BULLETIN OF THE ALLYN MUSEUM

3621 Bayshore Rd.
Sarasota, Florida 34234

Published By
Florida Museum of Natural History
University of Florida
Gainesville, Florida 32611

Number 123 22 November 1988

ISSN-0097-3211

THE "HAIRSTREAK BUTTERFLIES" (LYCAENIDAE, THECLINAE) OF NORTHWESTERN ARGENTINA. I. Introduction, *Calycopis*, *Calystryma*, *Tergissima* & *Femniterga*

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INTRODUCTION

This is the first in a series of papers treating the Theclinae ("Hairstreak butterflies") of northwestern Argentina. Theclinae were not included by K. J. Hayward in his major studies of Argentine butterflies, "Lepidopteros Argentinos" (1931-1934), "Hesperioidea Argentina" (1937-1950), "Satíridos Argentinos" (1953-1962), "Hesperiidarum Argentinarum Catálogus" (1941), "'Catalogos' de los Ropaloceros Argentinos" (1950-1963, 1973) and his contributions to "Del genera et species animalium Argentinorum" (1948-1967). His treatment of Argentine lycaenid butterflies was limited to short papers describing some of the more obvious new taxa from the region (1949, 1967) or comment on taxa characterizing particular localities (1965).

Hayward resided in northwestern Argentina, first in Sante Fe Province and later in Tucumán. As a result, the northwestern Argentine locales are well-represented in Hayward's collections at the British Museum (Natural History) (BMNH) and the Instituto Miguel Lillo (Tucuman [Anglicized hereafter], Argentina, IML). At BMNH much of his material is still unsorted and unincorporated. The Theclinae were never a priority for Hayward, apparently because their Neotropical taxonomy is so poorly known. Ackery (1984) summarized the minimal study of Argentine Theclinae (and Theclinae in general) stating that of all Neotropical butterfly faunas, Argentina's was "adequately, if incompletely" studied. Aside from the work of Hayward, only Breyer (1945) and Koehler (1923, 1934) added lists of taxa taken in the region. However, these brief works, a paper by Ajmat de Toledo (1978) and recent studies by the senior author (Johnson, 1981, 1988a,b, Johnson et. al, 1986) strongly suggest northwestern Argentina harbors distinctive areas of biological endemism. Thus, there is a need for a detailed study of the Theclinae of the region, based on all available collections.

Materials and Methods

Materials: The second and third authors have collected butterflies in northwestern Argentina, Eisele since 1960 and MacPherson since 1972. Their collections now comprise the largest recent samples from the region. Most of the Theclinae from the MacPherson collection are at the American Museum of Natural History (AMNH); Eisele material is deposited at a number of institutions, but principally the Allyn Museum of Entomology (AME) and American Museum of Natural History (AMNH). Many undescribed species of Theclinae are apparent in both collections, including those deposited by the authors in the BMNH and IML collections. These above museums also include some undescribed species not yet found by Eisele or MacPherson. The present study utilizes the Eisele and MacPherson collections (as variously housed) and the collections of the AMNH, BMNH, AME, IML, Carnegie Museum of Natural History (CMNH) and Museum Nationale d'Histoire Naturelle, Paris (MNHN). Since most of the Eisele and MacPherson samples are recent, distributions of new voucher material will be made after each edition of this series. These distributions will include (in addition to institutions listed above) the Los Angeles County Museum (LACM), the Milwaukee Public Museum (MPM), and the Museo Zoologia Universidade Federal do Paraná, Curitiba (MZPC). Type material not previously deposited will be donated primarily to the AME.

Methods: The research is part of a faunal survey of the study area in northwestern Argentina as defined below. Each publication in the series treats a group of genera. Previously described species are treated in diagnostic format. For identification purposes, each species is illustrated, including male and female genitalia. Descriptions of new taxa then follow. Because of the biotic uniqueness of the southern half of South America and the rarity of some samples presently assembled, some additional new taxa from areas contiguous with the principal study area are also described. These "Addenda" rely primarily on the unusual austral Neotropical samples in the Larsen and Martin collections (MNHN). When the study of specimens assignable to known genera is completed, decisions will be made concerning how to approach samples for which a generic assignment is not presently possible. Taxonomic work herein was undertaken primarily by the first author. The second and third authors have assembled geographic and habitat data and each contributed to the written results.

A standardized distribution and locality map (Figs. **1,2,16-18**) is utilized, representing the historical and recent collection localities listed in Appendix I. Material examined and distributed is listed following each taxonomic entry: *localities* from Appendix I noted by their respective numerals and *depositions* of new voucher material by museum initials. Asterisks placed by collection dates indicate specimens dissected. The illustrations for Figs. **10-15** were prepared using a camera lucida attachment to the Zeiss Stemi SV-8 binocular microscope. Regarding polymorphism (Table **1** and "Distribution" section of taxonomic entries), we refer to sexual morphism with the traditional terms "mono"- and "di"-; for seasonal phenotypes we use "monophenic", "polyphenic" etc.; the latter should not be confused with seasonal broods or flight periods, though sometimes these coincide. To avoid confusion, we always state the condition of sexual morphism in brackets after any statements involving seasonal polymorphism.

STUDY AREA

Northwestern Argentina (the "Northwest" or "Upper Provinces" [O.S.A.E.G. 1955]) (hereafter, "the Region") is traditionally defined as including the primarily montane provinces of Mendoza, San Luis, San Juan, La Rioja, Catamarca, Tucuman, Salta and Jujuy and their adjacent, primarily lowland, neighbors Formosa, Chaco, Santiago del Estero, Córdoba and Santa Fe provinces (Fig. 1, inset). The Region is one of five geographic regions recognized in the Argentine republic. The Andes mountains, sloping steeply eastward from the Chilean border (Fig. 1), form its western border, occurring first in two major cordilleras stretching from Bolivia southward to 27° S. latitude. Thereafter, from about Tucuman, the Andes occur as a single large ridge, reaching nearly 7000 m. in

Mendoza (Mt. Aconcaqua). From Bolivia southward, because of the steep tilt of the mountains, the areas directly eastward are broken into vast, sharp east-west ridge systems (called "Quebradas"). This complex front range system (or "Piedmont") slopes eastward to meet the vast alluvial plain of the Rio Paraguay, Paraná-Plata river systems to the south and broad, but discontinuous, areas of arid and semi-arid "Chaco" to the north. Because of the such physiographic diversity and marked wet and dry seasonal fluctuations, the region harbors several areas of apparent biological endemism. Principally, these include the following (characterized by the junior authors and from Hayward (1927-1928), O.S.A.E.G. (1955), and Cabrera and Willink (1980)):

(1) the xeric and semi-xeric *Chaco*, extending in disjunct pockets northward into eastern Bolivia, southwestward to Brazil and western Paraguay, eastward in Argentina (through eastern Salta, Chaco, Formosa and Santiago del Estero provinces, Fig. 1) and southward to 20° S. latitude in Mendoza. In Mendoza, the Chaco ranges eastward to the ocean. The Chaco vegetation is primarily arid thorn scrub. It blends east and southward into complexes of deciduous scrub and savanna characterizing the Rio Paraguay and Paraná-Plata alluvial plains. Northward it meets the xerophytic scrub of the "Monte" (see below);

(2) a narrow strip of xerophytic scrub and chapparal, known as the *Monte*, extending northwestward through the southern area of the Region, from Santa Maria near western Tucuman into Salta in the Cafayate area;

(3) the hydric-woodland strip, or *Yungas*, occurring on the immediate eastern face of the mountain system, from approximately 500-2000 m. altitude. This region extends out of eastern Bolivia southward into Catamarca Province just below Tucuman and, in Argentina, can be divided into a more northern tropical section (Jujuy and north Salta provinces) and a semi-tropical southern section (southern Salta and Tucuman provinces);

(4) a temperate section, or *Piedmont*, which extends throughout the region in the lower mountain valleys and plateaus from about 1200 m. to 2000 m. and proceeds far south and north of the study area; and

(5) the various high montane environs (which afford a complex of varied habitats), from 2000-4000 m. and higher, extending both far south and far north through the Northwestern Region.

Historical samples used in the present investigation include locales in all the northwestern provinces. However, areas of intense recent collecting by the junior authors comprise, basically, the provinces of Jujuy, Salta and Tucuman (Figs. 1,2). Fortunately, these three provinces cut across the major ecological provinces of the region, with the exception of the high montane and Patagonian transitional elements restricted to the area of central Mendoza southward (Johnson, 1988b). Precise collection data is crucial to the study of butterflies characterizing diverse and disparate habitats. Consequently, our work on large samples, and their consequent distributional data (Figs. 16-18) focuses primarily on the provinces of Jujuy, Tucuman and Salta (Figs. 1,2,16-18).

TAXONOMIC TREATMENT

These taxa are readily distinguishable by distinctive morphological characters (Johnson, 1988a [Figs. 3, 4], Fig. 9). Since Field (1967b) included no species of *Calystryma* from Argentina, newly found representatives of this genus from the region are apparent. Concerning Argentine *Calycopis*, Field (1967a) included only one species of general distribution. It exhibited the elongate female genitalic configuration (Appendix II, Fig. 19 and Field, 1967a [Figs. 24,25]) distinctive amongst congeners. A second species was also included, from a few specimens from extreme NE Argentina. All newly discovered Argentine *Calycopis* taxa have (with one exception) the distinctive short female genitalic configuration (Table 1 and Field, 1967a [Figs. 22,23,27-29,31-34]), by means of which such new species are readily identified. Large numbers of specimens with detailed habitat data have allowed us to discern the sexually dimorphic and seasonally polyphenic patterns in Argentine *Calycopis* (Table 1). Knowledge of this variability enhances our ability to distinguish new Argentine taxa from the few congeners known from small early samples.

CALYCOPIS AND CALYSTRYMA

Field (1967a) revised the genus *Calycopis* Scudder and erected the new sister genus *Calystryma* (Field, 1967b). He included twenty-one species in *Calycopis*, distributed in the Nearctic and Neotropical realms. In *Calystryma* he included thirteen Neotropical species. Having only limited material from south of Brazil and Bolivia, Field (1967a) included only two taxa from Argentina-- *Calycopis chacona* (Jorgensen), of general distribution, and *C. indigo* (Druce), represented by a few specimens from extreme northeastern Argentina. No *Calystryma* were reported from Argentina (Field 1967b).

Taxa of generally "blue-above" *Calycopis* and "brown-above" *Calystryma* share very similar under surface wing patterns (Fig. **3A**, & Field, 1967a, p. 1; 1967b, p. 2). This general pattern also occurs in several other taxa of the omnibus "*Thecla*" grade, particularly taxa of the "*vesulus* Group" of Draudt (1919) (e.g. *T. vesulus* Cramer and *T. anthora* Hewitson) or the "*badaca* Group" (e.g. *T. autoclea* Hewitson [=*sangala* Hewitson], Draudt, 1919). *Calycopis* and *Calystryma* are both distinct however, in their lack of male forewing androconial patches and the presence of a specialized sclerotization of the male's eighth tergite. This specialization forms (using Field's terminology) and "incised posterior cavity" of "subcordate" shape overlaying the genitalic parts. Johnson (1988a) initially distinguished the genera *Tergissima* and *Femniterga* from *Calycopis* and *Calystryma* based on primarily austral South American samples. Though *Tergissima* and *Femniterga* also share the generalized under surface wing pattern of *Calycopis* and *Calystryma* (Figs. **3A,7**), the four genera differ markedly in genitalia and tergal morphology of both sexes (see entries under *Tergissima* and *Femniterga*, and Figs. **8-9**). Field (1967a) neglected to mention the presence of brush organs overlaying the ventral vinculum in male genitalia of *Calycopis* and *Calystryma*. This was followed by Eliot (1973), who placed both genera in a group of Eumaeini purportedly lacking these organs. Brush organs occur in all taxa included in this study and their location and length are illustrated in Figs. **8, 10, 13** and **14**.

We have been able to study a sample of 552 specimens of the *Calycopis/Calystryma* assemblage recently collected in numerous Argentine localities by Eisele and MacPherson (not including 69 specimens assigned to *Tergissima* and *Femniterga*). Data on these specimens has been specific enough to allow inferences to be drawn on a locale/per day basis. Reported herein are the first known specimens of *Calycopis* from Chile. The results significantly extend both the geographic ranges and taxonomic diversity attributable to these groups.

CALYSTRYMA Field

This genus is readily recognized by characters noted by Field (1967b) and Johnson (1988a)– most taxa are "brown above" and "brown beneath" with a tripartite, often jagged, undersurface medial hindwing band (Fig. **3A**). The incised posterior cavity in males is more expansive laterally and terminally than in *Calycopis* and female genitalia have prominent terminal spines. Field (1967b) noted no species of *Calystryma* occurring in Argentina; *C. keta* Field and *C. gentilla* (Schaus) were noted as occurring as far south as Rio de Janeiro, Brazil.

Our Argentine samples include two undescribed species of *Calystryma*, one with the familiar brown upper surface color of the genus, the other being like the few known *Calystryma* species displaying brilliant blue on the hindwing upper surface. To conserve space in our treatment below (and in subsequent *Calycopis* entries), we describe the characteristic wing pattern of *Calycopis* and *Calystryma* as is Fig. **3A** referring hereafter to the generalized wing pattern of each as "typical of the genus" and elaborating only the diagnostically distinctive features.

Calystryma phryne, new species
Figs. **3B, 10A**

DIAGNOSIS. The only known "brown above, brown beneath" *Calystryma* from

Argentina. Of the geographically proximate congeners, the wings of *C. phryne* (with light tawny ground and radically incised limbal line elements, Fig. **3A**) only slightly resemble *C. keta* Field (known southward to eastern Bolivia and Rio de Janeiro, Brazil). *C. keta*, however, has a radical morphology (unique for the group with a caudally pronged eighth tergal plate, see Field, 1967a, p. 6 [figs. 1b-e]). The eighth tergal plate in *C. phryne* is normal for the genus [Fig. **10A**; Field, 1967b [Figs. 2-12]) and male genitalia of *C. phryne* and *C. keta* differ drastically (Fig. **10A** and Field, 1967b [Figs. 1b-e]).

DESCRIPTION. *Male.* Upper wing surface (Fig. **3B**): ground deep brown, FW with no other markings and no androconial brand; HW with two tails, short at terminus of vein CuA_1, longer, CuA_2. Under wing surface: pattern typical of genus; ground shiny beige; component C with medial line extremely jagged anad crossbar and cells M_3 to anal margin framing very large bright red-orange spots of which CuA_1 Thecla-spot is blackened centrad. Length of forewing: 11.5 mm. (holotype), 11.5, 12.0 mm. (paratypes). *Female.* Unknown. *Male Tergal Morphology and Genitalia.* Fig. **10A**. Eighth tergal plate width exceeding length by X1.3, laterally and caudally ridged and with caudal edge narrowly incised centrad. Genitalia with labides' lateral surface produced caudo-dorsad and caudo-ventrad, falces arched; valvae with bilobed area opague, ovate, indented, caudal extension tapered to blunt ends with slightly angled lateral points; saccus short, parabolic; aedeagus straight, length exceeding that of entire genital expanse X1.3, caecum comprising one-quarter aedeagal length.

TYPES. Holotype male (Fig. **3B**), 15A, Yariquarenda, Salta, 550 m., wooded stream bottom, 17 October 1977, leg. Bruce MacPherson [BM] deposited AMNH. Paratypes: BMNH, two males, Tucuman, 25 May 1922, leg. not noted.

DISTRIBUTION. Spatial (Fig. **16A**): presently known from single localities in each of Salta and Tucuman provinces. Temporal: dates indicate spring and fall occurrence, with no additional data suggesting whether duration of flight period is summer or winter.

REMARKS. From all *Calystryma* the genitalia of *C. phryne* are quite distinct, resembling only *C. blora* Field (known only from French Guiana). The only other regionally occurring *Calystryma*, *C. gentilla* (southward to southeastern Brazil), can be readily distinguished from *C. phryne* by the formers unusually dark undersurface ground color while sympatric Argentine congener *C. nototrebula* differs by its bright blue upper hindwing surface. *C. phryne* must also be distinguished from three other "brown-above" taxa sympatric in northwestern Argentina: *Thecla autoclea* Hewitson (Fig. **6F**), and *Tergissima mosconiensis* Johnson and *T. macphersoni* Johnson. These three taxa differ drastically from *Calystryma* taxa in genitalia of both sexes (Figs. **8-9**) but are also easily distinguished by particular wing characters. On the hindwing undersurface *T. autoclea* lacks the component B "crossbar" and, in addition, has the vein M_3 sector of the medial band obsolescent. *Tergissima* species lack the shiny beige under surface ground color (ground is deep flat brown) and the medial hindwing band is not anally incised but rather in a modest "W" shape.

The BMNH specimens were located in supplemental uncurated material, and these included a large number of Argentine Rhopalocera with collection labels of Kenneth Hayward.

ETYMOLOGY. The Greek name means "brown" referring to the distinctive markings of *Calystryma* amongst sympatric taxa in Argentina.

Calystryma nototrebula, new species
Figs. **3CD**, **10BC**

DIAGNOSIS. Brilliant blue hindwing uppersurface resembling only *C. trebula* (Mexico to northern Amazon region) but *C. nototrebula* with under surface ground lacking the vivid yellow flush of *C. trebula* and being instead gray-beige. None of the "blue-above" *Calycopis* rival the brilliance of blue in the blue *Calystryma*, which in *C. trebula* and *C. nototrebula* extends distally to a clearly defined black marginal band. Blue in *Calycopis* either fades marginally or makes an incised border with marginal black. *C. nototrebula* differs genitalically from *C. trebula* in (a) male valvae and falces and (b) female lamellae

(see below).

DESCRIPTION. *Male*. Upper wing surface (Fig. **3C**). FW ground black brown, no other markings; no androconial patch. HW brilliant azure blue over entire wing except for narrow marginal black line; short tail, terminus vein CuA_1, longer, vein CuA_2. Under wing surface (Fig. **3C**). FW ground gray beige. Pattern typical of genus but with anal area of component B radically jagged and component C spots not outstandingly red-orange. Length of forewing: 12.5 mm. (holotype). *Female*. Upper wing surface (Fig. **3D**). FW as on males, HW with blue lighter, more silver blue. Under wing surface (Fig. **3**). Similar to male. Length of forewing: 12.0 mm. (allotype). *Male Tergal Morphology and Genitalia*. Fig. **10C**. Resembling *C. trebula* most but with tergal plate caudal margins wider and lobes more deeply incised centrad; genitalia differing from *C. trebula* principally in valvae, vinculum and falces which, respectively, extend widely laterally in the bilobed area, lack wide lobate spurs, and are not terminally bifurcate. *Female Genitalia*. Fig. **10B**. Resembling *C. trebula* most but with prongs of lamella antevaginal plate more inclined laterally and forming a distinct bifurcation with lateral prongs of the lamella postvaginalis.

TYPES. Holotype male (Fig. **3C**), 16A, Tartagal, Salta, 500m., 16 June 1980, leg. Bruce MacPherson, deposited AMNH; allotype female (Fig. **3D**), 58A, Villa Ana, Sante Fe Province, leg. K. J. Hayward, deposited BMNH. *Paratypes*. CMNH-- one male, 22B, "Rio Bermejo", Salta, Argentina, Steinbach Collection.

DISTRIBUTION. Spatial (Fig. **16A**): known in the region from two xeric chaco localities and one relatively mesic forest collecting site. Temporal: known only from June.

REMARKS. Though among *Calystryma* this species is most like *C. trebula*, wide distributional disjunction and disparate tergal and genitalic characters support their respective species status. Their distributional disjunction duplicates that of other recently revised Eumaeini. The BMNH allotype was found among samples in the supplemental uncurated materials. These included a significant number of Rhopalocera bearing collection labels of Hayward and Giocomelli.

ETYMOLOGY. The name is derived by adding the Latin "*noto*", meaning "southward" to the name of the apparent sister taxon.

CALYCOPIS Scudder

On the basis of examining some 50 *Calycopis* specimens from northern Argentina, Field (1967a) listed 46 of the specimens as *C. chacona* and an indeterminate number (1-3, see Field, 1967a, p. 31) as *C. indigo*. He stated that *C. chacona* was the southernmost species of the genus and limited reports of *C. indigo* to Missiones Province in northeastern Argentina. Field reported *C. chacona* syntypes were possibly extant at the Museo de Ciencias, Buenos Aires, but was unable to confirm this. He redescribed and figured *C. chacona* based on the original description and available Argentine samples, a large number of which are at the BMNH (main collection). We have examined the BMNH specimens identified by Field and, indeed, all represent *C. chacona*, except for small numbers of *C. jeneirica* ("*janeirica*" *sensu* Field, 1967a [misspelling]) and *C. bellera*. In small samples, the *C. jeneirica* and *C. bellera* can only be reliably identified by dissection, since both are non-dimorphic (see Table **1**) *C. jeneirica* resembles the winter form female of C. *chacona*; *C. bellera* resembles the male and summer form female of *C. chacona*. Since from small samples Field was unable to detect seasonal polyphenism in *C. chacona*, it is easy to understand his almost exclusive identification of Argentine *Calycopis* as *chacona*.

As shown in Table **1**, deciphering sexual and seasonal polymorphism in Argentine *Calycopis* is key to understanding their diversity and identification. To examine polymorphism in Argentine *Calycopis*, we divided our samples into locality and date subsets. We then examined the genitalia of 238 specimens, representing a sample of each date at each locality. Fortuitous to our study, the two common species of the study area, *C. chacona* and *C. jeneirica*, differ strongly in degree of sexual dimorphism and temporal polyphenism. However, their male genitalia are similar *and* both exhibit the elongate type of female genitalia (Table **1** & Figs. **12 B C E**, **15 B E** and Field, 1967a, p. 4 [figs. 24, 25]). All the other South American *Calycopis* treated by Field principally have the short type

of female genitalia (Table 1 & Figs. **12 A D, 15 C D** and Field, 1967a, p. 4 [figs. 22,23,26-34]). Thus, we could reason reliably that if we found a population of *Calycopis* in northwestern Argentina which was divergent from known *Calycopis* in wing and male genitalic characters and also evidenced the *short* type of female genitalia, we were most likely dealing with an undescribed species. Schwartz and Gali (1984, p. 1) used similar reasoning regarding clusters of new taxa in Hispaniolan *Calisto* (Satyridae). Each of these taxa had unique characters, but as a group they all differed from the previously known congeners in a major shared character. Fortunately, the elongate genitalia of the three previously described Argentine *Calycopis* also differ generally: *C. chacona* usually recurvate along the cephalic third of its length (Fig. **12 B**), *C. jeneirica* most often generally elongate except for its near cephalic end (and with lamella postvaginalis often terminally produced) (Fig. **12 E**), and *C. bellera* usually the ductus centrally rotated (Fig. **12 C**).

Four previously described species of *Calycopis* occur in northwestern Argentina along with five undescribed species. All of the previously described species are of general regional distribution. Of the new species, three are of general regional distribution and seem to have remained unknown because they range from NW Argentina southward. Two of the new species appear to be habitat-restricted endemics.

The following treatment uses the species group names of Field (1967a). In diagnoses we first make comparisons with previously known taxa, then with taxa herein described as new. Deferring to Field (1967a,b) and for reasons of space, we limit treatments of previously described taxa to detailed differential Diagnoses and Remarks. Table **1.** is provided to summarize the polymorphic patterns and major diagnostic characters important for readily identifying the Argentine species. Full descriptions are provided for new taxa. Material examined is presented for all taxa including the new material distributed.

The jeneirica Group:

Calycopis jeneirica (C. Felder)
Figs. **3 E F, 11 A, 12 E**

DIAGNOSIS. *C. jeneirica* has been clearly distinguished from *C. chacona* by Field (1967a). Compared to *C. chacona*, the sexes in *C. jeneirica* are not strongly dimorphic, and both have azure blue over the entire hindwing basad vein M_1. The blue is brighter and more iridescent in the males. In *C. chacona*, males are marked azure blue above only in a generally central patch on the hindwing; females are broadly marked silvery blue over the entire hindwing and often parts of the forewing (winter form) or marked with the central darker blue as on male, but with this blue extending to a dentate submarginal border (summer form). *C. jeneirica* and *C. chacona* both exhibit the "long" morph of the female genitalia. As we and Field note (see below) there are other diagnostic genitalic differences.

C. caulonia also occurs in northwestern Argentina with wing markings which resemble *C. jeneirica* more than *C. chacona*, being monomorphic and having the same general blue wing markings as *C. jeneirica*. Thus, though *C. jeneirica* is more commonly collected in northwestern Argentina than *C. caulonia*, they can be reliably separated only by genitalia-- *C. caulonia* has "short"-morph female genitalia and a "stair-step" terminal constriction of the male genital valve (see below and Figs. **11 A B** and **12 A E**). One wing character is somewhat useful in distinguishing *C. caulonia*-- in both sexes a salient vein M_3 running through the blue hindwing patches is usually distinctly blackened. *C. jeneirica* cannot be confused with *C. bellera* because of the dull coloration of the latter species (see *C. bellera*).

Compared to taxa newly described herein, *C. jeneirica* is distinctive in not having (a) brilliant silver blue on both wings in both sexes as in *C. dragones* (its blue obscures even the usual marginal markings of the genus), (b) a deep black notch in the hindwing blue field distad of the discal cell as in *C. crena*, (c) large black spots along the margin in both sexes as in *C. argenopuncta*, (d) large size and blue limited to deep azure flecks in the center of the hindwing as on *C. gigantea*, and (e) jagged distal margins to blue patching,

vivid and extremely jagged undersurface hindwing band and dark discal slashes as in *C. nancea.*

DESCRIPTION. See Field, 1967a, p. 10 [Adults, Figs. 35,36, 37-42; Genitalia, Figs. 4,24]. *Adult.* Male: forewing 11-13 mm., Fig. 3 **E**. Female: forewing 11-13mm., Fig. 3 **F**. *Male Tergal Morphology and Genitalia.* Fig. **11 A**. *Female Genitalia.* Fig. **12 E**.

TYPES. Described from female from Rio de Janeiro, type not located by Field, or subsequently by us at BMNH. Field did not designate a neotype since Felder material is deposited at several other European museums. We have not located the type at Museum National d'Histoire Naturelle, Paris (Johnson, in press).

DISTRIBUTION. Spatial (Fig. **16 B**): generally distributed in the region. Temporal: seasonally monophenic [sexually monomorphic]; known from every month of the year.

REMARKS. The identity of *C. jeneirica* since Field (1967a) has been consistent. Bridges (1988) has accounted for the frequent misspellings of Felder's original *Thecla jeneirica.* The misspelling "*janeirica*" became prominent after Field's (1967a) revision. The present identification of *C. jeneirica* is strengthened by examination (Field, 1967a and us) of the *C. caulonia* holotype female and topotypical *C. caulonia.* However, since *C. jeneirica, C. caulonia* and *C. chacona* are superficially similar (and the abdomen of the holotype of *C. caulonia* not extant [Field, 1967a]), it is possible that present usage of the name "*jeneirica*" may be incorrect. Strongly supporting the present identification are (a) the characters *Calycopis* samples from the "Rio de Janeiro" type locality of *jeneirica* and (b) availability of the type and unambiguous topotypes of *C. caulonia.* We will continue to investigate the status of the *C. jeneirica* type.

MATERIAL EXAMINED AND DISTRIBUTED: leg. MacPherson-- 16A, 18 ♂, *16. vi. 1980 (AMNH), *20. v. 1981 (AMNH), *20. v. 1986 (AMNH), *14 vi. 1980 (2) (AMNH), 30. v. 1981 (AMNH), 1. xi. 1982 (AMNH), 3. x. 1977 (AMNH), 24. xi. 1982 (AMNH), *3. x. 1977 (3) (AMNH), 22. xii. 1980 (3), *2. ix. 1982 (CRE), *24. xi. 1982 (AMNH), 28. vi. 1980 (AMNH), 7 ♀, 28. vi. 1980 (AMNH), 20. v. 1986 (AMNH), 31. iii. 1981 (AMNH), 27. viii. 1982 (AMNH), 14. vi. 1982 (2) (AMNH), 16. vi. 1980 (AMNH), 28. vi. 1980 (AMNH); 34A, 5 ♂, *17. x. 1977 (AMNH), *7. x. 1977 (AMNH), 31. x. 1977 (AMNH), *22. ix. 1977 (AMNH), 7. xi. 1977 (AMNH); 15A, 5 ♂, *17. x. 1977 (AMNH), 7. x. 1977 (AMNH), 31. x. 1977 (AMNH), 7. xi. 1977 (AMNH), *22. ix. 1977 (AMNH), 1 ♀, 26. ix. 1977 (AMNH); 19A, 1 ♂, 19. v. 1977 (AMNH); 14A, 1 ♂, 27. vi. 1980 (AMNH); 9A, 1 ♀, 30. vii. 1979 (AMNH); 10A, 1 ♂, 15. vii. 1980 (AMNH); 27A, 1 ♂, 17. iv. 1974 (AMNH); 7F, 1 ♂, 13. vi. 1976; 18A, 1 ♀, *8. v. 1978; 2A, 1 ♀, 31. vii. 1974; 22A, 1 ♂, 4. vii. 1974; leg. Eisele-- 27A, 3 ♂, *26. v. 1970, *16. v. 1972 (illustrated), *4. iii. 1972; 3 ♀, *9. v. 1972 (illustrated), *7. v. 1972, *16. v. 1972 (AME); 27B, 1 ♂, *28. xi. 1971 (AME), 2 ♂, 24. v. 1972 (CRE), 18. v. 1964 (IML), 4 ♂, 31. v. 1972 (2) (CRE), *5. vi. 1964 (IML), 11. vi. 1969 (IML); 7B, 8 ♂, *30. iv. 1979 (CMNH), *26. iv. 1979 (2) (BMNH), 25. vi. 1979 (CMNH), 29. iv. 1979 (MZPC), 28. iv. 1979 (MZPC), 2. v. 1979 (BMNH), *30. iv. 1979 (2) (LACM), 9 ♀, 4. v. 1979 (CMNH), 7. v. 1979 (2) (CMNH), 8. v. 1979 (MNHN), 28. iv. 1979 (MNHN), 26. iv. 1979 (BMNH), 25. iv. 1979 (BMNH), 2. v. 1979 (BMNH); 7C, 3 ♂, *24. iv. 1979 (MNHN) (2), 27 vi. 1979 (AME), 1 ♀, *23. vi. 1979; 7D, 2 ♂, 22. v. 1979 (MNHN), 21. v. 1979 (LACM), 1 ♂, *8. v. 1979 (IML), 7 ♀, *11. v. 1979 (2)(LACM), *7. v. 1979 (MNHN), **22. v. 1979 (2) (AME), **24. iv. 1979 (2) (MZPC); 27F, 3 ♂, 27. v. 1970 (CRE), 15. ix. 1983 (CRE), 19. x. 1972 (CRE), 2 ♀, 10. xii. 1973 (CRE), 8. ix. 1973 (CRE); 30B, 1 ♂, i. 1980 (IML), 3A, 2 ♀, 21. i. 1968 (2) (IML); 27E, 1 ♂, 19. vi. 1968 (IML); 27B, 6 ♂, *22. iv. 1974 (AMNH), 23. vi. 1974 (AMNH), 21. v. 1974 (AME), 28. iv. 1974 (AME), 16. ix. 1971 (IML), 2 ♀, 17. iv. 1974 (AME), 1. v. 1974 (AME); 34A, 1 ♀, 30. vii. 1979 (AME); 15B, 2 ♀, 8. viii. 1973 (CRE), 5. ix. 1972 (CRE); 20A, 1 ♂, 2. viii. 1974 (AME); 28A, 1 ♂, 14. xii. 1974 (AME); other miscellaneous leg.-- 45A, 1 ♂, *v. 1947, leg. B. Garcia (IML); 23A, 1 ♀, 1938, leg. unknown (IML); 25B, 1 ♀, 25. ii. 1969, leg. unknown (IML); 201A, 1 ♂, 2. xi. 1949, leg. unknown (IML); 25B, 1 ♀, v. 1947, leg. B. Garcia (IML); 39A, 1 ♀, i. 1960, leg. A. L. Teran (IML); 41A, 1 ♀, iii. 1946, leg. F. Folquer (IML); 44A, 1 ♀, 23. vi. 1951, leg. R. Golbach (IML);

Calycopis caulonia (Hewitson)
Figs. **4 A B, 11 B, 12 A**

DIAGNOSIS. As noted above, *C. caulonia* closely resembles *C. jeneirica* in the wings. However, most *C. caulonia* specimens have a darkly scaled vein M_3 extending through the blue hindwing field. *C. caulonia* is most distinct in the genitalia as noted by Field (1967a, p. 9 [Figs. 3, 23]), with the "short" type of female genitalia and a three-step constricted terminus on the male valvae. Given the above, *C. caulonia* cannot be confused with any of the new species of *Calycopis* described herein but often must be genitalically distinguished from *C. jeneirica* (see Remarks, below).

DESCRIPTION. See Field, 1967a, p. 9 [Adults, Figs. 115, 116; Genitalia, Figs. 3, 23]. *Adult.* Male: forewing 10-13 mm., Fig. **4 A.** Female: forewing 10-13 mm., Fig. **4 B.** *Male Tergal Morphology and Genitalia.* Fig. **11 B.** *Female Genitalia.* Fig. **12 A.**

TYPES. Holotype, female, BMNH No. 916, "Rio de Janeiro" examined by us (abdomen missing), topotypical Hewitson labelled males and female BMNH, with genitalia, also examined by us.

DISTRIBUTION. Spatial (Fig. **17 A**): known primarily from the chaco and xeric woodland areas of the region. Temporal: monophenic [sexually monomorphic]; though known from all months except February, March, July and September, the latter omissions probably result from the species not being easily identified.

REMARKS. Workers unfamiliar with *Calycopis* might confuse *C. caulonia* with *C. argenopuncta* (new species named below). This might result because (i) males of *C. caulonia* are very generally suggestive of *C. argenopuncta* (though several wing and genitalic characters distinguish them, see below) and (ii) females of *C. caulonia* and *C. argenopuncta* both have the "short" type genitalia (Table **1.** & Figs. **12 A, 15 C**). Regarding this, note that *C. caulonia* is sexually monomorphic, *C. argenopuncta* sexually dimorphic (with its females very different than those of *C. caulonia*).

MATERIAL EXAMINED AND DISTRIBUTED: leg. MacPherson-- 16A, 1 ♀, *28. v. 1980 (AMNH); 17A, 1 ♂, *8. viii. 1977 (AMNH); 19A, 2 ♂, 22. xi. 1982 (AMNH); leg. Eisele-- 27B, 3 ♂, *20. i. 1972, *6. vi. 1971, *22. xi. 1971 (AME); 27G, 1 ♂, *8. xii. 1972 (illustrated) (AME), 1 ♀, *8. viii. 1973 (illustrated) (AME), 7D, 1 ♀, 23. iv. 1979 (LACM); 27A, 1 ♂, 2. vi. 1969 (MZPC); 28A, 3 ♂. *19. x. 1972 (IML), *20. xii. 1973 (CMNH), *8. xii. 1972 (MNHN); 27C, 1 ♂, 2. iii. 1968 (CRE); 27D, 1 ♂, *4. iii. 1968 (CRE); 21A, 9 ♂, *5. xi. 1974 (2) (AME), (1) (BMNH), 14. xii. 1974 (AME), 11. xi. 1974 (AME), 27. x. 1974 (AME), 16. xi. 1974 (AME), 22. x. 1974 (AME), *19. x. 1974 (AME), 7 ♀, 4. xi. 1974 (3) (AME, 5. xi. 1974 (2) (AME), (2) (BMNH, MNHN); 9A, 1 ♀, 4. iii. 1975 (CRE); 28A, 3 ♂, *19. x. 1974 (2) (AME), 22. x. 1974 (AME); 7A, 1 ♂, 20. x. 1977 (AME); 35B, 2 ♂, *7. v. 1979 (CRE), 4. v. 1979 (CRE); 7D, 1 ♂, 11. v. 1979 (CRE); miscellaneous other leg.-- 46A, 1 ♀, xii. 1928, leg. Hayward (IML);

Calycopis chacona (Jorgensen)
Figs. **4 C D, 11 C, 12 B**

DIAGNOSIS. Field (1967a) clearly distinguished *C. chacona* except for recognizing two seasonal forms of the female. *C. chacona* is strongly dimorphic. The male is dull black-brown above, with only a limited central field of dull iridescent blue in the postbasal and submarginal areas of the hindwing. This pattern is similar to the much larger species *C. gigantea* but in *C. chacona* the blue field is much larger and not notched with black at the end of the discal cell as in *C. gigantea* (see *C. gigantea*, below). The female of *C. chacona* occurs in two seasonal morphs, a winter form and a summer form, neither of which resemble the female of *C. gigantea*. In *C. chacona*, the winter form (typically early May through July) (Fig. **4 D**, left) is bright silver blue over most of the hindwing and at least the basal part of the forewing. Thus, it is somewhat similar to the male and female of *C. dragones*. However, on *C. dragones* hindwing blue is so extensive it (a) is interrupted by only a vague black/white distal marginal line, and (b) almost always covers the entire

inner margin. The summer female form of *C. chacona* (typically early December through March [smaller numbers October to December]) (Fig. 4 D, right) is dull black over most of the wings except for a dull, limited blue field on the hindwings (more like that pattern of *C. chacona* males). This form thus resembles *C. bellera* females. However, these taxa can be readily distinguished by sexing (see Table 1), the genitalia, and the generally more dull coloration of *C. bellera* (see *C. bellera*, below).

DESCRIPTION. See Field 1967a, p. 11 [Adults, Figs. 47-52; Genitalia, Figs. 5, 21, 25]. *Adult.* Male: forewing 11-13mm., Fig. 4 C. Female: forewing 11-13mm., winter form Fig. 4 D (left), summer form Fig. 4 D (right). *Male Tergal Morphology and Genitalia.* Fig. 11 C. *Female Genitalia.* Fig. 12 B.

TYPES. As noted by Field (1967a) Jorgensen's collection is at Museo Argentino de Ciencias Naturales, Buenos Aires. We have not, however, been able to confirm whether syntypes are indeed extant.

DISTRIBUTION. Spatial (Fig. 16 C): generally distributed in the study region. Temporal: seasonally polyphenic as well as sexually dimorphic; monomorphic male known from every month of the year, though less common August to November; winter form of female typically early May through July (thereafter less common into September), summer form prominent late December through March (less common in November and December).

REMARKS. Hitherto, nobody has associated the etymology of "chacona" with Chaco (see Field, 1967a). However, *C. chacona* is of general distribution and not a Chaco endemic (for Chaco endemics, see *C crena* and *C. dragones* described below).

MATERIAL EXAMINED AND DISTRIBUTED: leg. MacPherson-- 16A, 3 ♀, *26. i. 1980 (AMNH), *14. vi. 1980 (AMNH), *31. viii. 1979 (AMNH), *14. ix. 1985 (AMNH); 17A, 7 ♀, *7. vi. 1975 (AMNH), *9, vi. 1975 (6) (AMNH); 24A, 2 ♀, *13. viii. 1974 (AMNH); 5A, 5 ♂, *28. xii. 1985 (AMNH), *17. iv. 1983 (AMNH), *17. xii. 1982 (2) (AMNH), *29. xii. 1980 (AMNH); 15A, 2 ♀, 26. xi. 1977 (AMNH); 19A, 1 ♀, *12. v. 1972 (CRE); 1A, 2 ♂, **15. iv. 1976 (AMNH) (one illustrated) (AME); 11A, 1 ♀, *3. ix. 1979 (AMNH); 7A, 2 ♀, *2. vi. 1972 (AMNH), *3. iv. 1978 (AMNH). leg. Eisele-- 27A, 2 ♂, *10. v. 1972, *24. v. 1972, 8 ♀, *15. v. 1972, *2. v. 1972, **9. v. 1972 (2), *11. vi. 1970 (illustrated), *25. v. 1972, *16. v. 1972, *17. v. 1972 (AME), 1 ♂, 15. v. 1968, 1 ♀, 7. v. 1972 (IML); 27B, 1 ♀, *17. xi. 1971, 1 ♂, *4. ii. 1972 (AME), 5 ♀, *24. iv. 1974 (AMNH), 10. iv. 1979 (IML), 22. iv. 1974 (CRE), *22. v. 1974 (AMNH), 30. vi. 1974 (AMNH), 4 ♂, iv. 1974 (IML), *17. iv. 1974 (CRE) [det. H.K. Clench, 1976], 11. v. 1979 (CRE), 4. v. 1979 (CRE); 7B, 11 ♂, 4. v. 1970 (CMNH), 2. iii. 1963 (IML), 25. iv. 1979 (CRE), 4. v. 1979 (IML), 2. v. 1979 (IML), 8. v. 1979 (IML), 21. v. 1979 (CMNH), 24. iv. 1979 (CMNH), 20. iv. 1979 (CMNH), 30. iv. 1979 (MNHN), 26. iv. 1979 (MNHN), 1 ♀, 20. iv. 1979 (CMNH); 7C, 2 ♂, *7. v. 1979 (MNHN), 24. iv. 1979 (MNHN), 2 ♀, *25. vii. 1979 (MNHN), *19. vii. 1979 (MNHN), 7D, 5 ♂, 8. v. 1979 (2) (IML), 22. v. 1979 (BMNH), 7. v. 1979 (BMNH), 17. v. 1979 (CRE), 3 ♀, 8. v. 1979 (2) (BMNH), 17. v. 1979 (BMNH); 4A, 1 ♂, 10 v. 1979 (CRE); 2F, 1 ♂, 27. iv. 1984 (CRE); 28A, 2 ♂, *9. xi. 1974 (AME), 14. xii. 1974 (AME); 29A, 1 ♂, 25. i. 1968 (CRE); 21A, 3 ♀, 5. xi. 1974 (LACM); 8A, 3 ♂, *7. v. 1979 (LACM), 4 ♀, 7. v. 1979 (2) (MZPC), 17. v. 1979 (AME), 11. v. 1979 (AME); 6A, 6 ♂, 3 ♀, *20. v. 1980 (9) (4 ♂ AME, 2 ♂ MZPC; 2 ♂ CMNH, 1 ♀ MNHN); 42A, 1 ♂, 18. vi. 1986 (BMNH); 3A, 7 ♂, 18. i. 1968 (CRE), 19. i. 1968 (2) (CRE), 20. i. 1968 (2) (CRE), (24). i. 1968 (IML), 21. i. 1968 (IML) 1 ♀, 28. i. 1968 (IML); 7E, 3 ♂, *6. vii. 1978 (CRE), 15. iii. 1978 (CRE), 28. x. 1977 (CRE); 34A, 1 ♂, 21. ii. 1979 (CRE), 1 ♀, 23. i. 1979 (CRE); 15B, 1 ♂, 5. ix. 1972 (CRE); 33A, 1 ♀, *25. v. 1985 (AME); 31B, 3 ♂, 8. v. 1985 (2) (BMNH), 15. v. 1985. (MZPC); 25B, 1 ♀, *17. i. 1969 (illustrated) (AME); miscellaneous other leg.-- 204A, 1 ♂, ii. 1924, leg. Hayward (IML); 46A, 1 ♂, xii. 1928, leg. unknown (IML); 45A, 1 ♀, xii. 1945, leg. Golbach (IML), 1 ♀, i. 1947, leg. Golbach (IML); 38A, 1 ♂, ii. 1947, leg. Golbach (IML); 44A, 1 ♂, 18. ii. 1951, leg. Golbach (IML); 12A 1 ♂, ii. 1950, leg. R. Golbach (IML); 203A, 1 ♂, 30. iv. 1947, leg. Hayward (IML); 43A, 1 ♂, 23. i. 1957, leg. R. Golbach (IML); 41A, 1 ♂, iii. 1946, leg. F. Folquer (IML); 40A, 1 ♂, 7. i. 1947, leg. R. Golbach (IML); 47A, 2 ♂, 1 ♀, v. 1947, leg. B. Garcia (IML); 49A, 3 ♂, 17. xi. 1947, leg. B. Garcia (IML), xii, 1947, leg. B. Garcia (IML), v. 1947, leg. B. Garcia (IML),

1 ♀, v. 1947, leg. B. Garcia (IML); 205A, 2 ♂, 3. iv. 1957, leg. R. Golbach (IML); 32A, 1 ♂, ii. 1953, leg. Kusnezov (IML); 202A, 1 ♂, 18. xi. 1948, leg. R. Golbach (IML);

Calycopis gigantea, new species
Figs. **5 A B, 14 A, 15 B**

DIAGNOSIS. From other *Calycopis*, *C. gigantea* stands out first by its large size (both sexes, forewing base/apex 13-16 mm. versus @9-13 mm. of congeners [excluding *C. argenopuncta*, see its entry]). The distinct black upper surface of males has deep, flecked, blue restricted to the area around the distal end of the hindwing discal cell; the female is brilliant blue across the distal two-thirds of the hindwing. Both sexes have (a) bold orange coloration dorsad on the anal lobe, (b), a submarginal orangish spot dorsad in cell CuA_1, and (c) a prominent, black-brown wavy submarginal line extending costad from the red-orange Thecla-spot of the hindwing and across the entire forewing. For distinction from several large blue and black *Thecla* species, see Remarks.

DESCRIPTION. *Male.* Upper surface of wings: Ground completely blackish except for small central field of flecked azure blue on hindwing from postbasal to medial area, broken by black notch at end of discal cell. FW with no androconial brand; HW with tails elongate at terminus vein CuA_2, shorter at vein CuA_1. Under surface of wings: As typical of genus but with three distinctive additional components (a-c, Diagnosis). Length of forewing: 13.5-16.0 mm. *Female.* Upper surface of wings: similar to male but with ground color more grayish brown and with hindwing field of blue more extensive, usually to postmedian area and occasional in crennated juncture with submarginal area of wing. Under surface of wings: similar to male. Length of forewing: 13.0-15.5 mm. *Male Genitalia and Tergal Morphology*. Fig. **14 A**. Dorsum of dorsal plate of eighth tergite quite elliptical compared to congeners; genitalia most similar to *C. chacona* of the *jeneirica* Group but with saccal vincular junction always enlarged and bilobed area of valvae angled laterally. Aedeagus long, length at least X3 width of widest areas vincular arc, caecum less then one-fourth aedeagal length and angled circa 30° from plane of aedeagal shaft. *Female Genitalia*. Fig. **15 B**. Eighth tergite unspecialized; thick, elongate ductal configuration of genitalia somewhat similar to *C. chacona* and *C. jeneirica*, but *C. gigantea* with prominently bulbous lamellae termini and lamella postvaginalis wide with slight lateral prongs; lamella antevaginalis triangular and comprising only about half of overall length of lamellal configuration.

TYPES. Holotype, male, San Ramón (Dept. Famailla), Tucuman Province, 49A, *i. 1947, leg. unnoted [see below], deposited IML. allotype female, *same data, but leg. B. Garcia. Both deposited IML. *Paratypes* [all dissected]. IML, 1 ♂, Buenos Aires, Argentina, leg. Hurlingham, 11. i. 1958; 1 ♂, Buenos Aires, Argentina, leg. Martinez; 1 ♀, no locality data [bears IML "Tucuman" label but by date is probably Villa Ana, Santa Fe Province], 5. ix. 1926, leg. Hayward; 2 ♂, Florida, Uruguay, xi. 1952, leg. Arnau; 1 ♀, Villa Nougués, Tucuman Province (46A), i. 1929, [very dull specimen]; 1 ♂ Tucuman (45A), v. 1953, leg. Golbach. BMNH-- 1 ♀, La Soledad, Province Entre Rios near Uruguay, 26, ii. 1905, leg. R. A. Britton.

DISTRIBUTION. Spatial (Fig. **17 B**): known in the northwestern region from old Tucuman Province specimens, all from hydric woodland habitats; historically indicated as more common southward. Temporal: seasonal monophenic [sexually dimorphic]; known from January, February, May, September and November.

REMARKS. *C. gigantea in Argentina*: This species has apparently not been collected recently in northwestern Argentina and is indicated as primarily a Paraná delta species seldom found in the northwestern Argentina study area. We designate the Tucuman specimens as the primary types of this taxon but, because of the few specimens known, include specimens of diverse localities as paratypes. The lack of recent specimens of *C. gigantea* suggests that the insect's habitat has been disturbed by agriculture, an observation consistent with the view of Eisele and MacPherson that *C. gigantea* is primarily of more southern Argentine range only occasionally occurring in the northwest. If there are additional early collections of Argentine butterflies not been located by us,

these may contain more specimens of *C. gigantea*. It is generally acknowledged that the regions of the Rio Paraguay and Paraná-Plata alluvial plains have undergone drastic ecological alteration (Cabrera and Willink, 1980).

Hitherto, specimens of *C. gigantea* have usually been included with *C. chacona* in collections, though often with note of their enlarged size. However, *C. gigantea* (a) lacks the pattern of sexual dimorphism characteristic of *C. chacona* and (b) has several unique wing characters. Male upper surface ground color in *C. gigantea* is distinctly black, not fuscous to blackish brown as on congeners. Contrasted to congeners, blue in *C. gigantea* occurs only in azury flecks concentrated near the very center of the hindwing. This small blue field is notched with black at the end of the discal cell and along vein M_3. In females, brightly metallic azure blue is more pronounced over the hindwing than in any congener (resembling the blue *Calystryma*) and extends to a broadly dentate juncture with large black marginal spots. Latter occur only as scattered to obsolecent spots in congeners.

C. gigantea and the Thecla "hesperitis" Group: Because of its large size and last three characters above, *C. gigantea* is superficially suggestive of a few taxa of the "hesperitis Group" of Draudt (1919), particularly *Thecla cos* Druce which has a limited blue field above on the hindwing. However, members of this group are found only from northern South America northward through Central America (see Draudt, 1919) and have very exaggerated patterns of the tripartite median line on the hindwing undersurface, particularly a widely jagged "W" configuration toward the anal margin. Many specimens traditionally identified as *T. hesperitis* Butler & Druce have blue on the upper surface hindwing. In males the blue is brilliant and extends almost completely to the anal margin; in females, the blue is silverish and included basal and adjacent areas of the forewing. The genitalia of *T. hesperitis* (and the group in general) differ greatly from *Calycopis*. Males have the "robust" condition summarized in Johnson (1988a, Table 1, entry 20, Fig. 5A,cd); females have a straight, tubular, ductus with the postvaginal lamellae spade-shaped and the antevaginal lamellae limited to an upturned central prong.

ETYMOLOGY. The name is derived from the large size of this butterfly; in both sexes, forewing expanse exceeds that of congeners by about one-third.

The cecrops Group:

Calycopis argenopuncta, new species
Figs. **5 C D, 13 C, 15 C**

DIAGNOSIS. Distinctive from other Argentine *Calycopis* in upper surface ground color and hindwing spotting-- large black spots along the upper surface hindwing margin contrasting (i) azure ground color in the males, and (ii) uniquely dull silver-gray ground color in females. The species is also larger than all the others (forewing base/apex 12-14 mm.) except for extremely large *C. gigantea* (forewing base/apex 13-16 mm.). Genitalia of both sexes of *C. argenopuncta* are distinct: males (Fig. **13 C**) with (a) saccus elongate (as only in *C. crena*, with differs greatly in the wings), (b) valvae markedly angled, with both caudal and cephalic ends markedly tapered, (c) vincular configuration thin and elongate, (d) aedeagus significantly longer than on any previously described congener (approaching 3X length of vincular arc); females (Figs. **15 C**) with (1) ductus bursae extremely short compared to the width of the lamellae (lamellae width approaching ⅔ that of ductus) and (2) lamellae more extensively sculptured than any Argentine congener.

DESCRIPTION. *Male.* Upper surface of wings (Fig. **5 C**): FW ground color blackish fuscous. HW basal to submarginal area iridescent azure blue, broken along margin with large, blotch-like black dots from anal margin to cell RS, costal margin widely black. Under surface of wings (Fig. **5 C**): as typical of the genus, but component B deeply and widely red (as in *C. nancea*) and differing from *C. jeneirica*, *C. chacona*, *C. bellera*, *C. caulonia*, *C. crena* and *C. dragones* in slightly more outstanding submarginal spots and strongly lined discal slashes (but these are not as prominent as when they occur as major pattern components in *C. gigantea* and *C. nancea*). Length of forewing: 12.0-14.0 mm. *Female.* Upper surface of wings (Fig. **5 D**): pattern similar to males but ground color dull burnished silver-gray over entire hindwing and occasionally base of forewing. Hindwing with large

marginal black dots similar to male. Under surface of wings (Fig. **5 D**): similar to males. Length of forewing: 12.5-13.5 mm. *Male Genitalia and Tergal Morphology*. Fig. **13 C**. Eighth tergal plate nearly equilaterally trapazoidal in shape, thinly incised centrad along caudal margin for about one-third its length. Genitalia distinct from congeners as follows: (a) elongate saccus, length equalling widest width of vincular arc; (b) reduced labides, width one-half that of widest width of vincular arc; (c) valval with ventral three-step terminal taper; (d) aedeagus longest of genus (along with *C. crena*), length exceeding X3.5 widest width of vincular arc. *Female Genitalia*. Fig. **15 C**. Eighth tergite unmodified; genitalia distinctive with (a) short ductal configuration, length only @ one-third more than maximal width of lamellae; (b) lamella postvaginalis prominent, width equal to widest expanse of ductus terminus, pronged termino -laterally and cephalo-laterally, crennate termino-centrally.

TYPES. Holotype, male, Pichanal, Salta Province (27A), *28. v. 1974, leg. R. Eisele; allotype female, same data, both deposited AME. *Paratypes*. (cluster of xeric foothill margin habitats and adjacent chaco). AME-- leg. Eisele, 27A, 1 ♂, *28. iv. 1974, 2 ♀, 22. iv, 1974, 15. iv. 1974, 1 ♂, *10. iv, 1970; 27B, 1 ♀, *4. iii. 1972, 1 ♂, *20. i. 1972, 1 ♂, 10. iv. 1970, 5 ♀, *15. iv. 1974 (2), 24. iv. 1974, 22. iv. 1974 (2). AMNH-- leg. Eisele, 27B, 2 ♂, 16. iv. 1974, 30. vi. 1974; leg. MacPherson, 16A, 2 ♂, *15. vi. 1981, 20. v. 1986; 17A, 1 ♂, *9. vi. 1975. MNHN-- leg. Eisele, 27B, *28. v. 1974. BMNH-- leg. Eisele, 27B, *24. iv. 1972. LACM-- leg. Eisele, 27G, 1 ♂, *8. xii. 1972. CMNH--, leg. Eisele, 27G, 1 ♂, *10. xii. 1973. IML-- leg. R. Golbach, 16A, *7. xi. 1950; leg. Eisele, 27A, 2 ♂, 2. iii. 1968, 3. iii. 1968. For other material examined see REMARKS below.

DISTRIBUTION. Spatial (Fig. **17 C**): known from numerous primarily xeric woodland and chaco areas (and a few mesic woodland localities) in the northwestern region. Not presently found in samples of *Calycopis* from the regions adjacent to the study area but expected to occur at least in SE Bolivia and southward in adjacent montane provinces of Argentina. Temporal: monophenic [sexually dimorphic]; known from every month except July, August and September.

REMARKS. Other Material Examined: leg. MacPherson, 7A, *22. xi. 1982. (AMNH); leg. Eisele, 7B, 1 ♂, *2. v. 1979 (CRE), 1 ♀, *29. iv. 1967 (MZPC); 7D, 1 ♂, 22. v. 1979 (CRE); 15B, 3 ♂, *31. x. 1977 (AME); miscellaneous other leg.--, 30A, 3 ♂, i. 1950 (2), leg. R. Golbach, vi. 1950, leg. R. Golbach (IML); 45A, 1 ♀, 11. ii. 28, leg. unknown (IML); 30A, 1 ♂, i. 1949, leg. M. Aczel (IML).

ETYMOLOGY. The respective roots of the name refer to the silverish ground color of the female and, in both sexes, the black spots along the hindwing margin.

Calycopis nancea, new species
Figs. **5 E F, 12 D, 13 A**

DIAGNOSIS. At present known only from a single northwestern Argentine locality (Cucho, Jujuy Province, 1200-2500 m. [see below], in hydric montane woodland habitat contiguous as a SE extension of the Bolivian Cordillera Central). Beneath both sexes are: (a) distinctly deeper brown and with bands of both wings more pronounced and boldly bordered red than on any congener (except, perhaps, Nearctic *C. cecrops* (Fabricius) and northern Neotopical *C. susanna* Field, 1967a, distributed southward only to Ecuador east to French Guiana), (b) have bold discal slashes on the under surfaces of both wings, and (c) the limbal area of the hindwing tripartite line so extremely jagged as to form a double (not single) W-shaped configuration. The species is dimorphic only as to the extent of upper hindwing surface blue and is distinctive as follows: male above completely blackish except for various degrees of flecked blue centrad; female blackish with central to submarginal areas of hindwing upper surface deep azure blue, crennated along its limbal margin. Genitalia distinctive with short type female genitalia and diminutive saccus and very short brush organs on the male.

DESCRIPTION. *Male*. Upper surface of wings (Fig. **5 E**): ground color black, HW with deep iridescent azure blue field from wing base to postmedian area anad veing M_1. FW with no androconial brand; HW with long tail, terminus vein CuA_2, shorter tail, terminus

vein CuA_1. Under surface of wings (Fig. **5 E**): ground color deep brown, A and B component bands very pronounced and boldly bordered red; emphatic blackened discal slashes on both wings and C component with tripartite line extremely jagged, forming a double (not single) W-shaped configuration. Length of forewing: 11.5-13.0 mm. *Female*. Upper surface of wings (Figs. **5 F**): as on males but margin of hindwing blue field more unevenly bordering distal black. Under surface of wings (Fig. **5 F**): as on males. Length of forewing: 11.5-13.0 mm. *Male Tergal Morphology and Genitalia*. Fig. **13 A**. Eighth tergite with dorsal plate markedly tapered cephalad; genitalia distinct from congeners by (a) short, thin saccal structure, (b) short, bilobally rounded valvae and (c) extremely short brush organs. Aedeagus elongate, length exceeding that of vincular arc by at least one-third. *Female Genitalia*. Fig. **12 D**. Eighth tergite unmodified. Genitalia distinct from congeners by (a) short type configuration with ductus radically curvate cephalad, (b) lamella antevaginal plate prominent and recurved cephalad, as typical of *cecrops/susanna* complex.

TYPES. Holotype male, allotype female, 5A, Cucho, circa 10 km. N. of Hwy. 56 on vehicle path circa 7 km. E. of San Salvador de Jujuy, Jujuy Province, wet montane woodland reaching 2,500 m. elevation [see Remarks], leg. B. MacPherson, *16. i. 1987 (male), *11. i. 1987 (female) deposited AMNH. *Paratypes* [all dissected]. AMNH-- 2 ♂, 2 ♀, same data as holotype; 1 ♂, 1 ♀, same data as allotype; 1 ♂, same data but 13. i. 1987; 1 ♀, same data but 14. i. 1987.

DISTRIBUTION. Spatial (Fig. **17 D**): presently known only from type locality, but likely to occur in similar habitat northward in SE Bolivia (see Remarks, below). Temporal: season phenism undetermined [sexually dimorphic]: known only from a series of mid-January specimens.

REMARKS. This species appears to be a part of the *C.* cecrops/ C. *susanna* complex (*sensu* Field, 1967a) although disjunct by some 2600 kilometers from any known south extension of the latter taxon. Presently, the species has been taken only at one locality, Cucho, only recently sampled heavily because of our interest in its proximity to montane areas of Bolivia and Chile. Numerous butterflies occur at Cucho which are not otherwise characteristic of the northwestern Argentine study area. The habitat, wet high montane woodland (elevations reaching 2,500 m., but usual accessible collecting altitudes 1200-1500 m.) is reached by ascending N to NE out of San Salvador de Jujuy on a dirt road, often impassible in the rainy season. This area is still poorly invaded by roads and relatively undisturbed. The humid forest is typical of a narrow strip at the foot of the eastern chain of mountains extending from the Bolivian border to just S of Tucuman Province. The mountain that rises N of Cucho (Cerro Labrado, 2513 m.) receives especially heavy rainfall on its SE flank and this area is marked by distinctive habitat. A drastic ecological transition can be seen 30 km NW of Cucho as one travels N from San Salvador de Jujuy on National Route 9; just before Volcan, within just a few kilometers, habitat changes abruptly from humid woodland to xeric montane desert. Given the relative inaccessibility of many Bolivian collecting areas (for reasons of politics and personal safety), the Cucho fauna is one of particular interest.

ETYMOLOGY. At the request of the third author, who collected the type series, this species is named for his wife Nancy.

The partunda Group:

Calycopis bellera (Hewitson)
Figs. **4 E F, 11 D, 12 C**

DIAGNOSIS. This species is distinguished by its generally dull appearance relative to congeners. Contrasted to other *Calycopis*, the hindwing upper surface of both sexes has only limited dull blue, extending from the postbasal area variously through the postmedian area. This blue becomes duller distally, and meets the blackish submarginal areas with an irregular juncture. The blue extends more closely to the margin on males but is still dully colored. Most specimens of both sexes have a distinct (even if dull) blue powdering on the bases of the forewings. Because of this, both sexes of *C. bellera* somewhat

resemble females of the summer form of *C. chacona*. However, the overall demeanor of iridescent blue in *C. bellera* differs significantly, even if subtlely, from nearly all congeners. This appears as heavy, metallic blue flecks over a darker ground of fuscous. On other Argentine *Calycopis*, the blue is concentrated enough to form the entire ground color. This "flecked" appearance in the blue iridescence is approached only by the Chilean taxon described herein and the blue in the small hindwing field on the otherwise black species *C. gigantea*. The genitalia of *C. bellera* are distinctive in the male valve being smoothly tapered to a prong-like terminus (Field, 1967a [Fig. 14], herein Fig. **11 D**) and female intermediate between the "long" and "short" morph and with ductus bursae often rotated laterally (Fig. **12 C**) (see Remarks).

DESCRIPTION. See Field 1967a, p. 27 [Adults, Figs. 79-80, 95-96; Genitalia, Figs. 14, 20o, 30]. *Adult*. Male: forewing 10-12.5 mm., Fig. **4 E**. Female: forewing 10-12.5 mm. Fig. **4 F**. *Male Tergal Morphology and Genitalia*. Fig. **11 D**. *Female Genitalia*. Fig. **12 C**.

TYPES. Lectotype of Field 1967a, p. 28, BMNH No. 914, "Amazons", syntype males and females, examined.

DISTRIBUTION. Spatial (Fig. **16 D**): (see Remarks, below); known in the northwestern region from primarily mesic to hydric woodland habitats and farmland (specimens illustrated are from virgin hydric forest reserves). Temporal: monophenic [sexually monomorphic]. Known primarily from January and February (fewer specimens representing October and November) and May to early July (fewer specimens representing April).

REMARKS. Field mentioned only a few specimens of *C. bellera*, often with poor data, from over a diverse range including "Brazil" and "Bolivia". We find no major differences between the small samples of *C. bellera* examined by Field, the lectotype female, and our samples from northwestern Argentina, except for the somewhat longer ductus bursae in Argentine females. Since nearly all samples of populations from across the range of "*C. bellera sens. lat.*" are small, a conservative taxonomic approach warrants our use of this name for northwestern Argentine specimens. However, it is possible that in a detailed study of the complex from many specimens, a division of the taxon might be warranted. In this case, based on as stronger morphological analysis of non-Argentine specimens, the northwestern Argentine component might warrant differentiation as a separate entity.

MATERIAL EXAMINED AND DISTRIBUTED: leg. MacPherson-- 16A, 1 ♀, *31. v. 1982 (AMNH); 17A, 2 ♂ *9. vi. 1975 (AMNH), 2 ♀, *16, vii. 1977 (AMNH), *26. vii. 1974 (AMNH); 24A, 1 ♀, *20. v. 1977 (illustrated) (AME); 5A, 2 ♂, **15. i. 1977 (AMNH), 4 ♀, **28. i. 1980 (2) (AMNH), *9. i. 1983 (illustrated) (AME); *1. x. 1979 (AMNH); 15A, 1 ♂, *7. xi. 1977 (AMNH); 36A, 1 ♂, *11. iv. 1978 (AMH); 37A, 1 ♂, *18. i. 1980 (AMNH); leg. Eisele-- 7D, 2 ♂, *25. v. 1979 (CMNH), *7. v. 1979 (BMNH), 1 ♀, *7. v. 1979 (MNHN); 3A, 1 ♀, 17. i. 1968 (LACM); 16A, 1 ♀, *20. v. 1986 (AME); 27A, 2 ♀, *28. v. 1972 (CRE), *27. vii. 1974 (AME), 1 ♂, *5, vi. 1974 (AME); 27D, 1 ♀, *7. v. 1979 (AME); 11B, 1 ♀, *10. iv. 1975 (CRE); 30B, 1 ♀, *8. v. 1970 (CRE); miscellaneous other leg.-- 204A, 1 ♀, *ii. 1924, leg. Hayward (IML); 45A, 1 ♀, *no other data, leg. Steinbach (BMNH); 200A, 1 ♀, *no other data, coll. Comstock & Huntington (AMNH); 47A, 1 ♂, 1 ♀, v. 1947, leg. B. Garcia (IML); 48A, 1 ♀, *28. ii. 1948, leg. Aves (IML); 50A, 1 ♀, i. 1947, leg. Golbach (IML).

Calycopis crena, new species
Figs. **6 A B, 14 B, 15 E**

DIAGNOSIS. This species exhibits a distinctly incised notch distad crossvein LDC which breaks the border of the bright azure blue field of the hindwing upper surface. This very salient character nearly always distinguishes *C. crena* from all congeners unless specimens are quite worn [workers who have not seen *C. crena* should not mistake much smaller indentions in individuals of some congeners for the *outstanding, blackened* notch in this species]. In genitalia both sexes are distinct; males with (a) saccus very long, only resembling *C. argenopuncta* (which differs drastically in the wings), (b) valvae greatly constricted terminad and (c) eighth tergal plate rather ovate and cephalically bilobed;

females with (a) ductus drastically elongate with the ductal length being X4-X5 the width of the lamellae (these measures are X2.5 in taxa *C. caulonia*, *C. argenopuncta*, and 3.2=3.5 in *C. chacona* and *C. jeneirica*), and (b) pronged, sculptured areas terminad on the lamellae greatly reduced (Fig. **15 E** vs. Figs. **15 C**, **12 A B E**).

DESCRIPTION. *Male.* Upper surface of wings (Fig. **6 A**): FW blackish fuscous throughout except for occassional blue dusting at wing base; hindwing blackish-fuscous from submarginal areas distad. Rest of wing a field of bright iridescent blue only vaguely broken by blackish wing veins. Distinctive notch-shaped break in blue field at end of discal cell. Forewing, no androconial brand; hindwing, long tail at terminus of vein CuA_1, shorter tail, terminus CuA_1. Under surface of wings (Fig. **6 B**): pattern typical of the genus with degree of red coloration in components A & B, and darkening of discal slashes exceeding that of previously described *Calycopis* but not approaching the extent of these markings in *C. gigantea* and *C. nancea*. Length of forewing: 11.0-13.5 mm. *Female.* Upper surface of wings (Fig. **6 B**): as on male but blue field on hindwing duller and less iridescent. Under surface of wings (Fig. **6 B**): as on males. Length of forewing: 11.0-13.5 mm. *Male Tergal Morphology and Genitalia.* Fig. **14 B**. Eighth tergal plate rather ovate, tapered to bilobate cephalic terminus; genitalia distinctive from congeners as follows: (a) saccus elongate, equalling @.75 widest width of vincular arc, only exceeded by saccal length in *C. argenopuncta*; (b) valvae ventrally elongate, nearly reaching caudal tip of vincular arc and greatly constricted terminad much wider bilobed area; (c) aedeagus elongate, X3 widest width of vincular arc, caecum less than one fifth aedeagal length. *Female Genitalia.* Fig. **15 E**. Eighth tergite unspecialized; genitalia distinctive from all congeners by (a) extremely elongate ductus, length equal up to X3.5 lamellal width; (b) terminal lamellae diminutive, lamella postvaginalis hardly apparent except for short terminal prongs.

TYPES. Holotype, male 1 km. NE Pichanal, Salta Province, Argentina (27B), *24. iv. 1974, leg. R. E. Eisele; allotype female, same data, *, both deposited AMNH. Other paratypes: AMNH-- leg. Eisele, 27B, 4 ♂, *1. v. 1974, *17. iv. 1974 (2), *4. vi. 1974; AME-- leg. Eisele, 27B, 5 ♂, *22. iv. 1974, **28. iv. 1974, 14. iv. 1974, 17. iv. 74, 3 ♀, *22. iv. 1974, 21. iv. 1974, 28. iv. 1974; 27A, 3 ♂, *9. vi. 1970, *9. v. 1972, *10. iv. 1978, 7 ♀, *16. v. 1971, *24. v. 1971, *9. v. 1972, *21. v. 1974, 19. vi. 1974, 4. vi. 1974, 11. vi. 1970; 27 G, 1 ♀, 28. vii. 1972. BMNH-- leg. Eisele, 27A, 2 ♂, 17. iv. 1974, *28. iv. 1974, 3 ♀, *23. vi. 1974, *21. v. 1974, *4. vi. 1974. MZPC-- leg. Eisele, 27A, 1 ♀, *19. vi. 1974. CMNH-- leg. Eisele, 27B, 2 ♂, 1. v. 1974, 15. iv. 1974. MNHN-- leg. Eisele, 27A, 2 ♂, *24. vi. 1974, 28. v. 1972. LACM-- 1 ♀, *28. iii. 1975. CRE-- leg. Eisele, 27A, 1 ♀, *27. v. 1972; leg. Eisele, 2C, 1 ♀, *10. i. 1968; leg. Eisele, 27F, 1 ♀, *19. vi. 1968. IML-- leg. Eisele, 27E. 1 ♂, *19. vi. 1968.

DISTRIBUTION. Spatial (Fig. **18 A**): of general regional occurrence in xeric woodland and chaco localities (and a few marginal and mixed mesic woodland/grassland collecting sites); also represented in samples from localities in SE Bolivia (see below). Temporal: monophenic [sexually monomorphic]; known from every month except March, September and December.

REMARKS. Other Material Examined: leg. MacPherson, 16A, 1 ♂, *28. vi. 1980 (AMNH), 2 ♀, 16. v. 1980 (AMNH), 14. vi. 1980 (AMNH); 17A, 3 ♀, *9. vi. 1975 (AMNH), 7. vi. 1975 (AMNH), 2. v. 1978 (AMNH); 15A, 2 ♂, *26. ix. 1977 (AMNH), 15. iii. 1978 (CRE); 2 ♀, *17. x. 1977 (AMNH); 19A, 1 ♀, *22. xi. 1982 (AMNH); 13A, 1 ♂, *5. i. 1980 (AMNH); 16B, 1 ♂, *6. ii. 1983 (AMNH). leg. Eisele, 16A, 1 ♀, *28. vi. 1980 (CMNH); 7D, 2 ♂, *8. v. 1979 (IML), *11. v. 1979 (CRE), 2 ♀, *10. v. 1979 (BMNH), *11. v. 1979 (CRE); 16A, 1 ♀, *8. viii. 1969 (CRE); **3A**, *21. i. 1968 (CRE); 27F, * 1 ♀, 19. vi. 1968 (CRE); 16A, 3 ♂, *17. viii. 1981 (MZPC), 17. iv. 1974 (LACM), *31. v. 1982 (MNHN), 3 ♀, *15. vi. 1981 (MZPC), **31. v. 1982 (LACM); 8A, 1 ♂, *29. xii. 1979 (BMNH); 6A, 1 ♂, *1. iv. 1980 (MNHN); 21A, 1 ♀, *6. xi. 1974 (CMNH); 7E, 1 ♂, 15. iii. 1978 (CRE); miscellaneous other leg. -- Santa Cruz Bolivia, 1 ♀, leg. unknown, *(IML)

The dragones Group:

We introduce this as a new group which includes species that are distinctive from any

species group defined by Field. They appear to be an austral Neotropical assemblage. The group is characterized by specialization of the eight tergite and an extremely elongate and/or recurved ductus in females; known males exhibit extremely diminutive valvae whose length usually does not reach the cephalic arch of the falces.

Distinction of the dragones Group also provides context for description of new Chilean *Calycopis* which follows.

Calycopis dragones, new species
Figs. **6 C D, 13 B, 15 D**

DIAGNOSIS. Unlike all congeners this species has light silvery blue over the entire hindwing and from the basal to medial areas of the forewing in both males and females. Uniquely, extent of blue on the hindwing reduces marginal markings to only a vague white line (not the usual black or spotted border of other *Calycopis*). Thus, *C. dragones* resembles only an extreme blue winter form female of *C. chacona*. Morphology in *C. dragones* is quite distinct: males with valvae very small (length comprising less than two-thirds of the distance from the base of the saccus to the arch of the falces, Fig. **13 B**), females with a fully developed convex platelike specialization of the 8th tergite (Fig. **15 D**) almost equal that found in males. Female genitalia are of the "short" configuration and have the cephalad areas proximate the corpus bursae distinctly constricted. The pointed areas of the lamellae antevaginalis are uniquely recurved cephalad.

DESCRIPTION. *Male*. Upper surface of wings (Fig. **6 C**): Ground color both wings, except postmedial areas of forewing bright silvery blue, on hindwing extending completely to the margin so as to allow only a slight white marginal line. Under surface of wing (Fig. **6 C**): with pattern typical of the genus but ground color lighter tawny brown; components A & B thinly lined red-orange and component C with reduced red in the cell interspaces and almost complete lack of blue-gray suffusion in cell CuA_2 of the limbal area. Length of forewing: 10-12.5 mm. *Female*. Upper surface of wings (Fig. **6 D**): Similar to male but with blue slightly more expansive distad on the wings. Under surface of wing (Fig. **6 D**): As on males. Length of forewing: 10-12.5 mm. *Male Tergal Morphology and Genitalia*. Fig. **13 B**. Overall configuration distinctive in diminutive size of valvae, these being rather rhomboid in shape and extending only to the cephalic arch of the falces. Saccus similarly diminutive and thinly tapered. *Female Tergal Morphology and Genitalia*. Fig. **15 D**. Eighth tergite highly specialized to sclerotized tergal plate, extending laterally past spiracles and thickly sclerotized dorsad lamella postvaginalis; genitalia differing from all congeners in (a) ductus bursae recurved sharply ventrad (not variously latero-ventrad as in congeners) and thickened cephalad base of lamallae; (b) lamellal configuration with lamella antevaginalis uniquely recurved and with distal spines extended the opposite direction of those disto-terminal on the lamella postvaginalis; (c) lateral edges of lamellae extending cephalad along side of ductus through thickened ductal region, reminiscent of condition in *Thecla autoclea* (Johnson, 1988a, Fig. 5).

TYPES. Holotype, female, Dragones, Dept. San Martin, Salta Province, Argentina, 34 km S. at Pozo de la Mora, xeric chaco habitat, (20A), leg. R. Eisele, 2. vii. 1974; allotype male, same data, both deposited AME. *Paratypes* (a cluster of xeric chaco habitats in NE Salta): AME-- leg. Eisele, 27A, 12 ♀, ****11. vi. 1970 (4), ***15. vi. 1969 (3), **12. v. 1972 (2), *10. iv. 1970, *21. iv. 1972, *9. vi. 1970, 2 ♂, 4. v. 1974, 17. v. 1972; 27B, 1 ♀, *17. xi. 1971, *28. xi. 1971; 30A, 1 ♀, *19. vi. 1972; 20A, 1 ♂, *2. vii. 1974; 1 ♀, *2. vii. 1974; 28A, 2 ♂, 23. xi. 1974, 27. x. 1974, 2 ♀, 13. xii. 1974, 23. xi. 1974. CMNH-- leg. Eisele, 20A, 6 ♀, *2, vii. 1974. LACM-- leg. Eisele, 20A, 1 ♀, *2. vii. 1974. BMNH-- leg. Eisele, 20A, 1 ♀, *2. vii. 1974. MNHN-- leg. Eisele, 27A, 1 ♀, *4. v. 1974. CRE-- leg. Eisele, 20A, 1 ♀, *2. vii. 1974; 1 ♂, 2. vii. 1974; leg. Eisele, 27A, 3 ♀, *9. vi. 1969, *24. v. 1972, *28. v. 1972; leg. Eisele, 27G 1 ♀, 19. x. 1972. IML-- leg. Eisele, 27A, 2 ♂, *17. iv. 1974, 22. iv. 1974. AMNH-- leg. Eisele, 27A, 1 ♀, 22. vi. 1974.

DISTRIBUTION. Spatial (Fig. **18 B**): apparently an endemic of chaco and chaco-margin lowland xeric woodland, probably extending in these habitats to Sante Fe, Formosa, Chaco

and Santiago del Estero Provinces. Not presently known from Bolivian samples. Temporal: menophenic [sexually dimorphic]; known primarily from April through July and September to early January.

REMARKS. Other Material Examined: leg. MacPherson-- 16A, 1 ♀, *31. vii. 1979 (AMNH); 17A, 1 ♀, *28. July 1977 (AMNH); 15A, 3 ♀, *31 x. 1977 (2) (AMNH), *26. ix. 1977 (AMNH); leg. Eisele-- 7D, 1 ♀, *17. v. 1979 (MZPC); 15B, 1 ♀, *31. x. 1977 (CRE); 21A, 1 ♀, *5. xi. 1974 (AME); other miscellaneous leg.-- 30A, 1 ♀, * i. 1950, leg. unknown (IML).

Addendum to dragones Group:

The following new *Calycopis* species is represented by the only known specimens of the genus from Chile. Because of the importance of this austral member, and the purposes of this faunal series, we describe it below.

Calycopis valparaiso, new species
Figs. **6 E, 15 A**

DIAGNOSIS. At present this is the only *Calycopis* known from Chile. In wing characters it is distinctive from all the above by its bright "flecked" metallic blue iridescence, which overcasts darker ground color on the entire upper surface of both wings. Though this coloration appears somewhat darker on the forewing, *C. valparaiso* is the only *Calycopis* in the region on which the forewing can be considered completely blue. Beneath, the ground color of known specimens is distinctly grayish-yellow in cast. As a result, the typical *Calycopis* under surface markings appear particularly enhanced over this light ground color. Though the species is presently known from only two females, their genitalia are distinct from any other known *Calycopis* species: (a) lamellae tips recurved cephalad, (b) ductus bursae beneath lamellae distinctly swollen with lateral lamellal edges continuing cephalad as ridges along each side of the ductal wall (a condition not occurring in any other *Calycopis* though apparent in some *Electrostrymon* grade taxa like *Thecla autoclea*, see Johnson, 1988a, Fig. 5AB), (c) ductus bursae caudad its juncture with the corpus bursae is extremely recurvate distad (this condition only occurring to a lesser degree in some females of *C. chacona*).

DESCRIPTION. *Male*. Unknown. *Female*. Upper surface of wings (Fig. **6 E**): ground color bright, flecked, metallic silver blue over entire wing surfaces bordered by thin, fuscous marginal line. Under surface of wings (Fig. **6 E**): pattern typical of the genus but ground color very light, overcast yellowish and with distal white edging of tripartite medial band extremely vivid and nearly continous. *Female Tergal Morphology and Genitalia*. Fig. **15 A**. Eighth tergite specialized; dorsal plate heavily sclerotized baso-laterally (Fig. **15 Aa**). Genitalia distinctive from congeners as noted in Diagnosis above.

TYPES. Holotype female, Valparaiso, Chile, 1923, leg. R. Martin, deposited MNHN. Paratype female, same date (MNHN).

REMARKS. A number of South American thecline groups traditionally thought not to have Chilean representatives do indeed have members in the Chilean fauna. Along with *Calycopis* the region has undescribed members of typically Andean assemblages *Tergissima*, *Eiseliana sens. lat.* and the *Thecla arria* Group of Draudt (1919), groups presently in revisionary study by the senior author.

ETYMOLOGY. The name is taken from the type locality.

TERGISSIMA AND FEMNITERGA

The senior author described the genera *Tergissima* and *Femniterga* as sister genera of *Calycopis* Scudder and *Calystryma* Field from four sympatric species occurring in the northwestern Argentine and southeast Bolivian Andes region (Johnson, 1988a). *Tergissima* and *Femniterga* superficially resemble *Calystryma* and *Calycopis* species in the generalized under surface wing pattern (Fig. **3 A**). However, *Tergissima* and *Femniterga* differ drastically from *Calycopis* and *Calystryma* in tergal and genitalic morphology (Figs. **8-9**).

To complete faunistic and diagnostic treatment of these four groups in northwestern Argentina, taxa of *Tergissima* and *Femniterga* are treated below in an abbreviated diagnostic format. Since the original descriptions, numerous additional specimens of these taxa have been located and distributed. These are noted in the entries below, with the original paratypes regrouped according to the localities of Appendix **I** and Fig. **18**. Although Johnson (1988a) figured the types of these species, we take this opportunity to figure additional specimens (Fig. **7**).

TERGISSIMA Johnson

Wings above and beneath are brown as in *Calystryma*, but the under surface pattern is reduced as in *Calycopis* (Fig. **3 A**, left). The eighth tergite of *Tergissima* males (Fig. **8 C**) is specialized to an elaborate incised posterior cavity, extending terminally from beneath the dorsum of the sixth segment, enclosing the entire lateral surfaces of the abdomen, and sometimes recurved beneath the terminal sternite. Male genitalia lack development of a saccus and have the cephalic portions of the vinculum angled steeply (circa 90°) to the rest of the sclerotized structures (Fig. **8 E**). In females the eighth tergite is normal and the genitalia extremely simple-- a straight, tubular, ductus terminating in diminutive, hardly sclerotized, flaps (Fig. **9 E, F**).

Development of the eighth tergite in males greatly exceeds that of *Calycopis* and *Calystryma*. *Femniterga*, on the other hand (see below), has an elaborate eighth tergite modification which occurs in the females as well as the males. Contrasting the brown of *Tergissima* species, *Femniterga* taxa are often brilliantly blue above, particulary on the hindwings. Johnson (1988a, Appendix & Table 1) presented a detailed table and matrix of character differences in these taxa. *Tergissima*, as revised (Johnson, in prep.), contains only four species, the third being a little known species from Chile, and the fourth a montane Peruvian entity.

Tergissima mosconiensis Johnson
Figs. **7 A B**, **8 C**, **9 E**

DIAGNOSIS. Distinctive from noncongeners by characters of genus. Compared to *T. macphersoni* (entry below), *T. mosconiensis* with: (a) distinctive brilliant limbal red coloration (b) protruding terminal prong on lateral surface of the modified eighth tergite and (c) modified eighth tergite recurved beneath the terminal sternite.

DESCRIPTION. See Johnson 1988a, p. 34 [Adults, Figs. 1 A-D; Genitalia, Figs. 3 C,H; 4 E]. *Adult*. Male: forewing 11.5-13.0 mm., Fig. 7 A. Female: forewing 10.5-12.5 mm., Fig. 7B. *Male Tergal Morphology and Genitalia*. Fig. **8 C**. *Female Genitalia*. Fig. **9 E**.

TYPES. Holotype male, allotype female, 17A, AMNH. *Paratypes*: 5 ♂ (AMNH) (17A, 47A, 27A, 27B), 2 ♂, (CMNH) (22B), 1 ♂ and 1 ♀ (IML) (Santa Cruz, Bolivia).

DISTRIBUTION. Spatial (Fig. **18 D**): known from several xeric woodland and chaco habitats in Salta and Jujuy provinces, Argentina; also known from eastern Bolivia. Temporal: monophenic [sexually monomorphic]; known from every month of the year except September to December.

REMARKS. Males exhibit a darkened, flat-sheened patch distad in the discal cell (Fig. **7**) (see Remarks, Johnson, 1988a, for discussion fo the status of these dull markings as "brands"). These Remarks apply to all males of *Tergissima* and *Femniterga* but will be mentioned only here. Until the nature of these flat-sheened patches can be further elucidated, they cannot be considered major diagnostic features. They were seminal, however, in recognizing the distinctness of *Tergissima* and *Femniterga* species among longer series of *Calycopis* and *Calystryma* when we began this study. Following dissection of these groups, morphological features proved most diagnostic (Johnson, 1988a) (Figs. **8, 9**).

Additional Material Examined and Distributed. Since Johnson (1988a) the following additional specimens of *T. mosconiensis* have been located-- leg. MacPherson, 17A, two females-- **9 June 1975 (AMNH), one male-- *same data (AME), [in addition to paratypes

listed (Johnson, 1988), located in previously unforwarded MacPherson material]; 16A, one male-- *13 May 1982 (BMNH); leg. Eisele, 2B, One male-- *28 April 1974 (LACM), one female-- *5 June 1974 (AME); miscellaneous leg., Rio Surutu, E. Bolivia, Steinbach Collection, two males (CMNH). [Note: R. Eisele reports field notes indicate the undated paratype (Johnson, 1988a, p. 34) was collected on 28 April 1974].

Tergissima macphersoni Johnson
Figs. **7 C D, 8 E, 9 F**

DIAGNOSIS. Distinctive from noncongeners by characters of genus. Distinguished from *T. mosconiensis* by (a) dull limbal area beneath, (b) terminus of modified eighth tergite in males not recurved ventrad and without protruding prong; rather, with trilobate margin and (c) female with extremely elongate ductus, exceeding by ratio X2 that in *T. mosconiensis*.

DESCRIPTION. See Johnson 1988a, p. 34 [Adults, Figs. 1E-H; Genitalia, Figs. 3C,4F,5C]. *Adult.* Male: forewing 10.0-11.5 mm., Fig. 7C. Female: forewing 10.0-12.0 mm., Fig. 7D. *Male Tergal Morphology and Genitalia.* Fig. 8E. *Female Genitalia.* Fig. 9F.

TYPES. Holotype male, allotype female, 16A, AMNH. *Paratypes.* 1 ♂ (AMNH) 16A, 2 ♂ (CMNH) (Rio Surutu, E. Bolivia), 3 ♂ (BMNH) (Buenavista, Bolivia), 1 ♂ and 1 ♀ (IML) (Santa Cruz, Bolivia).

DISTRIBUTION. Spatial (Fig. **18 D**): geographically congruent with *T. mosconiensis*, but known primarily from mesic habitats. Temporal: monophenic [sexually monomorphic]; known currently from April through June.

REMARKS. *Additional Material Examined.* Since Johnson (1988a) the following additional specimens of *T. macphersoni* have been located: leg. MacPherson, 16A, 2 ♂, **31 May 1982 (AME); 6A, 2 ♂, **20 June 1975 (LACM, AME) [from additional previously unsorted material of MacPherson]; miscellaneous leg., ***Rio Surutu, E. Bolivia-- 2 ♂, 1 ♀ (CMNH).

FEMNITERGA Johnson

Though resembling *Calycopis* and *Tergissima* on the wing under surface, wing upper surfaces in both sexes of *Femniterga* (with one exception) are variously iridescent blue, often in patterns characterized by distinctive, geometrically-shaped, patches. Distinctive from *Calycopis*, *Calystryma* or *Tergissima*, the eighth tergite in *Femniterga* is modified in both females and males (Figs. **8 D, F; 9 A, B**). Eighth tergite modification in females is so pronounced it can be observed in soaked specimens without dissection. Male genitalia of *Femniterga* resemble the distinctive characters of *Tergissima*, but female genitalia of *Femniterga* exhibit a very short ductus bursae and large, often terminally spined, genital plates (Figs. **9 G, H**). Johnson (1988a, Appendix and Table **1**) presented a detailed table and matrix of characters distinguishing *Femniterga*. As revised (Johnson, in prep.) *Femniterga* contains a number of undescribed species as well as *Thecla cissusa* Hewitson, *Thecla cinniana* Hewitson and *Thecla plumans* Druce (as identified from their type specimens, BMNH).

Femniterga notacastanea Johnson
Figs. **7 E F, 8 D, 9 G**

DIAGNOSIS. Distinctive from congeners by male being only dully flecked with blue above and females brown with overcast of blue on hindwing (other congeners with brilliant blue patches above). Both sexes with characteristic dull orangish upper surface spot in the submargin of cell CuA_1. Female genitalia differing from sympatric, brilliantly blue-above Argentine congener *F. judae* by (i) ovate, bilobate and terminally pronged lamella postvaginalis and (ii) ductus incompletely sclerotized (*F. judae* with square, marginally entire lamellae and prominent, fully sclerotized ductus).

DESCRIPTION. See Johnson 1988a, p. 38 [Adults, Figs. 2A-D; Genitalia, Figs. **3 D**

G, 4 A G]. *Adult*. Male: forewing, 11.0-12.5 mm., Fig. **7 E**. Female: forewing, 11.0-11.5 mm., Fig. **7 F**. *Male Tergal Morphology and Genitalia*. Fig. **8 D**. *Female Tergal Morphology and Genitalia*. Fig. **9 G**.

TYPES. Holotype female, allotype male, 11A, AMNH. *Paratypes*. Since Johnson (1988a), R. Eisele has noted that the general locality data on a cover envelope forwarded through Wheaton was evidently exchanged resulting in a group of the paratypes labelled "leg. Eisele, Pichanal, Tartagal" actually representing "San Pedro, Jujuy" [Figs. **7 B, 7 C**]. This does no harm to the published distributional data concerning the species (since it has been taken at Pichanal and Tartagal and also listed from San Pedro (=Saladillo, Fig. **7 D**). However, for accuracy the following regrouping of the paratypes according to Table 1 reflects this change: 1 ♂ (AMNH) 11A; 1 ♂, 1 ♀ (AMNH) 5A; 3 ♂, 1 ♀ (AMNH) 27A [15 May 1972], others, as per above comment 7 B, 7 C; 1 ♂ (AMNH) 18A; 1 ♀ (AMNH) 7B [not Tartagal, as per above comment], 3 ♀ (AMNH) 7D; 1 ♂, 1 ♀ (AMNH) 17A; 1 ♀ (AMNH); 1 ♂ (AME) 16A; 1 ♂ (IML) 3A, 1 ♂ (IML) 47A; 1 ♀ 45A. In addition, the "1984" dates on Pichanal material of Eisele should read "1974", consistent with the additional material listed below. A single specimen was mislabelled at IML-- the El Fuerte paratype was collected by Eisele, not Garcia.

DISTRIBUTION. Spatial (Fig. **18 C**): known primarily from montane wet woodland habitats, 1-3000 m. in the Argentine Andean Piedmont northward into SE Bolivia; a few specimens are known from more mesic, marginal or grassland areas. Temporal: monophenic [sexually dimorphic]: known from every month of the year except the seasonal transition months of February-March and August.

REMARKS. *Additional Material Examined and Distributed*. Since Johnson (1988a) the following additional specimens of *F. notacastanea* have been located: leg. MacPherson, 11A, 4 ♀, **3 September 1979 (2) (AME), **21 October 1979 (CRE), 31 October 1979 (BMNH); 5A, 1 ♀, **15 December 1977 (LACM), 1 ♂, 1 ♀, **15 January 1987 (AMNH); leg. Eisele, 1 ♂, 24 April 1974 (AMNH); leg. Eisele, 27A, 1 ♀, *15 May 1972 (CRE); 3A, 1 ♀, *21 January 1968 (IML); miscellaneous leg., Santa Cruz, Bolivia, **2 ♀ (IML), El Cidral, Bolivia-- *28 January 1962 (IML).

Femniterga judae Johnson
Figs. **7 G H, 8 F, 9 H**

DIAGNOSIS. Distinguished from sympatric *F. notacastanea* by brilliant blue patches over the caudal two thirds of the hindwing in both sexes. Beneath, the tripartite band is thickened and lunular. Female genitalia with terminal margin entire without prongs, ductus completely sclerotized.

DESCRIPTION. See Johnson 1988a, p. 39 [Adults, Figs. 2E-H; Genitalia, Figs. 3Dc,4B,H]. *Adult*. Male: forwing, 10.5-11.5 mm., Fig. **7 G**. Female: forewing, 11.5-12.0 mm., Fig. **7 H**. *Male Tergal Morphology and Genitalia*. Fig. **8 F**. *Female Genitalia*. Fig. **9 H**.

TYPES. Holotype female, allotype male, 17A, AMNH.

DISTRIBUTION. Spatial (Fig. **18 C**): known from lowland (400-500 m.) xerophytic chaco and chaco margin habitat in Salta Province, Argentina (BMNH specimens from Tucuman have only provincial data). Temporal: seasonal phenism undetermined [sexually dimorphic]. Known only from May to July.

REMARKS. *Additional Material Examined*. Since Johnson (1988a) the following additional specimens of *F. judae* have been identified: "Tucuman"-- 1 ♂, *15 May 1922, 1 ♀, *14 July 1922 (BMNH).

DISCUSSION

Field (1967a) qualified his revisionary study of *Calycopis* with the word "Preliminary". He recognized, as have subsequent workers, that the genus contained many more undescribed species. Field's (1967b) erection of *Calystryma* was the first designation of a monophyletic group akin *Calycopis* (as defined by its type and other species). As noted in the introduction to *Calycopis* and *Calystryma* in the present study, there are numerous

assemblages in the "*Thecla*" grade (*sensu* Bridges, 1988) whose monophyly and relationship to *Calycopis* and *Calystryma* must be investigated further. The description and subsequent revision of *Tergissima* and *Femniterga* (Johnson, 1988a & in prep.) resulted from such study and treatment of other assemblages is in progress.

Previously, work on the many undescribed species of *Calycopis* and *Calystryma* has been hampered by small and widely scattered samples. The present study shows that concerted collecting within particular, even regionally local, biotic communities can discover distinctive species of these genera. While representives of most of the new species named here can be found in variously deposited, small samples from areas immediately adjacent the northwestern Argentine study area, it is doubtful these could have constituted a reliable sample for descriptive work. The large number of specimens assembled by the junior authors has been crucial to elucidating these groups. From the distribution of collecting areas used in this study, it is apparent that the majority of new taxa from northwest Argentina represent certain of the five areas of biotic endemism listed in the Introduction. Of these, frequency of collecting by the junior authors results in many of the new taxa representing either chaco-related habitats or habitats in mesic to hydric montane woodland. It is significant to note that in species of *Femniterga*, *Tergissima* and *Calycopis*, sister species appear to be segregated into these respective biomes.

There is at least one other, generically undescribed, assemblage related to *Calycopis Calystryma*, *Tergissima* and *Femniterga* with populations occurring in northwestern Argentina. However, there are still very few specimens extant. Since similar specimens are apparent in small samples from several other areas of the Neotropics, study of all of these must be completed before the status of the Argentine material can be determined.

ACKNOWLEDGEMENTS

We particularly thank staff of the IML (Z. D. A. deToledo, Curator) for their interest and cooperation in this study. Curators at the following institutions also graciously made specimens available for study: AME (L. D. and J. Y. Miller); AMNH (F. H. Rindge); BMNH (R. Vane-Wright and P. Ackery); CMNH (J. E. Rawlins); MNHN (G. Bernardi, J. Pierre); MPM (A. Young and S. Borkin). Rodolfo Golbach (IML) aided in collation of historical collection site data. J. Bolling Sullivan (Duke University) assembled and forwarded additional material. J. N. Eliot (Taunton, United Kingdom) provided valuable review comments on these genera (for Johnson, 1988a and in subsequent correspondence). Charles A. Bridges (University of Illinois, Urbana) answered certain queries. The junior authors are ministers of the Conservative Baptist Church (Wheaton, Illinois) missions in Argentina. They thank their Argentine and Wheaton colleagues for various courtesies concerning field work and the sometimes difficult problems of forwarding mail and materials. Special debt is owed David Matusik (Field Museum of Natural History, Chicago) for preparing large numbers of Eisele and MacPherson papered specimens and providing hand delivery for these and IML material sent to New York through Wheaton.

LITERATURE CITED

Ackery, P. R. 1984. Systematic and faunistic studies on butterflies. pp. 9-21 *in* Vane-Wright, R. I. and P. R. Ackery (Eds.), The Biology of Butterflies. Academic Press, London, xxiv + 429 pp.

Ajmat de Toledo, Z. D. 1978. Fauna del Noa. Contribucion al conocimiento de los Lepidopteros Argentinos VI. *Eiseliana* nuevo genero de Lycaenidae (Theclinae, Strimonini). Acta zool. Lilloana 33: 79-84.

Breyer, A. 1945. Lista parcial de Lepidopteros colleccionados en Salta. Rev. Soc. Entomol. Argentina 12: 310-312.

Bridges, C. A. 1988. Catalogue of Lycaenidae & Riodinidae (Lepidoptera: Rhopalocera). published by the author, vii + 811 pp.

Cabrera, A. L. and A. Willink. 1980. Biogeografica de América Latina. Publications of

the Secretariat, Organization of American States, Serie de biologia 13: vi-122.
Draudt, M. 1919. *Thecla*, pp. 794-811 in Seitz, A. Macrolepidoptera of the World. Stuttgart, Alfred Kernen Verlag. Vol. 5, pp. 593-1139, Vol. 5 [Plates], pls. 1-194.
Eliot, J. N. 1973. The higher classification of the Lycaenidae (Lepidoptera) a tentative arrangement. Bull. Brit. Mus. Nat. Hist. 28: 373-505.
Field, W. D. 1967a. Preliminary revision of butterflies of the genus *Calycopis* Scudder (Lycaenidae: Theclinae). Proc. U.S. Nat. Mus., vol. 119, no. 3552, 48 pp.
---------- 1967b. Butterflies of the new genus *Calystryma* (Lycaenidae: Theclinae, Strymonini). Proc. U.S. Nat. Mus. vol, 123, no. 3611, 31 pp.
Hayward. K. J., 1927-1928. A short description of the Argentine Chaco. Trans. South London Entomol. & Nat. Hist. Soc., 1927-1928: 18-33.
---------- "1936" [1937]-1950. "Hesperioidea Argentina"; "1936" 1937a. I. Los genitales de algunas especies y adiciones a la bibliographia. Rev. Soc. Entomol. Argentina 8: 57-60; "1936", 1937b. II. Insectos nuevos para la fauna y anotaciones sobre otras. *Ibid., op cit.*: 65-76; 1937a. IV[sic]. [without additional title ("w.a.t.")], Ibid. 9: 61-65; 1937b. V[sic]. [w.a.t], *Ibid., op cit.* 93-101; VI[sic]. [w.a.t.], Ann. Soc. Cienc. Argentina 125: 222-231; 1938a. VII[sic]. Especies y procedencias adicionales para la fauna Argentina. *Ibid., op. cit.*; 374-383; 1938b. VIII[sic]. [w.a.t.] *Ibid.*, 124 [sic].: 429-459; 1939a. IX[sic]. [w.a.t.] *Ibid.* 127: 285-293; 1939b. III[sic]. [w.a.t.], Physis 17: 279-301; 1939c. X[sic], [w.a.t], Ann. Soc. Cienc. Argentina 128: 289-296; 1940a. XI[sic], [w.a.t], Rev. Soc. Entomol. Argentina 12: 279-297; 1940b. XII[sic], [w.a.t], Ann Soc. Cienc. Argentina 130: 70-94; 1942. XIII. Ibid., 134: 64-71; 1944. XIV[sic], [w.a.t], Rev. Soc. Entomol. Argentina 12: 173-180; "1946" 1947a. XV[sic], [w.a.t], Acta Zool. Lilloana, Tucuman 3: 215-230; 1947b. XVI[sic], [w.a.t], *Ibid.*, 4: 4-18; 1947b. XVII[sic], [w.a.t], *Ibid., op cit.*: 55-61; 1947c. XVIII[sic], [w.a.t], *Ibid., op cit.*: 133-144; 1948. XIX[sic], [w.a.t], *Ibid.*, 5: 103-112; 1949. XX[sic], [w.a.t], *Ibid.*, 7: 331-335; 1950. XXI[sic], [w.a.t], Rev. Soc. Entomol. Argentina 15: 53-56.
---------- 1931-1934. "Lepidopteros Argentinos"; 1931, familia Nymphalidae. Rev. Soc. Entomol. 4: 1-200. 1932. fam. Hesperidae [sic]. Parte I. Subf. Pyrrhopyginae. *Ibid.*, 5: 19-35; 1933a. Familia Hesperiidae II. Subfamilia Pyrginae "A.", *Ibid., op cit.*: 149-188; 1933b. Familia Hesperiidae III. Subfamilia Pyrginae "B.", *Ibid., op cit.*: 219-275; 1943a. Familia Hesperiidae IV. Subfamilia Pamphilinae. *Ibid.*, 6: 97-181; 1934b. Fam. [sic] Hesperiidae V. Resumen, claves, apendices e indices, *Ibid, op cit.*: 183-234.
---------- 1941. Hesperiidarum Argentinarum Catalogus. Revista del Museo La Plata 2: 227-340.
---------- 1948-1967. contributions to "Del genera et species animalium Argentinorum". 1948. Insecta. Lepidoptera, fam. Hesperiidae, subfam. Pyrrhopyginae et Pyrginae. Tomo I. Del genera et species animalium Agentinourum. Talleres Graficos Kraft, Buenos Aires. 389 p.; 1949. Tomo II. subfam. Hesperiinae. *Ibid., op cit.*: 388 p.; 1964. Tomo III. fam. Nymphalidae et Fam. Heliconiidae. *Ibid., op cit.*: 474 p.; 1967. Tomo IV. fam. Papilionidae et fam. Satyridae. *Ibid., op cit.*: 412 p.
---------- 1949. Nuevas especies del Lycaenidae de la Argentina. (Lep. Rhop). Acta Zool. Lilloana, Tucuman 8: 567-581.
---------- 1950-1963. Catálogo Sinonimico de los Ropaloceros Argentinos, excluyendo 'Hesperiidae'. Acta Zool. Lilloana 9: 85-282. 1953. Primer suplemento, *Ibid.*, 14: 352-374. 1958. Segundo suplemento, *Ibid.*, 16: 13-21. 1962. Tercer suplemento, *Ibid.*, 18: 19-30. 1963. Cuarto suplemento, *Ibid.*, 19: 497-502.
---------- 1953-1962. "Satiridos argentinos (Lep. Rhop. Satyridae)". 1953. I. Los generos (excluidos *Euptychia* y *Neomaniola*). Acta Zool. Lilloana, Tucuman 13: 5-66; 1958a. II. [w.a.t], *Ibid.*, 15: 161-181; 1958b. III. Guia para su classificacion. *Ibid*, op cit.: 199-296; 1962. IV. Notas Adicionales (Lep. Rhop. Satyridae). *Ibid*, 18: 11-17.
---------- 1965. Los Ropaloceros de Cafayate (Salta), Lepidoptera. Rev. Soc. Entomol. Argentina 28: 65-70.
---------- 1967. Descripciones de *Thecla*. Acta Zool. Lilloana, Tucuman 21: 5-12.
---------- 1973. Catálogo de los Ropaloceros Argentinos. Opera Lilloana 23: 1-318.

Johnson, K. 1981. Revision of the Callophryina of the world with phylogenetic and biogeographic analyses. ms. [in part] as unpublished Ph.D. dissertation, Graduate Center, City University of New York, 902 p.
---------- 1988a. *Tergissima* and *Femniterga*, new sister genera of *Calycopis* Scudder and *Calystryma* Field from the south central Andes (Lepidoptera: Lycaenidae). Insecta Mundi 2(1): 28-42.
---------- 1988b. A revisionary study of the Neotropical hairstreak butterfly genus *Noreena* and its new sister genus *Contrafacia* (Lepidoptera: Lycaenidae). J. New York Entomol. Soc. 96, in press.
---------- in press. Types of Neotropical Theclinae at the Museum National d'Histoire Naturelle, Paris. J. Lepid. Soc., 44, in press.
---------- in prep. Revision of the Neotropical hairstreak genera *Tergissima* and *Femniterga*. [ms., In review].
Johnson, K., B. MacPherson and J. Ingraham. 1986. A new genus and species of Eumaeini (Theclinae) from western Argentina. Bull. Allyn Mus. 102: 7 p.
Koehler, P. 1923. Fauna argentina. Lepidoptera e collectione Alberto Breyer. I. Teil. Rhopalocera. Systematischer Katalog un Studien, Berichtigungen u. Neubeschreibungen. Z. wiss. InsektBiol. 18(12): 34 pp.
---------- 1934. Dos Lepidopteros Argentinos neuvas. Rev. Soc. Entomol. Argentina 6: 39-40.
O.S.A.E.G. [Organizade por la Sociedad Argentina de Estudios Geographicos]. 1955. Semana de Geographica. Ministerio de Educacione Univ. Nacional de Cuyo. Mendoza, Imp. Accurzio, 530 p.
Schwartz, A. and F. Gali. 1984. Five new species of *Calisto* (Satyridae) from Hispaniola. Bull. Allyn Mus. 85: 1-18.

APPENDIX I: COLLECTING LOCALITIES

Format: Collecting localities are grouped according to the numbered dots of Fig. 2 and correspond to blackened distribution dots for each species in Figs. 15-18. Each map number represents a generalized locality, divided in the table below into specific collection sites (1A, 1 B etc., as appropriate). Names of the generalized localities (*in italics*) correspond both to (i) usage in the text and (ii) specimen labels. Locality numbers and names are grouped by Province following the geographic sequence of Fig. 2. Following each name are (i) in parentheses, the "Department" (subdivision of Province), (ii) precise location data on the collection site (as available and corresponding to specimen labels), (iii) approximate altitude and (iv) in brackets, a habitat notation made by the junior authors. In cases where junior authors have used a duplicate locality name on specimen labels but collected at different sites (or in different habitats) such cases are noted. Also, some colloquial names for certain characteristic locations or habitats are noted in quotation marks. Several localities are not those of the junior authors but of other (recent or historical) collectors. These data has been listed and annotated with the aid of R. Golbach (IML).

No. *Locality name, altitude and habitat*

JUJUY PROVINCE

1A *Calilegua* to *Valle Grande* (LEDESMA), Prov. Rt. 83, km. 30, Calilegua Mts., Abra de Cañas, 1600 m., now a National Park [hydric montane woodland]

2A *El Palmar* (SANTA BARBARA), 7 km. E at Termas El Palmar, 700 m. [mesic woodland]

3A *El Fuerte* (SANTA BARBARA), 1300-1400 m. [mixed mesic wood- and grassland]

4A *San Salvador de Jujuy* (CAPITAL), at Villa 23 de Agosto, 1300 m. [northern suburb of provincial capital]

5A *Cucho* (CAPITAL), 1200-1500 m. [mesic to hybric woodlands on S slopes of Cerro Labrado, dense in places, drained by Rio de Las Capillas and affluents]

6A *La Esperanza* (SAN PEDRO), 4 km SW on flood plain of Rio Grande, 550 m. [mixed shrub and grassland]

7A *San Pedro* (SAN PEDRO), 600 m. [small city]
7B _____ 2 km. NW, 550 m. [xeric woodland]
7C _____ 3 km. NW, 550 m. [xeric woodland]
7D _____ 5 km. NW, at Saladillo, 600 m. [xeric woodland drained by small stream]
7E _____ at Ao. (arroyo) San Pedro, S branch, W of by-pass, 650 m. [moist stream bottom crossing otherwise xeric woodland]
7F _____ various distances SW on Rio Grande, 650 m. [wooded floodplain, "Los Chañares"]
8A *Arroyo Colorado* (SAN PEDRO), 13 km. W of Prov. Rt. 23 in foothills of Mo. (morro) Cibinquilloso, 850 m., [mesic woodland]

SALTA PROVINCE
9A *Acambuco* (SAN MARTIN), S in quebrada at Rio Seco and access road, 850 m. [moderately dense hydric woodland]
9B _____, 15-20 km. N at Alto de Macueta, 1050 m. [on road through mesic montane woodland]
10A *Tobantirenda* (SAN MARTIN), 8 km. NW at Dique Itiyuro, 550m. [foothills, mesic woodland]
11A *Piquirenda* to *Acambuco* (SAN MARTIN), km. 25 at Laguna Las Catas, 850 m. [hydric woodland]
11B _____ km. 14 at Rio Yacuy, 800 m., [hydric woodland, adjacent mountain stream]
12A *Aquaray* (SAN MARTIN), 565 m. [mesic woodland]
13A *Campo Duran* (SAN MARTIN), 500 m. [marginal xeric chaco]
14A *Piquirenda Viejo* (SAN MARTIN), W in foothills, 550 m. [mesic woodland]
15A *Yariguarenda* (SAN MARTIN), 550 m. [mesic woodland]
15B _____ 5 km. W of Rt. 34, 600 m. [mesic woodland]
16A *Tartagal* (SAN MARTIN), 500 m. [small city, in area of cut-over mesic woodland]
16B _____ 6 km. N at Zanja Honda, 500 m., [mesic woodland]
17A *Mosconi* (SAN MARTIN), 450 m. [small town, collection site of Eisele, mesic woodland; collection site of MacPherson, xeric woodland bordering chaco]
18A *Coronel Cornejo* (SAN MARTIN), 400 m. [mesic woodland]
19A *Senda Hachada* (SAN MARTIN), 2 km. N at Rt. 34 and Rt. 81 crossroads, 300 m. [margin of xeric woodland and chaco]
20A *Dragones* (SAN MARTIN), 34 km. S at Pozo de la Mora, 230m. [xeric woodland and adjacent chaco]
21A *Santa María* (RIVADAVIA — BANDA NORTE), 9 km. SE on Rio Pilcamayo, 250 m. [xeric woodland and adjacent chaco]
22A *Pluma de Pato* (RIVADAVIA — BANDA NORTE), 30 km., SW at Rio Bermejo, 200 m., [xeric woodland, adjacent chaco and intersecting watercourse with moister riperian woodland margin, "Talar"]
22B *Rio Bermejo*, construed as referring to river drainage of that name (Fig. 1); specimen label data used by J. Steinbach (BMNH, CMNH).
23A "*Dept. Orán*" [frequently cited historical locality, IML, BMNH, referring to the combined departments of Orán and San Martin; not currently used on any maps]
24A *Aqua Blanca* to *Angosto del Pescado* (ORÁN), Prov. Rt. 19, proceeding into foothills, circa 500 m., [hydric woodland; sites 24A-24D (below) were all virgin forest when originally collected; now, scattered areas are developed agriculturally. Recently, a large region N of sites 24C and 24D have been designated as the Baritú National Park, an area currently without access roads or trails and remaining as wilderness]
24B _____ 6-8 km. on Prov. Rt. 19 at and near Quebrada del Remanso, 450 m. [hydric woodland]
24C _____ km. 25 on Prov. Rt. 19 at El Chorro,

600 m. [cleared area in hydric woodland]

24D _____ km. 31 on Prov. Rt. 19 at Abra del Pescado in Snia, de las Pavas, 750 m., [hydric woodland]

25A *Hipolito Yrigoyen* (ORÁN), 300 m., [mesic woodland adjacent sugar plantation]

25B _____ 2 km. N., 300 m. [mesic woodland]

26A *El Tabacal* (ORÁN), 4 km. E of Rt. 50 at Rio Colorado, 300 m. [floodplain riperian woodland]

27A *Pichanal* (ORÁN), 300 m. [small town adjacent xeric woodland and chaco]

27B _____ 1 km. NE, 300 m. [originally xeric woodland and chaco, now farmland]

27C _____ 2 km. N, 300 m. [xeric woodland]

27D _____ N at Rio Colorado, 300 m. [xeric woodland]

27E _____ 4 km. E, 300 m. [xeric woodland]

27F _____ 4 km. E, 300 m. [seasonal wash in xeric woodland]

27G _____ at Rt. 5 and Rio San Francisco, 300 m. [floodplain riperian woodland with adjacent hydric forest]

28A *Yuchan* (ORÁN), at Rio San Francisco and RR, 300 m. [floodplain with broken riperian woodland adjacent xeric woodland and chaco]

29A *Saucelito* (ORÁN), 5 km. W, 350 m. [originally mesic woodland, now farmland]

30A *Urundel* (ORÁN), 350 m. [mesic woodland]

30B _____, at Rio Seco, 1 km. E of Rt. 34, 350 m. [small stream bottom in mesic woodlands]

31A *Salta* (CAPITAL), Cerro San Bernardo, 1300-1450 m. [Eisele "Site S1", xeric woodland and scrub]

31B _____ Cerro 20 de Febrero, 1250-1400 m. [xeric woodland and scrub]

32A *Parque Nacional El Rey* (ANTA), 890 m. [mesic to hydric woodland]

33A *Campo Quijano* to *Corralito* (ROSARIO DE LERMA), km. 11, 1400 m. [montane mesic woodland]

34A *Cerrillos* (CERRILLOS), 1250 m. [moderately xeric, irrigated, agricultural area]

34B _____ 2 km. N, 1250 m. [irrigated agricultural area]

34C _____ 3 km. N, 1250 m. [irrigated agricultural area]

35A *San Augustín* (CERRILLOS), 1170 m. [xeric chapparal and cactus desert]

36A *La Pedrera* (CERRILLOS), 4 km. S on Prov. Rt. 39, 15 km. SE of city of Salta, 1300 m. [xeric woodland at base of mountains]

37A *Metán* (METÁN), 850 m. [interspersed farmland and mesic woodland]

38A *El Tala* (CANDELARIA), 815 m. [interspersed xeric woodland and irrigated farmland, "Estación Ruiz de Los Llanos"]

TUCUMAN PROVINCE

39A *San Pedro de Colalao* (TRANCAS), 1190 m. [frequently cited historical locality, IML, BMNH; no other data available]

40A *Villa Padre Monti* (BURRUYACU) [see above]

41A *El Sunchal* (BURRUYACU), 600 m. [see above]

42A *Las Tipas* (TAFI VIEJO), 6 km. S on Prov. Rt. 340, 1150 m. [mesic to hydric woodland, "El Portezuelo"]

43A *El Cadillal* (TAFI VIEJO), 650-700 m. [xeric to mesic woodland]

44A *Cevil Redondo* (YERBA BUENA), 4 km. W, 650-700 m. [hydric woodland at foot of Cerros San Javier]

45A *San Miguel de Tucumán* (CAPITAL), 450 m. [city vicinity]

46A *Villa Nougués* (LULES), 1250 m. [hydric woodland in Cumbres de San Javier]

47A "Dept. Famailla" (FAMAILLA) [frequently cited historical locality, IML, BMNH; data referring to generalized locality]

48A *Ingenio La Fronterita* (FAMAILLA), 500 m. [originally hydric woodland, now hydric farmland]

49A *Villa Quinteros* (MONTEROS), 2 km. W at Ingenio San Ramon, 400 m. [originally hydric woodland, now hydric farmland]
50A *Monte Bello* (RIO CHICO) [frequently cited historical locality, IML, BMNH; no other data available]

FREQUENT COLLECTING LOCALITIES OF NORTHWESTERN REGION OUTSIDE DEFINED MAP AREA (numbered according to original locality numbers in this study prior to definition of mapped areas)

200A *Cosquín*, CORDOBA PROVINCE [frequently cited historical locality, IML, BMNH]
201A *Colonia Benítez*, CHACO PROVINCE, a few km. N of Resistencia [frequently cited historical locality, IML, BMNH]
202A *Misión Laishi*, FORMOSA PROVINCE (Dept. LAISHI) [frequently cited historical locality, IML, BMNH]
203A *Guayapa* to Patiquiá, LA RIOJA PROVINCE (Dept. INDEPENDENCIA), 450 m. [frequently cited historical locality, IML, BMNH]
204A *Villa Ana*, SANTA FE PROVINCE [one time home of K. J. Hayward, frequently cited historical locality, IML, BMNH)
205A *Icaño*, SANTIAGO DEL ESTERO PROVINCE (Dept. AVELLANEDA), NE at Lago Muyo, 100 m. [frequently cited historical locality, IML, BMNH]
206A *Mendoza*, MENDOZA PROVINCE (frequently cited historical locality, MNHN]
207A *Nahuel Huapi*, MENDOZA PROVINCE [now a National Park, frequently cited historical locality, MNHN]
208A *Patagonia* or *N. Patagonia*, MENDOZA PROVINCE & PATAGONIA [frequently cited historical localities, MNHN]

Table 1. Diagnostic Characters and Polymorphism in Argentine *Calycopis* (previously described species, black dots; new species, open dots).

Above: MAJOR DIAGNOSTIC FEATURES--

Types of female genitalia: "Elongate" type (Field 1967a), defined here as ductus bursae length being 3X lamellal width (Field included the corpus bursae length in his measurements, p. 4, which appears highly variable); "Short" type (Field, 1967a), defined here as ductus bursae length less than 2.5X lamellal width, normally about 2X lamellal width.

Supralimital characters (sensu Eliot, 1973): unusually salient characters aiding identification-- Morphology (see text for detailed descriptions): *bellera*, male with terminus of valve capped; *argenopuncta*, male with elongate saccus, female with extremely large lamellal plates; *nancea*, male with extremely small brush organs; *crena*, male saccus elongate, female ductus extremely elongate; *dragones*, male with extremely short valvae and brush organs, female with sclerotized dorsal plate on eighth tergite. Wings (see text for detailed descriptions): *gigantea*, extremely large, blue on male limited; *argenopuncta*, females hardly blue, instead dull silverish; *nancea*, red bands beneath emphatic; *crena*, large black notch in hindwing blue field; *dragones*, emphatically blue, hindwing blue extending completely to thin white marginal line.

Below: SEXUAL DIMORPHISM AND SEASONAL POLYPHENISM. Taxa characteristically polymorphic and those not. Superficial resemblances between morphs of various species: identical alphabetical symbols indicate sexual or seasonal morphs that are superficially much alike. As noted, such duplications span the genders and appear to have been the major cause of historical confusion in identification of *Calycopis* taxa.

TABLE 1 DIAGNOSTIC CHARACTERS AND POLYMORPHISM IN ARGENTINE CALYCOPIS

■ **Previously Described Species**

□ **Newly Described Species**

MAJOR DIAGNOSTIC FEATURES	JENEIRICA	CAULONIA	CHACONA	BELLERA	GIGANTEA	ARGENOPUNCTA	NANCEA	CRENA	DRAGONES
"elongate" type female genitalia	■		■	■	□			□	
"short" type female genitalia		■		■		□	□		□
supralimital morphological characters				■		□	□	□	□
supralimital wing characters					□	□	□	□	□
SEXUAL DIMORPHISM and SEASONAL POLYPHENISM									
Sexually Dimorphic*			■		□	□	□		□
Seasonally Polyphenic			■						
Superficial Resemblance (Match letters, A-A, etc. and see caption)	C♂ D♀	C♂ D♀	A♀ B♀	B♂ B♀					A♀ C♂

*Refers to major sexual dimorphism in pattern, not slight sexual differences in the same, generally monomorphic, pattern (e.g. duplicate color patches may be slightly more or less extensive in one sex, duplicate border patterns may be slightly more or less extensive in one sex; see Text).

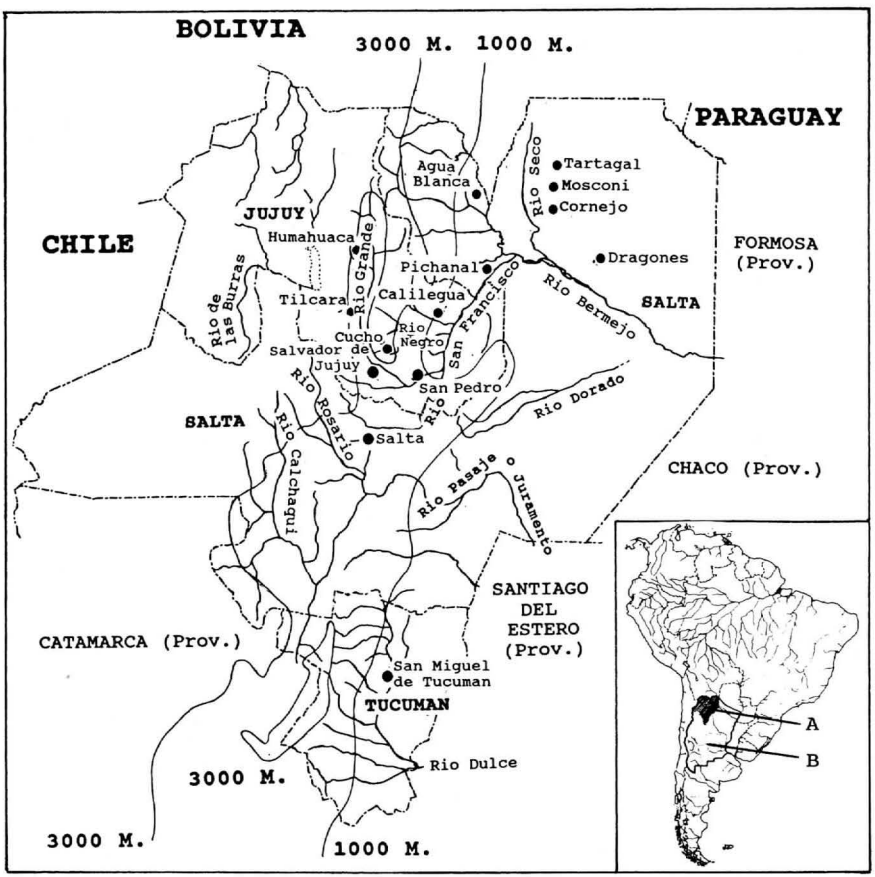


Fig. 1. Map of Study Area and geographic region indicating selected political and physical features. Lower Right Insert: South America: A, B "Northwestern Region" of Argentina indicated by thick black outline; A, area of detailed distribution maps in this study (Salta, Jujuy and Tucuman Provinces, Argentina). Upper, General: Salta, Jujuy and Tucuman Province with selected features. Political boundaries, dash/dot line (features and elements labelled as appropriate). River and stream systems, solid black (elements labelled as appropriate). Altitudinal lines, bold black lines notated above and beneath as: eastern margin of 3000 m., and 1000 m. elevations, respectively. Base map organized by Eisele.

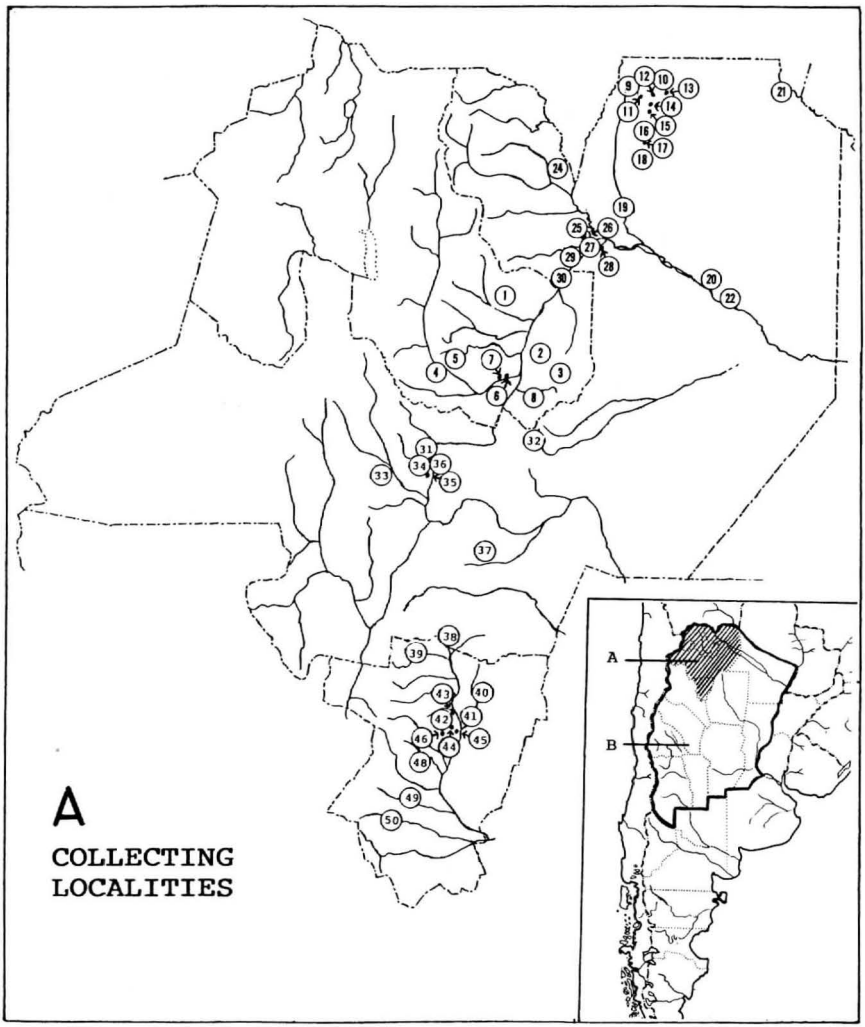


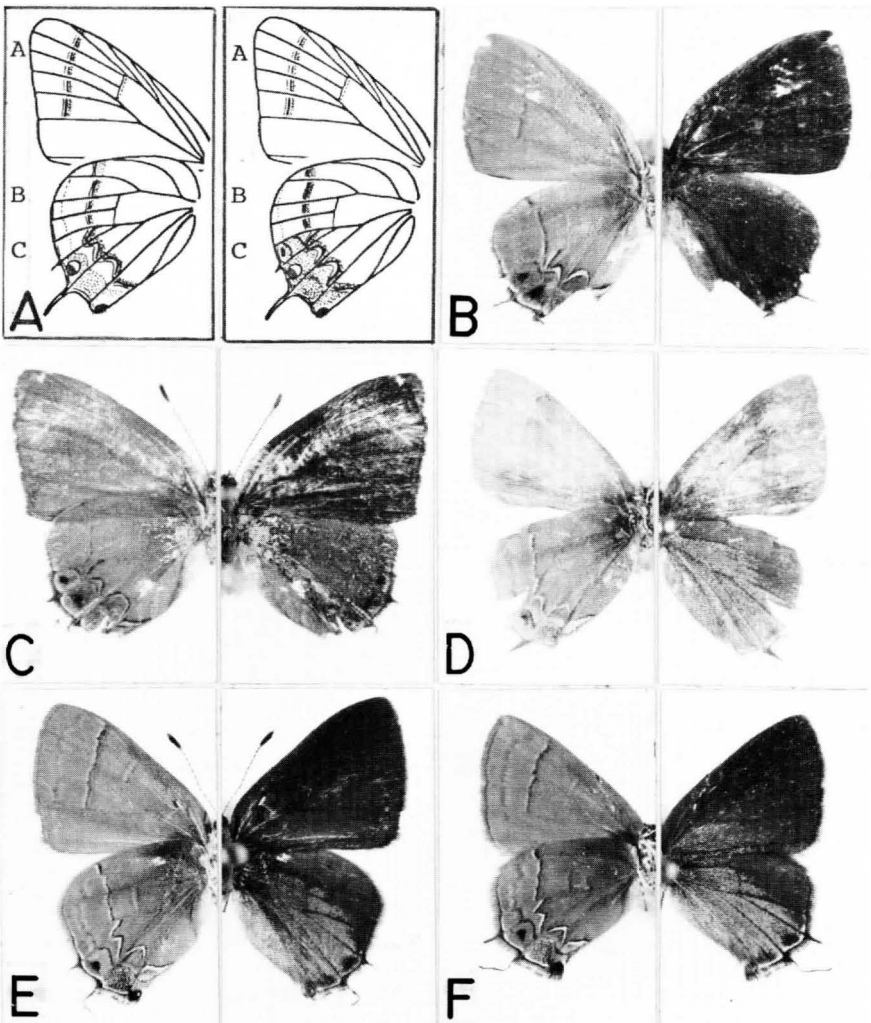
Fig. 2. Map of Study Area Collection Sites. Lower Right Insert: Argentina N. of 52° S Latitude with **A** and **B** as in Fig. **1**. Upper, General: **A**-- Salta, Jujuy and Tucuman Provinces, Argentina (duplicate, unlabelled base map of Fig. **1**) showing location of collecting localities listed in Appendix **I**. Hereafter, Fig. **2** is duplicated (without numerals) as base for distribution maps of individual species.

Fig. 3, **A**. Diagrammatic representation of under surface wing pattern elements typifying: left-- *Calycopis*, *Tergissima* and *Femniterga*; right-- *Calystryma*.

*Component **A***-- FW with postmedian tripartite line, usually from costa to cell CuA_1 (black distad, red centrad, white basad [hereafter, "tripartite line"]); *Component **B***-- HW with medial tripartite line, M_3 element out of line and forming a crossbar to rest of line ["M_3 crossbar"] [in *Calystryma* only, SC + R_1 element heavily edged and displaced distad from rest of line]; *Component C*-- limbal area with extremely W-shaped configuration of medial line framing various number of red or orange orbs, cells M_3 to anal margin and with variously emphatic Thecla-spot at cell CuA_1.

B-F. Adults of new northwestern Argentine *Calystryma* species and previously described species of *Calycopis* (upper surface right; under surface, left).

B. *Calystryma pryne*, holotype male. **C**. *Calystryma nototrebula*, holotype male. **D**. *C. nototrebula*, allotype female. **E**. *Calycopis jeneirica*, male (27A, 16 May 1972, AME). **F**. *C. jeneirica*, female (27A, 9 May 1972, AME).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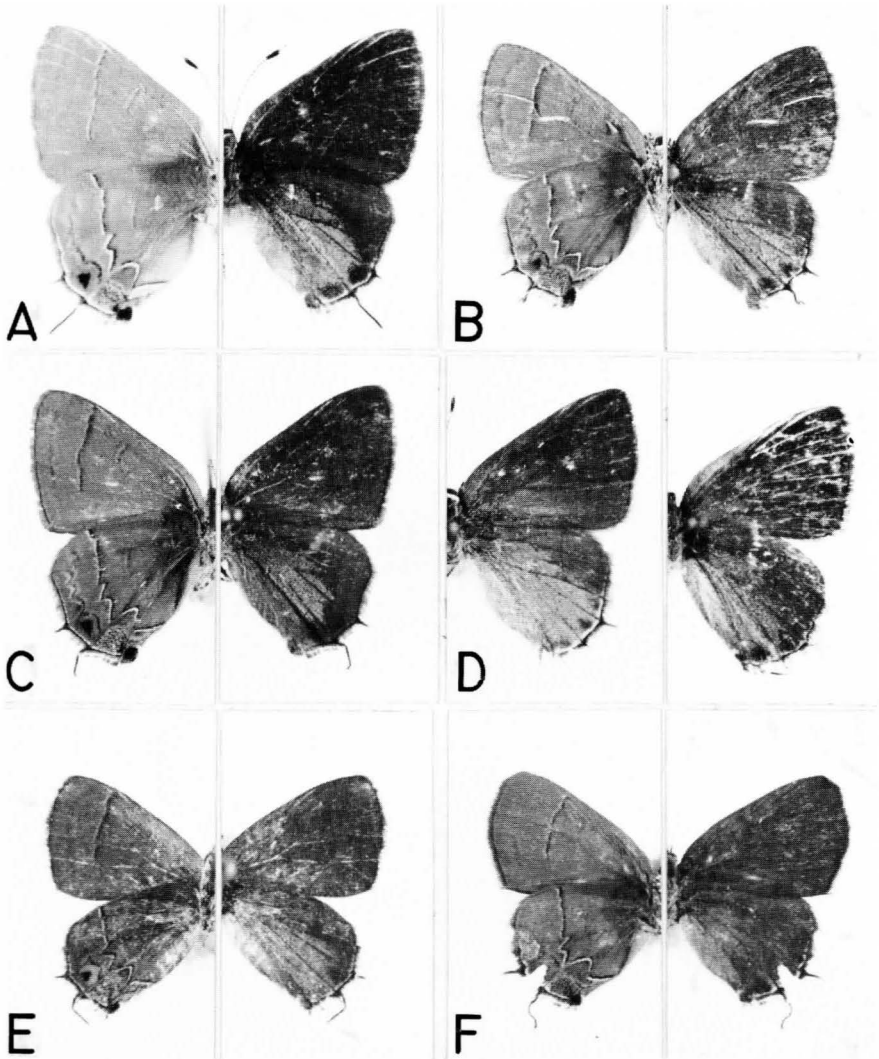


Fig. 4. Adults of previously described species of NW Argentine *Calycopis* (unless indicated otherwise: upper surface, right; under surface, left). **A**. *C. caulonia*, male (27 G, 8 December 1972, AME). **B**. *C. caulonia*, female (27 G, 8 August 1973, AME). **C**. *C. chacona*, male (1A, 15 April 1976, AME). **D**. *C. chacona*, seasonal female forms-- upper surface, left, winter form (27A, 11 June 1970, AME); right, summer form (25B, 17 January 1969, AME). **E**. *C. bellera*, male (5A, 9 January 1983, AME). **F**. *C. bellera*, female (24A, 20 May 1977, AME).

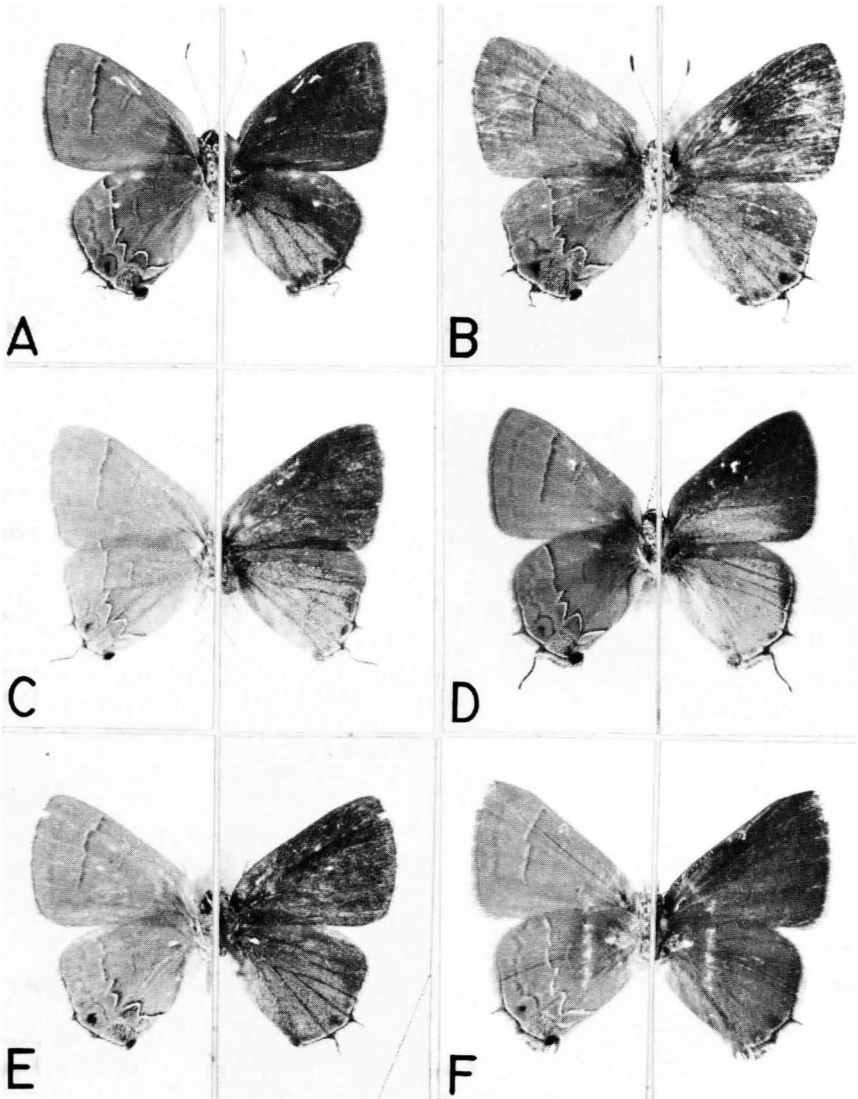


Fig. 5. Adults of new species of *Calycopis* from NW Argentina (upper surface, right; under surface, left). **A**. *C. gigantea*, holotype male. **B**. *C. gigantea*, allotype female. **C**. *C. argenopuncta*, holotype male. **D**. *C. argenopuncta*, allotype female. **E**. *C. nancea*, holotype male. **F**. *C. nancea*, allotype female.

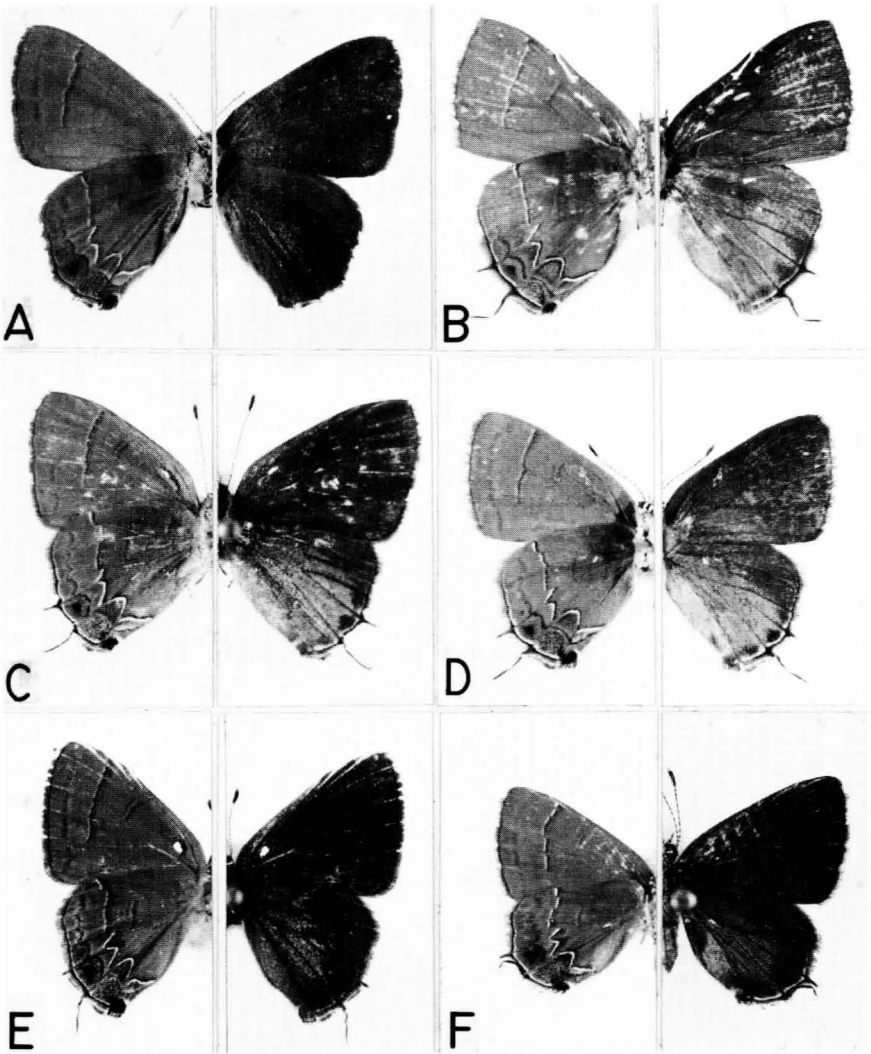


Fig. 6. Adults of new species of *Calycopis* from NW Argentina and Chile (upper surface, right; under surface, left). **A.** *C. crena*, holotype male. **B.** *C. crena*, allotype female. **C.** *C. dragones*, holotype female. **D.** *C. dragones*, allotype male. **E.** *C. valparaiso*, holotype female. **F.** *Thecla autoclea*, male (27A, AMNH).

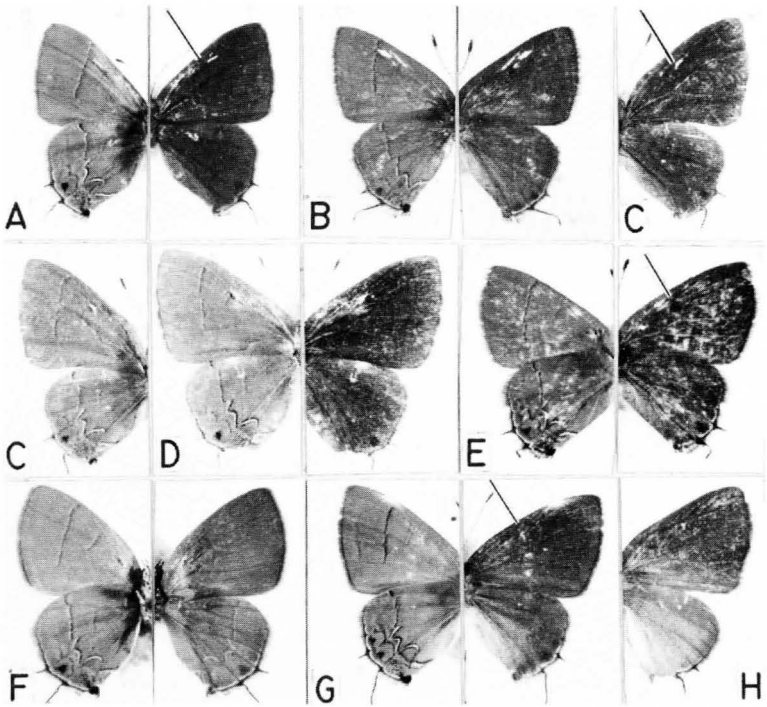
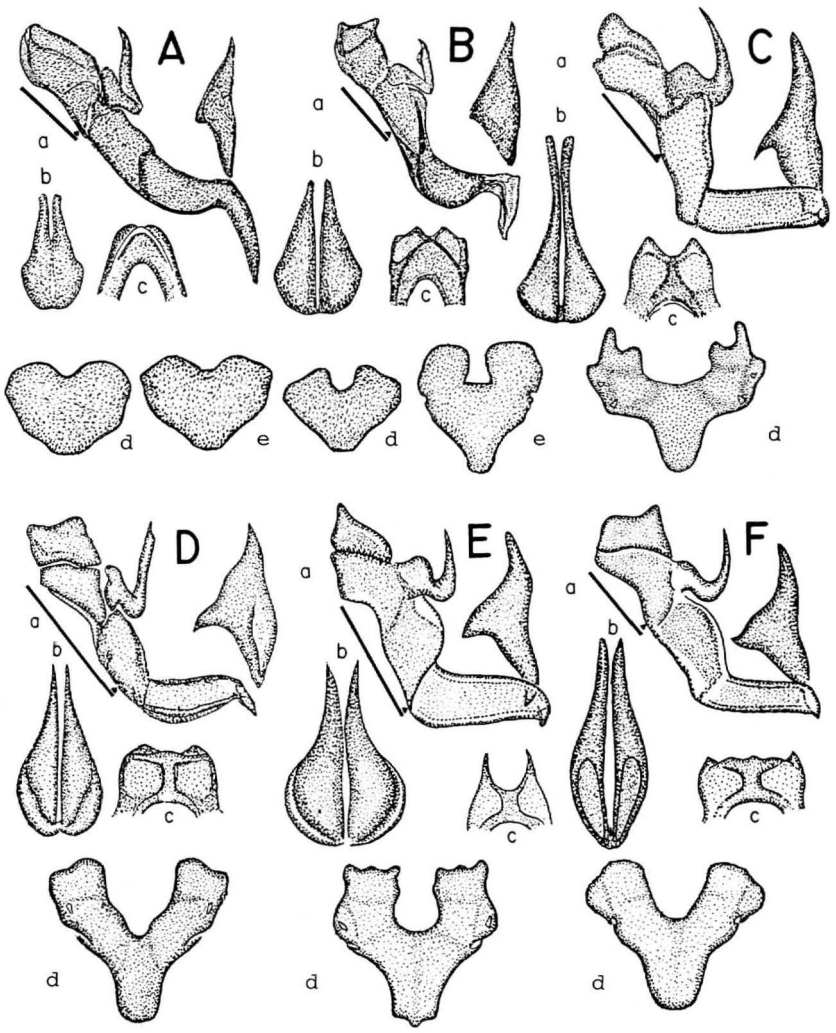


Fig. 7. Adults of species of *Tergissima* and *Femniterga* from NW Argentina (upper surface, right; under surface, left; black lines point to areas of male forewing with faint markings resembling "brands"). **A.** *T. mosconiensis*, male (47A, 20 June 1975 [paratype]). **B.** *T. mosconiensis*, female (17A, 9 June 1975, AMNH). **C.** *T. macphersoni*, male (upper, above right, under, below left) (6A, 20 June 1975, AME). **D.** *T. macphersoni*, female (16A, 31 May 1982, AMNH). **E.** *F. notacastanea*, female (5A, 15 January 1987, AMNH). **F.** *F. notacastanea*, male (5A, 15 January 1987, AMNH). **G.** *F. judae*, allotype male. **H.** *F. judae*, holotype female, upper surface only (under surface as on male).

Fig. 8. Comparative male morphology of *Calycopis*, *Calystryma*, *Tergissima*, and *Femniterga* and genitalia and tergal morphology of species of *Tergissima* and *Femniterga*. **A.** *Calycopis cecrops* (Fabricius) (type species) features: (**a**) lateral view, aedeagus removed, boldface line below vinculum showing length and point of abutment [caret] of brush organs, (**b** ventral view valvae, (**c**) dorsal view, labides, (**d**) dorsal plate of incised posterior cavity, *C. cecrops*. (**e**) dorsal plate, previously reported (Field, 1967a) Argentine species, *C. chacona*. **B.** Same, *Calystryma blora* Field (type species) except (**d**) dorsal plate maximal extend in genus, *C. trebula*, (**e**) dorsal plate *C. blora*. **C.** Same, *T. mosconiensis* (type species) dorsal plate, **d**). **D.** Same, *F. notacastanea* (type species) (dorsal plate **d**). **E.** Same, *T. macphersoni* (dorsal plate, **d**). **F.** Same, *F. judae* (dorsal plate, **d**).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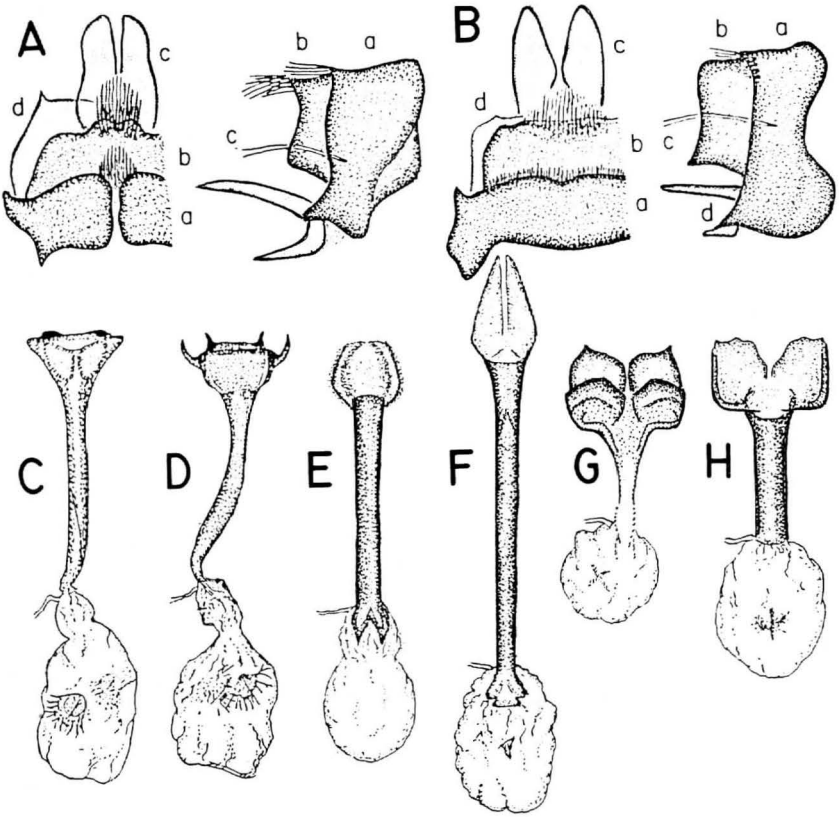

Fig. 9. Comparative female morphology of *Calycopis*, *Calystryma*, *Tergissima* and *Femniterga* and genitalia and tergal morphology of *Femniterga* species. **A.** Modified eighth tergite in females of *Femniterga notacastanea* (type species), dorsal view, left; lateral view, right (features: **a)** eighth tergite, **b)** terminal tergite, **c)** apophyses papillae anales, **d)** lamella postvaginalis). **B.** Same, *F. judae*. **C-H.** Female Genitalia (ventral view) (tergites normal in all taxa except *Femniterga*). **C.** *C. cecrops*, **D.** *C. keta* (*C. blora* not available, stated by Field, 1967a, to be like *C. keta*), **E.** *T. mosconiensis*, **F.** *T. macphersoni*, **G.** *F. notacastanea*, **H.** *F. judae*.

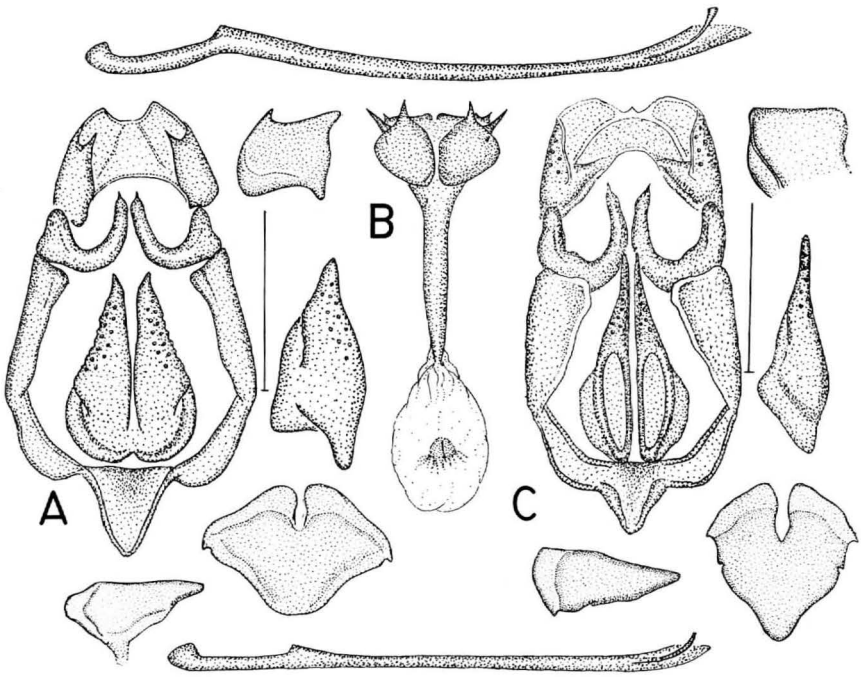

Fig. 10. Tergal morphology and genitalia of new Argentine species of *Calystryma*. **A.** *Calystryma phryne*, holotype male. Left, ventral view, genitalia with aedeagus (below) removed; boldface line at right of vinculum showing length and (baseline beneath) point of abutment of brush organs. Right, (above) lateral view labides, (center) lateral view valve, (below) dorsal plate of modified eighth tergite, dorsal (right), lateral (left) **B.** *Calystryma nototrebula*, allotype female, ventral view. **C.** *C. nototrebula*, holotype male, same format as on A, but aedeagus above.

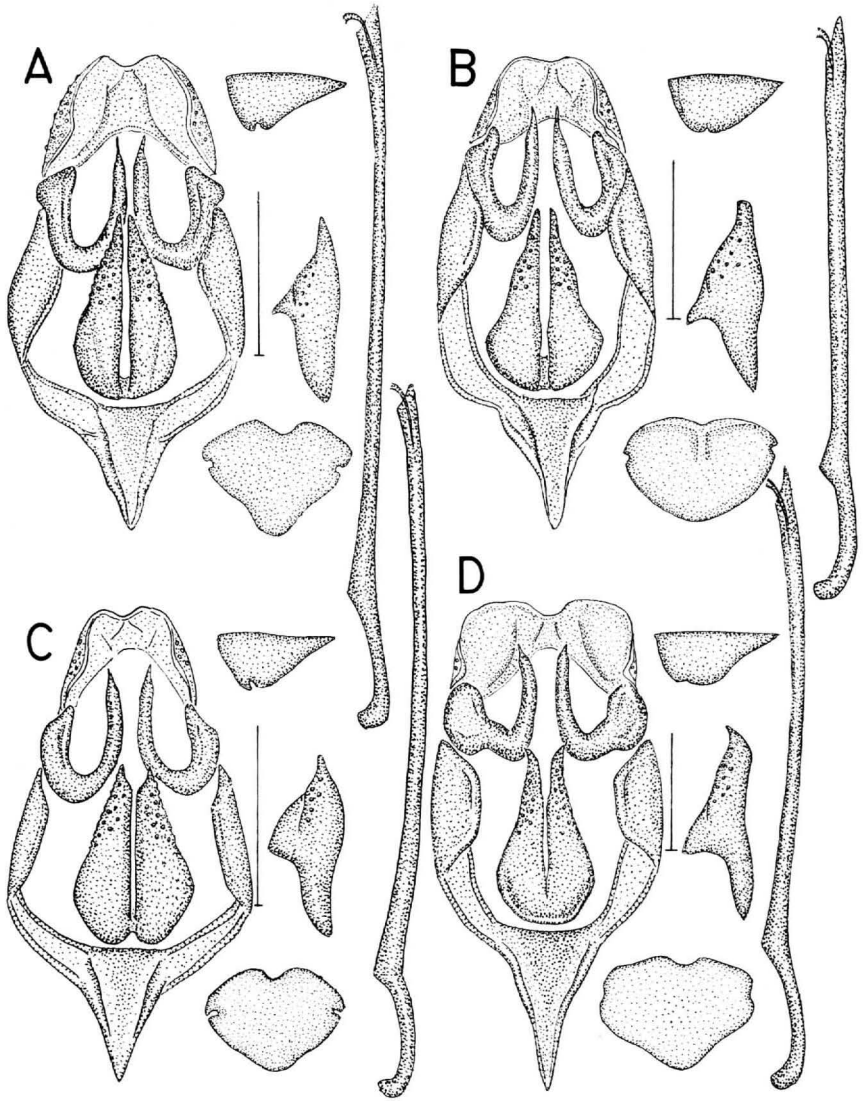

Fig. 11. Tergal morphology and genitalia, males of previously described species of Argentine *Calycopis*. Format: left, genitalia with aedeagus removed (far right), boldface line to right of vinculum showing length and (baseline) point of abutment of brush organs; right (above), dorsal plate of modified eighth tergite, lateral view; (center) valvae, lateral view; (below) dorsal plate of eighth tergite, dorsal view. **A**. *C. jeneirica* of Fig. 3. **B**. *C. caulonia* of Fig. 4. **C**. *C. chacona* of Fig. 4. **D**. *C. bellera* of Fig. 4.

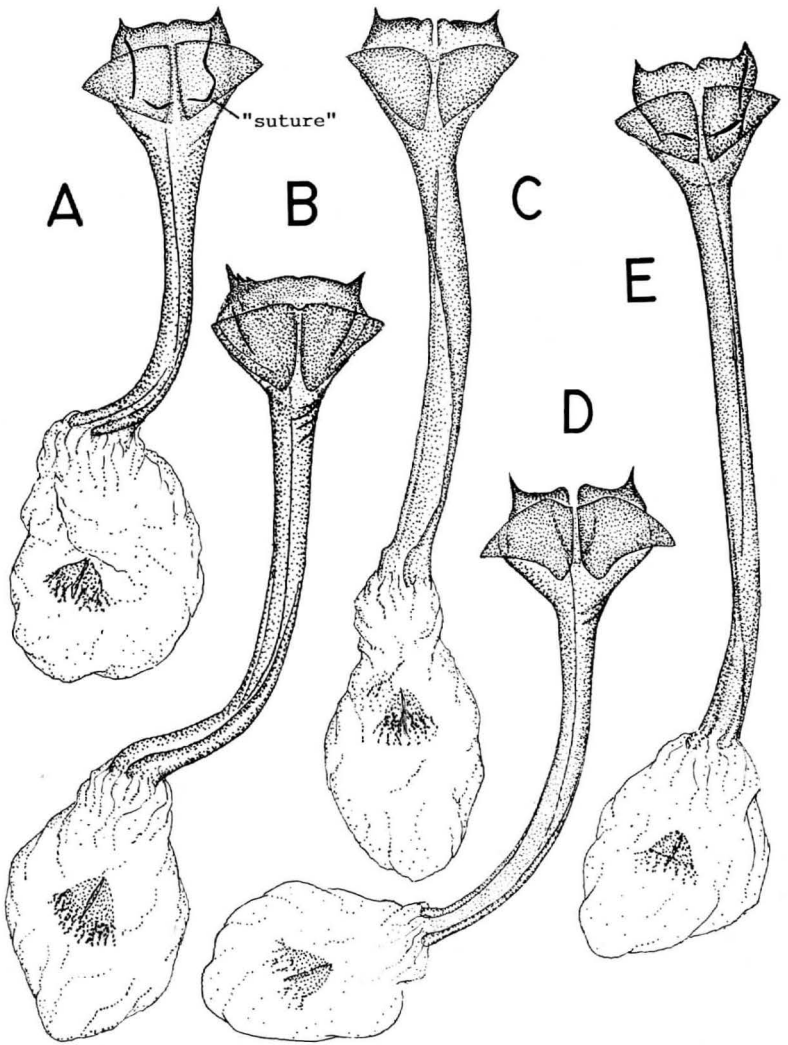

Fig. 12. Genitalia, ventral view, females of previously described species of Argentine *Calycopis* and *C. nancea*, new species (dark "suture" lines on the lamella postvaginalis and along the shaft of the ductus are highly individualized in *Calycopis* taxa; those drawn are from the specimen particular specimen illustrated). **A.** *C. caulonia* of Fig. 4. **B.** *C. chacona* of Fig. 4 (left). **C.** *C. bellera* of Fig. 4. **D.** *C. nancea*, allotype female. **E.** *C. jeneirica* of Fig. 3.

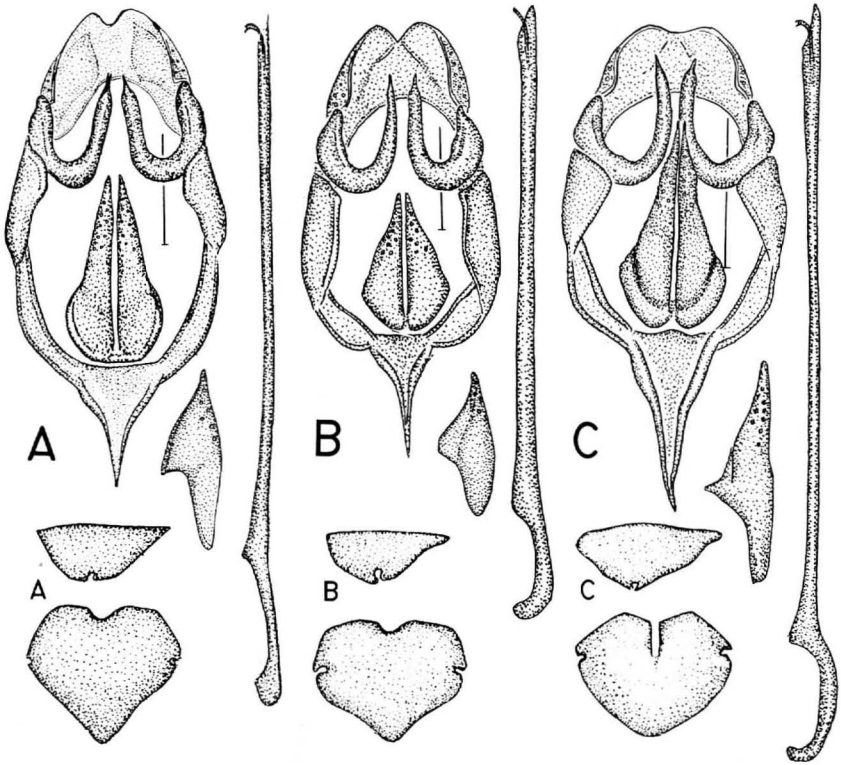

Fig. 13. Tergal morphology and genitalia, males of new species of *Calycopis*. Format. *Large letters* indicate clustered major features of species (genitalia [aedeagus removed] ventral view and directly adjacent, valve and aedeagus, lateral view; boldface line within vinculum [extending behind falces] showing length and [baseline] point of abutment of brush organs). *Small letters* indicate features slightly detached because of format requirements (particularly, lateral [above] and dorsal [below] views of dorsal plate of modified eighth tergite). **A.** *C. nancea*, holotype. **B.** *C. dragones*, allotype. **C.** *C. argenopuncta*, holotype.

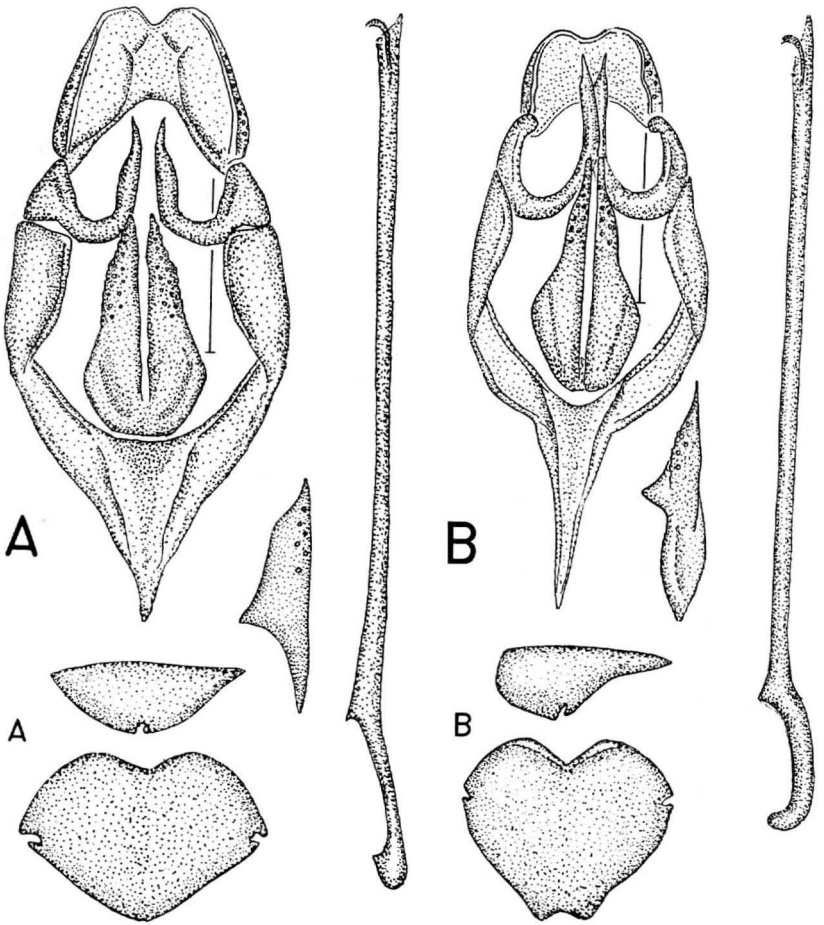

Fig. 14. Tergal morphology and genitalia, males of new species of *Calycopis*. Format same as figure 13. **A**. *C. gigantea*, holotype. **B**. *C. crena*, holotype.

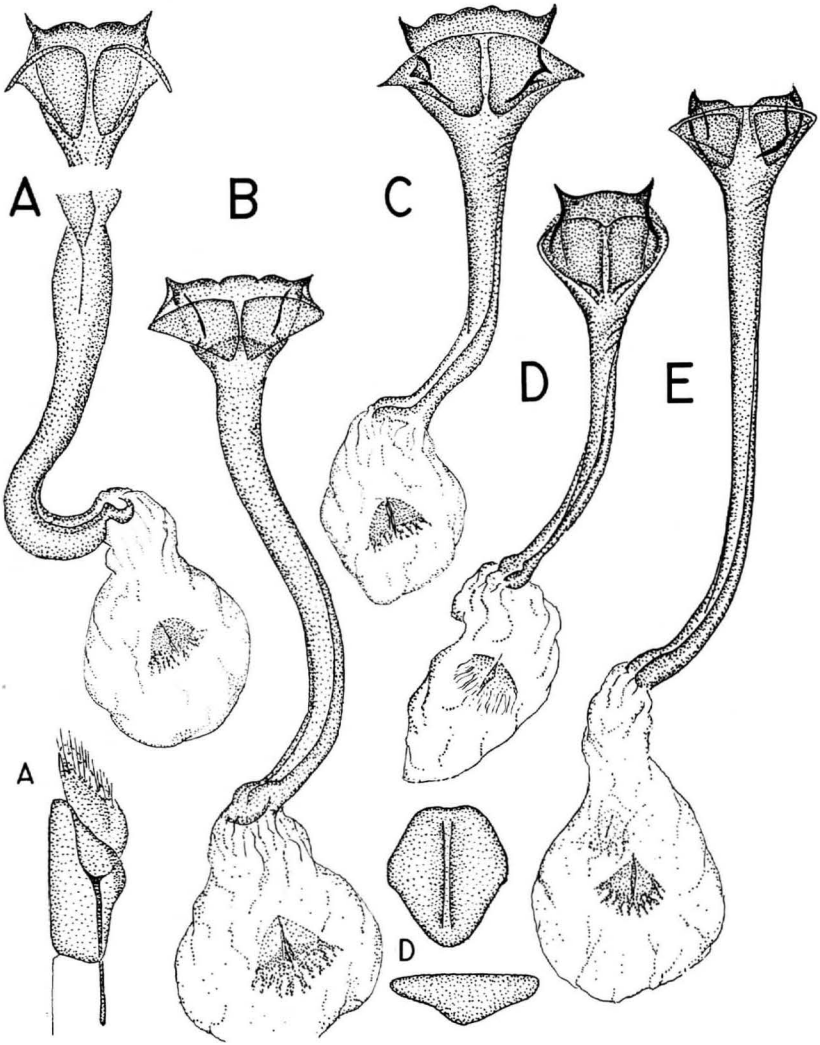

Fig. 15. Female genitalia, ventral view, of new species of *Calycopis* (dark "suture" lines qualified as in Fig. 12). **A.** *C. valparaiso*, holotype (with lateral view of modified eighth tergite detached below, small "a"). **B.** *C. gigantea*, allotype. **C.** *C. argenopuncta*, allotype. **D.** *C. dragones*, holotype (with dorsal view [above] and lateral view [below] of modified eighth tergite detached below, small "d"). **E.** *C. crena*, allotype.

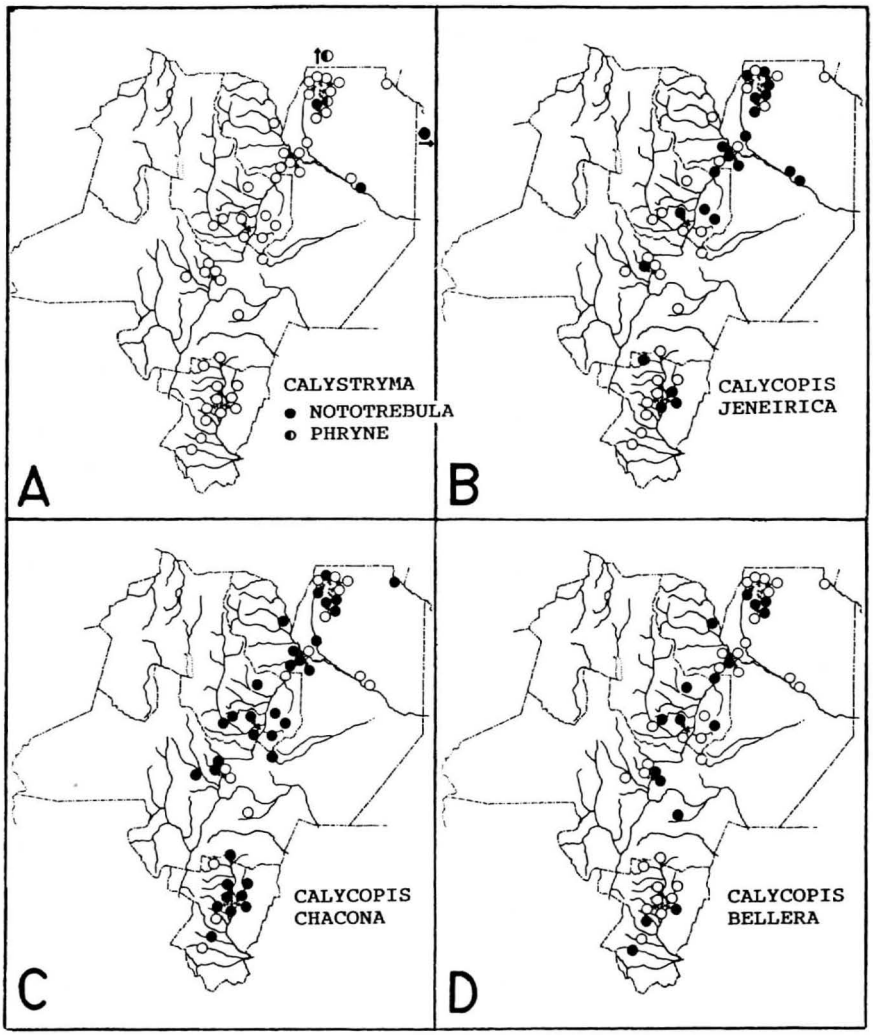

Fig. 16. Geographic distributions of *Calystryma* and *Calycopis* taxa in Tucuman, Salta and Jujuy provinces of the study area (blackened dots as indicated; if significant material examined was from an area directly adjacent these three provinces, the general direction of these further records is indicated by an additional dot and arrow at margin of map). **A.** *Calystryma phryne, C. nototrebula.* **B.** *Calycopis jeneirica.* **C.** *C. chacona.* **D.** *C. bellera.*

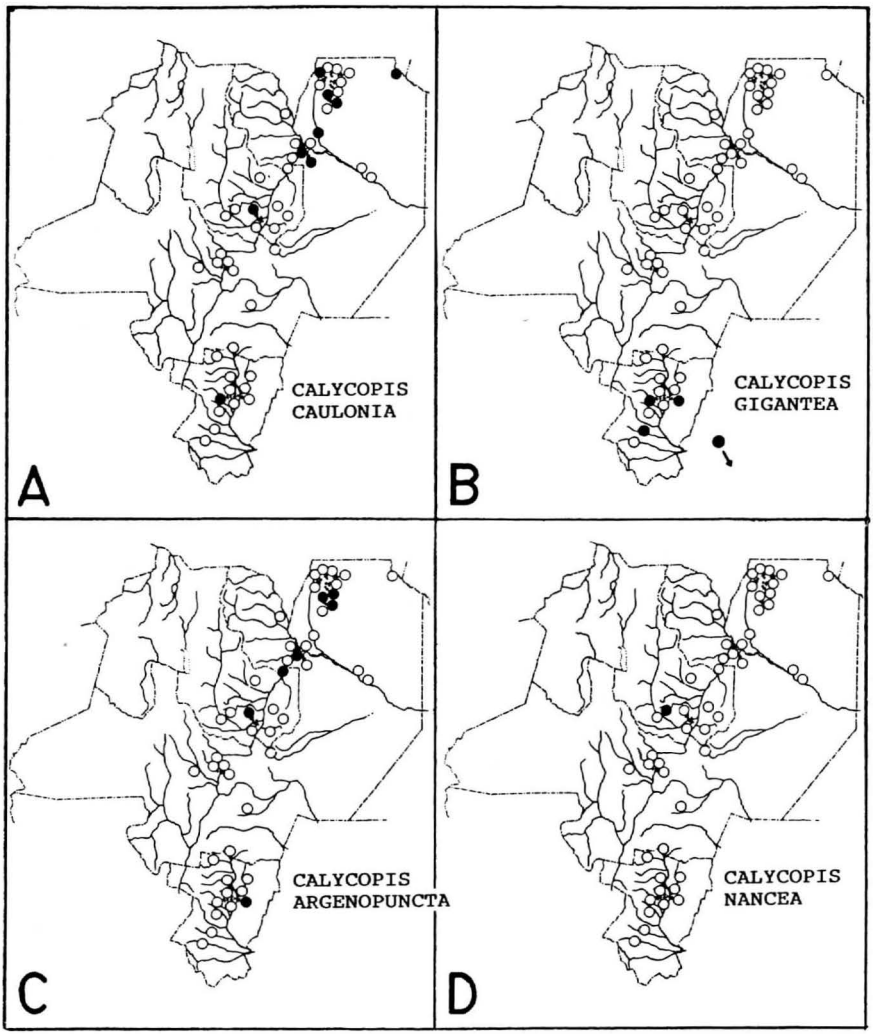

Fig. 17. Geographic distributions of *Calycopis* taxa in Tucuman, Salta and Jujuy provinces of the study area (blackened dots as indicated; if significant material examined was from an area directly adjacent these three provinces, the general direction of these further records is indicated by an additional dot and arrow at margin of map). **A.** *C. caulonia*. **B.** *C. gigantea*. **D.** *C. argenopuncta*. **E.** *C. nancea*.

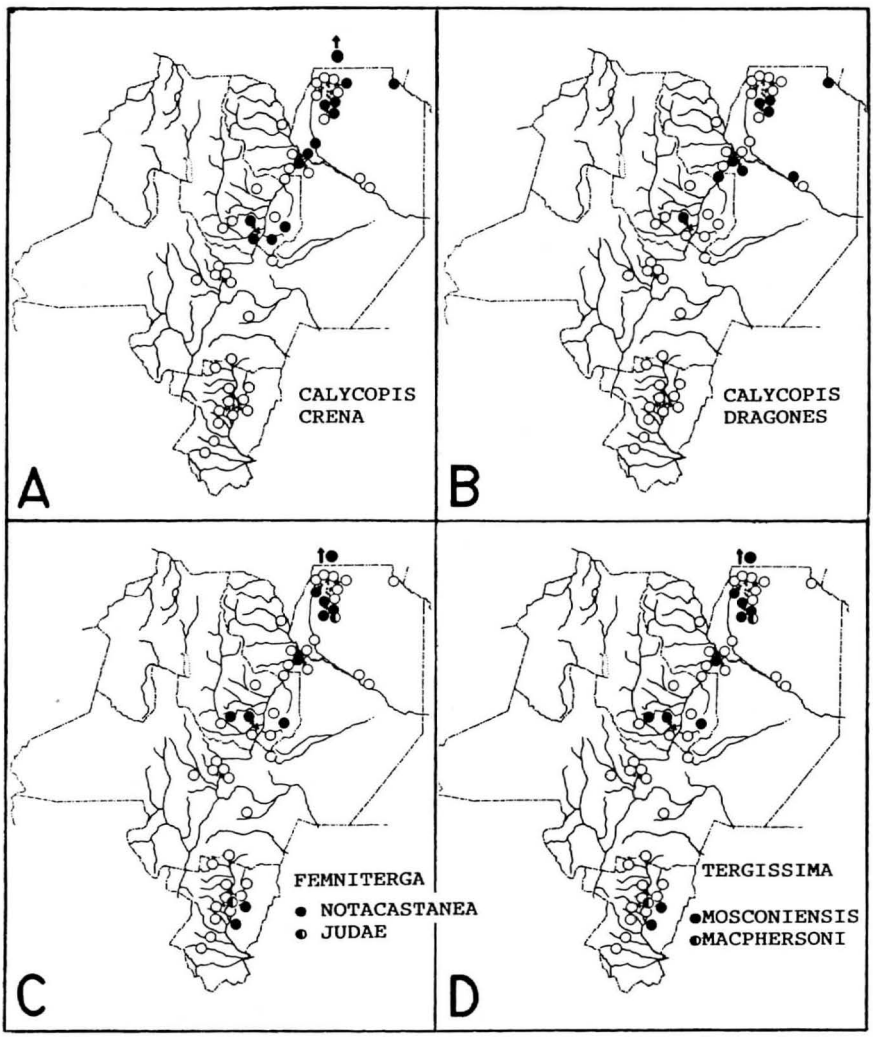

Fig. 18. Geographic distributions of *Calycopis*, *Tergissima* and *Femniterga* taxa in Tucuman, Salta, and Jujuy provinces of the study area (blackened dots as indicated; if significant material examined was from an area directly adjacent these three provinces, the general direction of these further records is indicated by an additional dot and arrow at margin of map.). **A.** *Calycopis crena*. **B.** *C. dragones*. **C.** *Femniterga notacastanea* and *F. judae*. **D.** *Tergissima mosconiensis* and *T. macphersoni*.

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