *Female Genitalia* (Fig. 26). Ductus bursae elongate and conical with spiral in the cephalic one-fifth closely adjoining a markedly robust and heavily sclerotized cervix bursae; configuration of ductus and cervix bursae forming in robust "u"-shape, unique for the genus; eighth tergite laterally expansive; papillae anales robust and blunt-ended, apophyses elongate (length only slightly less than that of ductus bursae caudad of the spiral).

**TYPES.** Holotype male, 40 km. N. Rio Mayo (239A), Chubut Province (near border with Santa Cruz Province), 20. xi. 1966, leg. J. Herrera, deposited AME; allotype female, Zapala (241A), Neuquen Province, 7. xi. 1988, leg. A. M. Shapiro, deposited AMNH (see Remarks).

**DISTRIBUTION.** Spatial (Fig. 48A): known only from the localities of the primary types (see Remarks). Temporal: known only from the type data.

**REMARKS.** No other South American *Strymon* has profuse spots basad of the medial band as in this species. *S. bubastus* has large postbasal spots but has a characteristic wing shape and always lacks tails. *S. raptos* appears to be part of an insular southern Andean fauna. The first specimen was located in a Theclinae sample from Chubut Province, Argentina, taken by J. Herrera. Aside from specimens of *S. eurytulus*, this sample was comprised of undescribed Theclinae attributable to several eumaeine genera. Later, A. M. Shapiro collected *S. raptos* in Neuquen Province along with several other hairstreaks characterizing austral and high Andean habitats: *Thecla quadrimaculata* and two undescribed species related to *Thecla heodes* and *Thecla wagenknechti* (see Introductory remarks concerning *Strymon sens. lat.*). In field notes, Shapiro records "habitat shrub-steppe, mostly collected from flowering *Haplopappus*". Irwin and Schlinger (1986) note conditions at collecting sites near Zapala. They include them in their "Patagonian Steppe Biotic Province" characterized as xeric, with bunch grass, *Stipa*, and dwarfed shrubs. Johnson (1989a) has described the eumaeine *Chlorostrymon patagonia* from this same biotic province.

**ETYMOLOGY.** The Greek name means "speckled" referring to the under surface pattern.

### *Strymon peristictos*, new species

Figures 9A,B, 27

**DIAGNOSIS.** Both sexes of this species are black on the upper surface and have smoky gray under surfaces marked by a mottled hindwing basal disc outlined by a few obsolescent black spots and white suffusion in the postmedial area. The genitalia are distinctive as



noted below.

**DESCRIPTION.** *Male* (Fig. 9A). Upper surface of wings: ground color graphite black. Forewing with jet black, ovate, androconial scent brand distad in discal area. Hindwing with tail at terminus of vein  $CuA_2$ . Under surface of wings: ground color smoky gray. Forewing with postmedian band of black macules, costa to cell  $CuA_1$ . Hindwing with basal disc dark brown (not marked internally with any macules), surrounded distally by medial band of black macules in each cell. Submarginal area with white suffusion, Thecla-spot at cell  $CuA_1$ , submargin faintly orange. Length of forewing: 10.0 mm (holotype). *Female* (Fig. 9B). Upper surface of wings: similar to male. Under surface of wings: similar to male but with basal disc more mottled and submarginal white suffusion more pronounced. Length of forewing: 10.0 mm (allotype). *Male Genitalia* (Fig. 27). Valvae with bilobed areas thinly parabolic, caudal extension immediately constricted caudad and tapering to thin termini. Vinculum laterally robust but in generally tapered configuration, brush organs thickly abutting dorso-terminal angle; saccus elongate, cephalically pointed and slightly asymmetrical. Aedeagus very elongate for genus, length slightly exceeding two times the length of the remaining genitalic parts, with shaft relatively straight and caecum comprising less than one-fourth of its length. *Female Genitalia* (Fig. 27). Ductus very thin and elongate, conical toward caudal tip; ductal spiral in cephalic one-fourth of ductus length and rather open and oriented laterally; cephalic portion of ductus and cervix bursae very minute; eighth tergite laterally expansive; papillae anales robust and blunt-ended, apophyses relatively short, only about one-half as long as ductus.

**TYPES.** Holotype male, allotype female, 20 km. S. Caldera, Atacama, Chile, 16. x. 1957, E. Pena, deposited AMNH (see Remarks).

**DISTRIBUTION.** Spatial (Fig. 48A): known only from the type locality in Intermediate Desert Biotic Province (*sensu* Davis, 1986; Irwin and Schlinger, 1986) (see Remarks). Temporal: known only from type data.

**REMARKS.** These specimens were forwarded by Pena to Dr. F. H. Rindge as geometrid moths while specimens of *S. eurytulus* taken at the same time were forwarded to the AME as butterflies. It is not known whether the *S. peristictos* specimens were taken at light; this has been reported previously for *S. eurytulus* (Eisele, field notes). The habitat at "30 km. S of Caldera" is listed as Intermediate Desert Biotic Province ("IDBP") by Irwin and Schlinger (1986) although, by general geography, it is located within the Northern Coast Region Biotic Province ("NCRBP"). Habitats of NCRBP are distributed along a narrow coastal band from circa 21-28° SL and we interpret the locality listing by Irwin and Schlinger to indicate IDBP biomes are here interspersed with typical NCRBP biomes (latter characterized as "distinctive vegetation supported by fog enshroud [ed] coastal hills"). Irwin and Schlinger describe the vicinity south of Caldera as sand dunes with interspersed Asteraceae. Since *S. eurytulus* is also represented from collections at these localities (same time and place), *S. peristictos* is most certainly distinct. Endemism appears typical of certain northern Chilean biotic provinces. Johnson (1989a) characterized insular *Chlorostyrmon kuscheli* (Ureta) from paramo in Tarapaca State; he, L. Miller and J. Herrera are studying an apparently distinctive *Ministrymon* from quebrada habitat in the same region.

**ETYMOLOGY.** The Greek name means "dappled" and refers to the black-suffused and spotted appearance.

The *rufosca* Group:

**Characters.** Males without scent brands; under surface dominated by a dashed red-orange medial hindwing band; female genitalia with ductus bursae thin, elongate, spiral-shaped; male vinculum laterally tapered with slight angle near brush organs.

**Remarks.** A significant number of other *Strymon* species from various areas of the Nearctic and Neotropics comprise a monophyletic lineage with *S. rufosca*. Because of the differential occurrence of forewing androconia in males and the simple under surface pattern, further work will be necessary to completely elucidate this group. After treatment of NW Argentine species we describe a new species from Patagonia, important to the Austral fauna of this group.

*Strymon rufofusca* (Hewitson)

## Figures 9C,D, 28

*Thecla rufofusca* Hewitson 1863-1878 [1877], (1): 196; (2): pl. 78, f. 627-628. Hayward 1973: 160.

*Thecla valentina* [not *Thecla valentina* Berg 1896, (2)5: 3 f. 3a]: Bridges 1988: I.361 (synonymy in error).

**DIAGNOSIS.** Lack of (a) male forewing brands and (b) a second hindwing tail at vein CuA<sub>1</sub> distinguish *S. rufofusca* at once from *S. valentina*. Also, both sexes of *S. rufofusca* have: (a) only one orange marginal marking at cell M<sub>3</sub> on the hindwing (two, cells M<sub>3</sub> and CuA<sub>2</sub>, in *S. valentina*), (b) medial band linear and mostly red-orange (lunular, bright orange and with distinctive distal black and white edges in *S. valentina*).

Accordingly, *S. rufofusca* more resembles new species *S. nicolayi* described below. Like *S. valentina*, *S. nicolayi* has male forewing brands and two hindwing tails, but its under surface pattern characters, like *S. rufofusca*, are linear and it has a single orange upper surface hindwing marking.

**DESCRIPTION.** *Adult.* Male (Fig. 9C): forewing 10.0-15.0 mm. Female (Fig. 9D): forewing 10.0-15.0 mm. *Male Genitalia* (Fig. 28). Valvae with bilobed area widely parabolic, caudal extension with thick caudal taper. Vinculum laterally with slight angle at area of abutment with brush organs; saccus elongate and parabolic. Aedeagus of moderate length, length exceeding rest of genitalia about one-third to one-fourth; shaft rather straight, caecum comprising about one-third its length. *Female Genitalia* (Fig. 28). Ductus elongate and terminally conical, terminal lamellae rather elliptical; spiral of ductus in caudal one-fourth to one-fifth of length usually very ovate with area adjacent cervix bursae dorsally inclined; cervix bursae diminutive; corpus bursae with two moderately sized signa, length of each comprising about one-third bursal length. Papillae anales with slightly bulbous termini; apophyses papillae anales length about that of ductus caudad its spiral.

**TYPES.** Holotype female labelled "Type", "B.M. TYPE No. Rh. 1008", "Hewitson Coll. 79-69. *Thecla rufofusca*. 1.", [lacking locality label], BMNH. Type locality: : not specified but known throughout the neotropics (see below).

**DISTRIBUTION.** Spatial (Fig. 48B): widespread from southern Nearctic southward, in the Antilles, Central and South America. In South America westward to Peru and southward to southeastern Brazil and northwestern Argentina. In northwestern Argentina known to us from Jujuy, Salta, Tucumán, Chaco, Sante Fe, La Rioja, Mendoza, Córdoba and Rio Negro provinces. Hayward (1973) also included Catamarca and Santiago del Estero. Temporal: monophenic (variable in size and wing pattern but without clear correlation to seasonality or ecological conditions [sexually monomorphic]; known from every month of the year.

**REMARKS.** *S. rufofusca* is widely distributed and extremely common throughout many parts of the Neotropical Region. It appears remarkably stable in wing and structural characters over its wide Neotropical and southern Nearctic range. Eisele (31D, 10. v. 1985) captured notable female aberration of *S. rufofusca* with medial areas of both wing upper surfaces suffused with orange.

**MATERIAL EXAMINED.** leg. Eisele— 31B, 2 ♂, 4 ♀, 7. v. 1985, 2 ♂, 10. v. 1985, 5 ♂, 4 ♀, 11. v. 1985, 1 ♀, 13. v. 1985 (all AMNH); 31D, 1 ♂, 30. iv. 1985 (MPM), 1 ♂, 4. v. 1985 (CMNH), 1 ♂, 1 ♀, 10. v. 1985 (MNHN), 1 ♂, 1 ♀, 10. v. 1985 (MZPC), 1 ♂, 1 ♀, 10. v. 1985 (LACM), 9 ♀, 10. v. 1985 (AMNH), 2 ♂, 13. v. 1985 (AMNH), 13 ♂, 19 ♀, 15. v. 1985, 1 ♀ [see Remarks] 10. v. 1985 (all CRE); 54A, 2 ♀, 10. i. 1988, 3 ♀, 18. i. 1988; 54B, 1 ♀, 18. i. 1988 (all CRE); 160C, 1 ♂, 7. v. 1986, 1 ♀, 9. v. 1986, 1 ♀, 21. v. 1986 (all CRE); 160B, 1 ♀, 10. vii. 1987, 1 ♀, 29. ix. 1987 (all CRE); 17A, 1 ♂, 1 ♀, 26. vii. 1977 (CMNH); 21A, 4 ♂, 7 ♀, 5. xi. 1974 (CRE), 1 ♂, 1 ♀, 6. xi. 1974 (CRE); 27A, 1 ♂, 1 ♀, 9. v. 1972, 1 ♂, 1 ♀, 15. v. 1972, 1 ♂, 1 ♀, 25. v. 1972, 1 ♂, 1 ♀, 17. v. 1972, 1 ♂, 1 ♀, 29. v. 1972, 1 ♂, 1 ♀, 14. vi. 1972, 1 ♂, 1 ♀, 17. vi. 1972, 1 ♂, 1 ♀, 17. vi. 1972, 1 ♂, 1 ♀, 29. v. 1972, 1 ♂, 1 ♀, 9. v. 1972, 1 ♂, 1 ♀, 19. vii. 1972,

1 ♂, 1 ♀, 17. v. 1972, 1 ♂, 1 ♀, 29. v. 1972, 1 ♂, 1 ♀, 18. v. 1972, 1 ♂, 1 ♀, 14. v. 1972, 1 ♂, 1 ♀, 18. vi. 1972, 1 ♂, 1 ♀, 18. vi. 1972, 1 ♂, 1 ♀, 29. v. 1972, 1 ♂, 1 ♀, 29. v. 1972, 1 ♂, 1 ♀, 16. vi. 1972, 1 ♂, 1 ♀, 16. vi. 1972, 2 ♂, 2 ♀, 28. v. 1972 (all AME), 1 ♀, 28. v. 1972, 1 ♀, 2. vi. 1972, 2 ♀, 28. v. 1972, 1 ♀, 24. v. 1972, 1 ♂, 8. xi. 1971, 2 ♂, 29. xii. 1967, 1 ♀, 24. v. 1972, 1 ♂, 20. vi. 1969, 1 ♀, 2. vi. 1972, 1 ♀, 29. v. 1972, 1 ♂, 21. v. 1972, 1 ♀, 12. v. 1972, 1 ♂, 8. vi. 1969, 1 ♂, 26. v. 1972, 1 ♂, 31. v. 1972, 1 ♀, 21. v. 1972 (all IML), 1 ♀, 21. v. 1969 (MPM), 1 ♂, 24. v. 1972 (MPM), 1 ♂, 24. v. 1972 (MZPC), 1 ♂, 4. vi. 1969 (LACM), 1 ♂, 2. v. 1969 (MNHN), 1 ♂, 31. v. 1970 (IML), 1 ♀, 8. vi. 1969 (MNHN), 1 ♀, 13. ix. 1968 (MZPC), 1 ♀, 17. vi. 1972 (BMNH), 1 ♂, 28. v. 1972 (BMNH); 1 ♂, 1 ♀, 9. v. 1972, 1 ♂, 14. v. 1972, 1 ♀, 15. v. 1972, 1 ♂, 1 ♀, 16. v. 1972, 3 ♀, 17. v. 1972, 3 ♀, 24. v. 1972, 1 ♀, 25. v. 1972, 1 ♂, 2 ♀, 26. v. 1972, 1 ♂, 28. v. 1972, 1 ♂, 3 ♀, 29. v. 1972, 1 ♂, 7. vi. 1972, 1 ♀, 19. vii. 1972, 1 ♂, 1 ♀, 12. v. 1972, 3 ♀, 17. v. 1972, 1 ♂, 2 ♀, 21. v. 1972, 1 ♂, 2 ♀, 24. v. 1972, 2 ♂, 26. v. 1972, 2 ♂, 2 ♀, 28. v. 1972, 1 ♀, 29. v. 1972, 1 ♂, 31. v. 1972, 2 ♀, 2. vi. 1972, 1 ♀, 30. v. 1970, 1 ♂, 12. v. 1972, 2 ♀, 17. v. 1972, 1 ♂, 26. v. 1972 (all CRE); 27B, 1 ♂, 16. iv. 1974, 1 ♀, 24. iv. 1974, 1 ♂, 1. v. 1974, 1 ♀, 22. vi. 1974, 1 ♀, 25. vi. 1974, 1 ♀, 30. vi. 1974, 1 ♂, 29. vi. 1974, 1 ♀, 16. vii. 1976, 1 ♂, 28. x. 1976, 1 ♂, 8. xi. 1976, 1 ♂, 3. i. 1976, 1 ♀, 4. iii. 1977, 1 ♂, 26. iii. 1977, 1 ♀, 22. x. 1968, 1 ♂, 21. v. 1969, 1 ♂, 2. vi. 1969, 1 ♂, 4. vi. 1969, 2 ♀, 8. vi. 1969, 1 ♂, 29. xii. 1967, 1 ♂, 10. iv. 1970, 1 ♀, 30. v. 1970, 1 ♀, 31. v. 1970, 1 ♂, 11. vi. 1970, 1 ♂, 7. xi. 1971, 2 ♂, 8. xi. 1971, 1 ♀, 16. xi. 1971, 1 ♂, 1 ♀, 17. xi. 1971, 1 ♀, 28. xi. 1971, 1 ♀, 20. i. 1972, 1 ♂, 1 ♀, 25. iv. 1973, 1 ♀, 28. xi. 1971, 1 ♂, 7. xi. 1971, 1 ♀, 20. i. 1972 (all CRE), 1 ♀, 16. xi. 1971, 1 ♀, 22. x. 1968, 1 ♀, 14. xi. 1971, 1 ♂, 17. xi. 1971, 1 ♂, 8. xi. 1970, 1 ♂, 10. vi. 1970 (all IML); 27C, 1 ♀, 12. vii. 1968 (CRE), 1 ♂, 12. vii. 1968 (IML); 27G, 1 ♀, 27. iv. 1974, 1 ♀, 3. vii. 1973, 1 ♂, 3. v. 1973, 1 ♂, 3. vi. 1973, 1 ♂, 5. vi. 1973, 1 ♂, 11. vii. 1973 (all CRE); 27E, 1 ♂, 1 ♀, 15. xi. 1973, 1 ♀, 20. vi. 1968 (all CRE); 28A, 1 ♂, 23. xi. 1974 (CRE); 3A, 1 ♂, 14. i. 1968, 1 ♀, 17. i. 1968, 1 ♀, 18. i. 1968, 2 ♂, 20. i. 1968, 1 ♂, 2 ♀, 24. i. 1968, 1 ♂, 14. i. 1968 (all CRE), 1 ♀, 24. i. 1968, 1 ♀, 18. i. 1968, 1 ♀, 17. i. 1968, 1 ♂, 24. i. 1968, 1 ♂, 24. i. 1968, 1 ♂, 20. i. 1968 (all IML); 30A, 1 ♀, 24. i. 1968 (IML); 30B, 1 ♀, 5. vi. 1969 (CRE), 1 ♀, 5. vi. 1969 (IML); 31A, 1 ♂, 1 ♀, 18. iv. 1972 (CRE), 1 ♂, 1 ♀, 18. vi. 1972 (IML); 4B, 1 ♂, 9. xii. 1960 (IML), 1 ♂, 16. i. 1961 (IML), 1 ♂, 12. vii. 1970 (IML); 7E, 1 ♂, 21. x. 1977 (CRE), 2 ♂, 11. vii. 1978 (CRE); 7 ♀, 1 ♀, 29. vi. 1979, 3 ♀, 25. vii. 1979, 1 ♀, 27. vii. 1979 (all CRE); 51A, 1 ♀, 20. ix. 1968 (IML); 15B, 1 ♂, 1 ♀, 31. x. 1977 (CRE); 51A, 1 ♀, 20. ix. 1968 (CRE); 52A, 2 ♂, 12. i. 1970, 1 ♀, 16. i. 1970, 1 ♀, 10. i. 1972, 1 ♂, 1 ♀, 12. i. 1972, 1 ♀, 14. i. 1977 (all CRE), 1 ♀, 10. i. 1972 (IML); 4A, 1 ♂, 28. xi. 1960, 1 ♂, 12. i. 1972, 2 ♂, 12. i. 1970, 1 ♂, 14. i. 1961 (all AME); 4B, 1 ♂, 28. xi. 1960, 1 ♀, 9. xii. 1960, 1 ♂, 12. xii. 1960, 1 ♂, 14. i. 1961, 1 ♂, 16. i. 1961 (all CRE); 26A, 1 ♀, 16. x. 1977 (CRE); 33A, 1 ♂, 17. ii. 1979 (CRE); 34A, 1 ♀, 28. i. 1977, 1 ♂, 1 ♀, 29. i. 1977, 2 ♀, 21. i. 1979, 1 ♀, 24. ii. 1979 (all CRE); 34B, 1 ♂, 23. i. 1979 (CRE); leg. MacPherson— 27A, 1 ♂, 1 ♀, 27. iv. 1973 (AME); 16A, 1 ♂, 1 ♀, \*\*17. iii. 1975, 1 ♂, 1 ♀, \*\*29. i. 1975, 1 ♂, 1 ♀, 29. i. 1975, 1 ♂, 1 ♀, 1. x. 1977 (all AME); 34A, 3 ♂, 3 ♀, \*\*21. i. 1979, 1 ♀, 28. iii. 1975, 1 ♂, 12. iv. 1977 (all AMNH); 17A, 1 ♀, 20. xi. 1979, 2 ♂, 2 ♀, \*\*4. vi. 1976, 1 ♂, 26. vii. 1977, 1 ♀, 7. vi. 1975, 1 ♂, 29. vi. 1977, 1 ♂, 6. i. 1977, 1 ♂, 1. vi. 1976, 1 ♂, 12. vi. 1976, 1 ♀, 12. v. 1976, 1 ♂, 7. vi. 1975, 1 ♀, 12. vi. 1976, 1 ♂, 3. i. 1977 (all AMNH); 7A, 1 ♂, \*20. vi. 1974, 2 ♀, \*27. vi. 1988 (all AMNH), 1 ♂, 1 ♀, 11. vii. 1978 (both AME); 21A, 1 ♀, \*6. xi. 1974 (AMNH); 18A, 1 ♀, \*24. iv. 1978 (AMNH); 11A, 1 ♀, \*4. iii. 1975 (AMNH); 21A, 1 ♀, \*5. xi. 1974 (AMNH); 19A, 1 ♂, \*22. xi. 1982 (AMNH); 5A, 1 ♀, \*29. xii. 1980, 1 ♂, \*3. xii. 1980, 1 ♀, 29. xii. 1986 (all AMNH); 17B, 1 ♂, \*4. xii. 79; 17B, 1 ♀, \*29. i. 1977 (AMNH); 18A, 4 ♀, \*2. vi. 1986 (all AMNH), 1 ♂, 26. v. 1981 (AMNH); 5A, 1 ♀, \*29. xii. 1985 (AMNH); miscellaneous other leg.— 214A, no other data, 4 M (BMNH); 229A, no other data, 2 ♂, 3 ♀, (BMNH), 1 ♂, 1 ♀, no other data (IML); 31A, 2 ♂, 1 ♀, ix.-xi. 1903 (BMNH); 45A, 4 ♂, 5 ♀, iii. (BMNH); 234A, no other data, 1 ♂, 1 F (BMNH); 201A, 1 ♀, 12. vii. 1948 (IML); 111A, 2 ♀, v. 1947, leg. Golbach (IML); 45A, 1 ♀, 29. x. 1943 (IML); 106A, 2 ♂, 10. v. 1947 (IML); 107A, 1 ♂, iv.-v. 1949 (IML); 101A, 1 ♀, ii. 1952, leg. Hayward (IML); 45B, 1 ♀, vi. 1932 (IML); 159A, 1 ♀, 9. xii.

1946, leg. Golbach (IML); 154A, 1 ♂, no other data (IML); 45B ["San Genaro"], 1 ♀, v. 1948, leg. Garcia (IML); 206A, 2 ♂, 1 ♀, 11. xii. 1906 (MNHN), 2 ♀, 2. ii. 1907 (MNHN), 1 ♂, 31. x. 1906 (MNHN); 207A, 1 ♂, 2 ♀, 7. xii. 1906, 1 ♂, 7. ii. 1908 (MNHN); 52A, 1 ♀, 16. i. 1970 (CRE).

*Strymon cyanofusca*, new species

Figures 9E,F, 29

**DIAGNOSIS.** A Patagonian species somewhat similar to *S. rufofusca* in under surface pattern and lack of male forewing brand but with upper surface distinctly steel-blue in males and gray-black in females. Female with gray patch covering upper surface limbal region marked prominently marginad by three to four black spots (cell  $M_2$  [or  $M_3$ ] to  $CuA_2$ ) and one red-orange spot (cell  $CuA_1$ ). Under surface bands extremely wide and lineal red-orange, resembling taxa of the "*Thecla badaca* Group" (Draudt, 1919).

**DESCRIPTION.** *Male* (Fig. 9E). Upper surface of wings: Ground color dull steel blue except along apices and submargins which are black. Forewing without scent brand; hindwing with two tails, long at terminus vein  $CuA_2$ , shorter, terminus vein  $CuA_1$ . Under surface of wings: Ground color gray; forewing with generally straight orange postmedial band, costa to cell  $CuA_2$ ; hindwing with wide, generally continuous red-orange medial band, particularly jagged near end of discal cell, cell  $CuA_1$ , and adjacent the anal lobe; limbal area suffused with orange and red around the *Thecla*-spot and anal lobe (see Remarks). Length of forewing: 13.5 mm (allotype). *Female* (Fig. 9F). Upper surface of wings: Ground color fuscous except limbal area of hindwing which is whitish-blue throughout, marked with three to four black marginal spots (cells  $M_2$  [or  $M_3$ ] to  $CuA_2$ ) and red-orange basad the spot at  $CuA_1$ . Under surface of wings (Fig. 9B): marked as male, but known specimens with hindwing medial band extremely wide and limbal area more brightly suffused than in male. Length of forewing: 14.0 mm (holotype). *Male Genitalia* (Fig. 29). Labides produced slightly dorso-caudally; vinculum tapered laterally tapered with slight angle in area of brush organ abutment; saccus elongate and parabolic, terminus displaced laterally out of vincular plane. Valvae with bilobed areas widely parabolic, caudal extension tapered thickly to pointed termini. Aedeagus with length exceeding rest of genitalic parts by about one-third; shaft slightly recurvate, caecum comprising about two-fifths of aedeagus length. *Female Genitalia* (Fig. 29). Ductus elongate with terminus dorsally inclined, laterally spiraled in cephalic one-third; terminal lamellae elongate and elliptical; cervix bursae diminutive; corpus bursae lacking signa; papillae anales robust with bulbous termini, apophyses short (length slightly less than ductus caudad of spiral).

**TYPES.** Holotype female, allotype male, Punta Norté (237A), Peninsula Valdez, Chubut Province, Argentina, 16. i. 1968, deposited IML. *Paratypes.* IML- one female, same data as primary types.

**DISTRIBUTION.** Spatial (Fig. 49A): known only from type locality. Temporal: known only from type data.

**REMARKS.** *S. cyanofusca* has an odd wing pattern combination and could be easily passed over as not representing *Strymon* but rather a taxon in Draudt's *badaca* Group (specifically *Thecla badaca* Hewitson). We included the specimens in our dissections from IML because of the upper surface similarity to *S. rufofusca* (aside from the whitish limbal area in females). The under surface of the male appears worn and it is thus probable that fresh specimens have hindwing under surface bands as outstanding as those in recorded females. Consistent with wing pattern selection in other high altitude and low latitude Argentine hairstreaks (*S. eurytulus* forms *nigra* and *tucumana*, *S. eremica*, *S. rhapsos*; *Thecla wagenknechti* assemblage), the highly suffused under surface pattern with widened orange bands in *S. cyanofusca* may reflect climatic adaptation in this species. Similar patterns and overscaling with darker wing scales are common in butterflies of high altitudes and high latitudes in the Holarctic.

**ETYMOLOGY.** Contrasting the name of the sister species "*rufofusca*", we substitute the Latin prefix "cyano" referring to the upper surface blue coloration in this species.

### The valentina Group:

**Characters.** Female genitalia with ductus bursae generally thin and with spiral closely abutting distal end of corpus bursae; male genitalia with vinculum laterally tapered and aedeagus terminally serrate; male with forewing brands; both sexes mostly lacking structural coloration; under surface with, broken, patchy orange or brownish bands.

**Remarks.** Though slightly resembling the rufofusca Group in superficial pattern characters, members of the valentina Group have scent brands and share other unique characters. The titular species has a restricted southern South American distribution and, previous to this study, has been poorly known. The group includes a number of previously undescribed species. The eremica Group (see below), also of southern South American distribution, is closely related to the valentina Group and similarly species rich.

### *Strymon valentina* (Berg), revised status

Figures 10A,B, 30

*Thecla valentina* Berg 1896, (2)5: 3, f. 3a. Köhler 1923: 3; 1928: 4. Hayward 1973: 160. *Thecla rufofusca* [not *Thecla rufofusca* Hewitson 1863-1878 [1877], (1): 196; (2): pl. 78, f. 627-628]; Bridges 1988: 1.361 (synonymy in error).

**DIAGNOSIS.** Contrasting *S. rufofusca*, *S. valentina* has prominent forewing androconial brands in males and, in both sexes, two prominent hindwing tails (veins CuA<sub>1</sub>, CuA<sub>2</sub>). On the under surface *S. valentina* exhibits a bold, broken, medial orange band formed by brilliant rectangular orange patches in each cell, each patch bordered distally first by black and then by white. This band contrasts the rather simple, mostly continuous, blotchlike red-orange medial band of *S. rufofusca*. In addition, on the upper surface in both sexes of *S. valentina* there are two marginal orange patches (cells CuA<sub>1</sub> and M<sub>3</sub> [latter bold in females]), not one as in *S. rufofusca*.

*S. valentina* must also be distinguished from the new species *S. nicolayi* described below. *S. nicolayi* appears much like *S. rufofusca* on the wing under surface and would be mistaken for *S. rufofusca* if it did not have prominent androconial brands in the males. *S. nicolayi* has historically confused identification of *S. rufofusca* and *S. valentina*. *S. rufofusca* is of general distribution while *S. valentina* is a monte endemic and *S. nicolayi* a chaco endemic (see Part I Introduction, Davis, 1986 and Irwin and Schlinger, 1986) (Fig. 48). The genitalia of the three species differ distinctively as noted below.

**DESCRIPTION.** *Adult.* Male (Fig. 10A): forewing 11.0-14.5 mm. Female (Fig. 10B): forewing 11.0-16.0 mm. *Male Genitalia* (Fig. 30). Labides small and flat to concave; vinculum laterally robust with position of saccus located rather perpendicular to line of vinculum; brush organs abutting dorso-caudal vincular margin with brushes curving dorsally to labides; saccus robust, length not exceeding that of valval bilobes. Valvae robust with parabolic bilobes not much wider than thickened caudal extension; caudal extension recurvate at terminus (notably in lateral view). Aedeagus robust, length exceeding rest of genitalia by only the caecum length, greatly recurvate and serrate at the terminus; caecum robust, comprising about one-fourth of aedeagal length. *Female Genitalia* (Fig. 30). Ductus bursae robust and with spiral directly adjacent diminutive cervix bursae; terminal lamellae parabolic, attached to swollen base; corpus bursae with two platelike signa of moderate size.

**TYPE.** Holotype male, Sierra de Córdoba, Córdoba Province (226A), Museo Argentino de Ciencias Naturales, Buenos Aires.

**DISTRIBUTION.** Spatial (Fig. 49B): restricted to monte habitat extending from western Córdoba and southeastern Catamarca provinces northward to the Cafayate region of Salta Province (possibly southward in the monte distribution noted by Davis, 1986 and Irwin and Schlinger, 1986). Temporal: monophenic, apparently occurring in every month of the year (only months ix and xi missing from specimen data), but most common in summer (xii-iii.).

REMARKS. Like *S. diaguia*, *S. valentina* has been poorly known because of its limited range. In museum collections it has also been widely confused with *S. rufofusca* and *S. basilides*. Bridges (1988) incorrectly listed *valentina* in synonymy with *S. rufofusca*. Study of large samples, including the type of *valentina*, confirms that *S. valentina* is distinctive. As noted in the Diagnosis, *S. valentina* is more distinctive from sympatric *S. rufofusca* than its chaco sister species *S. nicolayi*.

Since monte and chaco habitats are ecologically and geographically distinct, location of *S. valentina* and *S. nicolayi* in the field is extremely straightforward. In addition to characters cited above, *S. valentina* specimens from central Argentina are large (FW 13.5-15.5 mm, occasional dwarfs to 11.0 mm) compared to *S. nicolayi* and *S. valentina* specimens from the Cafayate region of Salta Province have an extremely prominent medial band and distal areas of the wings suffused with some brown and gray. In addition to *S. valentina*, another distinctive monte endemic occurs in Argentina. It is described immediately below.

MATERIAL EXAMINED. 209A, 6 ♂, 7 ♀, 18. ii. 1958 (IML); 101A, one female, ii. 1954, leg. Hayward, 1 ♂, 1 ♀, ii.-iii. 1950, leg. Hayward, 1 ♀, ii. 1963, leg. Hayward (all IML); 233A, 1 ♂, 5 ♀ (BMNH) [two additional females labelled simply "Brasil" probably represent inaccurate old data].

### *Strymon monteavagus*, new species

Figures 10D,E, 31

DIAGNOSIS. Like *S. valentina* on under surface but upper surface of hindwing in both sexes brilliantly silvery blue over the caudal one-half (discal cell and vein  $M_3$ ) and marked with black marginal spots in cells  $CuA_1$  and  $CuA_2$  (see Remarks). Under surface hindwing band lunular as in *S. valentina* but deep red-orange, not brilliant orange. Genitalic distinctive as noted below.

DESCRIPTION. *Male* (Fig. 10D). Upper surface of wings: Forewing and hindwing fuscous except for caudal one-half of latter which is brilliant silvery blue. Forewing showing scent brand; limbal area of hindwing with marginal black spots in cells  $CuA_1$  and  $CuA_2$ ; long tail, terminus vein  $CuA_2$ , shorter, terminus vein  $CuA_1$ . Under surface of wings: Ground color gray; forewing with orange postmedial band from costa to cell  $CuA_2$ ; hindwing with medial red-orange band composed of widely lunular elements in each cell, each edged lightly with distally black and then white. Limbal area with slight brownish suffusion in each cell; Thecla-spot orange with black central spot. Length of forewing: 13.0 mm (allotype). *Female* (Fig. 10E). Marked similar to male except without scent brand. Length of forewing: 12.5 mm (holotype). *Male Genitalia* (Fig. 31). Valvae with bilobed area parabolic, caudal extension gradually tapered to pointed termini. Vinculum laterally tapered, slight angle at area of brush organ abutment; sacculus parabolic, rather elongate. Aedeagus with length exceeding rest of genitalia by about one-third; shaft only slightly curvate, caecum comprising about two-fifths of length. *Female Genitalia* (Fig. 31). Ductus bursae thin and elongate, becoming conical near terminus; lamellae parabolic. Ductal spiral in cephalic one-fifth of ductal length, rather open and laterally oriented; cervix bursae diminutive; corpus bursae with two small signa. Papillae anales elongate and with bulbous termini, apophyses elongate, length equals or exceeds that of ductus caudad of spiral.

TYPES. Holotype female, near Arias (228A), CORDOBA PROVINCE, leg. D. H. [illegible] deposited BMNH. Allotype male, Córdoba (225A), CORDOBA PROVINCE, Dr. F. Giacomelli deposited BMNH.

DISTRIBUTION. Spatial (Fig. 49A): apparent monte endemic, thus far known only from the types (see Remarks). Temporal: known only from type data.

REMARKS. Known geographic distribution suggests *S. monteavagus* is a monte endemic. It is sympatric with *S. valentina* in the southern monte of Córdoba Province. Far northward, in the Paraguayan chaco, there occurs an apparent sister species of *S. monteavagus*, *Strymon azuba* (Hewitson) (Fig. 10C, holotype male, BMNH, type locality "Rio Grande", examined and dissected by us). *S. azuba* lacks male scent brands and therein



differs from *S. monteivagus* in the same way *S. valentina* differs from *S. rufusca*. It appears that historical disjunction of chaco and monte habitats accounts for the differentiation of these taxa. As noted elsewhere in the present study, insular chaco distributions also characterize *Strymon eremica* and little-known *S. amphyporphyra*. Since the chaco also harbors the distinctive eumaeine *Ministrymon sanguinalis* (Burmeister) and insular species of the recently described genera *Tergissima* and *Femniterga* (Johnson, 1988a, 1989b; Johnson, Eisele & MacPherson, 1988), this biome appears historically important to speciation in the region.

The types of *S. monteivagus* were among unincorporated, unsorted, materials apparently forwarded by Giacomelli to the BMNH for identification purposes. Along with the type of *S. azuba*, previously unincorporated BMNH specimens labelled "Patino, Paraguay, leg. Perens" (1 ♀) and "Paraguay, xi." (1 ♀) are assignable to *S. azuba* as are specimens in the AMNH labelled "Santissima-Trinidad, Cordillera, Paraguay, leg. Podtiaguin" (2 ♀).

**ETYMOLOGY.** We take the name *monte* from the distinctive Monte biotic province (see Davis, 1986, Irwin and Schlinger, 1986) and add the Latin suffix *vaga*, meaning "monte roamer".

### *Strymon nicolayi*, new species

Figures 10F, G, 32

**DIAGNOSIS.** *S. nicolayi* is superficially much like sympatric *S. rufusca* except for prominent black androconial brands in males, much smaller general size (FW 9.5-12.5mm, much like dwarfs of *S. rufusca*), and two prominent hindwing tails. Restricted to chaco habitat, *S. nicolayi* differs from monte sister species *S. valentina* by the hindwing medial band lacking the distinctive square shaped elements and prominent black and white edging. Also, there is no upper surface marginal orange patch in cell  $M_3$  (see Remarks). The genitalia of the three taxa differ distinctly as noted.

**DESCRIPTION.** *Male* (Fig. 10F). Upper surface of wings: ground color dark brown; scent brands black. Hindwing with single orange marginal spot in cell  $CuA_1$ . Two tails, longer at terminus  $CuA_2$ , shorter at terminus  $CuA_1$ . Under surface of wings: Ground color beige; forewing with thin linular orange brown and white postmedial line from costa to cell  $CuA_2$ . Hindwing with medial band of disjunct, crisply marked orange to reddish-orange spots, becoming smaller and more disjunct in cells  $Sc+R_1$  and  $M_1$  but with an enlarged spot at the costa. Limbal area with uniform ground and no distinctive markings except small orange Thecla-spot in margin of cell  $CuA_1$ . Length of forewing: 9.5 mm-12.5 mm (10.0 holotype). *Female* (Fig. 10G). Similar to males but without forewing brands. Length of forewing: 10.0 mm-12.5 mm (10.5 allotype). *Male Genitalia* (Fig. 32). Notably slender in all parts; labides rounded terminally; vinculum laterally robust, slender and tapered gradually from base of labides to base of saccus; brush organs abutting dorso-caudal vincular margin with brushes curving dorsally to labides base; saccus elongate and terminally pointed, length equalling about one-half valval length. Valvae elongate and slender with parabolic bilobes and thin, slightly curve caudal extension. Aedeagus elongate, length exceeding twice that of valvae but hardly recurvate at the terminus and without terminal serration; caecum small, comprising only about one-fifth of aedeagal length. *Female Genitalia* (Fig. 32). Similar to *S. valentina* in close proximity of ductal spiral to distal end of corpus bursae but generally appearing more slender and elongate than in *S. valentina* (individual size variation obviating this comparison in many specimens, however).

**TYPES.** Holotype male, allotype female, Pichanal (27A), Argentina, 17. v. 1972, leg. R. Eisele, deposited AME. *Paratypes* (limited to a cluster of chaco and chaco margin localities in Jujuy and Salta provinces). leg. Eisele— 20A, 1 ♂, 2. vii. 1974 (CRE); 27A, 1 ♀, 24. iv. 1973 (AME); 6 ♂, 3 ♀, 10. vii. 1974 (all AMNH), 1 ♂, 8. xii. 1973 (MPM); 27B, 1 ♂, 3. vi. 1973 (MZPC), 1 ♂, 17. v. 1972 (AME), 1 ♂, 29. v. 1972 (LACM), 1 ♀, 25. iv. 1973 (BMNH), 1 ♂, 2 ♀, 23. vii. 1976 (AMNH), 1 ♂, 1 ♀, 23. vii. 1976 (CMNH), 1 ♂, 1 ♀, 23. viii. 1976 (MZPC); 27C, 1 ♂, 8. xii. 1973 (CRE); 7C, 1 ♀, 29. vi. 1979 (LACM);

7E, 1 ♂, 22. v. 1978 (LACM), 1 ♀, 29. vi. 1979 (CRE), 1 ♂, 24. vii. 1979 (CRE); 108A, 1 ♂, 23. iv. 1978 (AMNH); 108A, 1 ♂, 23. iv. 1978 (CRE); 6A, 1 ♀, 1. iv. 1980; leg. MacPherson—16A, 1 ♀, 4. v. 1976; 17A, 1 ♂, 1 ♀, 6. i. 1977 (AMNH); 15A, 1 ♂, 17. x. 1977 (AMNH).

**DISTRIBUTION.** Spatial (Fig. 49B): disjunct chaco and chaco margin habitats from eastern Salta Province, Argentina to western Paraguay and eastern Bolivia (see Remarks). Temporal: monophenic; most commonly collected from iv.-vii. but also with smaller samples from xii.

**REMARKS.** S. S. Nicolay (notes on AMNH specimen labels) first noted distinction of AMNH Paraguayan *S. nicolayi* from sympatric, brandless, *S. rufosusca*. Aware of the ecological distinctions and range disjunction of Argentine monte and chaco, Eisele avidly collected *S. nicolayi* and *S. valentina* widely in their respective habitats and assembled historical material (mostly IML) for comparison. This allowed assessment of distinctive wing pattern differences and a test of geographic consistency in the markedly different genitalia characterizing the two populations. Without this care, the species would probably not have been diagnosed. The male genitalia of *S. nicolayi* are particularly notable; their slender structures and lack of terminal serration in the aedeagus suggest a highly derived state. This view is supported by the appearance of some of these characters in *S. coronus*, described below in the eremica Group. With the several taxa of these two groups segregated in various habitats of a relatively small geographic region, it appears that genitalic innovation includes a number of parallelisms.

**MATERIAL EXAMINED.** In addition to Types listed above, miscellaneous other leg.—151A, 1 ♀, v. 1948, leg. Garcia (IML); 204A, 1 ♂, 10. x. 1954, leg. Hayward (IML); 5 ♂, 4 ♀, 11. iv. 1926, leg. Hayward (BMNH); 212A, 1 ♀, i. 1947, leg. Greco (IML); additional records adjacent study area, Corrientes [Province directly east of Chaco and Santa Fe province], 1 ♂, leg. Perens (BMNH), Sapucay, Paraguay, one female, leg. Forster (BMNH), Paraguay, 1 ♀, leg. Jorgensen (BMNH), Paraguay, 1 ♂, leg. Crowley (BMNH), Santissima-Trinidad, Cordillera, Paraguay, 4 ♂, leg. Podtiaguin (AMNH).

**ETYMOLOGY.** Named for S. S. Nicolay, who first noted the distinctive Paraguayan specimens at the AMNH.

### *Strymon lariyojoa*, new species

Figures 11A,B, 33

**DIAGNOSIS.** Somewhat resembling *Strymon yojoa* (Reakirt) (type locality Vera Cruz, Mexico; known southward to southeastern Brazil) and thus differing from any Argentine congener. Upper surface dark brown; forewing under surface with thin linular brown and white postmedial line (as in *S. yojoa*) and discal white slash (as in *S. yojoa* and *S. mulucha*); hindwing under surface with thickened brown band, displaced distally into a "V"-shape along vein Cu<sub>2</sub>, and broken into a separate patch in cell 2A (*S. yojoa* has a continuous, thin, whitish hindwing band which is displaced distally along veins Cu<sub>1</sub> and Cu<sub>2</sub> into a "W"-shape and unbroken costad). Uniquely, *S. lariyojoa* has under surface hindwing limbal area suffused dark beige (in *S. yojoa* it is white through the submargin with tawny lines surrounding marginal spots or blotches); both species show distinctly blackened markings at the Thecla-spot and anal lobe.

**DESCRIPTION.** *Male* (Fig. 11A). Upper surface of wings: ground color dark brown; scent brand black. Hindwing with orange marginal spot in cell Cu<sub>1</sub>. Two tails; longer at terminus Cu<sub>2</sub>, shorter at terminus Cu<sub>1</sub>. Under surface of wings (Fig. 10B): Ground color beige; forewing with thin linular brown and white postmedial line and white slash distad in discal cell. Hindwing with moderately wide, continuous, brown medial line, displaced radically along cell Cu<sub>2</sub>, distad and broken into a separate spot at cell 2A. Limbal area suffused dark beige from the limbal area costad through the submarginal area. Length of forewing: 14.0 mm. (holotype). *Female*. Unknown. *Male Genitalia* (Fig. 33). Labides small and flat; vinculum laterally tapered toward saccus, brush organs abutting dorso-caudal margin (brushes extending to labides); saccus short, length less than valval bilobes,

and slightly funnel-shaped. Valvae elongate, bilobes thinly parabolic, caudal extension thinly tapered. Aedeagus relatively short, length exceeding rest of genitalia by only one-fifth to one-fourth, undulate in the terminal one-fourth. This genitalic configuration differs greatly from that in *S. yojoa* (specimen examined Rolandia, Paraná, Brazil, AMNH) in which the vinculum is robust with a short saccus, the saccus thickly bordered with heavy sclerotin extending distally along vincular margin, the valvae with steeply constricted caudal extensions slightly recurved at the terminus, and the aedeagus with a narrow caudal terminus but prominent caecum.

**TYPES.** Holotype male, La Rioja (229A), Argentina, collection E. I. Huntington, no other data, deposited AMNH [some E. I. Huntington Collection *Theclinae* from La Rioja are marked as leg. Giacomelli (perhaps also the source of this specimen, consistent with our observations at BMNH)].

**DISTRIBUTION.** Spatial (Fig. 49B): known only from the type locality. Temporal: unknown.

**REMARKS.** This species appears to be a southern relative of the widely distributed northern congener *S. yojoa*, from which it differs markedly. Its occurrence is consistent with the pattern of disjunct distribution evidenced by other new *Strymon* described in this study (see *S. amphyporhya*, *S. golbachii*, *S. montevagus*) in which a distinctive sister species of a more familiar northern or nuclear South American thecline occurs from the Argentine region southward. The distinctness of these southern entities, along with the frequency of Argentine endemics, suggests that faunal disjunctions in temperate South America are very old and have produced sister species and sister lineages of more familiar northern forms.

**ETYMOLOGY.** The name is a euphonious combination based on the type locality and the name of the somewhat similar species *S. yojoa*.

#### The eremica Group:

**Characters.** Under surface pattern with reduced medial hindwing band bordered distally by white postmedial suffusions sometimes forming a second, parallel, band; male with scent brands; some species with prominent structural color on upper surface [though not *eremica*]; female genitalia with ductus bursae spiral closely abutting distal end of corpus bursae; male genitalia with vinculum laterally robust and generally tapered, aedeagus terminally serrate as in some species of *valentina* Group.

**Remarks.** As noted above under *valentina* Group, the *eremica* Group appears to be a close relative endemic to temperate and austral South America. We include it at a separate group because of its surprising species richness and distinctive wing and genitalic features.

#### *Strymon eremica* (Hayward), new combination

Figures 11C,D, 34

*Thecla eremica* Hayward 1949: 574. Hayward 1973: 160.

**DIAGNOSIS.** Contrasting blue structural color on wing upper surfaces in other group members, both sexes of *S. eremica* are dull brown. On the under surface *S. eremica* resembles *S. lorrainea* most but (a) ground is grizzled brown in *S. eremica*, mottled gray in *S. lorrainea*; (b) hindwing band is postmedial and distally produced at cells  $M_1$  and  $M_2$  in *S. eremica*, medial and basally incised at cells  $M_1$  and  $M_2$  in *S. lorrainea*; (c) postmedial white is outstanding in *S. eremica*, obsolescent in *S. lorrainea*. Small females could be confused with *S. rufofusca* but, unless very worn, postmedial white suffusion always denotes *S. eremica* (see Remarks).

**DESCRIPTION.** *Adult.* Male (Fig. 11C): forewing 14.0-15.5 mm. Female (Fig. 11D): forewing 14.0-16.0 mm. *Male Genitalia* (Fig. 34). Vinculum and valvae extremely robust, latter shorter than in many congeners and with termini more spatulate; saccus short and "shovel-like". Brush organs compact. Aedeagus also robust and relatively short; shaft

thick and length never exceeding that of remaining genitalia by one-third; terminus radically undulate near caudal, distally serrate tip; cornuti more prominent than in most congeners. *Female Genitalia* (Fig. 34). Ductus bursae robust and with spiral directly adjacent swollen cervix bursae; terminal lamellae wide and blunt-ended; slight sclerotized hood over distal end of corpus bursae; corpus bursae with two, small, elongate signa; papillae anales extremely elongate, nearly three times maximal width, apophyses also elongate (equal or exceed entire length of ductus from lamellar tips to corpus bursae).

**TYPES.** Holotype male (Fig. 11C) labelled "Thecla eremica, Holotipo, K. J. Hayward Det.", "Type", "Holotipo", "Argentina, Prov. Catamarca, Breyer", "Preparacion genitalia male No. 4008, K. J. Hayward Det.", "Coleccion Inst. Fund. M. Lillo, S. M. Tucuman, Tucuman, Argentina", IML. Type locality: Catamarca, Argentina (misspelled as "Catamarea" in Bridges, 1988). The type, as labelled, had abdomen intact but there was also a purported dissection slide of the "type" (IML #4008). We have disregarded the latter and consider the abdomen attached to the type specimen (Fig. 31) as that of the type. It (and IML dissection 4008) does not differ from other dissections of *S. eremica*.

**DISTRIBUTION.** Spatial (Fig. 50A): a regional endemic, known only from Jujuy, Salta, Catamarca, La Rioja and Mendoza provinces in northwestern and central Argentina. Temporal: apparently monophenic though extremely variable in response to ecological and altitudinal variation; sexually monomorphic; at high altitudes known only from late spring and summer (xii.-i.); in the lowlands flight period extending from typical xii.-iv. to include vi. and x.

**REMARKS.** Since Hayward's early work this species has remained poorly known. Its habitats are xeric, ranging from lowland chaco to high montane shrub-steppe (to 3400 m). It appears to be extremely local. In Jujuy and Salta, lowland morphs resemble the specimens figured but south of Catamarca the species displays a more disjunct hindwing medial band, more compact white suffusion distad and prominent dark suffusion in the limbal area. At high altitudes in the region (Huacalera/Tilcara, Jujuy), the species is larger with pattern elements diminished and ground extremely suffused. Such high altitude phenotypic alteration typifies several groups, particularly at Tilcara (see *S. eurytulus* form *tucumana*).

The distinctiveness of *S. eremica* is further emphasized by the three new taxa described below. These species suggest the *eremica* Group is a major southern South American lineage of *Strymon* that has produced at least four distinctive locally endemic species. The dingy upper and under surface appearance of *S. eremica* may represent the plesiotype of this group, with structural coloration and additional pattern elements characterizing more derived taxa. All the taxa differ distinctly in under surface ground color and pattern, particularly in the limbal elements, but all have the pattern dominated by the white postmedial suffusion characterizing the group.

**MATERIAL EXAMINED.** leg. Eisele— 54B, 1 ♂, 18. i. 1988 (AME); 53A, 1 ♂, 1 ♀, 2. xii. 1969 (LACM), 1 ♂, 1 ♀, 18. iii. 1975 (AME), 1 ♂, 18. iii. 1975 (BMNH), 1 ♀, 2. xii. 1972 (CRE), 1 ♂, 1 ♀, 2. xii. 1969 (CMNH); 51A, 1 ♂, 18. i. 1974, 1 ♀, 26. xi. 1974, 1 ♂, 18. i. 1974 (all CRE), 1 ♂, 1 ♀, 27. i. 1974 (MZPC), 1 ♂, 1 ♀, 29. i. 1974, 2 ♂, 26. xi. 1974, 1 ♂, 17. i. 1969 (all AMNH), 1 ♂, 2 ♀, 17. i. 1969 (IML); 32B, 2 ♂, 2 ♀, 18. i. 1988 (CRE); leg. MacPherson— 7A, 1 ♀, 29. vi. 1987 (AMNH); miscellaneous other leg.— 229A, 1 ♂, 1906 "No. 17", leg. Giacomelli (BMNH); 101A, 1 ♀, ii.-iii. 1950, leg. Hayward (IML); 209A, 6 ♂, 8 ♀, 18. ii. 1958, leg. Golbach (IML); 203A, 1 ♀, 1.-19. x. 1954, leg. Hayward, 1 ♀, 1.-18. x. 1950, leg. Hayward; 206A, 2 ♀, i. 1947 (IML); 203A, 1 ♂, 1 ♀, iv. 1950 (IML).

#### *Strymon lorrainea*, new species

Figures 11E,F, 35

**DIAGNOSIS.** Both sexes with upper surface forewing warm amber brown, hindwing brilliant silvery blue from vein  $M_3$  caudad, a single thickened tail at vein  $CuA_2$ , and a black spot in margin at cell  $CuA_2$ . Under surface slate gray with a lunular dark gray medial band basally incised at cells  $M_1$  and  $M_2$ . Genitalia distinctive as noted below.

**DESCRIPTION.** *Male* (Fig. 11E). Upper surface of wings: Forewing ground color warm amber; scent brands small, ovate, black. Hindwing ground cephalad vein  $M_3$  as above, brilliant silvery blue caudad. Single thickened tail at vein  $CuA_2$  terminus with cell  $CuA_1$  margin notably concave and a black marginal spot in cell  $CuA_2$  before blackened anal lobe. Under surface of wings: Ground color slate gray; forewing with wide, lunular dark gray postmedial line from costa to cell  $CuA_1$ . Hindwing with slate gray ground darkened to deep gray in the basal disc; latter surrounded by dark gray lunular medial band incised basally at cells  $M_1$  and  $M_2$ . Length of forewing: 16.0 mm (allotype). *Female* (Fig. 11F). Upper surface of wings: Marked as on male but without scent brand. Under surface of wings: Marked as on males. Length of forewing: 16.5 mm (holotype), 16.5 mm (paratype). *Male Genitalia* (Fig. 35). Labides small and slightly rounded; vinculum laterally robust and tapering widely to prominent saccus; brush organs thickly abutting dorso-caudal vincular margin, brushes extending caudally to labides base; saccus robust, length about equalling that of valval bilobes. Valvae robust basally and caudally with bilobes slightly shouldered and caudal extensions thickly tapered to bulbous termini. Aedeagus robust, length exceeding rest of genitalia by slightly more than length of caecum and with caudal terminus robust, recurvate and serrate; caecum robust, comprising about one-fourth of the aedeagus length. *Female Genitalia* (Fig. 35). Ductus bursae with fluted terminus not as ellipsoidal as in congeners; rather, lateral margins and terminal lamellae angled and irregular. Shape of ductus adjacent cervix bursae not truly spiralled; rather, ductus strongly declined and laterally displaced before tapering gradually terminad. Cervix bursae and distal end of corpus bursae adjoined with short hood, somewhat reminiscent of structures typifying taxa of the basilides Group. Terminal tergite laterally expansive and heavily sclerotized along ventral margin; papillae anales robust with terminus bulbous; apophyses papillae anales robust, length extending through the terminal tergite.

**TYPES.** Holotype female, allotype male, San Pedro del Calaleo (39A), Tucumán Province, Argentina, 1954, leg. P. Arnau, deposited IML. Paratype female: same data as primary types, deposited AMNH.

**DISTRIBUTION.** Spatial (Fig. 50A): known only from the type locality. Temporal: known only from type data.

**REMARKS.** Specimens of this species were forwarded by Z. D. Ajmat Toledo (IML) after review of our preliminary draft. Previously, the specimens had not been associated with *Strymon* at the IML and not forwarded to us. Unfortunately, nothing else is known concerning the capture of these unique specimens.

**ETYMOLOGY.** The name is a patronym for Lorraine Hitz.

### *Strymon coronos*, new species

Figures 12A, 36

**DIAGNOSIS.** Upper surface of hindwing with blue structural color but, contrasting *S. lorrainea* and more typical of crossoea Group *Strymon*, limited to the caudal one-half of wing. Forewing fuscous, not warm brown as in *S. lorrainea*. Under surface uniquely marked with closely adjacent distal white-suffused postmedial band and immediately basal orange medial band.

**DESCRIPTION.** *Male* (Fig. 12A). Upper surface of wings: Ground color fuscous except for brilliant iridescent silvery blue over the caudal one-half of hindwing. Forewing with small, parabolic, black brand at end of cell. Hindwing with two tails, short at vein terminus  $CuA_1$ , longer at vein  $CuA_2$ . Under surface of wings (Fig. 10F): Ground color tawny. Forewing with thin, orange-brown, postmedial line extending from costa to cell  $CuA_2$ . Hindwing with thin, arc-like, orange-brown medial band followed distally by a white suffused postmedial band. Limbal area with prominent orange centrally blackened Thecla-spot and anal lobe; submargins with light white suffusions in each cell. Length of forewing: 14.5 mm (holotype). *Male Genitalia* (Fig. 36). Though resembling *S. eremica* in general configuration, far less robust. Valvae with bilobed area more thinly parabolic and caudal extension far more elongate. Vinculum laterally tapered, saccus about twice the length

as in *S. eremica*. Aedeagus with serrate terminus as in *S. eremica* but shaft, and particularly caecum, thin, latter comprising at least two-fifths of aedeagus length.

**TYPES.** Holotype male, La Rioja (229A), leg. Giacomelli, Ex. H. H. Druce Collection, deposited BMNH (see Remarks).

**DISTRIBUTION.** Spatial (Fig. 49A): known only from the type locality. Temporal: known only from the type data.

**REMARKS.** *S. coronos* was noted as "sp. nov." in BMNH collection but undescribed. Notable among eremica Group members are the slender male genitalic structures typifying *S. coronos*. These contrast *S. eremica* and parallel respective robust and slender genitalic structures characterizing *S. valentina* (Fig. 30) and *S. nicolayi* (Fig. 32) of the valentina Group. As noted in species group Remarks, the eremica and valentina Groups appear closely related. Their geographic distributions suggest congruent speciation, both groups having numerous sympatric endemics within the relatively small northwestern Argentine region. Consistent with the distributions of these taxa, *S. coronos* appears to have a vicariant sister species northward in the Paraguayan chaco—*S. veterator* (H. H. Druce) (type locality: "Paraguay"). This latter species (as identified by the type, BMNH) has additional chromatic blue on the forewings and lacks the white postmedian coloration beneath. In the genitalia *S. veterator* exhibits a rounder vinculum, much shorter saccus, more thickly tapered valvae with a produced terminus, and a thin, terminally pronounced and undulate aedeagus without terminal serration as seen in *S. coronos*.

**ETYMOLOGY.** The name is taken from the Greek referring to the corona of submarginal white on the hindwing under surface.

### *Strymon nivnix*, new species

Figures 12B, 37

**DIAGNOSIS.** Resembling other eremica Group members in under surface white suffusion across the postmedial area but otherwise very distinct. Upper surface brownish-black with slight azure flush in anal area of hindwing. Under surface with hindwing outstandingly marked—white suffusion of postmedial area broken into blotches, limbal area lavishly suffused with black and orange, particularly in cells CuA<sub>1</sub> and CuA<sub>2</sub> (see below).

**DESCRIPTION.** *Male.* Unknown. *Female* (Fig. 12B). Upper surface of wings: Ground color brownish-black with slight bluish flush in anal regions of hindwing suffused blackish along the margins from the anal lobe to cell CuA<sub>1</sub>. Two tails, long at terminus vein CuA<sub>2</sub>, short at vein CuA<sub>1</sub>. Under surface of wings (Fig. 10E): Ground color slate gray; forewing with rather straight postmedial band, white distally, brownish-black basally, from costa to cell CuA<sub>2</sub>. Hindwing with obsolescent medial band obscured distally by intense white suffusion of postmedial area (latter broken into blotches); submargins with darkened crenate line bordering the limbal area; limbal area suffused with orange in cell CuA<sub>2</sub> both basad and distad the crenate line, remaining cells M<sub>3</sub> to anal lobe heavily suffused with black. Length of Forewing: 14.5 mm (holotype). *Female Genitalia* (Fig. 37). Typical of eremica Group, with spiral portion of ductus closely abutting distal end of corpus bursae; this species, however, with ductal areas anterior and posterior to the spiral closely clustered as two, nearly adjacent, tubes then tapered very thinly to the caudal lamellae. Caudal lamellae steeply inclined dorsally and rather spatulate. Corpus bursae with two relatively small signa.

**TYPES.** Holotype female, Cadenta (230A), Mendoza Province, 4-5000 ft., 1904, leg. A. F. Baynes, C. S. Larsen Collection, deposited MNHN.

**DISTRIBUTION.** Spatial (Fig. 50A): known only from the type locality. Temporal: known only from the type data.

**REMARKS.** Because of the prominent postmedial white hindwing suffusion, this species would appear peculiar if its relatives were unknown. The occurrence of upper surface structural color in the female suggests that the male is probably more brilliantly blue (as in *S. coronos* and *S. lorraíneae*). Genitalia of *S. nivnix* corroborate placement in the



eremica Group. It is notable that Hayward (1949) emphasized the prominent white postmedial band in describing *Thecla eremica*. It is an interesting character, since in occasional Nearctic thecline aberrations, medial bands are obscured by a similar white suffusion (the "Heathii-white banding aberration", Fisher, 1976). It is possible that the suffused white postmedial band of eremica Group members represents a phylogenetically canalized expression of this phenotype. If so, it would not be unusual among eumaeines. In Nearctic *Mitoura*, an under surface "figure 8" pattern aberration occurs occasionally in northeastern United States populations and is the typical pattern of a related species in eastern Mexico. Similarly, the lavishly marked limbal area in *S. nivnix* is not unusual among eumaeines. *Mitoura* is also a group in which highly derived wings characters often include lavish coloration in the limbal area (Clench, 1981; Johnson, 1981).

**ETYMOLOGY.** The name combined the two Latin roots for "snow", referring to the hindwing postmedial band.

#### The eurytulus Group:

**Characters.** Males with scent brands; upper surface of wings lacking prominent structural color (occurring as overscaling in some forms, particularly on distal hindwing); presence of hindwing tails variable within species; under surface with simple medial spot-band and one or two postbasal spots; male genitalia with lateral surface of vinculum generally robust and with heavily sclerotized junctures adjacent the saccus (Figs. 38-43); female genitalia with ductus bursae generally thinly cylindrical and prominently spiraled, terminal lamellae narrow; papillae anales elliptical and blunt ended (Figs. 38-43).

**Remarks.** Historically, this group has included a number of synonymic problems. We have resolved these by examining the types of *Thecla argona* Hewitson, *T. sapota* Hewitson, *T. nigra* Lathy, *T. tucumana* H. H. Druce and *T. americensis* Blanchard. We make four new synonyms in this complex and designate a lectotype for *T. americensis*. The eurytulus Group is distributed primarily in southern South America and closely related to the *S. columella* (Fabricius) complex of the central and northern neotropics (Comstock and Huntington, 1944; Johnson and Matusik, 1988). Together, the *eurytulus* and *columella* complexes probably comprise a superspecies. Widespread distribution, and sympatry with a sister species, *S. bubastus*, suggests the *S. eurytulus/columella* assemblage is very old. Within the assemblage, many species are sympatric and there are numerous endemics, particularly in the Antilles (Riley, 1975; Johnson and Matusik, 1988) and austral regions.

#### *Strymon eurytulus* (Hübner)

Figures 4, 12, 13, 38-43

*Tmolus eurytulus* Hübner 1806-1838 [1819], (2) pl. 90.

*Thecla eurytulus*: Köhler 1923: 31 (misspelled as "Tecla eurytilus"); 1928: 4. Hayward 1973: 162.

*Thecla sapota* [not *Thecla sapota* Hewitson 1863-1878 [1877] (1): 203, (2): pl. 81, f. 668, 669]; Hayward 1973: 162 (misidentification, see Remarks).

*Thecla argona* Hewitson (1863-1878) [1874], (1): 16, pl. 63, f. 441, 442). **NEW SYNONYMY.**

*Thecla americensis* Blanchard [in Gay] 1852 (7): 38, pl. 3, f. 10. **NEW SYNONYMY.**

*Thecla nigra* Lathy 1926: 46. **NEW SYNONYMY.**

*Thecla tucumana* H. H. Druce 1907 (3): 629, pl. 36, f. 36. **NEW SYNONYMY.**

**DIAGNOSIS.** A widely distributed and variable species characterized by upper surface brown ground color and an under surface pattern comprised of (a) a medial stripe of black spots (or black spots edged with orangish suffusion) and (b) one to three smaller basal spots occurring singularly at the wing base, postbasal at vein 2A, and/or in the discal cell. There are many intraspecific forms (see Remarks). These include morphs with blue structural color on the upper surface, grizzled under surface patterns, variously pronounced or obsolescent under surface spot patterns, and presence or absence of tails. Untailed

morphs somewhat resemble *S. bubastus* (see below), but this species has the spots of the medial band larger, closer together, more basally located and complemented by two equally large (or larger) spots each at vein 2A and in the discal cell.

**DESCRIPTION.** *Adult.* Male (Fig. 12C, "normal", Figs. 12E-13, various infraspecific forms): forewing 8.5-14.0 mm. Female (Fig. 12D, "normal", Figs. 12F-13, various infraspecific forms): forewing 8.5-14.5 mm. Remarks below summarize the various, intergrading, wing morphs occurring within the species. *Male Genitalia* (Fig. 38, "normal"; Figs. 39-43, various forms listed under Remarks). Eighth tergite unspecialized (relative to *Thecla wagenknechti* assemblage). Genitalia exhibiting the generalized *Strymon* configuration but with lateral valval surfaces unusually robust; valvae with parabolic bilobed configuration and evenly tapered caudal extension; saccus asymmetrical and usually displaced to left of ventral plane. Aedeagus with length usually exceeding length of vincular arc by about one-third with caecum comprising about two-fifths of shaft length. Aedeagus sometimes with slight caudal recurvature; always with two terminal cornuti. *Female Genitalia* (Fig. 38, "normal"; Figs. 39-43, various forms listed under Remarks). Eighth tergite unspecialized (relative to *T. wagenknechti* assemblage) except for occasionally ventro-lateral sclerotization of tergite dorsum adjacent the lamellae postvaginalis. Genitalia with ductus bursae spiral typical of the genus but with ductus itself generally thinly cylindrical. Cervix bursae often with small, fanlike, sclerotization extending cephalically over the distal end of the corpus bursae. Papillae anales elongate, extending cephalically from beneath the eighth tergite to the spiral of the ductus. Corpus bursae with two signa, each an elongate, parabolic sclerotization with an inwardly directed spine.

**TYPES.** Type of *Tmolus eurytulus* not known to be extant (Comstock and Huntington, 1958-1964 [1960], Bridges, 1988) but, given the generalized morph of the species, identification is unambiguous (Figs. 12-13, 38-43).

Type of *Thecla sapota*, BMNH, a male labelled "Payta [Peru], Hewitson Coll. 79-69", "*Thecla sapota* 1." (Fig. 4F). Ureta (1963) and Hayward (1973) confused this species with *T. americensis*, using the name *sapota* for tailless, dully marked Patagonian and Chilean specimens. The type of *T. sapota* is clearly distinctive from the *eurytulus* complex (Figs. 4G, 13B, 41). Its tawny color and lunular under surface markings hardly resemble *S. eurytulus*. *T. sapota* occurs at least as far north in Peru as Callao (HEC).

Type of *Thecla argona*, BMNH, a male labelled "*Thecla argona*", "Uruguay", "Hewitson Coll. 79-69, *Thecla argona* Hew.", "B.M. Type 1050", Fig. 39.

Types of *Thecla americensis*, MNHN: with aid of G. Bernardi (MNHN) two syntypes of *T. americensis* located in MNHN. We designate one as lectotype (Figs. 4C, 40): a male (Fig. 4C) bearing the labels "designated Lectotype by K. Johnson, R. Eisele and B. MacPherson 1989" [handwritten], the round green type label of the MNHN, on the back of which is written by Blanchard "15/43" (see below), "Museum Paris, Chili, Gay 1843" [printed, green], and "T. americensis, Bl." with second line illegible [handwritten by Blanchard, see below]. This syntype was located by the senior author in 1985 in the MNHN general collection. The second syntype was located by G. Bernardi earlier (pers. comm., dated 25 January, 1983) stating that this specimen was also labelled by Blanchard himself "*Thecla americensis*", had a green type label which had written on the opposite side the number 15/43 referring to the "[journal] entry 15 in the year 1843", and had the tip of its abdomen missing. Bernardi's letter indicates whereabouts of this specimen in MNHN collection is currently unknown.

Type of *Thecla nigra*, originally placed in Lathy's personal collection, now at MNHN (Figs. 4A,B, 42). It is a male bearing the labels "Tucuman, Argentina, June 9, 1922" and the green type label of the MNHN.

Type of *Thecla tucumana*, BMNH (Figs. 4E, 43), a male labelled "*Thecla tucumana*", "Tucuman", "type H. H. Druce", "B.M. Type Lep. Rh. 1043".

**DISTRIBUTION.** Spatial (Fig. 50B): in the neotropics known from eastern coastal Brazil southward and westward to Paraguay, adjacent eastern Bolivia, Uruguay and Argentina (southward to Patagonia). In Argentina occurring from Chubut Province northward. Temporal: Polyphenic in regard to winter and summer forms and also with some morphs

typifying certain geographic regions or ecological biomes (see Remarks, below). Sexually monomorphic; at lower latitudes known from every month of the year; in Patagonia known only from spring and summer. At Pichanal (27) Eisele has summarized the seasonal phenism of *S. eurytulus* (based on his series deposited at IML) as follows: (a) summer brood (wet season)—reduced upper surface blue, lighter under surface ground color with markings outstanding, orange bright and tails relatively long; (b) winter brood (dry season)—pronounced upper surface blue, darker under surface ground color with markings obscured by suffusion, orange light and tails shorter.

**REMARKS.** *Variation.* We have examined the type specimens listed above, along with the extensive samples listed in Material Examined. We find continuous variation supporting the synonymy presented. Conspecificity of these taxa is supported by the following summary of continuous variation in specimens from Argentina and Chile.

Eight samples include various taxa of the *S. eurytulus* complex collected at the same locality on the same date. These include: (1) tailed "*eurytulus*", non-tailed "*tucumana*", tailed "*tucumana*" and tufted-tailed "*americensis*" occurring at "Tucuman, Argentina, i. 1947, leg. Golbach" [or leg. not noted] and same data but "ii. 1947" (IML); (2) tailed "*eurytulus*", tailed "*e. nigra*", non-tailed "*americensis*" and tailed "*americensis*" occurring at "Valparaiso, Chile, 1923, leg. R. Martin" (MNHN) and "Llail, Chile, 1. i. 1927" (BMNH); (3) tailed "*americensis*", non-tailed "*americensis*" and non-tailed melanic morph "*eurytulus*" occurring at "Los Andes, Chile, 1.-2. i. 1927" (BMNH); (4) tailed "*eurytulus*", tailed "*e. nigra*" and tailed "*tucumana*" occurring at "Tucuman, Argentina, 31. v. 1922, leg. Hayward" and same data but "7. vi. 1922" (all BMNH) and "La Rioja, 1906, leg. Giacomelli" (IML, BMNH); (5) tailed "*e. nigra*", non-tailed "*tucumana*" and tailed "*tucumana*" occurring at "Rio Bermejo, Argentina, leg. Hayward" (IML, BMNH), and "Rio Bermejo, ix. 1914, leg. Steinbach" (CMNH); (6) tailed "*eurytulus*", tailed "*e. nigra*", non-tailed "*americensis*" and non-tailed "*tucumana*" occurring at "Cerrillos, Argentina, leg. MacPherson, 11. x. 1976; 12. iv. 1977" (AMNH); (7) tailed "*eurytulus*" and tailed "*e. nigra*" occurring at "Tartagal, leg. MacPherson, 21. xii. 1974" or same data but "13. xii. 1974" (AMNH, AME); (8) tailed "*eurytulus*", non-tailed "*americensis*" and tailed "*e. nigra*" occurring at "Villa Ana, i.-ii. 1927, leg. Hayward" (BMNH).

In addition, there are five other samples of mixed morphs from Argentina in which specimen locality data is duplicate and dates vary only slightly. These include: (1) tailed "*eurytulus*" and tailed "*tucumana*" occurring at Pichanal (27A) in iii., iv. and v. 1972, 1973, leg. Eisele (IML) and MacPherson (AMNH); (2) tailed "*eurytulus*" and tailed "*tucumana*" occurring at Cerrillos (34A), 3.-11. x. 1976, leg. MacPherson (AMNH); (3) tailed "*eurytulus*", tailed "*nigra*", non-tailed "*americensis*" and tailed "*tucumana*" occurring at Mosconi (17A), 9.-11. vi. 1976, leg. MacPherson (AMNH) ("*americensis*" 2. x. 1976 by Eisele, CMNH); (4) non-tailed "*tucumana*" and tailed "*tucumana*" occurring at Cerrillos (34A), 1.-11. x. 1976, leg. MacPherson (AMNH); (5) tufted-tailed and non-tailed "*americensis*", tailed, tufted-tailed, and non-tailed "*tucumana*" and tailed "*eurytulus*" occurring at Tucuman (45A) with more diverse dates, 1947, leg. either not noted or as Golbach (IML).

*Intraspecific forms:* based on our synonymic analysis and consistent with our listing of Material Examined, the various intraspecific morphs of *S. eurytulus* can be summarized as follows.

"normal *S. eurytulus* morph" (Figs. 12C,D, 38): tailed; brown on upper surface and under surface with markings well defined and ground colors not suffused or grizzled. Of general lowland occurrence in the northwestern Argentine provinces (this morph would include that of the types of *Thecla americensis* and *Thecla argona*).

"*americensis* morph" (Figs. 13A,B, 40, 41): historically figured and discussed as lacking tails, though tails occur on the type (see Types and Fig. 4C). As previously noted, Hayward (1973) misidentified the *americensis* morph as *Thecla sapota*. For identification purposes we continue informal usage of "*americensis*" as a morph. Specimens typifying this morph are usually lighter brown than normal *S. eurytulus*, lack tails, have hindwing markings reduced to small dots or slashes, and a prominent orange *Thecla*-spot. The morph characterizes high altitudes and low latitudes in the region, though it also correlates, from

time to time, with xeric chaco conditions (see Mosconi, 17A, in Material Examined). This morph is the common throughout most of Chile, where it generally exhibits prominent orange suffusion around the under surface pattern elements.

"*tucumana/nigra* morph" (Figs. 4A,B,E, 12E,F, 42, 43): historically *tucumana* was associated with blue upper surface coloration and *nigra* with upper surface melanism and a grizzled under surface pattern. In large samples, these forms completely blend and there are numerous gradations with regard to tail expression. The type of *Thecla nigra* (Figs. 4A,B, 42) is remarkably lighter on the upper surface than many specimens historically associated with the name (Fig. 12E). At lower latitudes in northwestern Argentina, the dark, grizzled and blue phenotypes are associated with cool conditions (either with high altitude or with lowland seasonality). At higher latitudes the form does not appear to be common and is largely replaced by the *americensis* morph.

In addition to the above, there are two morphs which currently appear restricted to regions of Chile. For convenience we summarize these morphs as follows: (a) "*melanic morph*" (in which specimens are blackish on both wing surfaces and without tails, but otherwise marked as normal *S. eurytulus* (see Material Examined); (b) "*orange-blotched morph*" (like normal *S. eurytulus* but with varying degrees of prominent orange suffusion surrounding the characteristic under surface elements).

**MATERIAL EXAMINED.** For comparative purposes regarding documentation of continuous variation in this study, Material Examined is listed below according to the historical usages prior to this study. Consequently, each grouping includes a distinctive phenotype, the status of which, according to our analysis, has been summarized above.

normal [tailed] *S. eurytulus*: leg. MacPherson—34A, 1 ♂, \*12. iv. 1977, 1 ♂, 30. i. 1977, 1 ♂, 11. x. 1976, 1 ♀, \*20. xii. 1974, 1 ♂, 1 ♀, 6. iv. 1983, 1 ♂, 2. x. 1976, 1 ♂, 3. x. 1976 (all AMNH); 16A, 1 ♂, 1 ♀, 30. iii. 1976, 1 ♂, 22. xii. 1980, 1 ♂, 21. xii. 1974, 1 ♂, 14. xi. 1980, 3 ♂, 1 ♀, 21. xii. 1974, 2 ♂, 1 ♀, 13. xii. 1974 (all AMNH); 5A, 1 ♂, 19. i. 1977, 1 ♂, \*1. i. 1986, 2 ♂, 7. v. 1976 (all AMNH); 17A, 1 ♂, 19. ii. 1977, 1 ♂, \*6. i. 1977, 1 ♂, 9. vi. 1976, 1 ♂, 1 ♀, 11 vi 1976 (all AMNH); 27A, 1 ♂, \*27. iv. 1973, 1 ♀, \*27. iv. 1973, 1 ♀, 4. v. 1973 (all AMNH); leg. Eisele—160D, 2 ♀, 18. x. 1985 (CRE), 1 ♀, 26. xi. 1985 (CRE); 160E, 1 ♂, 4. xi. 1985 (CRE); 157A, 1 ♀, 19. i. 1986; 160A, 1 ♀, 27. v. 1988; 22A, 1 ♂, 3. vii. 1974 (CRE); 51A, 1 ♂, 17. i. 1969 (IML); 4B, 1 ♀, 6. i. 1961, 1 ♀, 3. xii. 1960 (IML); 3A, 1 ♀, 20. i. 1968, 1 ♂, 24. i. 1968, 2 ♀, 26. i. 1968, 1 ♀, 26. i. 1968, 1 ♀, 24. i. 1968, 1 ♀, 22. i. 1968, 1 ♀, 25. i. 1968, 1 ♀, 24. i. 1968, 1 ♀, 16. i. 1969, 1 ♀, 19. i. 1968, 1 ♂, 19. i. 1968, 1 ♀, 28. i. 1968 (all IML); 4A, 1 ♀, 14. i. 1961, 1 ♀, 11. i. 1961, 1 ♀, 2. i. 1961, 1 ♂, 1 ♀, 14. i. 1961 (all IML); 52A, 1 ♀, 10. i. 1972 (IML); 46A, 1 ♀, 11. i. 1961, 1 ♀, 14. i. 1961 (all IML); 17A, 1 ♂, 21. x. 1976 [CMNH #5250] (CMNH); 27A, 1 ♂, 1 ♀, 25 iv 1973 (IML). miscellaneous other leg.—101A, 1 ♀, i. 1952 (IML); 102A, 1 ♀, 24. i. 1950 (IML); 103A, 1 ♂, 1935 (IML); 218A, 1 ♂, 3. xi. 1950, leg. Willink (IML); 219A, 1 ♀, ii. 1947 (IML); 216A, 1 ♀, 9-31. vii. 1948, 1 ♂, 1 ♀, xii. 1948 (IML); 45B ["Guardamonte"], 1 ♂, 1 ♀, ii. 1948, leg. Golbach (IML); 204A, 2 ♀, i-ii. 1927, 1 ♀, 22. i. 1929, 1 ♂, 2 ♀, 2. ii. 1927, 1 ♀, 30. i. 1927, 1 ♀, ii. 1924, 1 ♀, i-ii. 1927, 1 ♀, 30. i. 27, 1 ♂, 22. i. 1927, all leg. Hayward (all IML); 45A, 2 ♂, 15. ii. 1947, 1 ♂, xii. 1945, 2 ♂, 15. i. 1947, 1 ♀, 20. iv. 1953, 2 ♂, 1 ♀, i. 1947, 2 ♂, 1 ♀, i. 1947, 1 ♀, 26. iii. 1944, 1 ♂, xii. 1948, 1 ♂, i. 1947, 1 ♂, x. 1944, 1 ♀, i. 1947, 1 ♂, i. 1947, 1 ♂, 2 ♀, ii. 1947, all leg. Golbach (all IML); 1 ♂, 2 ♀, 31. v. 1922, leg. Hayward (BMNH); 2 ♂, 1 ♀, 7. vi. 1922, leg. Hayward (BMNH); 212A, 2 ♀, ii. 1947, leg. J. Greco (IML); 27G, 2 ♂, 6. ii. 1958, leg. Willink (IML); 53A, 2 ♂, 4 ♀, 1947, leg. Hayward and Willink (IML); 204A, 1 ♂, 22. i. 1927, 1 ♂, 6. ii. 1927, 1 ♂, 30. i. 1928 (all IML); i-ii. 1927, leg. Hayward" (BMNH); 220A, 3 ♂, xi. 1948 (IML); 221A, 1 ♀, 3. ii. 1948 (IML); 232A, one male, 1947 (IML); 231A, 1 ♂, i. 1950, leg. P. Arnau; 210A, 1 ♂, 1 ♀, 9. ii. 1966, leg. Weyrach (IML); 209A, 1 ♂, 2 ♀, 18. ii. 1958, leg. Golbach (IML); 54A, 3 ♂, 1 ♀, i. 1947, leg. Golbach (IML); 222A, 1 ♂, 1 ♀, 18. xii. 1944 (IML); 155A, 1 ♀, xi. 1948, leg. Golbach (IML); 46A, 1 ♂, 14. i. 1961 (IML); 1 ♀, i. 1931 (IML); 152A, 1 ♂, 13. iv. 1967, leg. Ajmat; 223A, 1 ♂, 28. i. 1948 (IML); 39A, 1 ♂, ii. 1951, leg. A. Teran (IML); 153A, 1 ♂, iii. 1950; 47A, 1 ♂, no data (IML); 157A, 1 ♀, 1. ii. 1946 (IML); 45B ["Cuesta Anfavea, 2000 m."], 1 ♂, v. 1932 (IML); 206A, 2 ♂, 1 ♀, 11. xii. 1906

(MNHN); 207A, 1 ♂, 7. ii. 1908 (MNHN).

*tucumana* morph (with tails): leg. Eisele—51A, 2 ♀, 11. i. 1969 (CRE), 1 ♂, 14. i. 1969 (CRE), 1 ♂, 3 ♀, 17. i. 1969 (CRE), 1 ♀, 30. i. 1969 (CRE), 1 ♀, 18. i. 1974 (CRE), 1 ♀, 26. xi. 1976 (CRE), 2 ♀, 17. i. 1969 (IML), 1 ♀, 30. i. 1969 (IML); 52A, 2 ♀, 10. i. 1972 (CRE), 1 ♀, 9. i. 1977 (CRE), 1 ♀, 15. i. 1977 (CRE); 53A, 1 ♂, 18. iii. 1975 (CRE), 1 ♀, 17. iii. 1975 (CRE), 1 ♂, 22. ii. 1977 (CRE), 1 ♀, 18. xii. 1977 (CRE); 27B, 1 ♂, 28. iv. 1973 (IML); 27A, 1 ♀, 31. v. 1972 (IML), 3A, 1 ♀, 28. i. 1968 (IML); leg. MacPherson—17B, 1 ♀, \*4. xii. 1979 (AMNH); 17A, 1 ♂, \*9. vi. 1976 (AMNH); 34A, 1 ♂, \*14. xi. 1976, 1 ♀, 1. x. 1976 (AMNH); 27A, 1 ♀, \*28. iii. 1975, 1 ♂, 27. iv. 1973, 1 ♂, 1 ♀, 4. v. 1973 (AMNH); 34A, 1 ♂, \*11. x. 1976 (AMNH); miscellaneous other leg.—224A, 1 ♀, 14. i. 1982, leg. Willink (IML); 38A, 1 ♂, ii. 1947, leg. Golbach (IML); 45A, 7 ♂, 4 ♀, ii. 1947, 2 ♂, 1 ♀, i. 1947 (IML); 1 ♂, 1 ♀, 31. v. 1922, leg. Hayward (BMNH), 1 ♂, 1 ♀, 7. vi. 1922, leg. Hayward (BMNH); 243A, 1 ♀, 26. ix. 1944; 27D, 1 ♂, 14-18. xi. 1948 (IML); 219A, 1 ♂, 31. xii. 1941 (IML); 43A, 1 ♂, 1 ♀, 15. x. 1933, 1 ♂, 1. xi. 1935 (all IML).

*tucumana* morph (without tails): miscellaneous other leg.—101A, 1 ♀, ii. 1966 (IML); 45A, 1 ♂, 1 ♀, ii. 1947, 2 ♂, 1 ♀, i. 1947 (IML); 22B, 1 ♂, no other data, leg. Hayward (BMNH); leg. Eisele—9A, 1 ♂, 4. iii. 1975 (CMNH); 34A, 1 ♂, 1 ♀, 1. x. 1976 (CMNH); leg. MacPherson—34A, 1 ♂, \*12. iv. 1977, 2 ♂, 1 ♀, 11. x. 1976 (all AMNH).

*tucumana* morph (with tufted tails): leg. Eisele—52A, 1 ♀, 1. ii. 1970 (CRE); miscellaneous other leg.—225A, 1 ♂, xii. 1915, leg. D. H. Mathew (BMNH); 22B, 1 ♂, 1 ♀, no other data, leg. Hayward (BMNH); 45A, 2 ♂, 31. v. 1922 (BMNH), 1 ♂, 7. vi. 1922 (BMNH), 1 ♂, 1916 (BMNH), 1 ♂, ii. 1947, leg. Golbach (IML); 229A, 1 ♂, no other data, leg. Giacomelli (BMNH).

*nigra* morph: leg. MacPherson—7A, 1 ♂, 1 ♀, \*\*27. vi. 1988 (AMNH); 16A, 3 ♂, 1 ♀, 21. xii. 1974, 2 ♂, 1 ♀, 13. xii. 1974 (all AMNH); 34A, 3A, 1 ♂, \*12. iv. 1977, 1 ♂, 30. i. 1977, 1 ♂, 11. x. 1976 (all AMNH); 17A, 1 ♂, 2 ♀, 3. x. 1976 (all AMNH); miscellaneous other leg.—232A, 2 ♀, ix. 1951, leg. Hayward and Willink (IML); 229A, 3 ♂, 5 ♀, no other data, leg. Giacomelli (BMNH); 45A, 3 ♂, 2 ♀, 31. v. 1922, leg. Hayward (BMNH), 2 ♂, 3 ♀, 7. vi. 1922, leg. Hayward (BMNH); 204A, 2 ♂, 1 ♀, i.-ii. 1927, leg. Hayward (BMNH).

*americensis* morph (without tails): leg. Eisele—160C, 1 ♀, 9. x. 1986 (AMNH); 54C, 1 ♂, 10. i. 1988 (AMNH); 52A, 1 ♂, 10. i. 1972 (IML); 4A, 1 ♀, 13. ii. 1961 (IML); 17A, 1 ♂, 1 ♀, 2. x. 1976 (CMNH); leg. MacPherson—34A, 3A, 1 ♂, \*12. iv. 1977, 1 ♂, 1 ♀, 11. x. 1976 (all AMNH); 17A, 11. vi. 1986 (AMNH); miscellaneous other leg.—45A, 2 ♀, i. 1947 (IML), 1 ♂, no other data (BMNH); 204A, i.-ii. 1927, leg. Hayward (BMNH).

*americensis* morph (with tufted tails): leg. Eisele—27B, 3 ♂, 1 ♀, 28. iv. 1973 (CRE); miscellaneous other leg.—45A, 2 ♂, 2 ♀, i. 1947, 1 ♀, 1 ♂, ii. 1947 (IML); 236A, 1 ♂, i. 1950 (IML).

*americensis* morph ["sapota", sensu Hayward]: 242A, 2 ♂, 1 ♀, \*\*14-18. xi. 1948, leg. Hayward and Willink (IML); 235A, 1 ♂, 30. xi. 1947 (IML); 206A, 2 ♂, 2. ii. 1907, 3 ♀, 2. ii. 1907 (MNHN); 207A, 1 ♂, 7. ii. 1908, 2 ♀, 7. xii. 1906 (MNHN); 239A, 1 ♂, 3 ♀, \*\*20. xi. 1966, leg. Herrera; 240A, 2 ♂, 3 ♀, \*\*20. xi. 1966, leg. Herrera (AME); 238A, 1 ♂, no other data (IML); 208A, 1 ♂, 1 ♀, no other data (BMNH); 237A, 2 ♂, 1 ♀, \*\*16. i. 1968 (IML); 236A, 1 ♂, 1 ♀, \*\*1. i. 1954 (IML).

### *Strymon bubastus* (Stoll)

#### Figures 13C,D, 44

*Papilio bubastus* Stoll 1780-1790 [1780], 4(28): 84, pl. 332 f. G,H). Hayward 1973: 162.

DIAGNOSIS. Similar only to untailed specimens of *S. eurytulus* but always with elements of under surface medial hindwing band large, lunular, compact and basally directed and complemented by two distinctive, large, postbasal spots at vein 2A and in the discal cell. Hindwing with comparatively rounded outer margin, the upper surface

with a prominent, lunular, marginal black spot in cell CuA<sub>2</sub>; the under surface limbal area usually accented with white, crescent-like, markings in the submargin and suffused to blackish spots along the margin.

**DESCRIPTION.** *Adult.* Male (Fig. 13C): forewing 8.5-13.5 mm. Female (Fig. 13D): forewing 8.5-14.0 mm. *Male Genitalia* (Fig. 44). Labides small and flat; vinculum laterally tapered toward saccus, brush organs abutting dorso-caudal margin (brushes extending to labides); saccus short (about one-half length of valva bilobes). Valvae elongate with bilobes parabolic followed by abrupt constriction to a thinly tapered caudal extension. Aedeagus of moderate length (exceeding length of rest of genitalia by about one-fourth), slightly curve at terminus; caecum comprising about one-third aedeagal length. *Female Genitalia* (Fig. 44). Ductus bursae conical and of moderate length, spiral occurring in cephalic one-fifth; terminal lamellae elongate and elliptical; cervix bursae cuplike; corpus bursae with two, relatively small, elliptical and thin signa; papillae anales elongate, prominently sclerotized along lateral edge, apophyses elongate, nearly equalling length of ductus caudad the cervix bursae.

**TYPES.** Location of type unknown (Bridges, 1988) Type locality: Cap de Bonne, Esperance; type deposition unknown.

**DISTRIBUTION.** Spatial (Fig. 51A): in neotropics known from Antilles and Trinidad westward across South America to Ecuador and southward to southeastern Brazil, Paraguay and northwestern Argentina. In northwestern Argentina known to us from xeric localities in Salta and Jujuy provinces. Temporal: seasonally monophenic [sexually monomorphic]; the species occurs in every month of the year except mid-winter (viii-ix.).

**REMARKS.** *S. bubastus* in northwestern Argentina is remarkably distinctive in wing pattern from *S. eurytulus* even though the latter has untailled forms. The salience of *S. bubastus* pertains mainly to the formation of the under surface medial hindwing band (as noted above) and its immediate postbasal complements. Compared to overall homogeneity in the genitalia of *S. eurytulus* (Figs. 38-43), those of *S. bubastus* (Fig. 39) are notably distinctive. As Johnson (1989a) has noted concerning *Chlorostyrm* species, the wide sympatry of *S. eurytulus* and *S. bubastus* suggests this assemblage is very old.

**MATERIAL EXAMINED.** leg. Eisele— 27A, 3 ♂, 28. v. 1972, 1 ♂, 13. v. 1972, 1 ♀, 31. v. 1972, 1 ♂, 1 ♀, 2. vi. 1972, 1 ♀, 14. vi. 1972, 1 ♂, 17. vi. 1972, 1 ♂, 19. xii. 1968, 1 ♀, 31. v. 1972, 1 ♂, 2. vi. 1969, 1 ♀, 9. v. 1972 (all CRE), 1 ♂, 17. v. 1972 (IML); 27B, 1 ♂, 22. xi. 1968, 1 ♂, 7. xi. 1968, 1 ♂, 19. xii. 1968, 1 ♂, 30. v. 1969, 1 ♂, 2. vi. 1969, 1 ♂, 24. vi. 1969, 1 ♂, 7. xi. 1971, 1 ♀, 9. v. 1972, 1 ♀, 17. v. 1972, 1 ♀, 31. v. 1972, 1 ♂, 25. ii. 1975, 1 ♂, 27. ii. 1975, 1 ♂, 1 ♀, 6. iii. 1975, 1 ♂, 16. vii. 1976, 1 ♂, 27. x. 1976, 1 ♂, 18. vi. 1972, 1 ♂, 14. vi. 1968 (all CRE); 27C, 1 ♀, 2. iii. 1968 (CRE); 29A, 1 ♂, 15. iv. 1969, 1 ♂, 15. iv. 1969 (CRE); 7E, 1 ♀, 11. vii. 1978 (CRE); 17A, 1 ♂, \*16. vii. 1977, 1 ♀, \*25. vii. 1977 (all IML); 52A, 1 ♀, \*8. x. 1977 (IML); 16A, 1 ♀, \*5. i. 1977 (IML); 10A, 1 ♀, 15. xii. 1980; leg. MacPherson— 1A, 1 ♀, \*31. v. 1986 (AMNH); 18A, 1 ♂, \*6. xi. 1986 (AMNH).

Species group unknown:

Two new species are described here with wing and genitalic characters departing radically from any known *Strymon* species or species group characterized in this study. The first is represented by a single male collected along humid tropical forest margin; it has wing characters suggesting two species groups of *Strymon* and genitalia departing from any presently characterized. The second species is known from a single female collected in an ecologically restricted habitat and exhibits genitalic features typifying both the ductal spiral of most *Strymon*, *sensu lato* and the corpus bursal hood characterizing the basilides Group.

### *Strymon baptistorum*, new species

Figures 13E, 45A

**DIAGNOSIS.** Very distinctive with under surface medial band like *S. valentina* (though



tawny, not orange, and fading toward costa) and full postbasal spotline like *S. oreala*. Upper surface brown with prominent black androconial brands; genitalia very peculiar with (i) vinculum greatly produced laterally but ventrally distended and brush organs very large, (ii) valvae distinctively curvate in basal and terminal shape with latter marked by serrate inner-lateral edges and (iii) aedeagus very short with robust caecum greatly displaced from plane of aedeagal shaft.

**DESCRIPTION.** *Male* (Fig. 13E). Upper surface of wings: ground color bronze brown; scent brands black. Hindwing with orange marginal spot in cell CuA<sub>1</sub>. Two tails, longer at terminus CuA<sub>2</sub>, shorter at terminus CuA<sub>1</sub>. Under surface of wings: Ground color light beige; forewing with thin linular brown and white postmedial line from costa to cell CuA<sub>1</sub>. Hindwing with medial band of tawny spots, somewhat continuous and edged distally with darker brown and white from anal lobe to cell CuA<sub>1</sub>, becoming obsolescent toward the costa. Postbasal areas with equally distinctive row of five spots across the wing base. Limbal area immaculate except for orange "Thecla"-spot at cell CuA<sub>1</sub> and blackened anal lobe. Length of forewing: 14.5 mm. (holotype). *Female*. Unknown. *Male Genitalia* (Fig. 44A). Labides with ventral taper; vinculum dorso-laterally very broad with brush organs thickly abutting prong-like protrusion from cephalo-dorsal margin and extending terminad past labides; vinculum ventro-laterally distended with saccus short and lobate. Valvae ventrally with angled parabolic bilobes, abruptly constricted to thin, curvate caudal extension slightly serrate along lateral edge. Aedeagus short, exceeding length of rest of genitalia by only about half caecum length; caecum robust and displaced some 60° outside of aedeagal plane.

**TYPES.** Holotype male, "El Corte" Yerba Buena (160A) Argentina, 20. vi. 1987, leg. R. Eisele, deposited AME.

**DISTRIBUTION.** Spatial (Fig. 51B): known only from the type locality. Temporal: known only from type data.

**REMARKS.** This specimen was captured in a clearing directly facing dense humid tropical forest at the type locality, a day on which numerous *S. diaguia* were also collected.

**ETYMOLOGY.** At the suggestion of the second the third authors this species is named for the thousands of Baptists in American churches who have faithfully supported their spiritual ministry in Northwest Argentina, and thus indirectly contributed to many Lepidoptera discoveries in that part of the world.

### *Strymon barbara*, new species

Figures 13F, 45B

**DIAGNOSIS.** A small species (FW 10.0 mm) presently known from a single quebrada habitat, and with extremely supralimital genital and wing characters. Female ductus bursae short, extremely robust and exhibiting both a spiral (located near midpoint of ductal length) and a bursal hood (otherwise characteristic of the *basilides* Group). Hindwings above with distinctive white marginal dashes in each cell, submarginal orange in cell CuA<sub>2</sub> and at the anal lobe; beneath with obsolescent medial band obsolescent and incised at cells 2A, M<sub>3</sub> and between the Thecla-spot and the anal margin.

**DESCRIPTION.** *Male*. Unknown. *Female* (Fig. 13F). Upper surface of wings: Ground color warm brown; forewing without notable markings; hindwing with marginal white dashes in each cell, submarginal orange orb in cell CuA<sub>2</sub> and at the anal lobe. Under surface of wings: Ground color tawny gray. Forewing with faint red orange postmedial band, costa to vein CuA<sub>2</sub>. Hindwing with faint, dashed, red orange medial band incised at cells 2A, M<sub>3</sub> and between the yellowish Thecla-spot and the anal margin. Length of forewing: 10.0 mm. (holotype). *Female Genitalia* (Fig. 44). Ductus extremely robust and constricted, thick spiral occurring midway between pronounced terminal lamellae and a partially sclerotized hoodlike development of the corpus bursae typical of the basilides Group. There is no other species of *Strymon* known to us which has such a compact spiral configuration and a hoodlike development of the corpus bursae. Papillae anales robust and with bulbous termini, apophyses short (about equal in length to the eighth tergite); eighth tergite with ventro-caudal edge produced.

TYPE. Holotype female, Quebrada de Escoipe (105A), Salta, 1600 m., one female, 15. xii. 1976, deposited AME.

DISTRIBUTION. Spatial (Fig. 51B): known only from the type locality. Temporal: known only from the type data.

REMARKS. When the holotype was collected, Eisele recognized the distinctive small size and wing pattern and forwarded the specimen for dissection as a possible undescribed taxon. The genitalia proved truly extraordinary — the characters appear phylogenetically important for understanding *Strymon*, *sens. strict.* and the *basilides* complex. The quebrada type locality of *S. barbara*, (where steep wooded slopes occur adjacent to more mesic, heavily vegetated, ravine systems,) has not been collected often. Thus, we are reluctant to associate a male with the holotype from any other habitat, particularly since dwarf, obsolescent individuals occur in many species of *Strymon*. Further collections at Quebrada de Escoipe will be made in anticipation of finding the male, and further representatives of this remarkable species.

ETYMOLOGY. The second author requests that this species be named for his wife, Barbara B. Eisele, in loving gratitude for extended patience with the idiosyncrasies of a lepidopterist husband, and for making and repairing his nets.

## DISCUSSION

A posthumous publication (Hayward, 1973) included a list of Argentine thecline species. In Part I of our study we did not comment on this list regarding *Calycopis* and *Calystryma* as there were no objective criteria for evaluating Hayward's use of names (Hayward, 1973: 157). Concerning *Strymon*, Hayward included all species in the grade genus "Thecla". However, numerous specimens (BMNH, IML) have Hayward identification labels (Fig. 4D) and these allow some assessment of his knowledge of the Argentine *Strymon* fauna. His list accounts for thirteen of the *Strymon* species located in our study. He also included a synonym (*T. tucumana*) and two apparent misidentifications (*T. melinus*, *T. sapota*). We think the former refers to large specimens of either *S. valentina* or *S. rufofusca* in which the under surface hindwing band is disjunct. The latter name was used because of Hayward's uncertainty about the type of *T. sapota* (Fig. 4D,F,G) and the occurrence of obsolescent under surface markings on Patagonian specimens of *S. eurytulus*. It is apparent why Hayward did not locate the several new species we have described. From unsorted Hayward material at the BMNH it is evident he had not completed attempts at identifying Argentine Theclinae. Also, at the time of preparing the eventual 1973 manuscript, he had not completed assessing synonyms (Hayward, 1973: 144, 150, 152). We are also certain that Hayward had seen little, if any, of the Giacomelli collections (Hayward, 1973: 149, 162), and Giacomelli samples account for several of the undescribed *Strymon* located by us. Giacomelli's exchanges with the BMNH preceded the availability of Draudt (1919). It is apparent from examining BMNH Giacomelli material (mostly unincorporated) that he forwarded unusual specimens there hoping to receive identifications from BMNH staff. We infer this because Giacomelli specimens are also found in the IML, but never representatives of undescribed taxa. Giacomelli apparently never received identifications and his material remained unsorted at the BMNH.

Other new *Strymon* species were found by us in the C. S. Larsen Collection at the MNHN. As Johnson has commented previously (1989a, 1989b), Lathy described some new Argentine taxa from this collection but did not complete his work before moving to the BMNH. As a result, C. S. Larsen specimens at the MNHN are both incorporated and unincorporated. Status and location of these specimens is also complicated because, when incorporated, MNHN specimens are always "identified". Thus, in complex thecline groups, samples of the same species (or of their males and females) may be found under any number of names.

The remaining new taxa described herein were either in the IML collection or resulted from the recent collections of Eisele, MacPherson, Herrera and Shapiro.

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## APPENDIX 1A: ADDITIONAL COLLECTING LOCALITIES

Format: same as Appendix I (Part I, p. 24) except for new additions as follows.

Localities in Jujuy, Salta and Tucumán provinces:

- (a) new subsites for localities enumerated in Part I are listed first (1A, 2A, etc.) and for rapid reference, the initial italicized name of the locality is repeated in brackets;  
(b) new collecting localities are listed second, enumerated consecutively from 51 for Jujuy, 101 for Salta, and 151 for Tucumán. Full locality notes are provided for these entries.

Localities in the other ten provinces of the Northwestern Region:

- (a) new collecting localities are numbered consecutively from those in Part I (200A, etc.); locality notes include (from I.M.G., 1968) compass coordinates [listed for example as "27°12 S, 54°53 W" for 27° 12' South Latitude, 54° 53' West Longitude] and site description ["town", "rural dwelling", etc.];

Localities from the Patagonian region:

- (a) treated as in the ten provinces above.

No.	Locality name, altitude and habitat
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**JUJUY PROVINCE**

- 4B \_\_\_\_\_ [*San Salvador de Jujuy*] \_\_\_\_\_ Alto de Padilla, 1400-1500 m. [xeric to mesic  
"Piedmont", shrub-steppe]
- 5B \_\_\_\_\_ [*Cucho*] \_\_\_\_\_ Arroyo de las Bolsas, 1250 m., [hydic woodland]
- 51A *Tilcara* (TILCARA), at Cerro Negro, @3400 m. (varying with specimens) [paramo,  
xerophytic vegetation]
- 52A *Lozano* (CAPITAL), Morro de Alizar, @1700 m. (varying 1650 - 1850 m. with  
specimens) [mixed grass- and woodland, latter heavy on south and southeast facing  
slopes and with adjacent, heavily wooded quebradas]
- 52B \_\_\_\_\_, Baptist Mission Camp Site, 1600 m. [riparian woodland]
- 53A *Huacalera* (TILCARA), Quebrada La Huerta, 2700 m. [upland xerophytic habitat  
now irrigated farmland, adjoined by numerous seasonal washes]
- 54A *León* (bridge) to *Tiraxi* (CAPITAL), km. 6, SW slopes of "Abra de Hacienda Ruana",  
1725-1800 m. [mesic to hydic woodlands]
- 54B \_\_\_\_\_, km. 6, trail to Abra de Hacienda Ruana,  
1750-1850 m. [trail through mesic/hydic woodland valley]
- 54C \_\_\_\_\_, km. 14 nr. Tio Tiraxi, 1600 m., [grasslands  
bordering upland mesic woodlands]
- SALTA PROVINCE
- 31C \_\_\_\_\_ [*Salta*] \_\_\_\_\_, 10 km. E in Sierra La Ramada, 1400 m. [xerophytic scrub]

- 31D \_\_\_\_ [*Salta*] \_\_\_\_, 1/2 km. E of city limits S of Cerro San Barnardo, 1250 m. [mostly mesic scrub]
- 32B \_\_\_\_ [*Parque Nacional*] \_\_\_\_, 3 km. W of Hosteria along Arroyo La Sala and trails, 950 m., [transition from mesic to hydric woodland]
- 38B \_\_\_\_ [*El Tala*] \_\_\_\_, 11 km. E at junction Nat. Rte. 9 and Prov. Rte. 35, 900 m., [mesic scrub with clearings for agriculture]
- 101A *Cafayate* (CAFAYATE), 1660 m. [town surrounded by xerophytic habitat now extensively irrigated, "Valles Calchaquies", an early Hayward collecting area (Hayward, 1965)]
- 102A *Molinós* (MOLINOS), 2020 m. [town surrounded by upland desert, irrigated along several river courses]
- 103A *Embarcación* (SAN MARTIN), 287 m. [town surrounded by deforested area now irrigated for farming]
- 104A *Abra Grande* (ORÁN), W on Rt. 50 N of "San Ramón de la Nueva Orán" just S of Río Pescado, 400 m. [sugar plantation area, = "Oran, 20 km. N at Abra Grande", historical site of R. Golbach, IML]
- 105A *El Carril to Payogasta* (CHICOANA), Prov. Rt. 33 [formerly National Rt. 59], km. 23, "Quebrada de Escoipe", 1600 m. [transition zone between mesic and xeric woodlands and grasslands]
- 106A *Los Baños* (ROSARIO DE LA FRONTERA), 7 km. SW at "El Duraznito", 800 m. [xeric to mesic woodland in foothills of Morro de Guayacan, = "El Duraznito", historical site of R. Golbach, IML]
- 107A *El Quebrachal* (ANTA), 339 m. [small town adjacent chaco, habitat xerophytic thorn shrub]
- 108A *La Queña* (SAN MARTIN), at Rt. 34, 250 m. [mesic second growth scrub just above floodplain of Río Bermejo]
- 109A *Rivadavia* (RIVADAVIA), @250 m. [small town in chaco]
- 110A *Río del Valle* (ANTA), 469 m. [railroad station and, 4 km. S, a water course with adjoining seasonal washes through chaco, historical site of R. Golbach, IML]
- 111A *Río Majotoro* (SALTA), 700-1400 m. [water course running from N of Salta to S of Grl. Guemes, historical site of R. Golbach, IML]
- 112A *La Caldera to JUJUY border* (LA CALDERA), on Rte. 9 "Corniza" road, km. posts 1641, 1642 at "La Cargadera", on SE slopes of Alto de las Sauces, 1450 m. [floristically distinctive upland hydric woodland]
- 113A *San Ramon de la Nueva Oran* (ORÁN), at Río Bermejo (see 22B) 450 m. [alternative interpretation of Steinbach expedition site "Río Bermejo" based on information from CMNH concerning 1914].
- TUCUMÁN PROVINCE
- 45B \_\_\_\_ [*San Miguel de Tucumán*] \_\_\_\_, [this map notation used hereafter for various historical sites on IML label data associated with the name "Tucuman", but for which no other information is known; in Material Examined, each such "locality" is bracketed as 45B [" "]].
- 151A *Santa Cruz* (SIMOCA), 350 m. [sugar cane plantation area, historical site of R. Golbach, IML]
- 152A *Los Puestos* (LEALES), 300 m. [marginal sugar plantation and chaco, historical site of R. Golbach, IML]
- 153A *San Javier* (TAFI VIEJO), 1000 m. [agricultural area, in San Javier valley on W slopes of Cumbres de Taficillo; mesic to hydric woodlands except where cleared for agriculture, historical site of R. Golbach, IML]
- 154A "Dept. Leales" (LEALES) [frequently cited historical locality, IML, EMNH; data referring to generalized locality]
- 155A *Concepción* (CHICLIGASTA), 366 m. on Rte. 38 [Rte. 38 runs N/S through sugar cane plantation area, historical site of R. Golbach, IML]
- 156A *Sierra Aconquija* (various) [mountain range on border of Tucumán and Catamarca provinces, frequently cited historical locality, IML, BMNH; data referring to generalized locality]



- 157A *Amaicha* = Amaicha del Valle (TAFÍ DEL VALLE), @2000m. [small town in desert, recent site of R. Eisele, historical site of R. Golbach, IML]
- 158A *Tafí del Valle* (TAFÍ DEL VALLE), @ 2000 m. [resort town in mountain valley, mesic grassland, historical site of R. Golbach, IML]
- 159A *Tacanas* (LEALES), 375 m. [town in xerophytic shrub area, historical site of R. Golbach, IML]
- 160A *Yerba Buena* (YERBA BUENA), "El Corte", 560-590 m. [residential area including disturbed Rio Muerte riparian hydric woodland; former residence of R. Eisele]
- 160B \_\_\_\_\_, "El Paraiso", W of Rio Muerte to Biological Reserve, 600-700 m. [stream beds and trails in hydric woodlands bordering abandoned citrus groves]
- 160C \_\_\_\_\_, Yerba Buena to Anta Muerta, Prov. Rte. 338, km. posts 15 to 18 climbing Cumbres de San Javier, 700-900 m. [hydric woodlands, yungas]
- 160D \_\_\_\_\_, Yerba Buena to Anta Muerta, Prov. Rte. 338, km. posts 18 to 21, climbing to Cumbres de San Javier, 900-1100 m. [hydric woodland]
- 160E \_\_\_\_\_, Yerba Buena to Anta Muerta, Prov. Rte. 338, km. posts 21-23, climbing to Cumbres de San Javier, 1100-1260 m., [upland hydric woodland margin with high montane grassland]
- 161A *Acheral to Tafí del Valle* (MONTEROS), Rte. 307, km. 17-18, "La Ramadita", 550 m. [former hydric woodland now partially farmed]

#### CATAMARCA PROVINCE

- 209A *San Antonio* (28/56 S, 65/06W) [town]
- 210A *Santa Rosa* (28/27 S, 65/43 W) [town]
- 211A *Catamarca* (28/28 S, 65/47 W) [city]
- 243A *Santa Maria* (26/41 S, 66/02 W) [town]

#### SANTE FE PROVINCE

- 212A *Albarellos* (33/14 S, 60/38 W) [town]
- 213A *Sante Fe* (31/38 W, 60/47W) [city]
- 214A *Villa Guillermina* (28/14 S, 59/28 W) [town]

#### SANTIAGO DEL ESTERO PROVINCE

- 215A *Salinas de San Bernardo* (29/12 S, 64/53 W) [salt flat]

#### FORMOSA PROVINCE

- 216A *Pirané* (25/43 S, 59/06 W) [town]
- 217A *Dept. Pilcamayo* (25/30 S, 58/05 W) [administrative department]

#### CHACO PROVINCE

- 218A *Pampa del Indio* (27/02 S, 59/55 W) [town]

#### CÓRDOBA PROVINCE

- 219A *Huerta Grandé* (31/04 S, 64/30 W) [shrubland]
- 220A *Monte del Toro* (32/45 S, 62/49 W) [mountain]
- 221A *Estancia San Martín*, (33/32 S, 62/18 W) [ranch]
- 222A *El Sauce* (30/51 S, 64/31 W) [town]
- 223A *San Martín* (33/32 S, 62/18 W) [rural dwelling]
- 224A *Yacanto* (32/03 S, 65/03 W) [town]
- 225A *Córdoba* (31/24 S, 64/11 W) [city]
- 226A *Córdoba Hills* (30-33 S, 64/20 - 65/50 W) [physical feature, hills]
- 227A *Candonga* (31/06 S, 64/22 W) [town]
- 228A *Arias* ("vicinity of") (33/38 S, 62/25 W) [town]
- 234A *Cerro Suco* (33/20 S, 64/53 W) [mountain]

## LA RIOJA PROVINCE

- 229A *La Rioja* (29/26 S, 66/51 W) [city] [city and/or vicinity a frequently cited historical locality of Giacomelli, IML, BMNH, and Huntington (from Giacomelli), AMNH]  
 230A *Cadenta* ("4-5000 ft.") (29/15 S, 66/54 W) [town]

## MENDOZA PROVINCE

- 207A \_\_\_\_ [Nahuel Huapi] \_\_\_\_ of Part I is hereafter transferred to Rio Negro Province [early MNHN labels associate "Nahuel Huapi" and "Mendoza" but we now understand this as an archaic association of the locality and province]  
 231A *San Martín* (33/04 S/ 68/28 W) [town]  
 232A *Potrerillos* ("1500 m.") (32/57 S, 69/11 W) [town]  
 233A *Coroña* (34/50 S, 67/02 W) [rural dwelling]

## RIO NEGRO PROVINCE

- 206A *Nahuel Huapi National Park* (41/00 S, 71/30 W) [listed again as reassigned from Part I, see entry 207A, above]  
 235A *Coronel Gomez* (39/02 S, 67/39 W) [town]  
 242A *Rio Colorado* (39/01 S, 64/05 W) [town]

## NEUQUEN PROVINCE

- 241A *Zapala* (38/54 S, 70/04 W) [town and vicinity, montane shrub-steppe, collecting locality of Shapiro]  
 236A *Las Colorados* (40/35 S, 63/55 W) [rural dwelling]

## CHUBUT PROVINCE

- 208A \_\_\_\_ [Patagonia] \_\_\_\_ of Part I is hereafter expanded and amended to include general historical references to Patagonia or "Chubut"  
 237A *Punta Norté* (42/04 S, 63/45 W) [rural dwelling] on *Península Valdes* (same) [physical feature]  
 238A *Chubut* [Province] [frequently cited historical locality, IML, MNHN, BMNH]  
 239A *40 km. N Rio Mayo* (see 240A, below) [montane shrub-steppe, Herrera collecting locality, AME, AMNH, CECUC]  
 240A *Rio Mayo* (45/41 S, 70/16 W) [town surrounded by montane shrub-steppe, Herrera collecting locality, AME, AMNH, CECUC].

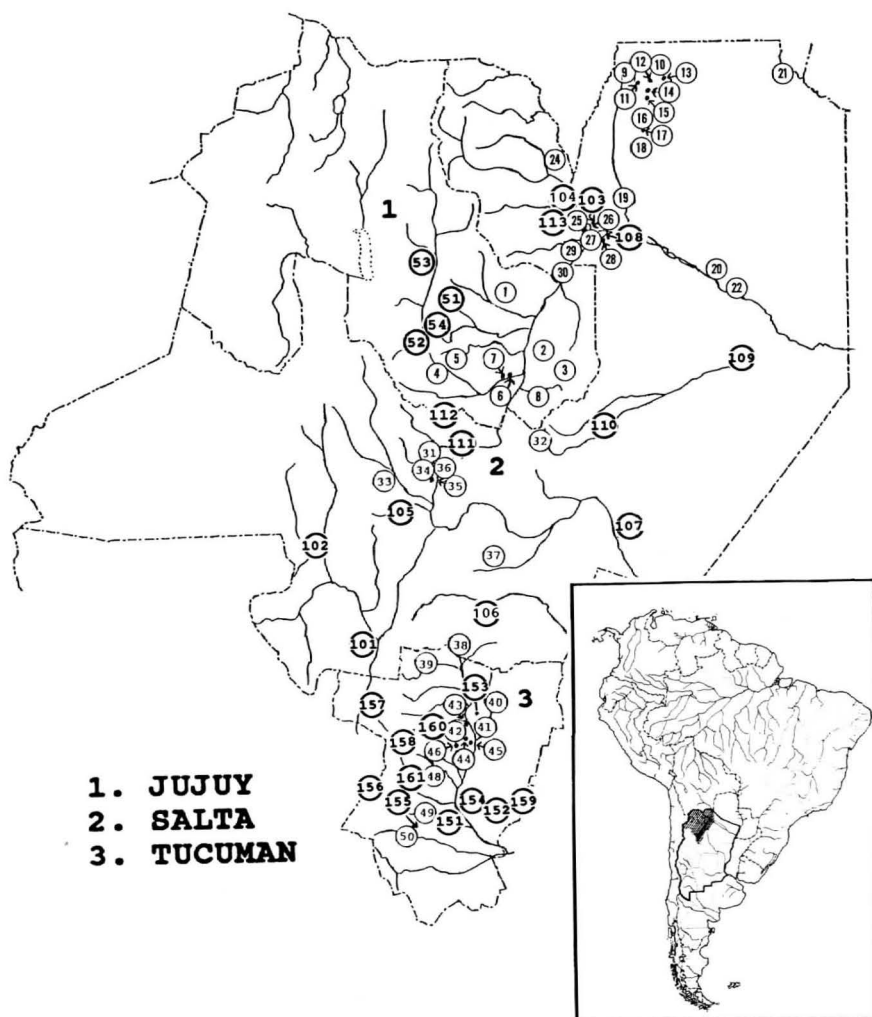


Figure 1. Map of Jujuy (1), Salta (2) and Tucumán (3) provinces; **bold-faced** numbered dots (51-53; 101-111; 151-159) indicate new collecting localities for Part II (listed in Appendix IA "Additional Collecting Localities"). Hereafter, Fig. 1 is duplicated (without numerals) for distribution maps of individual species in these provinces. Inset, below right, locates region in South America.

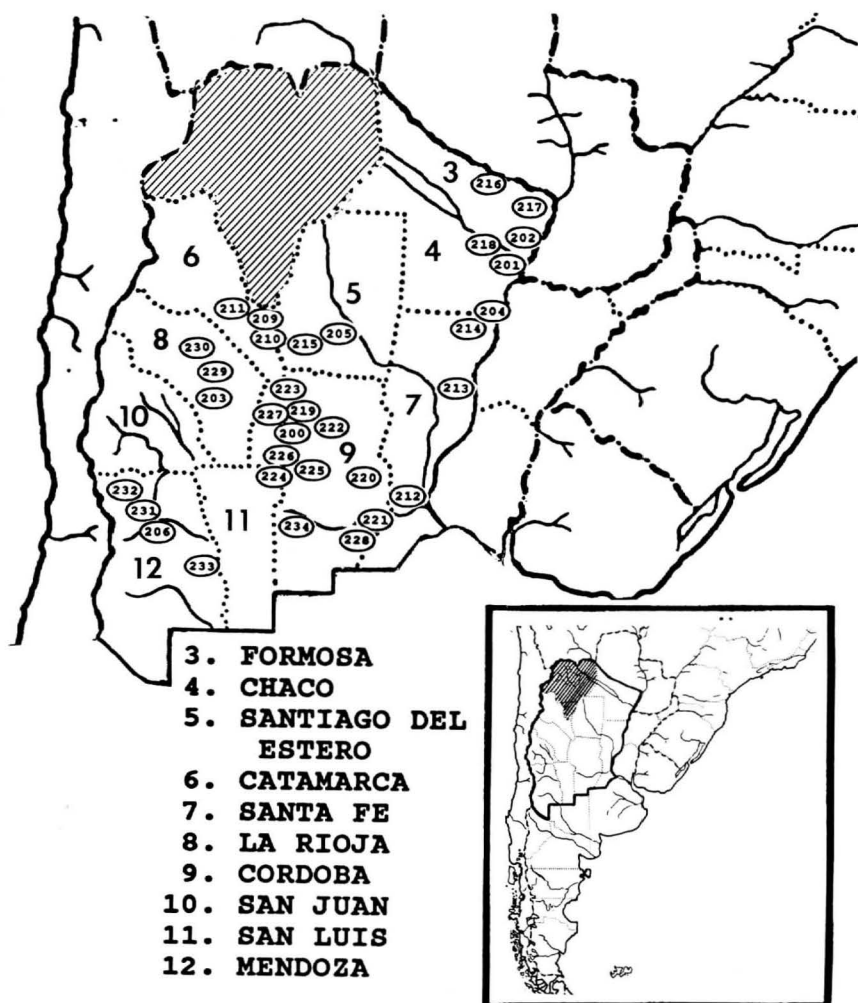


Figure 2. Map of Northwestern Region of Argentina. Shaded area indicates provinces of Fig. 1; numerals 3-12, other provinces of region. Circled locality numbers correspond to entries in Appendix 1A. Hereafter, where appropriate, Fig. 2 is duplicated (without numerals) for distribution maps of individual species in these provinces. Inset, below right, locates region in South America.

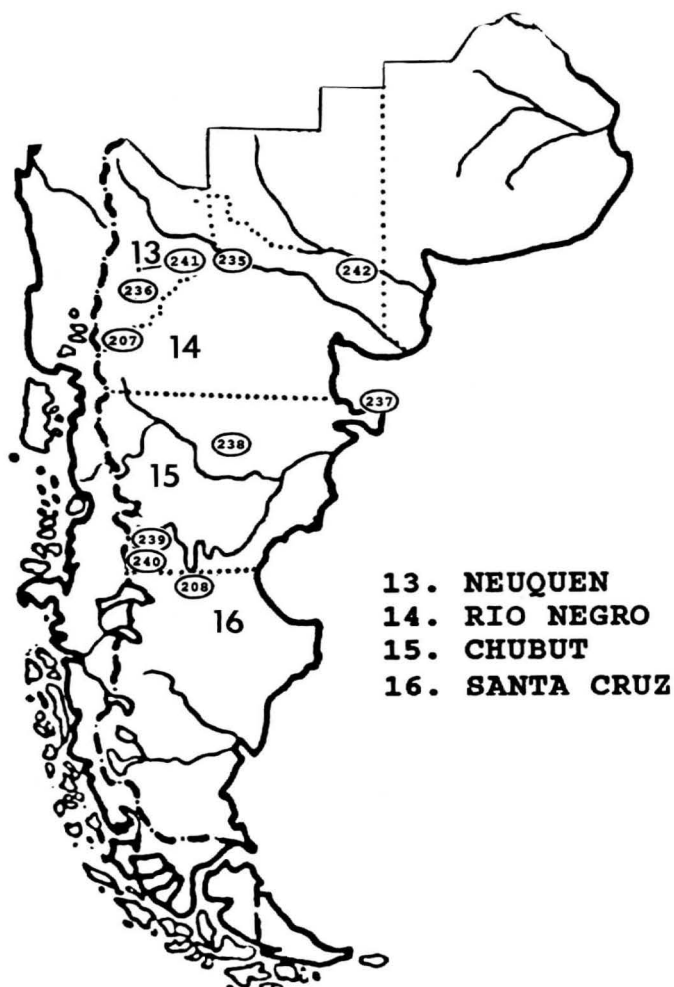


Figure 3. Map of southern Argentina, including Patagonia. Numerals 13-16 indicate provinces of region. Circled locality numbers correspond to entries in Appendix IA. Hereafter, where appropriate, Fig. 2 is duplicated (without numerals) for distribution maps of individual species in these provinces.

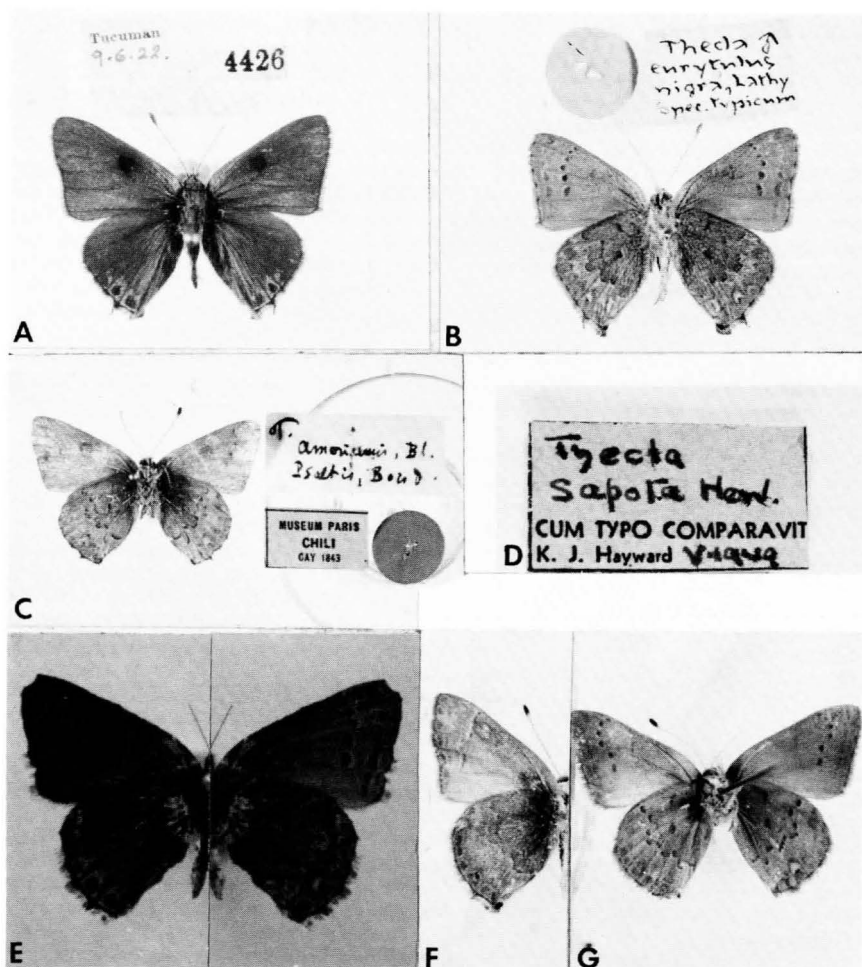


Figure 4. Types of Argentine *Strymon*. Certain type specimens of historical importance in evaluating status of Argentine *Strymon*. A. *Thecla nigra* Lathy, holotype ♂ (MNHN) (upper surface); B. same, under surface; C. *Thecla americensis* Blanchard, lectotype ♂ (MNHN) (under surface); D. example of label used by Hayward for identifications (label refers to his identification of *Thecla sapota* Hewitson, IML specimen of Fig. 4G); E. *Thecla tucumana* H. H. Druce, holotype ♂ (BMNH) (upper surface, left, under surface, right; black and white reproduction of color slide); F. *Thecla sapota* Hewitson, syntype ♂ (BMNH) (under surface); G. IML Patagonian ♂ misidentified by Hayward as *T. sapota* (under surface). (Type specimens of Hayward are figured in the synoptic figures of *Strymon* grouped hereafter).



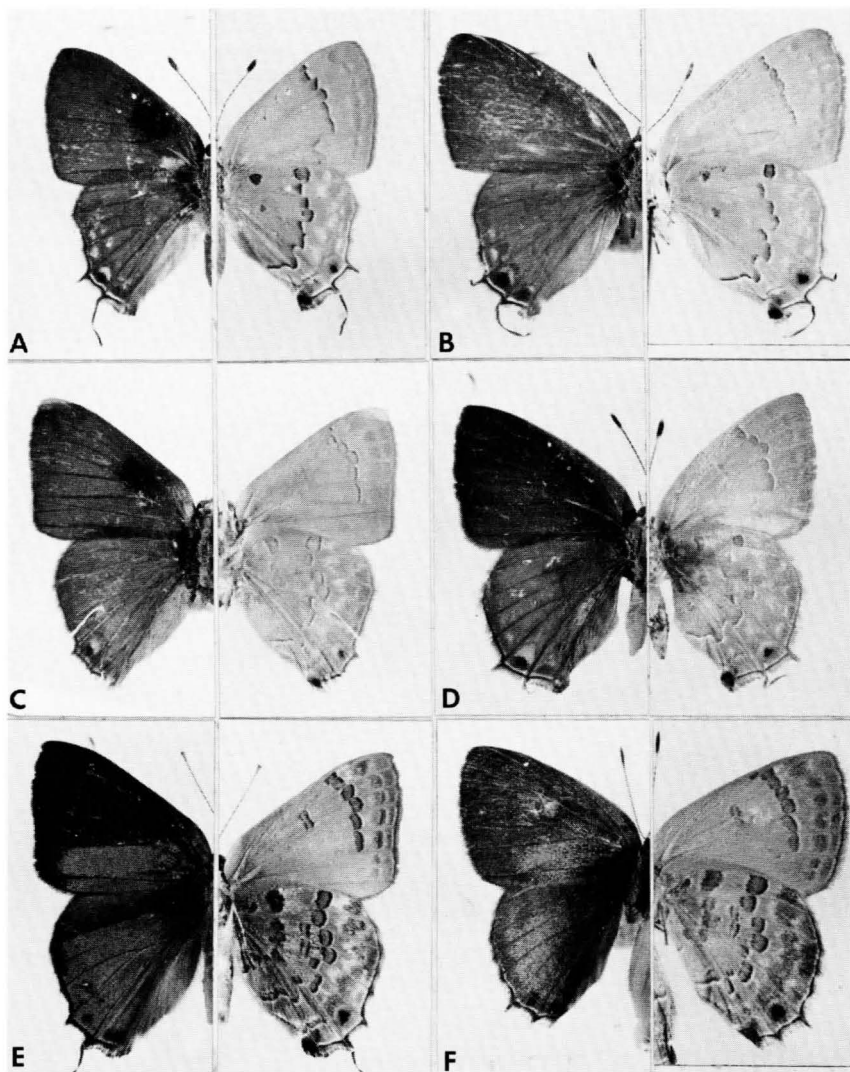


Figure 5. Adults of Argentine species of *Strymon* (upper surface left; under surface right). A. *S. basilides*, ♂ (22A, "1903", BMNH). B. *S. basilides*, ♀ (22A, "1903", BMNH). C. *S. diaguia*, holotype ♂. D. *S. diaguia*, ♀ (46A, 27. i. 1931, IML). E. *S. oreala*, ♂ (Massaranduba-Blumenau, Brazil, AMNH). F. *S. oreala*, ♀ (45B, 10. vi. 1936, IML).

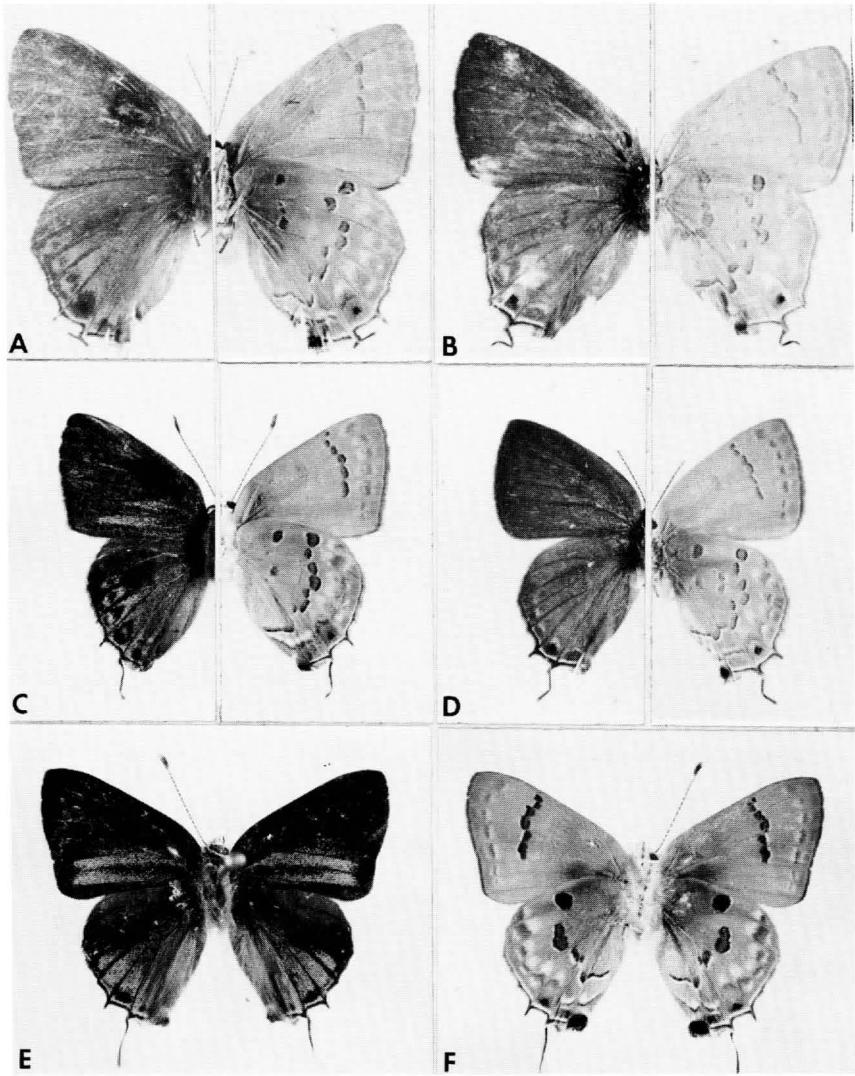


Figure 6. Adults of Argentine species of *Strymon* (upper surface left; under surface right, except E & F) A. *S. amphyporphyra*, holotype ♂. B. *S. amphyporphyra*, allotype ♀. C. *S. megarus*, ♂ (22A, "1903", BMNH). D. *S. megarus*, ♀ (22A, "1903", BMNH). E. *S. golbachii*, holotype ♂, upper surface; F. *S. golbachii*, holotype ♂, under surface.

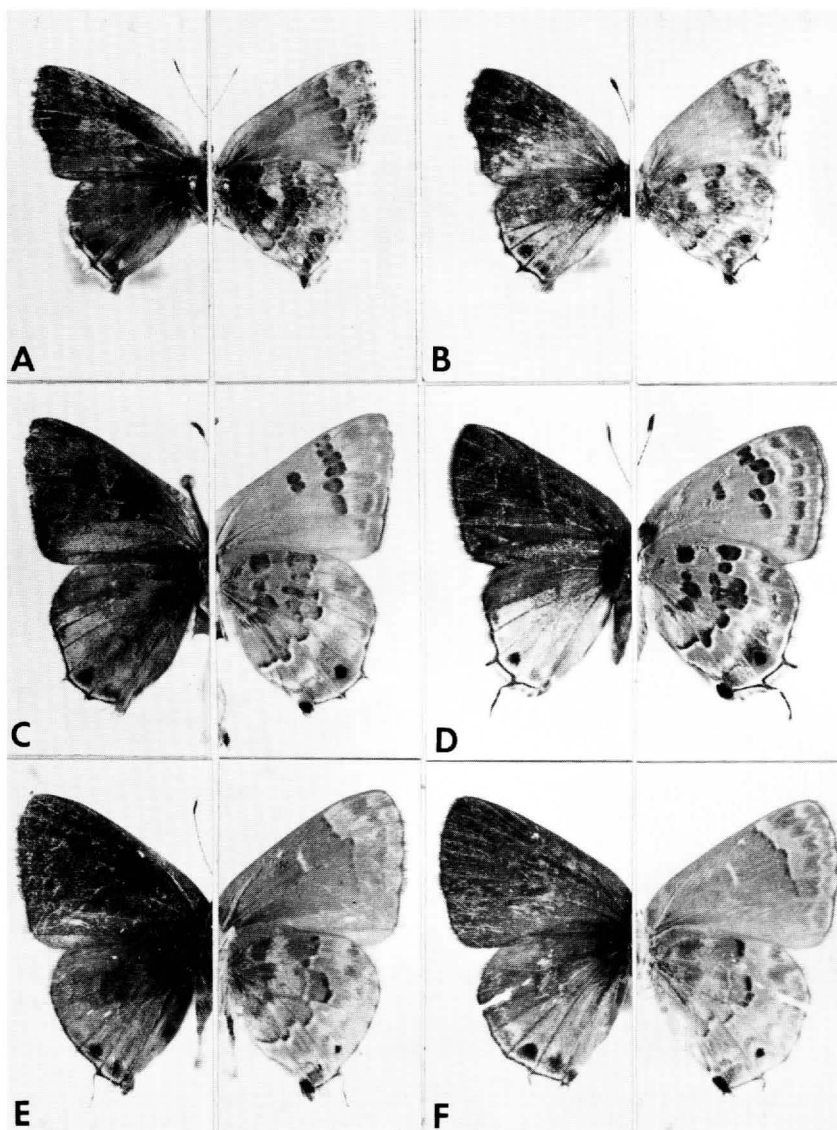


Figure 7. Adults of Argentine species of *Strymon* (upper surface left; under surface right). A. *S. crosssoea*, ♂ (17A, 26. vii. 1977, AMNH). B. *S. crosssoea*, ♀ (17A, 26. vii. 1977, AMNH). C. *S. canitus*, ♂ (159A, i. 1954, IML). D. *S. canitus*, ♀ (27A, 5. vii. 1969, CRE). E. *S. mulucha*, ♂ (17A, 8. vii. 1977, AMNH). F. *S. mulucha*, ♀ (17A, 8. vii. 1977, AMNH).

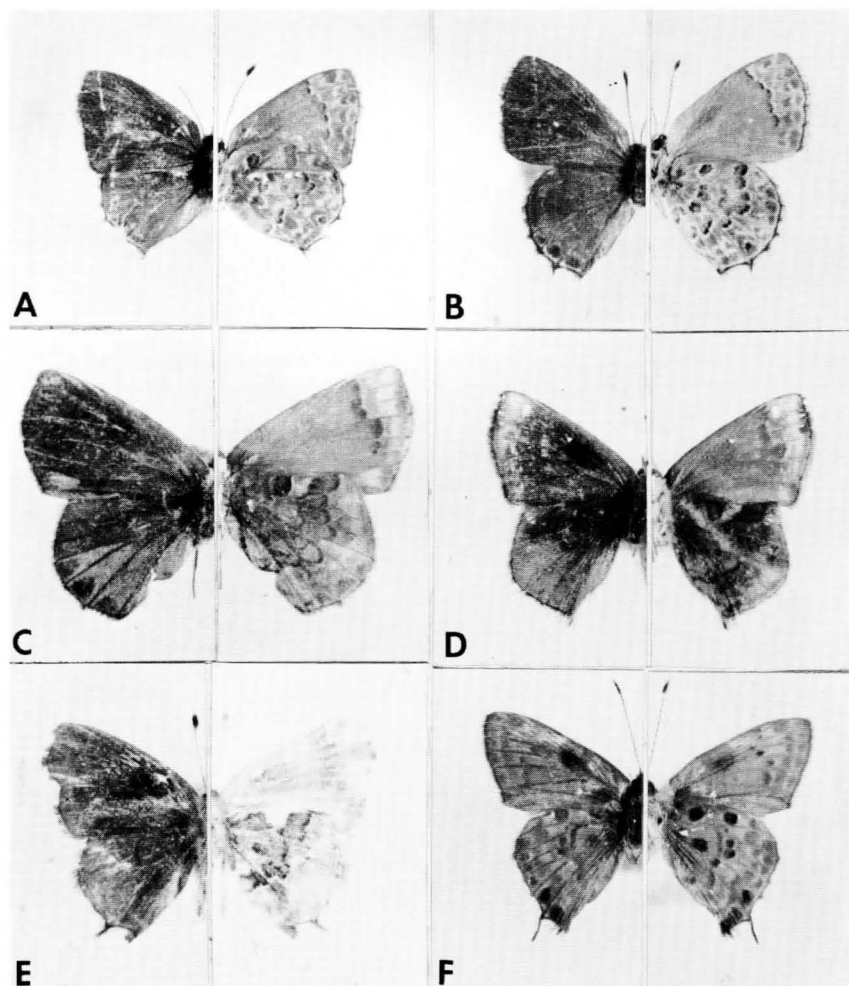


Figure 8. Adults of Argentine species of *Strymon* (upper surface left; under surface right). A. *S. faunalia*, ♂ (17A, 9. vi. 1975, AMNH [mating pair with B]). B. *S. faunalia*, ♀ (same as A). C. *S. bazochii*, ♂ (34A, 12. iv. 1977, AMNH). D. *S. bazochii*, ♀ (7E, 6. viii. 1978, AMNH). E. *S. crambusa*, ♂ (17A, 19. i. 1977, AMNH). F. *S. rhapsos*, holotype ♂.

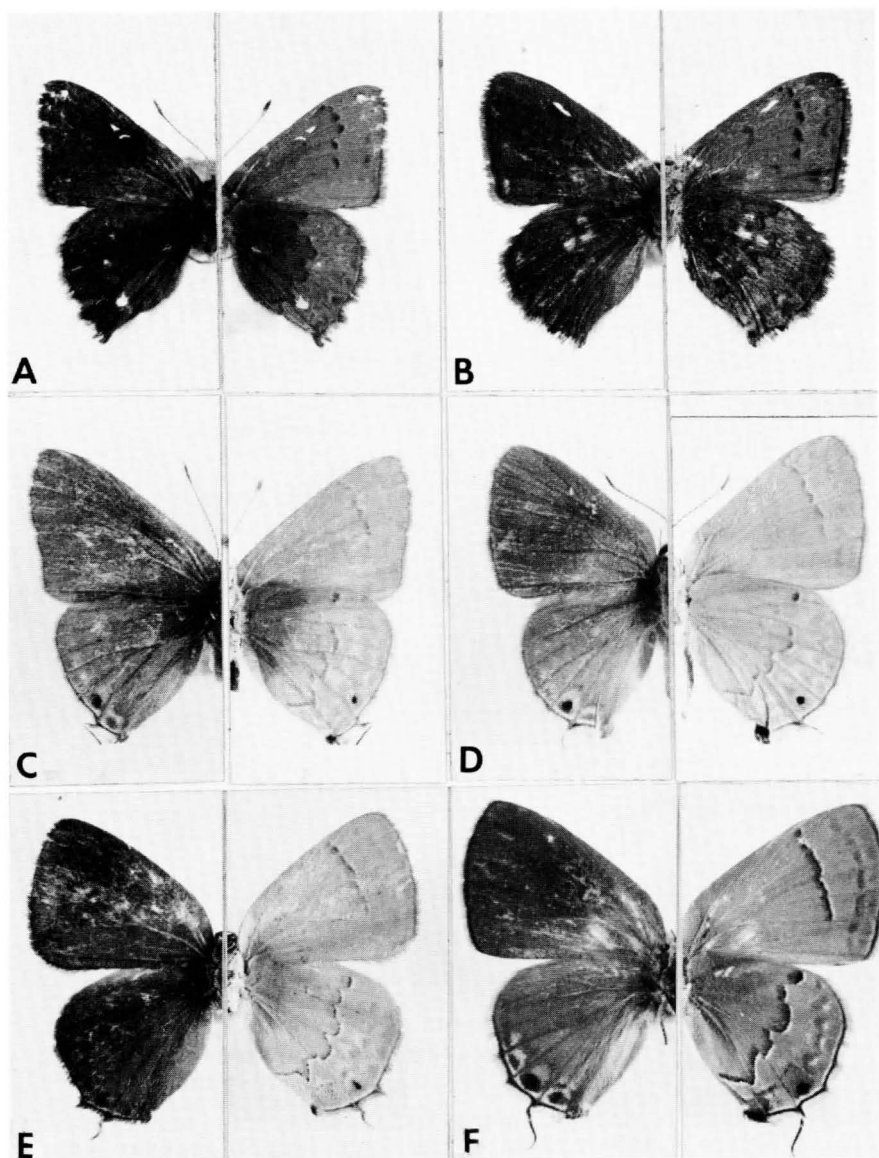


Figure 9. Adults of Argentine species of *Strymon* (upper surface left; under surface right). A. *S. peristictos*, holotype ♂. B. *S. peristictos*, allotype ♀. C. *S. rufofusca* ♂ (17A, 8. vii. 1977, AMNH). D. *S. rufofusca*, ♀ (same as C). E. *S. cyanofusca*, allotype ♂. F. *S. cyanofusca*, holotype ♀.

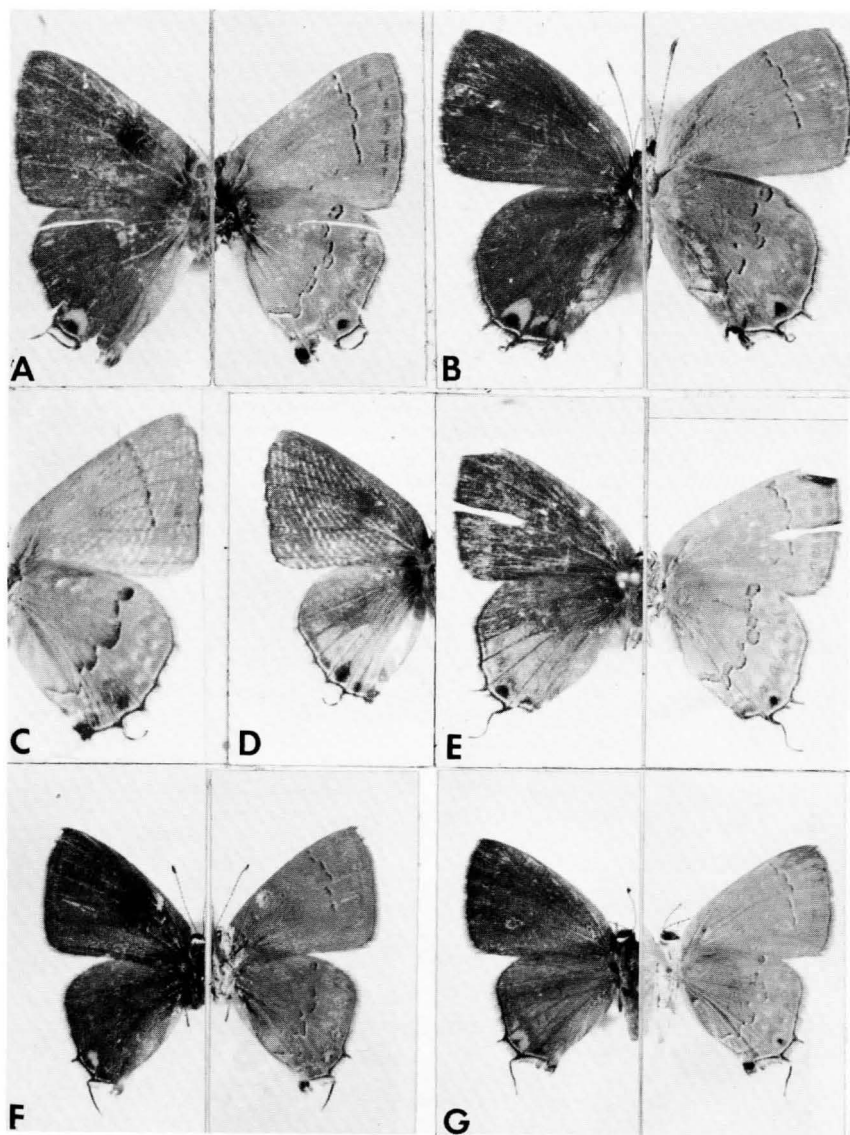


Figure 10. Adults of Argentine species of *Strymon* (upper surface left; under surface right, except C and D). A. *S. valentina*, ♂ (226A, no other data, IML). B. *S. valentina*, ♀ (16A, 4. v. 1976, AMNH). C. *S. azuba*, ♂ (Santrissima-Trinidad, Paraguay, AMNH) (under surface). D. *S. monteivagus*, allotype ♂ (upper surface). E. *S. monteivagus*, holotype ♀. F. *S. nicolayi*, holotype ♂. G. *S. nicolayi*, allotype ♀.



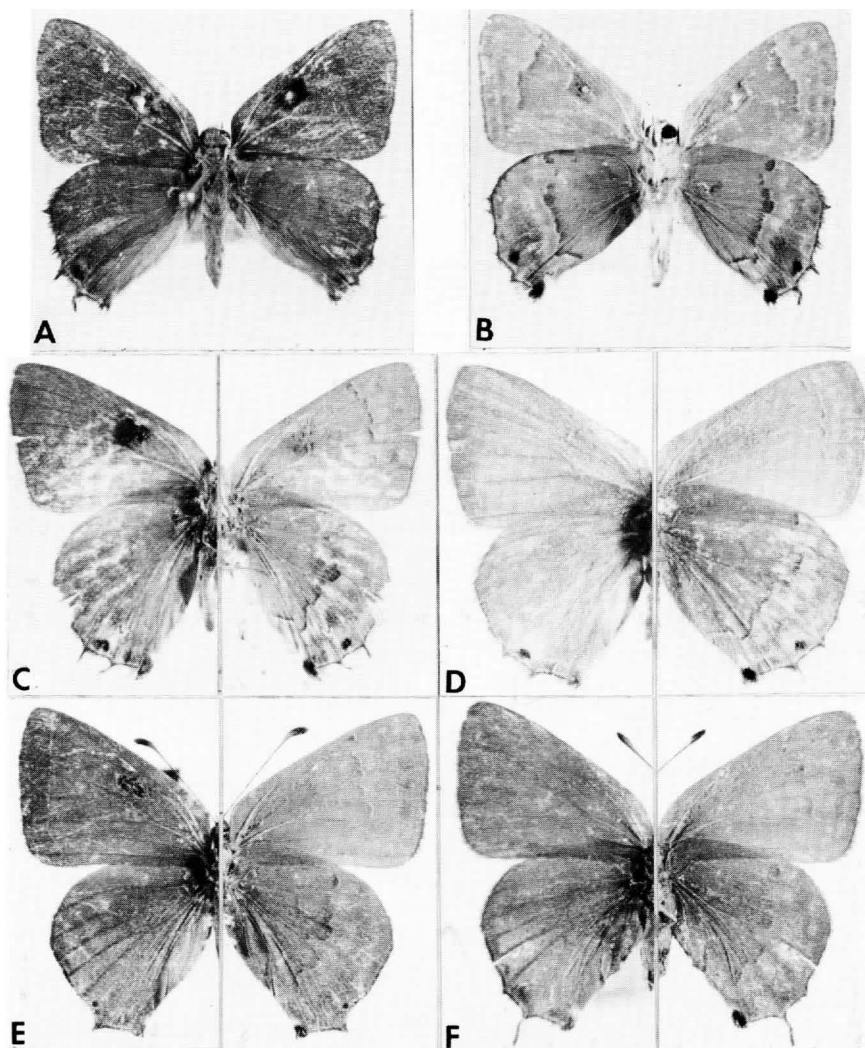


Figure 11. Adults of Argentine species of *Strymon* (upper surface left; under surface right, except A and B). A. *S. lariyojoa*, holotype ♂, upper surface. B. same, under surface. C. *S. eremica*, holotype. D. *S. eremica*, ♀ (51A, 17. i. 1969, IML). E. *S. lorrainea*, allotype ♂. F. *S. lorrainea*, holotype ♀.

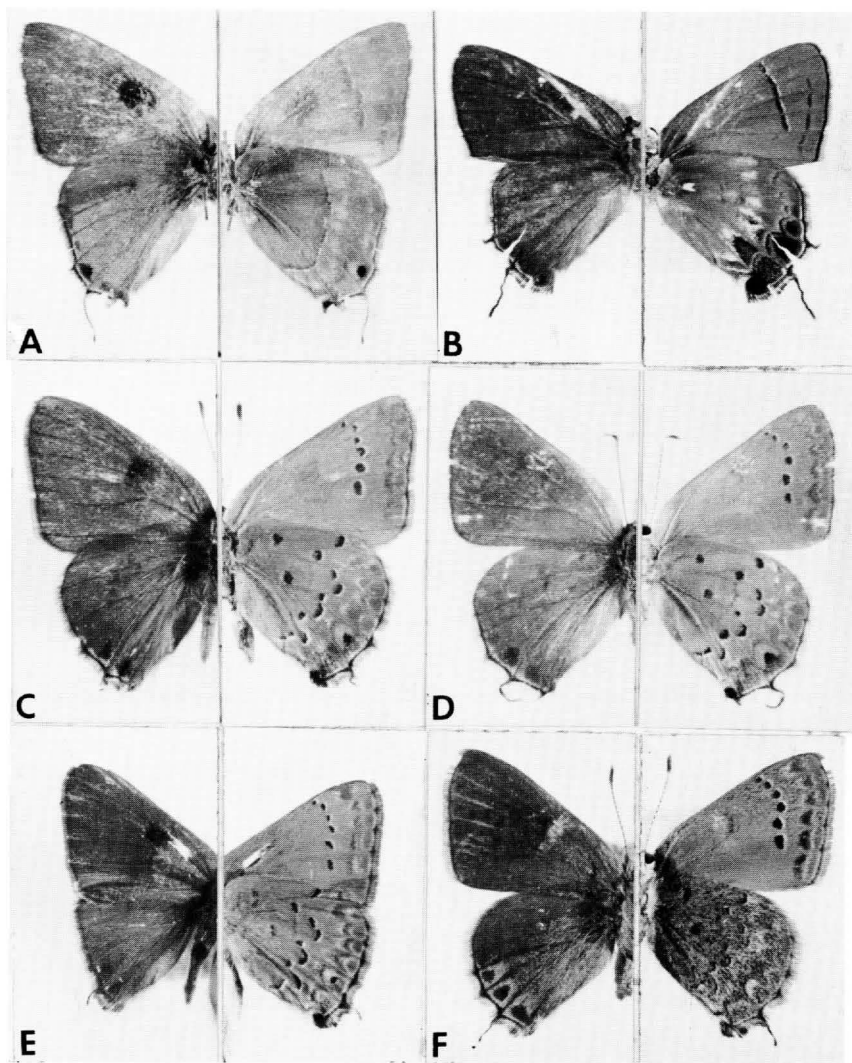


Figure 12. Adults of Argentine species of *Strymon* (upper surface left; under surface right). A. *S. coronos*, holotype ♂. B. *S. nivnix*, holotype ♀. C. *S. eurytulus*, "normal" ♂ (27B, 25. xi. 1971, IML). D. *S. eurytulus*, "normal" ♀ (27C, 18. xii. 1961, IML). E. *S. eurytulus*, "nigra" morph, ♀ (232A, no other data, IML). F. *S. eurytulus*, "tucumana" morph, ♀ (27A, 31. v. 1972, IML).

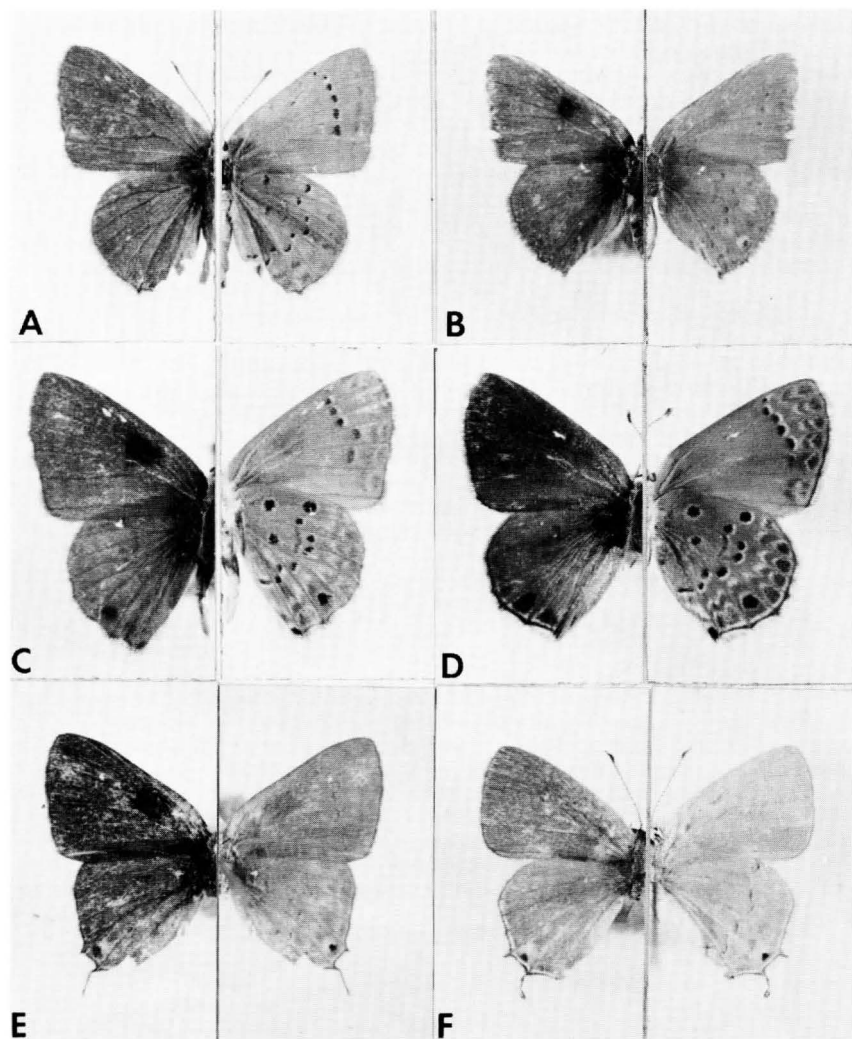
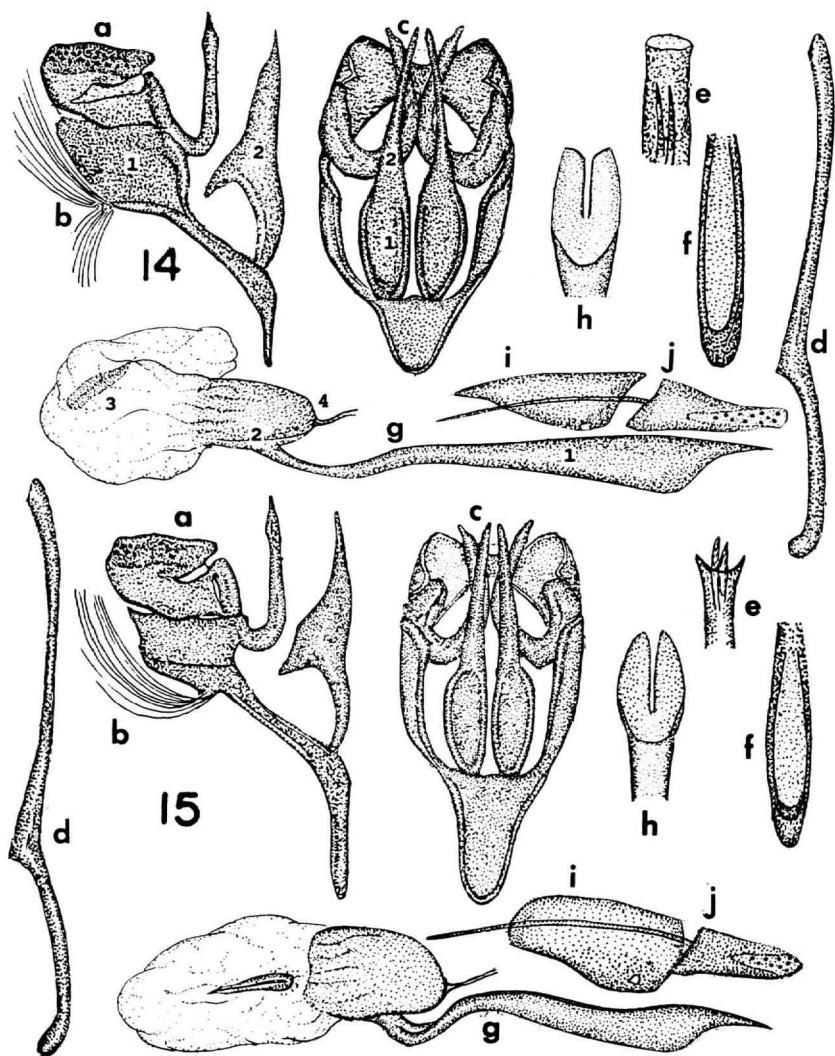
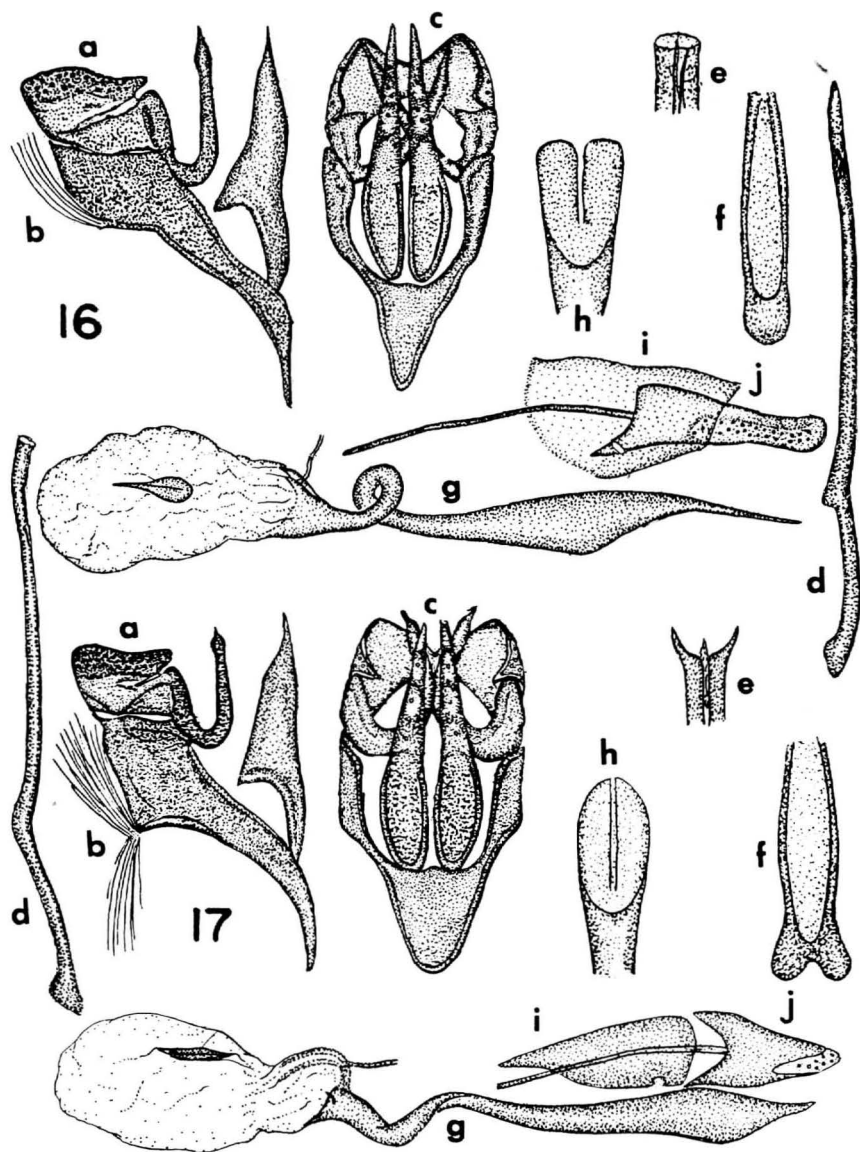


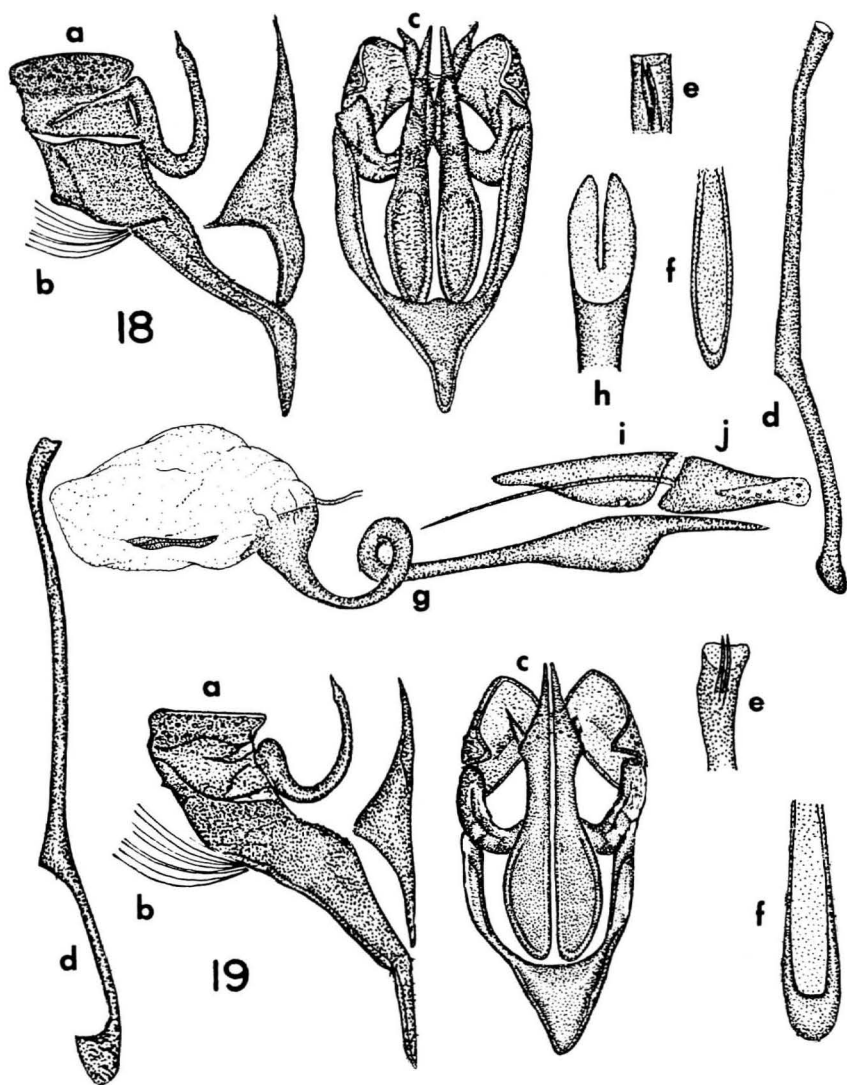
Figure 13. Adults of Argentine species of *Strymon* (upper surface left; under surface right). A. *S. eurytulus*, "americensis" morph (of north Argentina), ♀ (52A, 10. i. 1972, IML). B. *S. eurytulus*, "americensis" morph (of Patagonia) called "sapota" by Hayward, ♂ (236A, i. 1950, IML). C. *S. bubastus*, ♂ (27A, 17. v. 1972, IML). D. *S. bubastus*, ♀ (same as A). E. *S. baptistorum*, holotype ♂. F. *S. barbara*, holotype ♀.



Figures 14-15. Genitalia of Argentine species of *Strymon* Figure 14. Genitalia of *S. basilides* (♂, ♀ of Fig. 5). Figure 15. Genitalia of *S. diaguia* (holotype ♂, ♀ of Fig. 5). Format. Male genitalia—*a*, lateral view; *b*, brush organs; *c*, ventral view; *d*, aedeagus, lateral view [with ventral view terminus and caecum, *e*, *f*]. Female genitalia—*g*, lateral view; *h*, lamellae, ventral view; *i*, eighth tergite, lateral view; *j*, papillae anales, lateral view. For general reference but marked in Figure 14 only: male genitalic parts, *a1*, vinculum, *a2*, valvae, *c1*, "bilobed area", *c2*, "caudal extension"; female genitalic parts, *g1*, ductus bursae, *g2*, cervix bursae, *g3*, corpus bursae, *g4*, ductus seminalis.

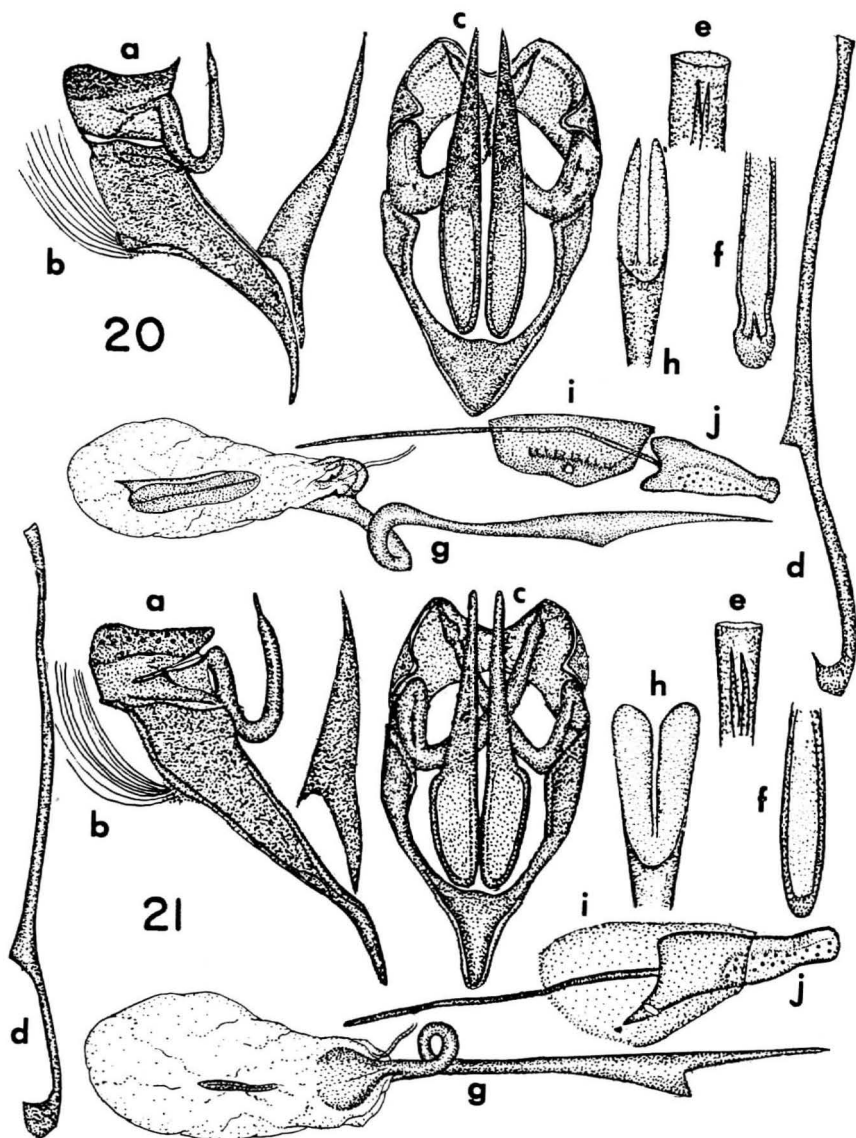


Figures 16-17. Genitalia of Argentine species of *Strymon*. Figure 16. Genitalia of *S. oreala* (♂, ♀ of Fig. 5). Figure 17. Genitalia of *S. amphyporphyra*, (holotype ♂, allotype ♀). Format: Male genitalia—a, lateral view; b, brush organs; c, ventral view; d, aedeagus, lateral view [view ventral view terminus and caecum, e, f]. Female genitalia—g, lateral view; h, lamellae, ventral view; i, eighth tergite, lateral view; j, papillae anales, lateral view.

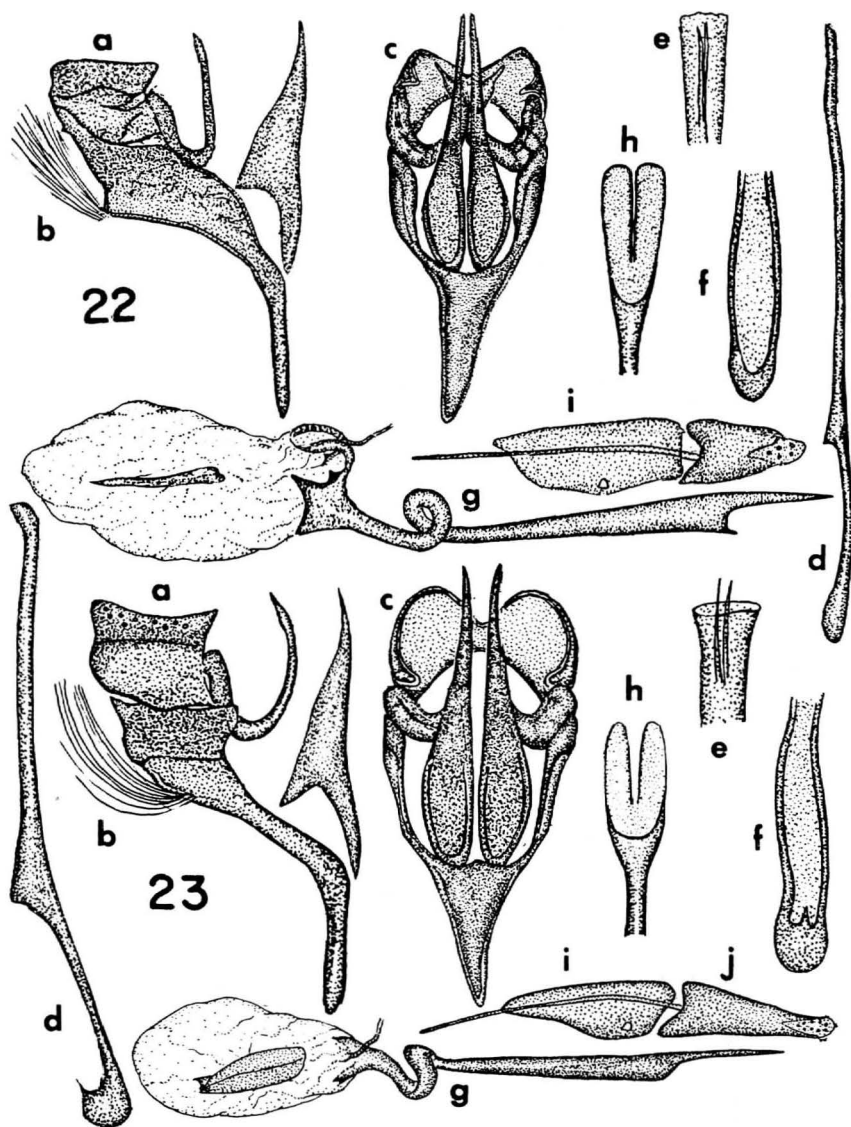


Figures 18-19. Genitalia of Argentine species of *Strymon*. Figure 18. Genitalia of *S. megarus*, ( $\sigma$ ,  $\varphi$  of Fig. 6). Figure 19. Genitalia of *S. golbachii* (holotype  $\sigma$ ). Format: Male genitalia—a, lateral view; b, brush organs; c, ventral view; d, aedeagus, lateral view [with ventral view terminus and caecum, e, f]. Female genitalia—g, lateral view; h, lamellae, ventral view; i, eighth tergite, lateral view; j, papillae anales, lateral view.

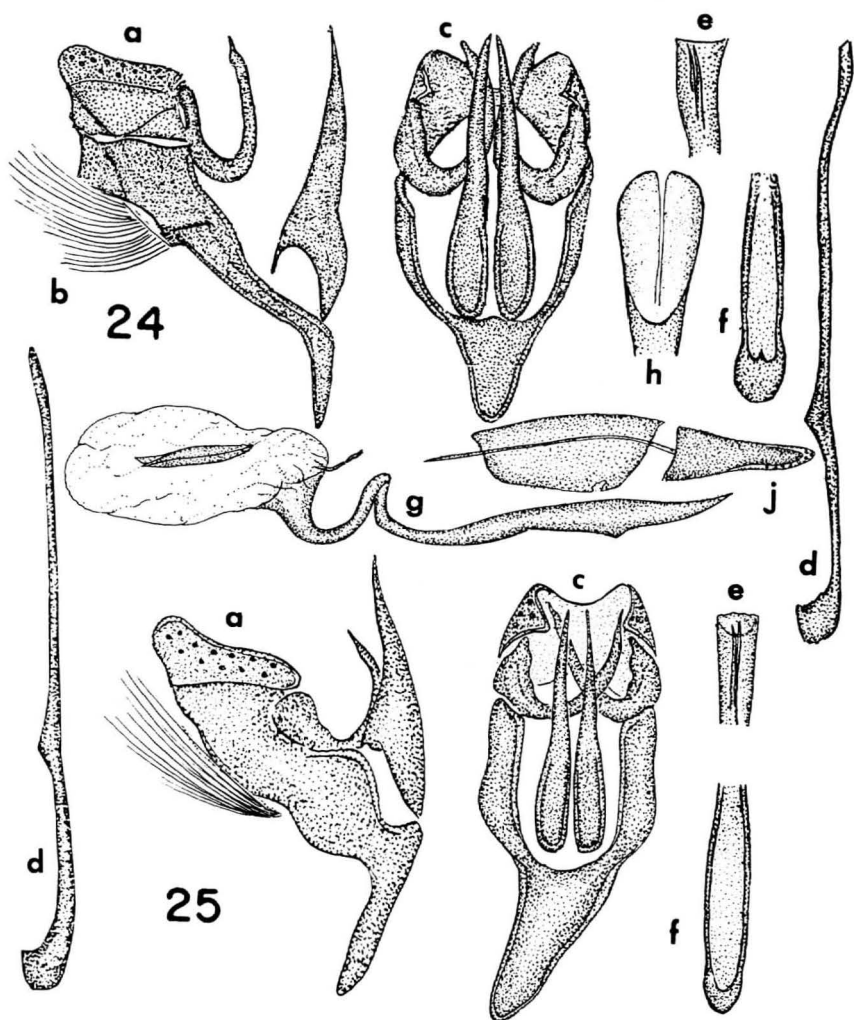




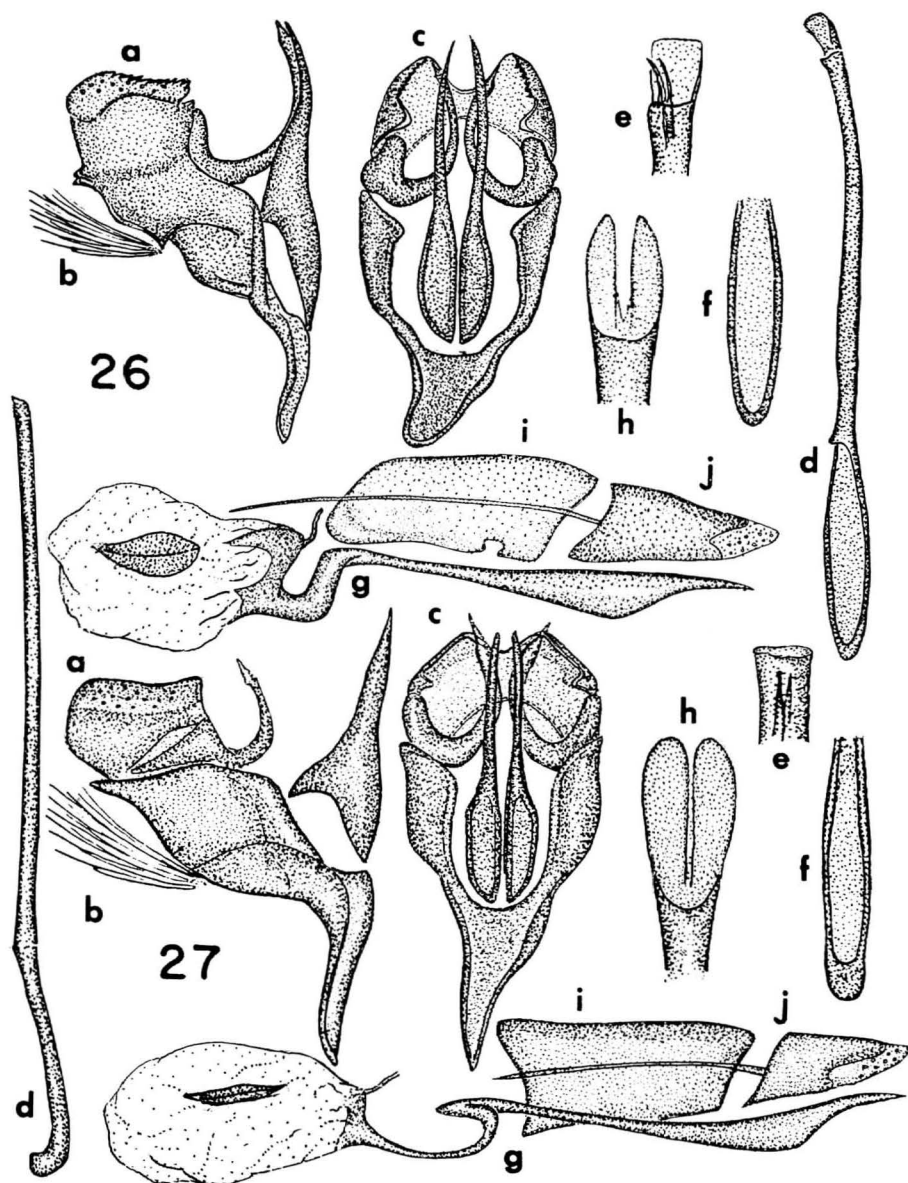
Figures 20-21. Genitalia of Argentine species of *Strymon*. Figure 20. Genitalia of *S. crossoea* (♂, ♀ of Fig. 7). Figure 21. Genitalia of *S. canitus* (♂, ♀ of Fig. 7). Format: Male genitalia—*a*, lateral view; *b*, brush organs; *c*, ventral view; *d*, aedeagus, lateral view [with ventral view terminus and caecum, *e*, *f*]. Female genitalia—*g*, lateral view; *h*, lamellae, ventral view; *i*, eighth tergite, lateral view; *j*, papillae anales, lateral view.



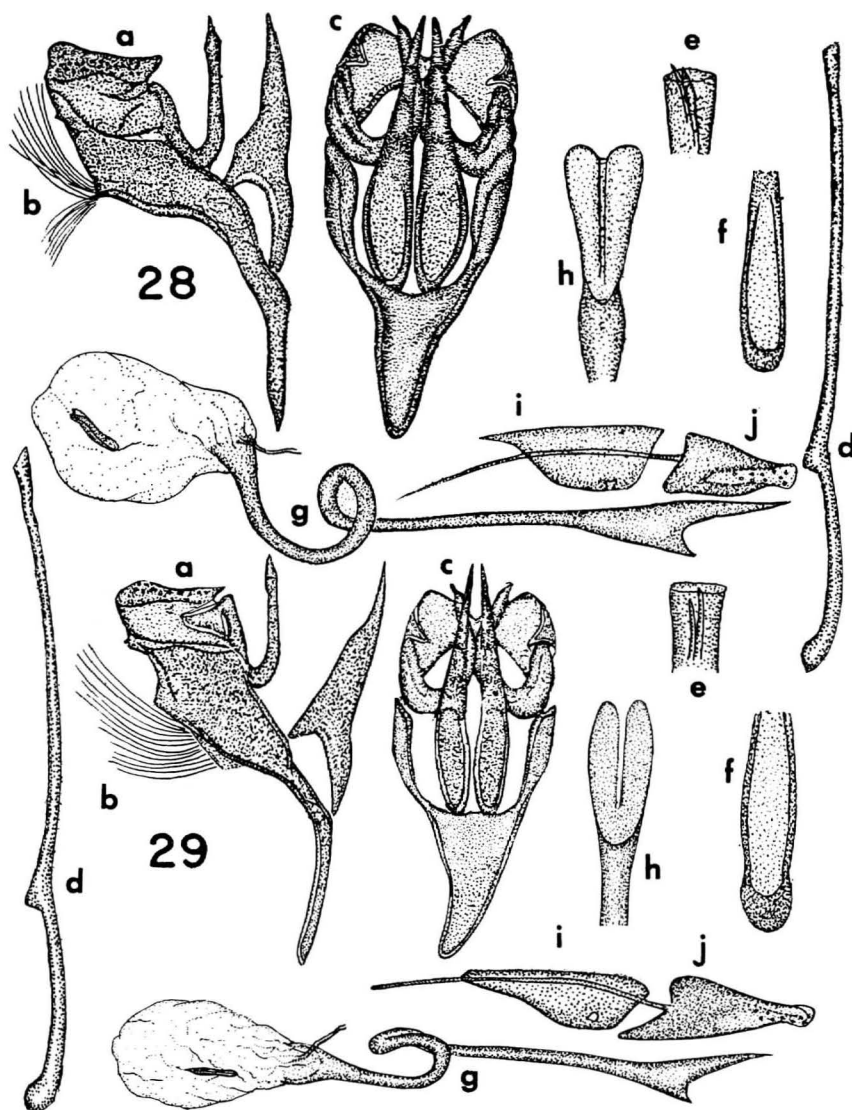
Figures 22-23. Genitalia of Argentine species of *Strymon*. Figure 22. Genitalia of *S. mulucha* (♂, ♀ of Fig. 7). Figure 23. Genitalia of *S. faunalia* (♂, ♀ of Fig. 8). Format: Male genitalia—a, lateral view; b, brush organs; c, ventral view; d, aedeagus, lateral view [with ventral view terminus and caecum, e, f]. Female genitalia—g, lateral view; h, lamellae, ventral view; i, eighth tergite, lateral view; j, papillae anales, lateral view.



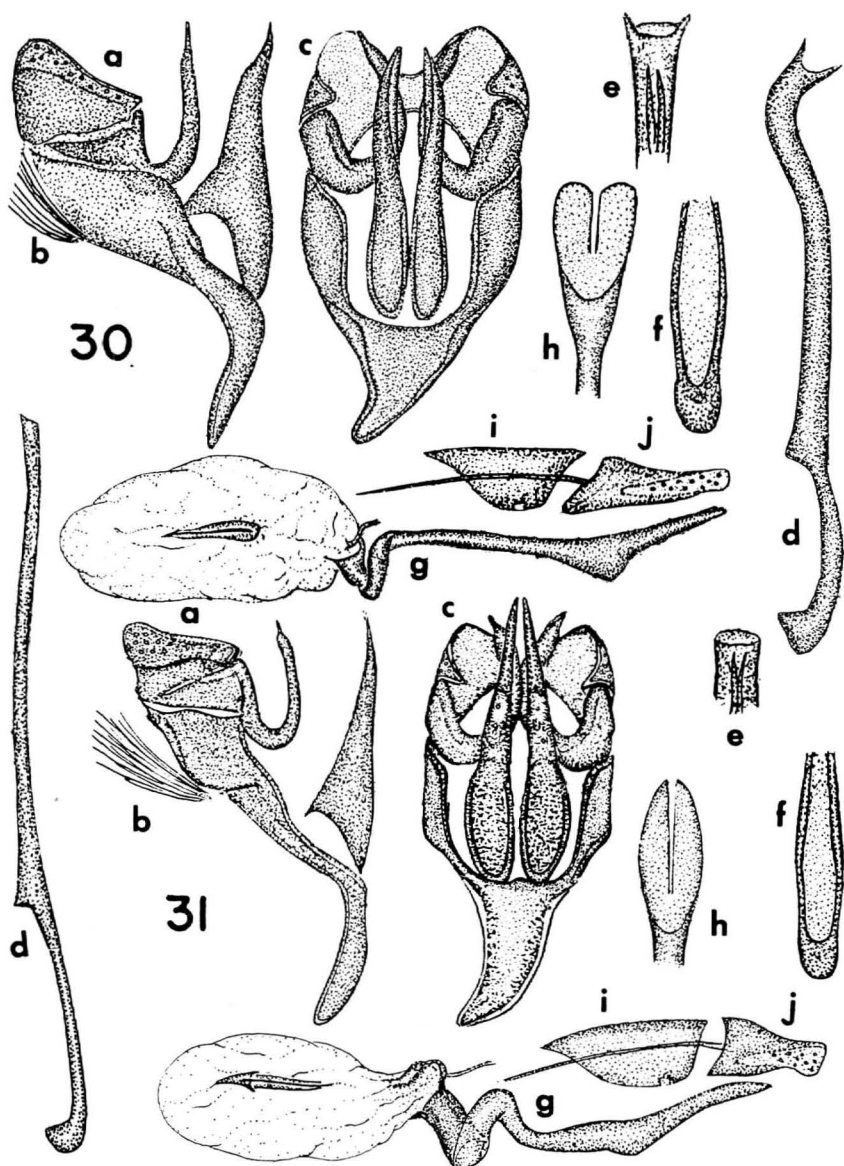
Figures 24-25. Genitalia of Argentine species of *Strymon*. Figure 24. Genitalia of *S. bazochii* (♂, ♀ of Fig. 8). Figure 25. Genitalia of *S. crambusa* (♂, ♀ of Fig. 8). Format: Male genitalia—a, lateral view; b, brush organs; c, ventral view; d, aedeagus, lateral view [with ventral view terminus and caecum, e, f]. Female genitalia—g, lateral view; h, lamellae, ventral view; i, eighth tergite, lateral view; j, papillae anales, lateral view.



Figures 26-27. Genitalia of Argentine species of *Strymon*. Figure 26. Genitalia of *S. rhapsos* (holotype ♂, allotype ♀). Figure 27. Genitalia of *S. peristictos* (holotype ♂, allotype ♀). Format: Male genitalia—*a*, lateral view; *b*, brush organs; *c*, ventral view; *d*, aedeagus, lateral view [with ventral view terminus and caecum, *e*, *f*]. Female genitalia—*g*, lateral view; *h*, lamellae, ventral view; *i*, eighth tergite, lateral view; *j*, papillae anales, lateral view.

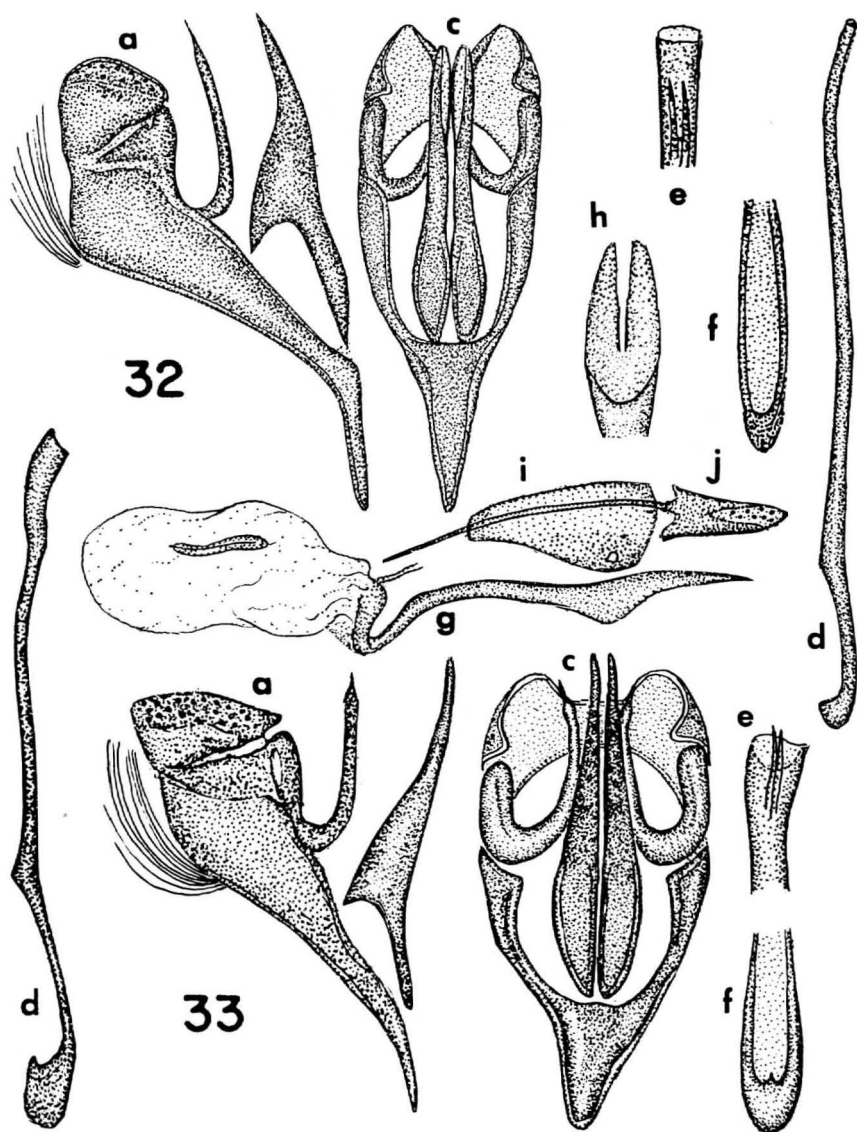


Figures 28-29. Genitalia of Argentine species of *Strymon*. Figure 28. Genitalia of *S. rufofusca* ( $\delta$ ,  $\phi$  of Fig. 9). Figure 29. Genitalia of *S. cyanofusca* (allotype  $\delta$ , holotype  $\phi$ ). Format: Male genitalia—*a*, lateral view; *b*, brush organs; *c*, ventral view; *d*, aedeagus, lateral view [with ventral view terminus and caecum, *e*, *f*]. Female genitalia—*g*, lateral view; *h*, lamellae, ventral view; *i*, eighth tergite, lateral view; *j*, papillae anales, lateral view.

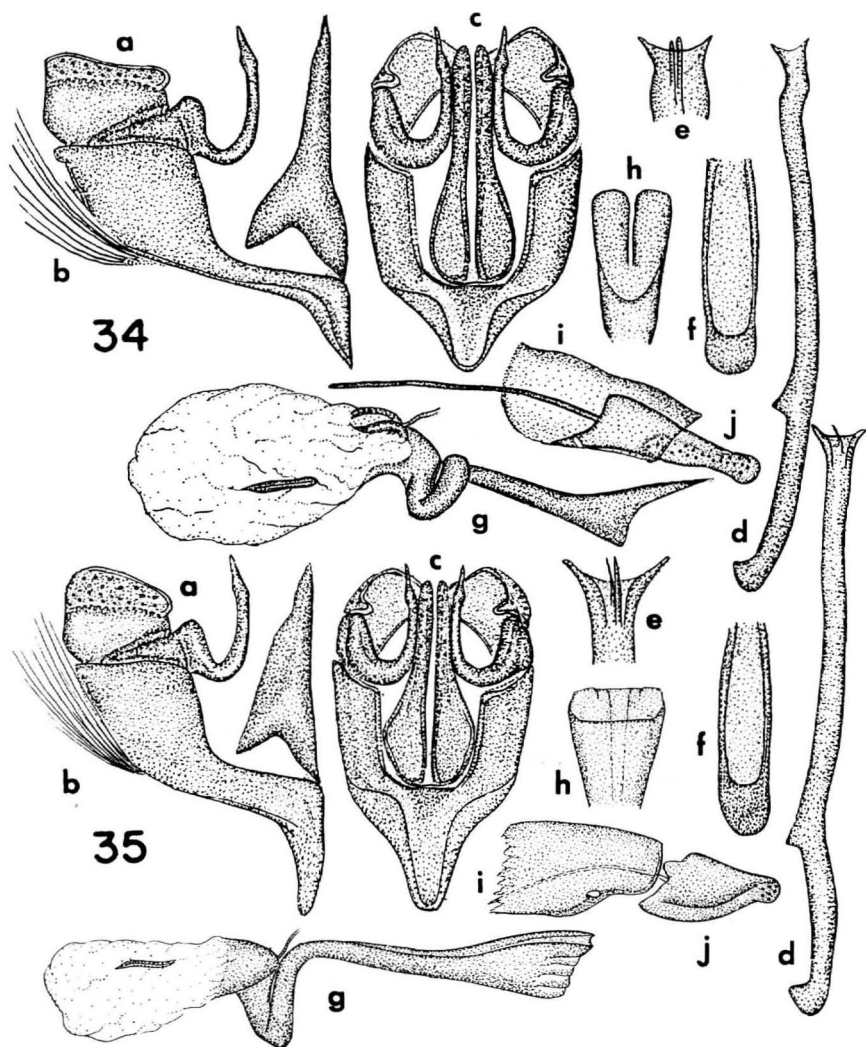


Figures 30-31. Genitalia of Argentine species of *Strymon*. Figure 30. Genitalia of *S. valentina* (♂, ♀ of Fig. 10). Figure 31. Genitalia of *S. monteivagus* (allotype ♂, holotype ♀). Format: Male genitalia—a, lateral view; b, brush organs; c, ventral view; d, aedeagus, lateral view [with ventral view terminus and caecum, e, f]. Female genitalia—g, lateral view; h, lamellae, ventral view; i, eighth tergite, lateral view; j, papillae anales, lateral view.

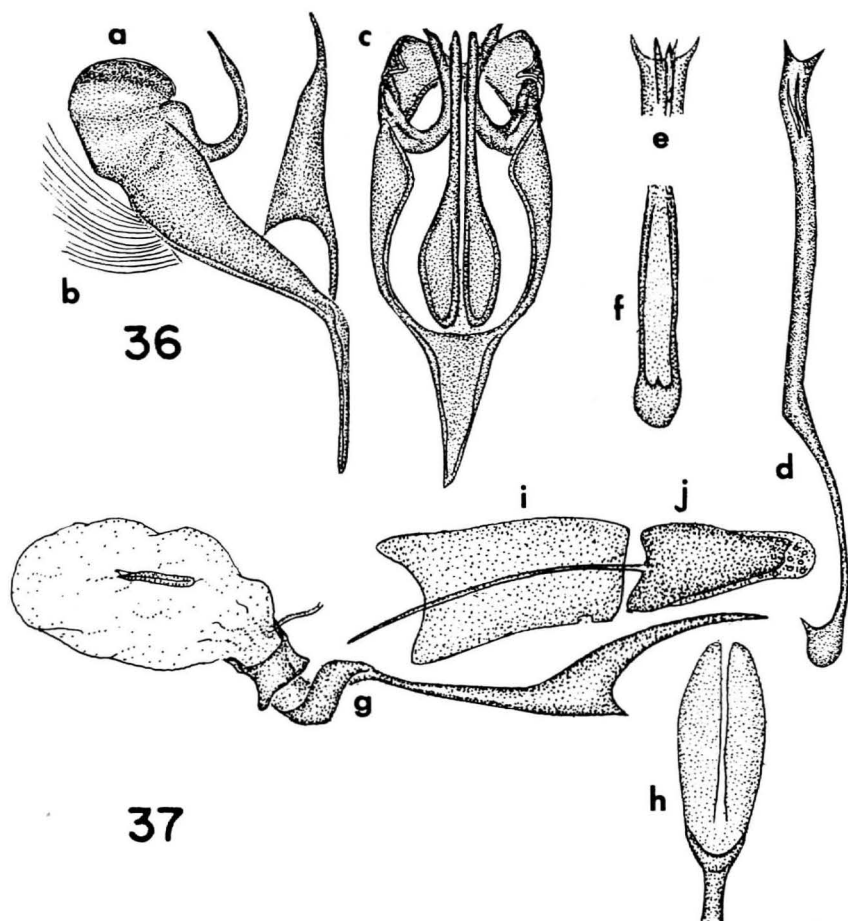




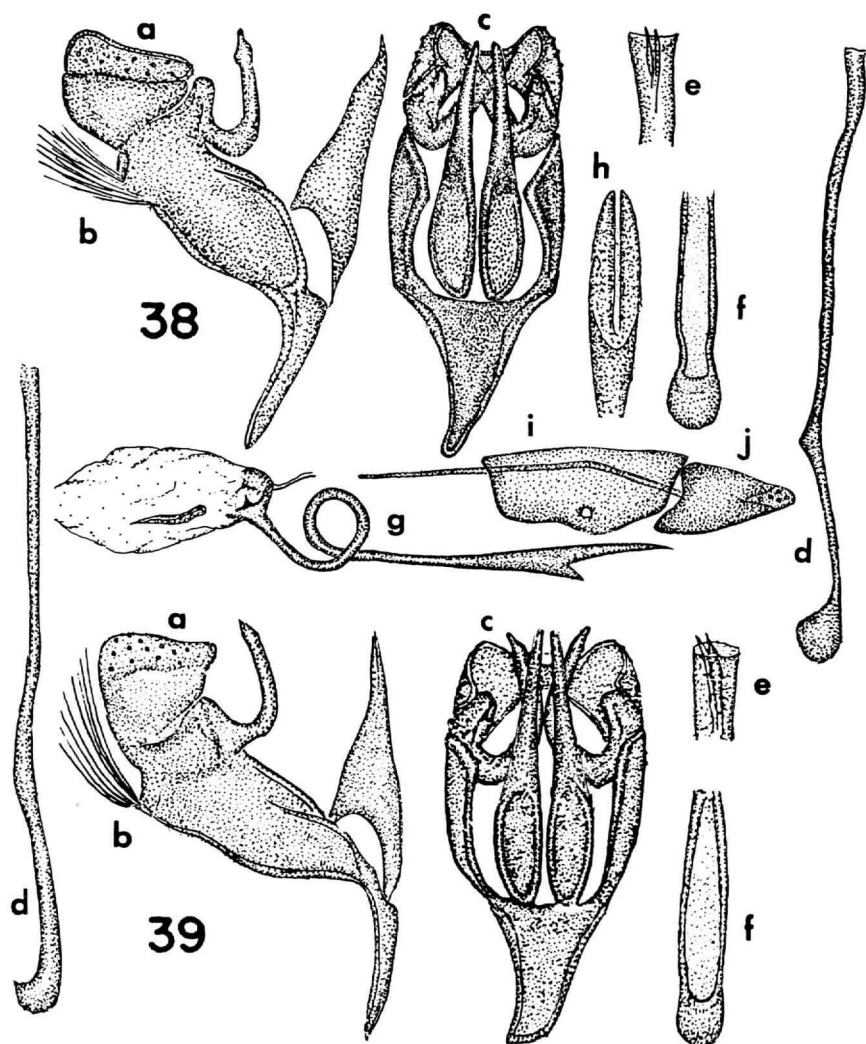
Figures 32-33. Genitalia of Argentine species of *Strymon*. Figure 32. Genitalia of *S. nicolayi* (holotype ♂, allotype ♀). Figure 33. Genitalia of *S. lariyójoa* (holotype ♂). Format: Male genitalia—*a*, lateral view; *b*, brush organs; *c*, ventral view; *d*, aedeagus, lateral view [with ventral view terminus and caecum, *e*, *f*]. Female genitalia—*g*, lateral view; *h*, lamellae, ventral view; *i*, eighth tergite, lateral view; *j*, papillae anales, lateral view.



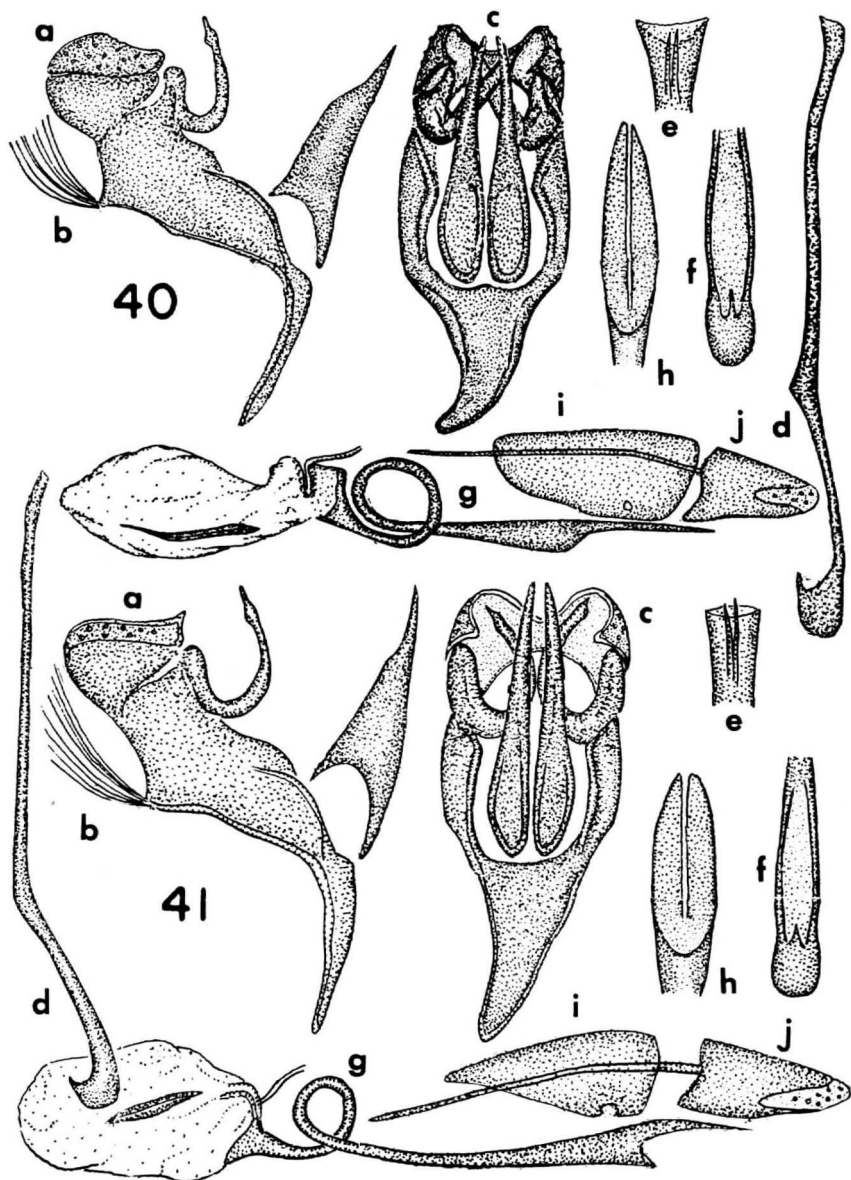
Figures 34-35. Genitalia of Argentine species of *Strymon*. Figure 34. Genitalia of *S. eremica* (holotype ♂, ♀ of Fig. 11). Figure 35. Genitalia of *S. lorrainea* (allotype ♂, holotype ♀). Format: Male genitalia— a, lateral view; b, brush organs; c, ventral view; d, aedeagus, lateral view [with ventral view terminus and caecum, e, f]. Female genitalia— g, lateral view; h, lamellae, ventral view; i, eighth tergite, lateral view; j, papillae anales, lateral view.



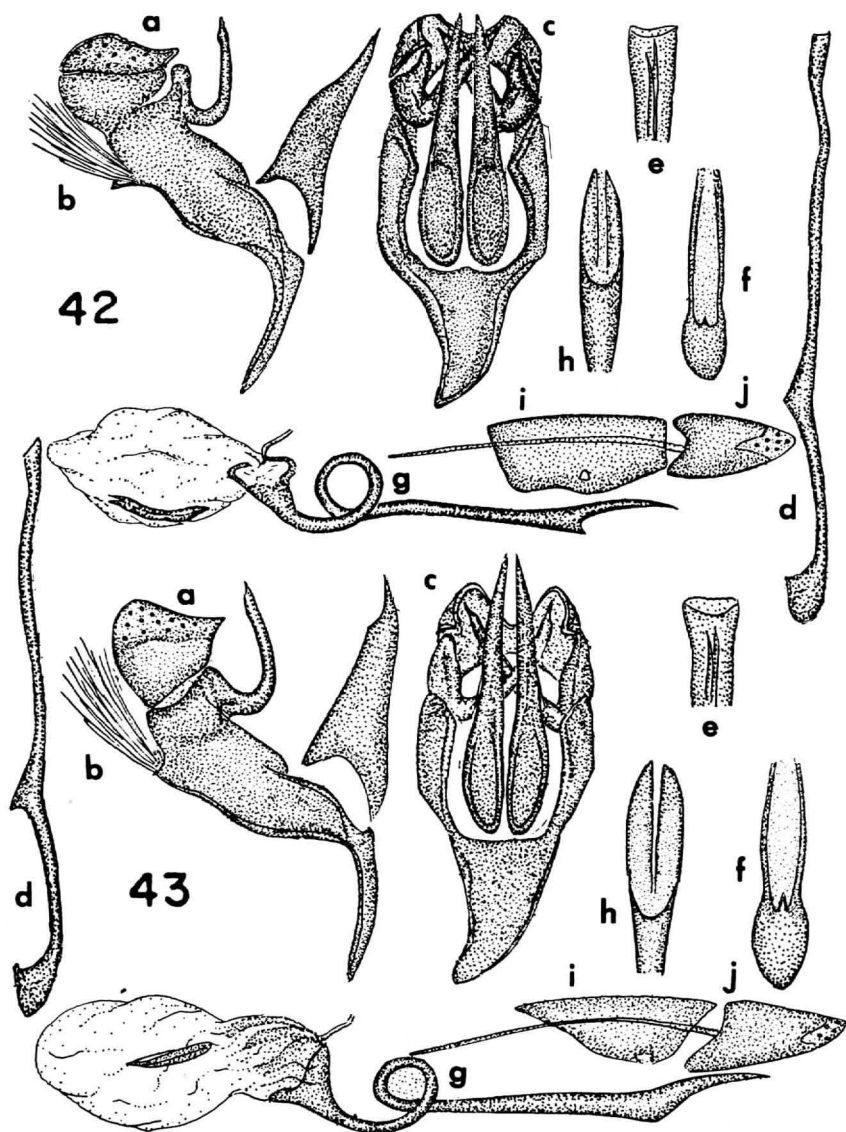
Figures 36-37. Genitalia of Argentine species of *Strymon*. Figure 36. Genitalia of *S. coronos* (holotype ♂). Figure 37. Genitalia of *S. nivnix* (holotype ♀). Format: Male genitalia—a, lateral view; b, brush organs; c, ventral view; d, aedeagus, lateral view [with ventral view terminus and caecum, e, f]. Female genitalia—g, lateral view; h, lamellae, ventral view; i, eighth tergite, lateral view; j, papillae anales, lateral view.



Figures 38-39. Genitalia of Argentine species of *Strymon*. Figure 38. Genitalia of *S. eurytulus* ("normal" ♂, ♀ of Fig. 12). Figure 39. Genitalia of *Thecla argona* (holotype ♂). Format: Male genitalia—a, lateral view; b, brush organs; c, ventral view; d, aedeagus, lateral view [with ventral view terminus and caecum, e, f]. Female genitalia—g, lateral view; h, lamellae, ventral view; i, eighth tergite, lateral view; j, papillae anales, lateral view.

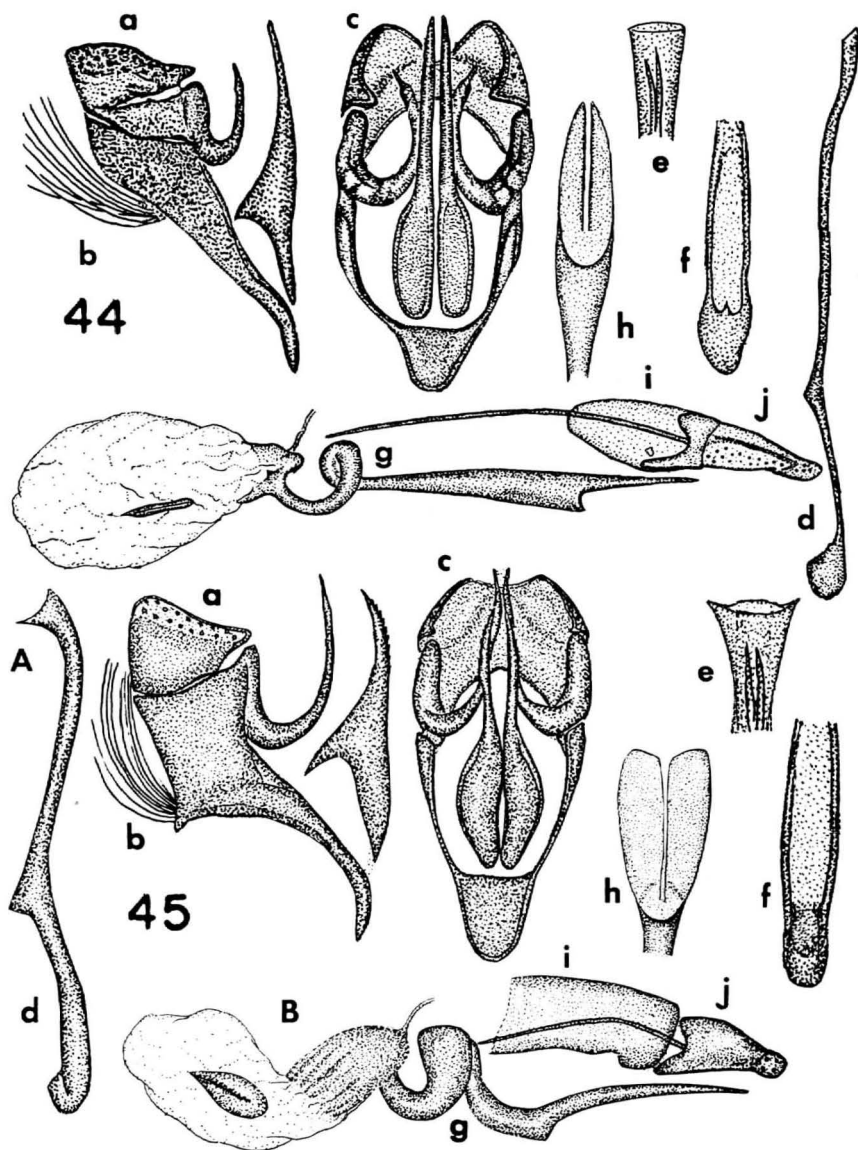


Figures 40-41. Genitalia of Argentine species of *Strymon*. Figure 40. Genitalia of *Thecla americensis* (lectotype ♂, ♀ of Fig. 13A). Figure 41. Genitalia of *S. eurytulus* ("americensis" morph of Patagonia="sapota" sensu Hayward, ♂ of Fig. 4 E,G; ♀ 236A, IML). Format: Male genitalia—a, lateral view; b, brush organs; c, ventral view; d, aedeagus, lateral view [with ventral view terminus and caecum, e, f]. Female genitalia—g, lateral view; h, lamellae, ventral view; i, eighth tergite, lateral view; j, papillae anales, lateral view.



Figures 42-43. Genitalia of Argentine species of *Strymon*. Figure 42. Genitalia of *Thecla nigra* (holotype ♂, ♀ 7A, 27. vi. 1988, AMNH). Figure 43. Genitalia of *Thecla tucumana* (holotype ♂, ♀ of Fig. 12F). Format: Male genitalia—a, lateral view; b, brush organs; c, ventral view; d, aedeagus, lateral view [with ventral view terminus and caecum, e, f]. Female genitalia—g, lateral view; h, lamellae, ventral view; i, eighth tergite, lateral view; j, papillae anales, lateral view.





Figures 44-45. Genitalia of Argentine Species of *Strymon*. Figure 44. Genitalia of *S. bubastes*. Figure 45. A. Genitalia of *S. baptistorum* (holotype ♂). B. Genitalia of *S. barbara* (holotype ♀). Format. Male genitalia—a, lateral view; b, brush organs; c, ventral view; d, aedeagus, lateral view [with ventral view terminus and caecum, e, f]. Female genitalia—g, lateral view; h, lamellae, ventral view; i, eighth tergite, lateral view; j, papillae anales, lateral view.), below, center, ventral view juncture of ductus and cervix bursae.

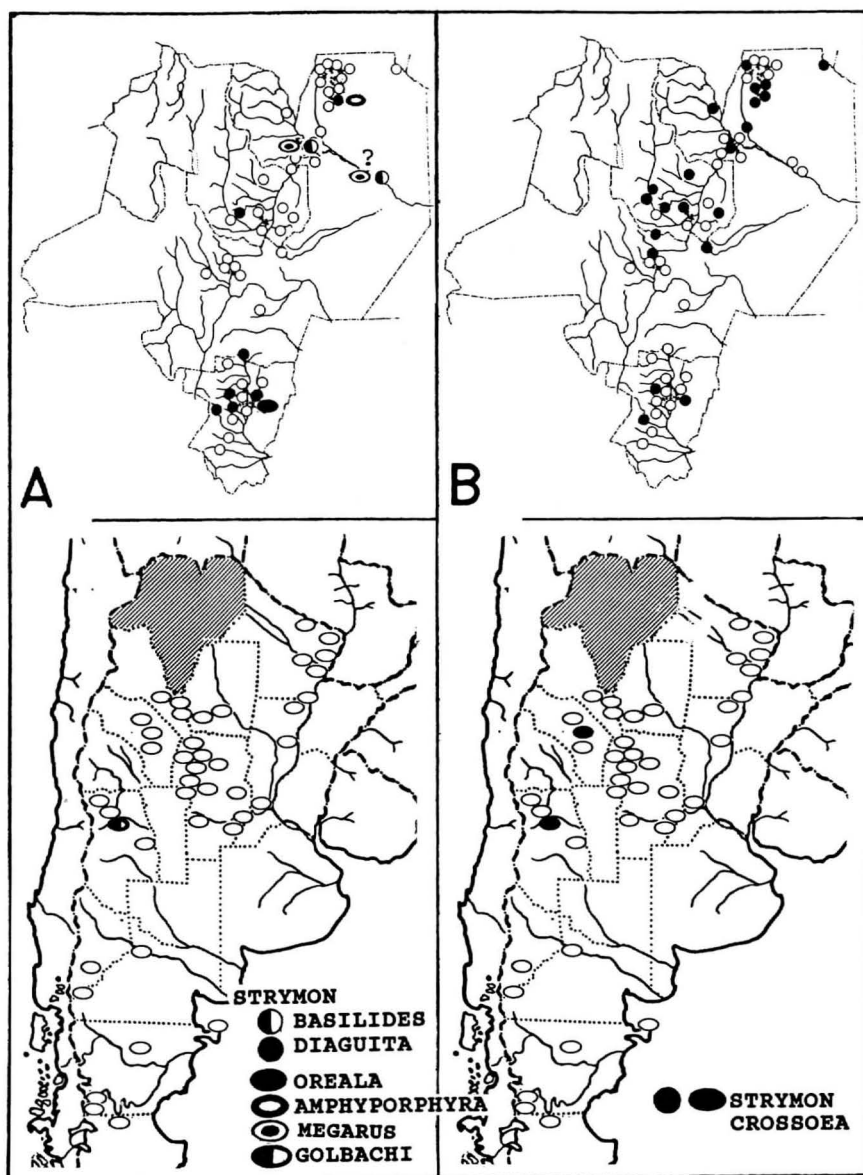


Figure 46. Geographic distributions *Strymon* taxa in Argentina in relation to base maps (Figs. 1-3, darkened symbols). A. *S. basilides*, *S. diaguita*, *S. oreala*, *S. amphyporphyra*, *S. megarus* and *S. golbachi*. B. *S. crossoea*.

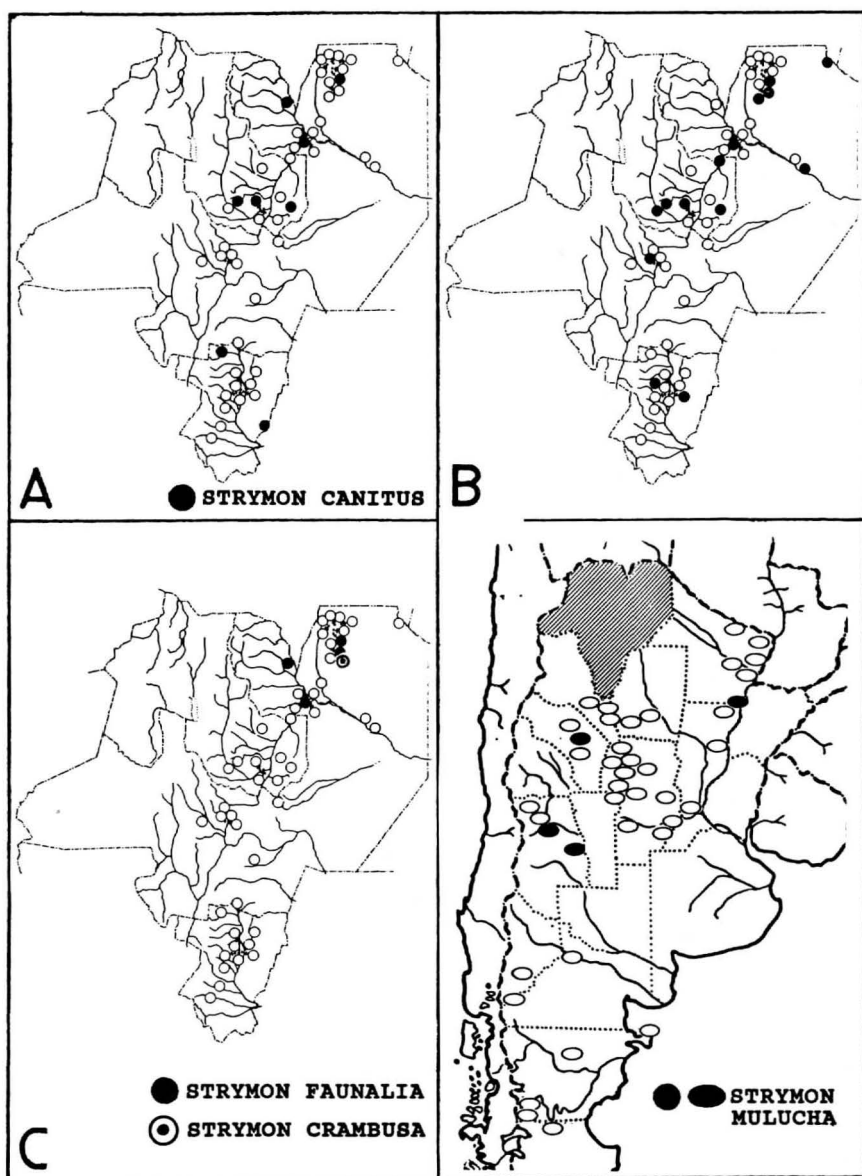


Figure 47. Geographic distributions *Strymon* taxa in Argentina in relation to base maps (Figs. 1-3, darkened symbols). A. *S. canitus*. B. *S. mulucha*. C. *S. faunalia*, *S. crambusa*.

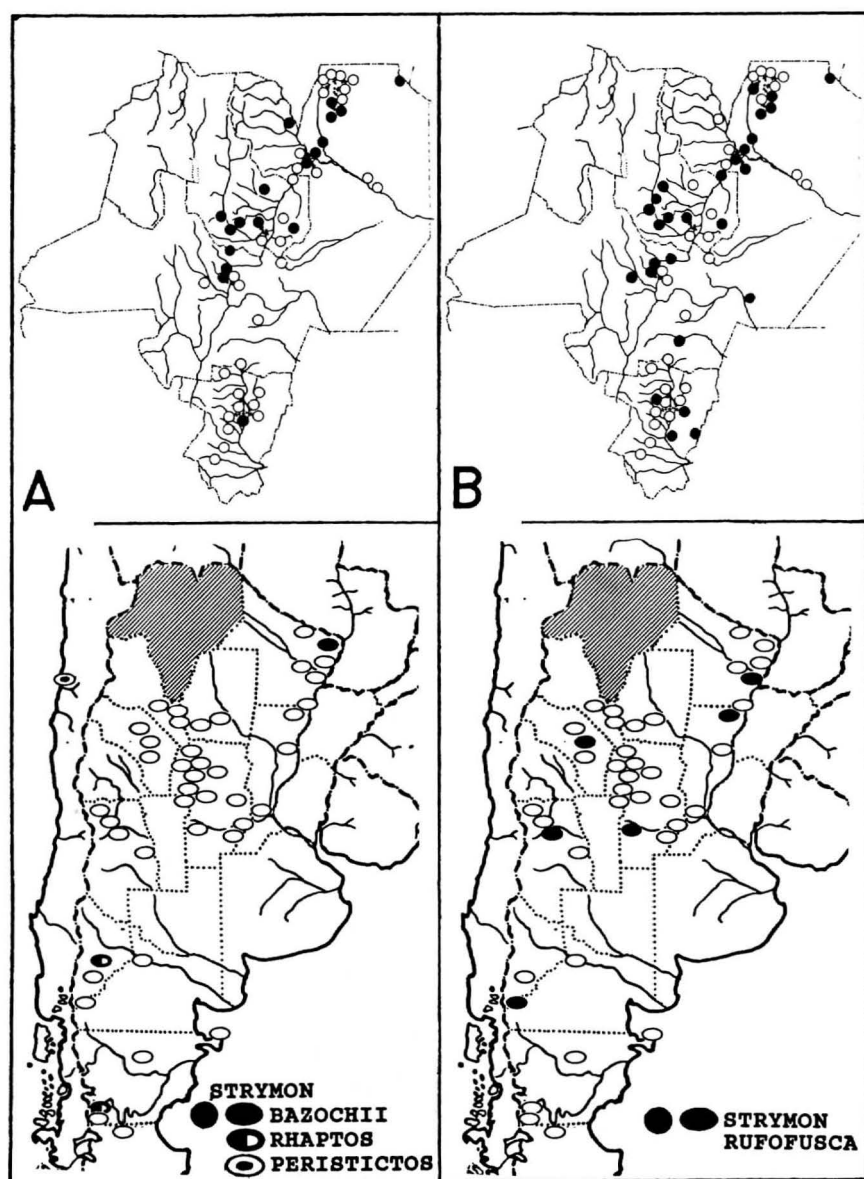


Figure 48. Geographic distributions *Strymon* taxa in Argentina in relation to base maps (Figs. 1-3, darkened symbols). A. *S. bazochii*, *S. rhapsos*, *S. peristictos*. B. *S. rufofusca*.

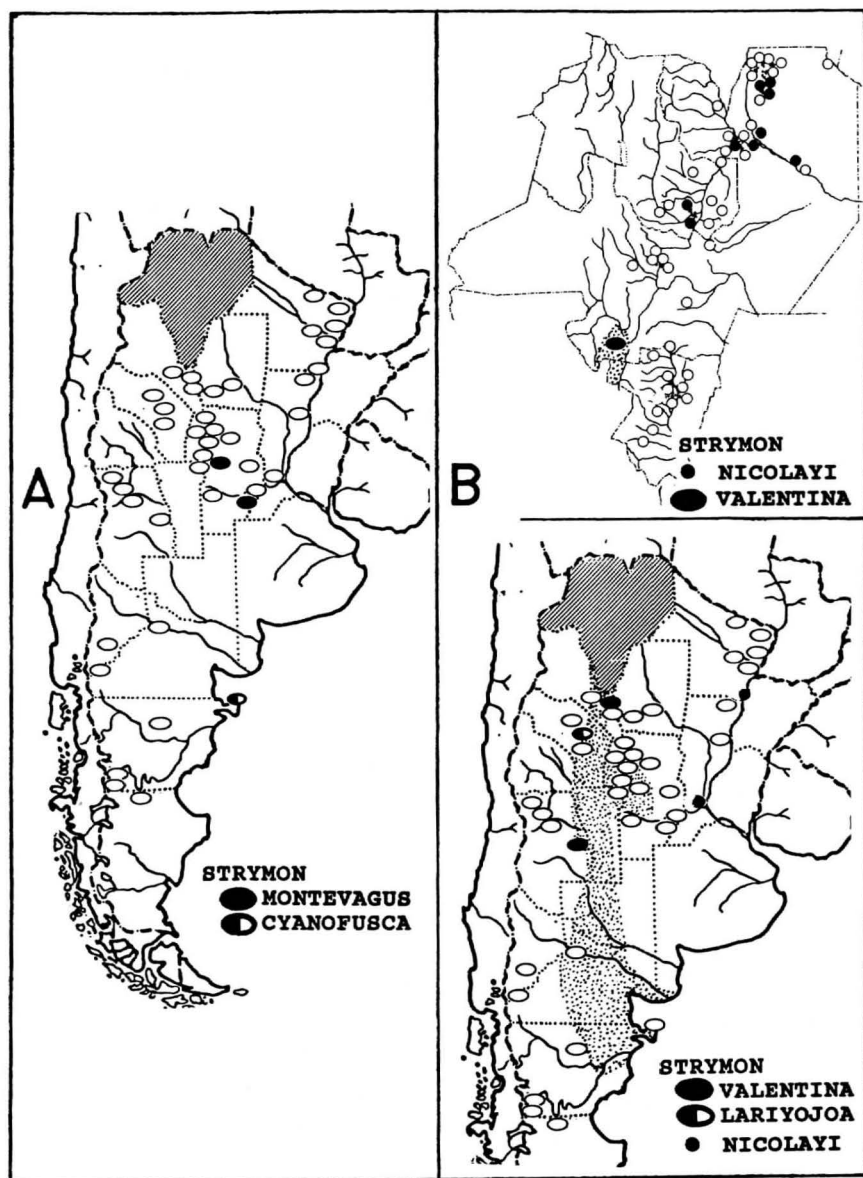


Figure 49. Geographic distributions *Strymon* taxa in Argentina in relation to base maps (Figs. 1-3, darkened symbols). A. *S. monteivagus*, *S. cyanofusca*. B. *S. valentina*, *S. nicolayi*, *S. lariyojoa*. Distribution of monte habitat, Davis 1986, stippled).

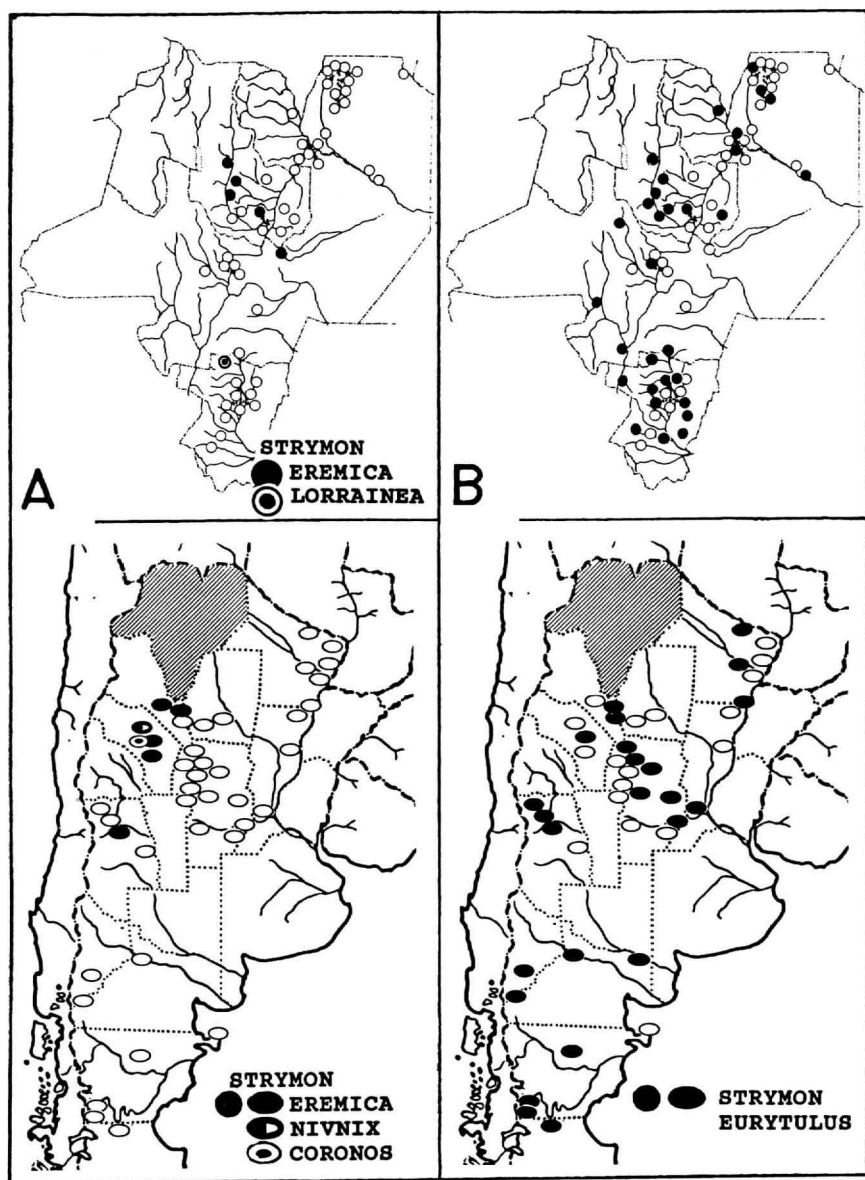


Figure 50. Geographic distributions *Strymon* taxa in Argentina in relation to base maps (Figs. 1-3, darkened symbols). A. *S. eremica*, *S. lorrainea*, *S. nivnix*, *S. coronos*. B. *S. eurytulus* (all morphs).



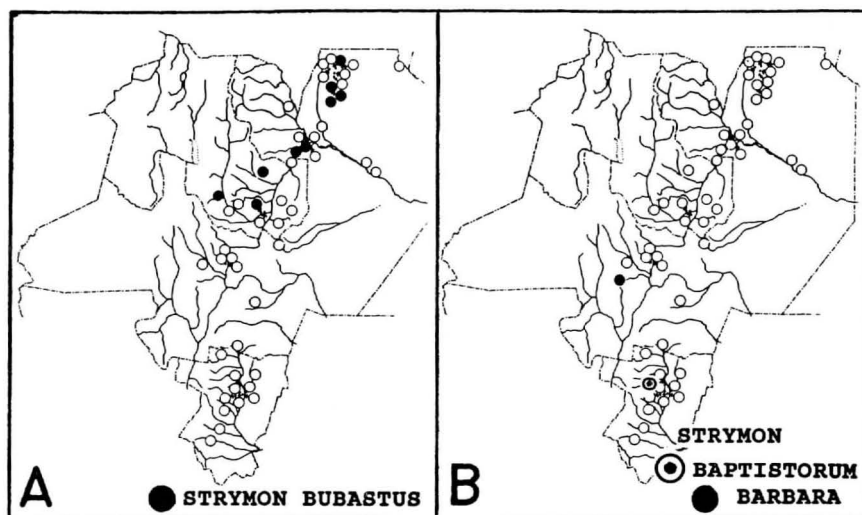


Figure 51. Geographic distributions *Strymon* taxa in Argentina in relation to base maps (Figs. 1-3, darkened symbols). A. *S. bubastus*. B. *S. barbara*, *S. baptistorum*.

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