

**A STUDY OF FAMILY POLYTHORIDAE, WITH DETAILS ON
THE GENUS *EUTHORE* SELYS, 1869
(ZYGOPTERA)**

G.H. BICK¹ and J.C. BICK¹
1928 SW 48 Avenue, Gainesville, Florida 32608, United States

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The 8 spp. of *Euthore* are keyed, discussed and their wing color patterns figured and tabulated. *E. fasciata* (Hag.) is polymorphic with 3 forms: *sulfurata*, *fasciata*, *plagiata*, none of which are valid species or subspecies. The 3 common genera: *Cora*, *Euthore*, *Polythore* are compared in detail and a key to males of all 8 polythorid genera is given.

INTRODUCTION

We continue here our studies of Polythoridae with detailed consideration of the genus *Euthore*. After this a tabular comparison of the 3 most common genera, *Cora*, *Polythore*, *Euthore*, is given followed by a key to all 8 genera of Polythoridae.

THE GENUS EUTHORE

SELYS (1869) established the genus *Euthore* with *fasciata* as the type species. MONTGOMERY (1967) keyed 9 species and detailed their type depositions. DE MARMELS (1981, 1982, 1988a) considered taxonomy, ecology, distribution of Venezuelan species and BICK & BICK (1990) removed *Euthore terminalis* (McL.) from *Euthore*, returning it to *Cora*.

The 8 species in *Euthore* with the occurrence of each by country are:
fasciata (Hagen in Selys, 1853): Venezuela, Colombia, Ecuador.
fassli Ris, 1914: Col.

¹ Research Associate, Florida State Collection of Arthropods, Gainesville, Florida, USA.

- fastigiata* (Selys, 1859): Venez. Col.
- hyalina* (Selys, 1853): Guyana, Venez., Col., Peru.
- inlactea* Calvert, 1909: Peru.
- leroi* Ris, 1918: Col.
- meridana* Selys, 1879: Venez.
- mirabilis* McLachlan, 1878: Ec.

We attempted to study specimens in most of the large Odonata collections, but, except for *E. fasciata*, disappointingly few were available, a contrast with other Polythorid genera which we previously studied. However, B.E. Montgomery's unpublished notes and figures, mostly of types, were available in the Archives of the International Odonata Research Institute, Gainesville, Florida, and we examined directly types of *fasciata*, *plagiata* (Selys) and *mirabilis*.

Abbreviations used are:

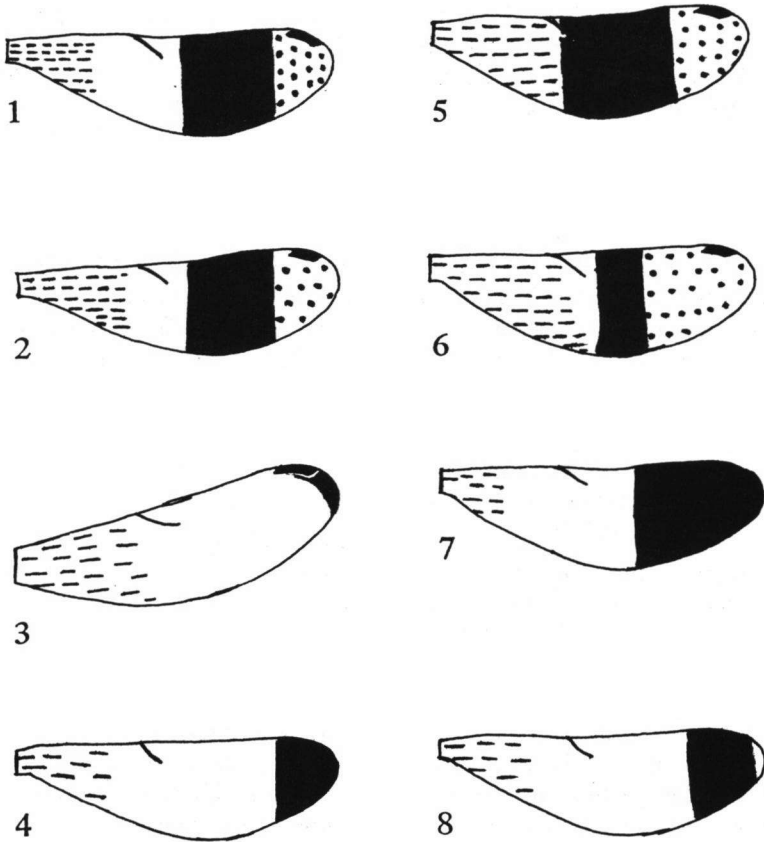
- ANSP Academy of Natural Sciences, Philadelphia
- BMNH British Museum (Natural History), London
- CC Carl Cook, Center, KY
- DM J. de Marmels, Maracay, Venezuela
- FO Felipe Ovale
- FSCA Florida State Collection of Arthropods, Gainesville
- IRSN Institut Royal des Sciences Naturelles, Brussels
- MCZ Museum Comparative Zoology, Harvard Univ., Cambridge
- R.G. R.W. Garrison, Azusa, CA
- SMF Senckenberg Museum, Frankfurt
- WCM W.C. MacIntyre
- UMMZ University of Michigan, Museum of Zoology, Ann Arbor
- USNM National Museum, Smithsonian Institution, Washington, D.C.

Because females of 3 species remain undescribed and we know of no description of the larval stage, this paper deals primarily with males. The sequence of species is alphabetical without indication of relationship. Basic collection data are given in the following sequence: COUNTRY (caps.), *department*, *province*, or *state* (italics), collector or source, date, number and sex, deposition.

SPECIES KEY TO *EUTHORE* MALES

The penis horns of 5 species figured by KENNEDY (1919) as well as the horns of 2 figured by DE MARMELS (1988a) are similar. Our examination of all 8 species showed the penis to be similar, the apical horns of most measuring 0.20 or 0.25 mm. We do not consider the penis a good diagnostic character. Also, because species differences were not found in either abdominal appendages or body colour pattern, the key is based entirely on wing color pattern. Determinations should be confirmed by species accounts, figures and tables.

- 1 Wings hyaline except for a yellow tint along the costa *hyalina*
- 1* Wings either conspicuously orange-red or transversely banded with brown-black 2
- 2 Each wing with an extensive orange-red triangular area *mirabilis*



Figs 1-8. Diagrams of wing color patterns in darkbanded species of *Euthore*: (1) h.w. *fasciata*, form "fasciata"; - (2) h.w. *fasciata*, form "plagiata"; - (3) f.w. *fastigiata*; - (4) h.w. *fastigiata*; - (5) h.w. *inlactea*; - (6) h.w. *fassli*; - (7) h.w. *leroyi*; - (8) h.w. *meridana*. [Dashes: basal transparency; - clear: opaque pale; - black: dark brown or black; - dots: apical transparency].

- 2' Each wing with either a transverse dark band or a narrow apical dark area 3
- 3 Dark wing band bordered proximally by an opaque white-yellow or orange area 4
- 3' No opaque pale area proximad of the dark band (Fig. 5) *inlactea*
- 4 Wing transparent golden brown with a narrow opaque orange band bordered distally by a narrow dark one (Fig. 6) *fassli*
- 4' Wing not golden brown but with an opaque white-yellow and a dark area 5
- 5 Front wing with dark area only 1.5-2.5 mm wide, usually only a narrow apical crescent (Fig. 3) *fastigiata*
- 5' Front wing with a distinct dark band which is never merely only an apical crescent 6

- 6 Hind wing dark band beginning 9-12 mm distad of nodus (Fig. 8) *meridana*
 6' Hind wing dark band beginning 1-7 mm distad of nodus 7
 7 Hind wing with a 3-8 mm apical transparent area distad of the dark band (Figs 1,2) .. *fasciata*
 7' Hind wing without an apical transparent area, the dark band reaching the apex (Fig. 7) *leroi*

EUTHORE FASCIATA (HAGEN IN SELYS)

Figures 1, 2; Tables I, II

Thore fasciata HAGEN in SELYS, 1853: 70 (Venez.; ♂, ♀ descr.); — SELYS, 1854: 259 (Col., Venez.: Puerto Cabello; addit. ♂, ♀ descr.).

Euthore fasciata: SELYS, 1869: 32 (Venez.; addit. ♂, ♀ descr., genus estab., *fasciata* type sp.); — McLACHLAN, 1878: 86 (Ec.; 2 ♂ descr.); — RIS, 1918: 27, 188 (Col.: Rio Negro, Casanara, Sosomuco, Medina, Villavicencio, 450-1300 m; ♂, ♀ descr., key); — KENNEDY, 1919: figs 21, 22 (Col.; "genotype", penis); — MUNZ, 1919: fig. 3 (h.w. ♀); — RACENIS, 1953: 28 (Venez.: Puerto Cabello; fig. 9, ♂ wings, venation only); — MONTGOMERY, 1967: 125, 127, 136, 147 (Venez.; key, type ♂, ♀, No. 12116, MCZ); — DE MARMELS, 1981: 26, 28 (Venez.; ecol., color photo ♂).

Euthore f. fasciata: RACENIS, 1958: 202 (Venez.: Cumbre de Choroni, Rancho Grande, 1000-1400 m); — DE MARMELS, 1982: 39 (Venez.: Aragua, Fed. Dist., Miranda, Zulia, 1000-2000 m; ecol., behavior); — 1988a: 93 (Venez.: Cumbre de Choroni, 1200 m; fig. 5, penis, fig. 6, photo whole insect); — 1988b: 380 (Venez.: Rancho Grande; fig. 3, superior appendage, fig. 6, penis); — 1990: 335 (Venez.).

Euthore plagiata SELYS, 1873: 37 ("race d'*E. fasciata*?") Rio Negro, Amérique équatoriale; 1 ♀ descr., ♂ unknown); — 1879: 56 (Ec.; probably ♂ of race *plagiata*, 1 ♂ descr.); — MONTGOMERY, 1967: 125, 148 (Rio Negro, Brazil; type ♀ BMNH; syn. of *E. fasciata*); — KIMMINS, 1970: 200 (holotype ♀, BMNH).

Euthore f. plagiata: DE MARMELS, 1988a: 93 (Venez.: Loma de Pio, Palmira; fig. 4, penis, fig. 6, photo whole insect, cf. *E. f. fasciata*; McLACHLAN's (1878), RIS' (1918) specimens assigned here; MONTGOMERY's (1967) Brazil probably inaccurate).

Euthore fasciata form *sulfurata*: DE MARMELS, 1982: 40 (Venez.: Coastal Cordillera; ♂ with butter yellow wing bars).

Material examined

Form *fasciata*: — COLOMBIA, *Cundinamarca*, Bogota, P. Mays, VIII-1983, 2 ♂, RG; — 1 ♂, ANSP; — Lindig, 1862, 1 ♂, MCZ; — "Appun", 1 ♂, MCZ; — COLOMBIA only, FO, 16 ♂, 2 ♀, FSCA. — ECUADOR, *Manabi*, Chone, VIII-1939, 1 ♂, FSCA; — *Morona-Santiago*, Rio Blanco, WCM, V-1936, 1 ♂, X-1939, 2 ♂, UMMZ; — Rio Napo, WCM, 1 ♂, UMMZ; — Rio Pastaza, WCM, X-1936, 1 ♂, UMMZ; — Rio Upano, L. Alonzo, 1 ♂, UMMZ; — *Napo*, Cotundo, VI-1975, R. LaFebre, 1 ♂, CC. — VENEZUELA, *Aragua*, Cumbre de Choroni, Rosales, V-1953, 1 ♀, FSCA; — T. Donnelly, VII-1989, 2 ♂, J. Michalski; — F. Test, VII-1955, 1 ♂, 1 ♀, UMMZ; "CFR", V-1969, 1 ♂, FSCA; — *Carabobo*, Puerto Cabello, ? Thoony, 3 ♂, MCZ; — *DF*, Los Vernados, IV-1939, 1 ♂, "CJR", X-1958, 2 ♂, FSCA; — *Miranda*, Curupas, G. Vivas, IX-1937, 1 ♀, FSCA; — *Yaracuy*, La Puerta, F. Fernandez, VIII-1945, 1 ♂, CC; — J. Osario, XI-1981, 1 ♂, FSCA; — VENEZUELA only, 1 ♂, 2 ♀, MCZ.

Form *plagiata*: — COLOMBIA, *Casanare*, Fassi, II-1911, 1 ♂, 1 ♀, UMMZ; — *Cauca*, Popayan, III-1912, 1 ♀, FSCA; — *Meta*, Villavicencio, VIII-1913, 2 ♂, 1 ♀, UMMZ; — "Monitz", 1 ♂,

MCZ; — COLOMBIA only, FO, 9 ♀, FSCA. — ECUADOR, *Morona-Santiago*, Mangosisa, L. Alonzo, 2 ♂, 1 ♀, UMMZ. — VENEZUELA, *Aragua*, Colonia Tovar, RG, IX-1980, 2 ♂, RG; — *Tachira*, San Cristobal, Y. Belandia, IV-1987, 2 ♂, J. Michalski. — COUNTRY ?, 1 ♂, UMMZ, 1 ♂, BMNH.

Form *sulfurata*: — VENEZUELA, *Miranda*, QUEBRADA PASQUIRE, DM, X-1980, 1 ♂, RG; — AVILA, DM, VI-1981, 1 ♂, X-1981, 1 ♂, RG; — DM, X-1983, 1 ♂, UMMZ.

Type data — *E. fasciata* lectotype ♂ No. 12116 in MCZ. Specimens well preserved, wing pattern definite but body color abnormally dark. Details of wings given in Table I.

Head dorsally black except for 4 small pale spots. Prothorax black, a mere suggestion of pale spots on middle lobe. Pterothorax black with the usual 5 pale stripes, anterior ones narrow, others scarcely detectable. Legs, abdomen and appendages entirely black.

E. fasciata paratype ♀ No. 12116 in MCZ. Abdomen missing, head and thorax abnormally dark. Front wings completely hyaline, not banded as in *plagiata*. Details of wings given in Table I.

Head black dorsally with 4 small yellow spots. Midlobe of prothorax with large paired pale spots narrowly separated by black. Pterothorax with narrow, scarcely visible pale stripes. Legs black.

E. plagiata holotype ♀ in BMNH. Specimen in good condition, wing color pattern definite, abdomen repaired. Wings banded, front ones conspicuously so in contrast with entirely hyaline ones of *fasciata*; opaque white begins proximad of the nodus, not at it as in *fasciata*. Other wing details given in Table I.

Head dull black dorsally with 4 small yellow spots. Middle lobe of prothorax with 2 large dorsal yellow areas separated by black. Pterothorax black with the usual 5 yellow stripes and an additional

Table I

Characteristics (mm) of wings of *Euthore fasciata* (lectotype ♂, paratype ♀, MCZ) and *E. plagiata* (holotype ♀, BMNH)

Species	Wing length	Base to nodus	Nodus to stigma	Antenodals	Postnodals	Stigma	Basal trans-parency	White width	Brown begins beyond nodus	Width of brown at costa	Apical trans-parency
<i>fasciata</i>											
lectotype ♂											
f.w.	31.6	14.6	13.0	38	40	3.0	4.0	14.0	4.0	12.2	2.1
h.w.	30.7	12.0	13.7	28	40	2.7	4.0	13.1	5.0	11.6	2.1
<i>fasciata</i>											
paratype ♀											
f.w.	30.8	12.3	13.0	32	39	3.1					
h.w.	29.1	11.6	13.5	27	39	3.0	11.6	4.0	4.0	4.3	8.5
<i>plagiata</i>											
holotype ♀											
f.w.	26.0	10.6	12.0	27	31	2.7	8.0	5.0	2.5	5.0	8.5
h.w.	26.7	9.5	12.5	23	32	2.7	7.5	7.0	4.0	6.0	6.7

half-length mesepisternal one. All legs missing. Abdomen black, yellow lateral stripes on segments 2 and 3, 4 unmarked, 3 and 5 each with a small lateral basal yellow spot.

SELYS (1873, 1879) stated that the front wings of *plagiata* females are banded, those of *fasciata* hyaline. This difference is obvious in the types of the taxa which we studied, but MONTGOMERY (1967) stated that these female types, presumably the same specimens, were identical and that *plagiata* is a synonym of *fasciata*. SELYS (1873, 1879) gave very brief notes for his 1 male *plagiata* surmising that it was only a variety of *fasciata*. There is no male type of *plagiata* but we studied the male type of *fasciata*. DE MARMELS (1982, 1988a, 1990) assigned Venezuela specimens to *E. f. fasciata* (northern), *E. f. plagiata* (southern) and to form *sulfurata* (2 small northern populations). However, all 3 of his "*plagiata*" females had hyaline front wings (DE MARMELS, 1988a, p. 93) as in the *fasciata* type.

Our material of *E. fasciata* included 2 kinds of readily distinguished females: those with hyaline front wings as in the *fasciata* type, those with banded ones as in the *plagiata* type. The hind wings of both kinds were very similar and overlapped in all measurements.

Specimens of *E. fasciata* included males which differed from all others by the opaque yellow or cream wing color and males in which the opaque wing color was white and the wing color patterns very similar. Distinction between these latter was manifest only when males were found associated in the same collection with the 2 very different kinds of females. One kind of male was collected with females having front wings as in the *fasciata* type, the other with females having front wings as in the *plagiata* type. Measurements of hind wing color patterns of various populations (Tab. II), showed that these 2 kinds of males overlapped in most characters. Thus, *E. fasciata* is polymorphic with 3 forms. They are only

Table II
A comparison in mm of hind wing color pattern of 3 forms of *Euthore fasciata* males

Form	Area	No.	Width of opaque pale	Dark begins distad of nodus	Width of dark at costa	Width of apical transparency
"SULFURATA"	Venezuela	3	8-10	3-4	9-11	3-4
"FASCIATA"	Colombia	19	5-9	3-6	6-9	3-5
	Venezuela	5	7-11	2-4	8-11	3-5
	Ecuador	5	4-6	2-3	9-10	3-6
Associated with hyaline f.w. ♀	Venez.	1	7	2	9	5
"PLAGIATA"						
Associated with banded f.w. ♀	Colombia, Ecuador	2	6-7	3-3	5-9	5-5
	Venezuela, southern	2	6-6	1-2	8-8	8-8
	Venezuela, northern	2	6-7	1-1	9-9	6-7

forms because we did not detect geographical or ecological isolation nor structural differences and because of overlap (Tab. II) in so many wing characters. The 3 forms are designated: (1) *sulfurata*, following DE MARMELS (1982), (2) *fasciata* because of association with females having colorless front wings as in the type, (3) *plagiata* from association with females having banded front wings as in that type.

Form *sulfurata* is represented by males only, all from Miranda State, northern Venezuela. The usually pale wing area is sometimes clearly yellow as in the DE MARMELS (1981) photo, sometimes only cream-colored.

Forms *fasciata* and *plagiata* occur in Venezuela, Colombia and Ecuador, both forms having been collected from the same localities. Because the male hind wing color patterns overlapped in most characters (Tab. II), some specimens could not be assigned confidently to either form. Indeed, without associated females, placement of most males in either form is risky. The best diagnostic character is the slightly larger (Figs 1, 2; Tab. II) apical transparency in the hind wings of some specimens of form *plagiata*.

Despite the obviously great difference in front wings, the hind wings of females of the 2 forms were very much alike, overlapping in every wing color pattern studied. This hind wing similarity in both sexes supports our hypothesis that neither form is a separate species or subspecies.

In each of 2 collections (Colombia, Ecuador) a male was associated with a banded front wing female. In another from Venezuela a male was associated with a hyaline front wing female. The fact that all 3 males (Tab. II) are essentially alike shows that very similar males occur closely associated with 2 very different kinds of females. Two kinds of females within what seems to be the same species is similar to the condition described for *Polythore procera* Selys (BICK & BICK, 1985) and reported for *Calopteryx* spp. (DE MARCHI, 1990).

EUTHORE FASSLI RIS

Figure 6; Table III

Euthore fassli RIS, 1914: 282 (Col.: Monte Socorro, Santa Margarita 2300 m; 6 ♂ descr., wings fig. 1 photo); — 1918: 27, 188 (Col.; key, 1914 photo inaccurate); — MONTGOMERY, 1967: 125, 136, 147 (Col.; key, lectotype ♂ No. 417 SMF).

Material examined. — COLOMBIA, *Amazonas*, Leticia, C. Farrell, 1 ♂, RG.

This specimen was collected far east of those reported by RIS (1914, 1918). The opaque pale band is orange, exceptionally narrow (Tab. III) and almost pointed at its anal end.

The female is unknown.

EUTHORE FASTIGIATA (SELYS)

Figures 3, 4; Table III

Thore fastigiata SELYS, 1859: 450 (Bogota; ♂ descr., ♀ unknown).

Euthore fastigiata: SELYS, 1869: 33 (Bogota; ♂ descr.); – RIS, 1918: 28, 188 (Col.: Bogota, Rio Negro, Sosomuco, Medina, Quetoma, 800-1600 m; key, ♂, ♀ descr., fig. 11 ♂ wings, ecol.); – KENNEDY, 1919: figs 23, 24 (Col: Tosomorio; penis); – MONTGOMERY, 1967: 125, 136, 147 (Col.; key, types 5 ♂ IRSN, 1 ♂ BMNH).

Euthore f. fastigiata: DE MARMELS, 1988a: 93, fig. 6 (Venez: Tachira, Los Delicias, 17-1800 m; photo, cf. *E. f. meridana*, Bogota illogical type locality); – 1990: 335 (Venez.).

Material examined. – COLOMBIA, *Cundinamarca*, Bogota, 2 ♂, ANSP; – Lindig, 1862, 4 ♂, MCZ; – *Meta*, Villavicencio, VIII-1913, 1 ♂, UMMZ; – Rio Meta, 3 ♂, BMNH; – Sosomuco, Fassl, III-1911, 2 ♂, UMMZ. – COLOMBIA only, FO, 11 ♂, FSCA, 1 ♂, UMMZ; – Sjosted, 2 ♂, UMMZ. – VENEZUELA, *Tachira*, Rubio-Delicias, IX-1966, 1 ♂, FSCA.

DE MARMELS (1988a) disagreed with Selys' designation of Bogota as the type locality, but we do have 6 specimens from there.

E. meridana has been designated a race or subspecies of *fastigiata* (SELYS, 1879; RACENIS, 1958; DE MARMELS, 1988a). The hind wings of both are similar (Figs 4, 8; Tab. III), but we judge each to be a separate species (as did

Table III

A comparison in mm of hind wing color patterns of males of 5 species of *Euthore* having dark-banded wings

Species	Geographic area	Number	Wing length	Basal transparency	Width opaque pale	Brown begins beyond nodus	Width of brown at costa	Brown ends before stigma	Apical transparency
<i>fastigiata</i>	Colombia	16	28-33	8-11	13-18	8-14	4-6	1-4	0-1
	range mean		30.4	9.2	15.4	10.8	5.4	1.9	0.1
<i>meridana</i>	Venezuela	9	29-32	9-10	13-17	9-12	5-7	0	0-1
	range mean		31.1	9.1	15.1	10.3	6.4	0	0.6
<i>fassli</i>	Colombia	1	29	13	2.5	1.7	4	6.7	10
<i>inlactea</i>	Peru	1	26	11	0	1.4	9	1.4	6
<i>leronii</i>	Colombia	1	30	6	13	7.0	12	0	0

MONTGOMERY, 1967) because of the great and nonoverlapping difference in width of the front wing black: 1.5-2.5 mm *fastigiata*; 4.5-5.5 mm *meridana*. Also the widths of dark in *meridana* front and hind wings are similar whereas these widths differ greatly in *fastigiata*.

RIS (1918) stated that the female front wing is hyaline, the hind, banded.

EUTHORE HYALINA (SELYS)

Thore hyalina SELYS, 1853: 71 (Bahia; 3 ♂, descr.); — 1854: 261 (expanded descr.).

Euthore hyalina: SELYS, 1869: 33 ("Bahia ??.", Bogota; note on ♀); — RIS, 1918: 25, 26, 188 (Col.: Muzo, Pacho, Bogota; Peru: Cuzco, 400-2300 m; key, ♂, ♀ descr.); — KENNEDY, 1919: figs. 25, 26 (Bogota; penis); — RACENIS, 1959: 487 (Peru: Santa Ana); — MONTGOMERY, 1967: 125, 127, 135, 148 (Brazil; key, lectotype ♂ IRSN desig.).

Material examined. — COLOMBIA, *Cundinamarca*, Bogota, 1911, 2 ♂, UMMZ; 1 ♂, 1 ♀, ANSP; Pacho, 2 ♀, BMNH; — COLOMBIA only, FO, 1 ♂, FSCA; 1 ♂, BMNH. — GUYANA, *Demarara*, E. Klots, IV-1937, 1 ♂, FSCA. — "NEW GRANADA", 2 ♂, BMNH, 1 ♂, ANSP. — VENEZUELA, *Lara*, Cubiro, Y. Fernandez, I-1954, 1 ♀, FSCA.

SELYS (1853, 1854) listed Bahia but in 1869 questioned that locality. MONTGOMERY (1967), possibly thinking of Bahia state, gave Brazil. If this is indeed the Selys locality, it would be far east of all records of the genus. The correct locality may be Bahia de Caraquez on the Pacific coast of Ecuador. Nevertheless, *E. hyalina* is widespread, reaching Guyana and southern Peru.

EUTHORE INLACTEA CALVERT

Figure 5: Table III

Euthore fasciata inlactea CALVERT, 1909: 91 (Peru: Piches, Perene Valleys, 2-3000'; 2 ♂ descr.); — KENNEDY, 1920: figs 24, 25 (penis); — RACENIS, 1959: 486 (Peru: Piches, Perene).

Euthore inlactea: KENNEDY, 1919: figs 27, 28 (Peru; penis); — MONTGOMERY, 1967: 125, 136, 148 (Peru; key, type, USNM, 1 ♂ paratype ANSP).

Material examined. — PERU, *Loreto*, Balsapuerto, P. Nagel, VI-1933, 1 ♂, FSCA. [S.W. Dunkle (pers. comm.) examined a type ♂ in USNM].

This new locality, the first since the original, is far to its north. *E. inlactea* (Fig. 5) may suggest *fasciata* (Figs 1, 2) except for the absence of white and the greater width of black in hind wings of the former.

The female is unknown.

EUTHORE LEROII RIS

Figure 7; Table III

Euthore leroii RIS, 1918: 28, 188 (Col.: Cañon del Tolima, 1700 m; 2 ♂, 1 ♀ desc., key); MONTGOMERY, 1967: 126, 136, 148 (Col.; key, type No. 418 ♂, No. 420 ♀, SMF).

Material examined. — COLOMBIA, *Caldas*, Pensilvania, 1913, 1 ♂, UMMZ.

The *Caldas* locality, the only one additional to the type, is at no great distance from the original. Wings of *leronii* have been considered (RIS, 1981; MONTGOMERY, 1967) exceptionally broad, but those of some specimens of *fasciata* are almost as wide. The 2 species are readily distinguished: the hind wing dark band of *leronii* (Fig. 7) reaches the apex, whereas *fasciata* (Figs 1, 2) has a 3-8 mm clear apical area.

RIS (1918) stated that both front and hind wings of *leronii* females are banded.

EUTHORE MERIDANA SELYS

Figure 8; Table III

Euthore meridana SELYS, 1879: 58 (Venez.: Merida; ♂ adulte, jeune descr., ♀ unknown, prob. race of *fastigiata*); — MONTGOMERY, 1967: 126, 136, 148 (Venez.; key, type ♂ IRSN); — DE MARMELS, 1982: 39 (Venez.: Merida, Lara; ecol.).

Euthore fastigiata meridana: RACENIS, 1958: 202 (Venez., Lara: Cubiro, Sanare, Sierra Terepayma, 1300-1600 m); — DE MARMELS, 1988a: 94 (Venez.: Merida, Barinas, Lara; fig. 6, photo entire insect); — 1990: 335 (Venez.).

Material examined. — VENEZUELA, *Barinas*. San Isidro, J.S. VII-1975, 3 ♂, 1 ♀, FSCA; — *Lara*, Carret, Humocaro Alto, II-1980, 2 ♂, CC; — Sanare, Gutierrez & Gonzalez, VII-1980, 1 ♂, FSCA; — J. Osorio, III-1981, 3 ♂, 1 ♀, FSCA; — *Merida*, San Jacinto, Adams & Bernard, VI-1975, 1 ♂, FSCA.

Although *meridana* sometimes has been considered a subspecies of *fastigiata*, there is little possibility of confusing the two because of the much more limited extent of the front wing dark in *fastigiata*. *E. meridana* differs also from *leronii* and *fasciata*: in *meridana* the hind wing (Tab. III) dark band is much narrower (5-7 mm) than in *leronii* (12) and in *meridana* the width of white (13-17 mm) is greater than in *fasciata* (4-11).

Our specimens include 2 females collected with males. The female from Barinas has hyaline front wings, white and dark-banded hind ones. The somewhat immature Lara female has hyaline front wings, only a mere trace of white in the hind.

EUTHORE MIRABILIS McLACHLAN

Euthore mirabilis McLACHLAN 1878: 87 (Ecuador: Intag; 6 ♂, 6 ♀, descr.); — SELYS, 1879: 57 (Intag; ♂, ♀ descr.); — KENNEDY, 1919 (Ec.; figs 29, 30, penis,

"type"); — MONTGOMERY, 1967: 126, 135; 148 (Ec.; key, types BMNH, IRSN, MCZ); — KIMMINS, 1970: 199 (Ec.; lectotype ♂ BMNH).

Material examined. — ECUADOR, *Pichincha-Imbabura*, Intag, Buckley, 1 ♂ lectotype, 1 ♂, 2 ♀ paratypes, BMNH. [R.W. Garrison (pers. comm.) examined a ♂ and a ♀ in MCZ].

This beautiful species seems to have been collected only from the above locality and not more recently than 1878.

Table IV
A comparison of hind wing characteristics of males in the 3 most frequently encountered genera of Polythoridae

	<i>Cora</i>		<i>Euthore</i>		<i>Polythore</i>	
Number of species studied	14		7		12	
	Range	Mean	Range	Mean	Range	Mean
Maximum wing width	4.8-7.2	5.7	7.4-10.0	8.4	8-12	9.5
Base-nodus, nodus-pterostigma	almost equal		almost equal		Nodus-stigma 4-8 mm greater	
Thickened antenodals		1		2	1-4	2.1
Sectors between MA & Cup		0		0	1-4	2.1
Cells between A3 & wing border	4-12	8.1	12-21	17.0	13-25	18.1
Wingth length	22-34	27.2	26-35	29.9	27-44	34.1
Number of antenodals	20-32	25.1	23-31	27.8	27-41	33.9
Veins under pterostigma	4-9	6.0	7-9	8.1	5-18	10.5
Length of petiole	2.4-4.5	3.4	1.5-2.0	1.8	1.9-3.6	2.4
Sectors between R3 & IR3	0-2	0.6	0-2	0.2	2-2	2.0
Sectors between CuP & A1	0-2	0.5	4-5	4.4	2-5	3.8
Maximum distance between wing border & A1	0.7-2.1	1.5	1.6-2.9	2.3	2.0-3.1	2.4

FAMILY POLYTHORIDAE

Family Polythoridae has been characterized and the genera keyed by FRASER (1957) and MONTGOMERY (1967). DE MARMELS (1988b) assigned *Euthore montgomeryi* Racenis to *Chalcothore*, new genus. BICK & BICK (1990) placed *Josocora jocosa* (McL) and *J. klenei* (Karsch) in *Cora*, thus eliminating the

former genus. Therefore, Polythoridae now includes 8 genera: *Chalcopteryx*, *Chalcothore*, *Cora*, *Euthore*, *Kalacora*, *Miocora*, *Polythore*, *Stenocora*.

We have been concerned with *Cora* and *Polythore* (BICK & BICK, 1985, 1986, 1990) and in 1991 gave a tabular comparison of *Cora* and *Euthore*. Because problems still arise in assigning certain species, particularly those in the *batesi* group to the correct genus, *Polythore*, we compare here the above 3 most frequently encountered genera, considering a majority of the species in each. As shown in Table IV, the following characters previously used in generic separation: number of antenodals, number of veins under pterostigma, length of petiole, sectors between CuP and A1 and between R3 and IR3, maximum distance between wing border and A1 overlap too broadly to be significant in generic separation. In contrast, the characters: maximum wing width, distance between base & nodus, nodus and pterostigma, first thickened antenodal, sectors between MA and CuP, cells between A3 and wing border are important in separating these genera.

This comparative study suggested a need for a revised key to all polythorid genera. The following key, modified from RACENIS (1953), FRASER (1957) and MONTGOMERY (1967) and with data from KENNEDY (1940) and DE MARMELS (1988b), is given with the hope that it will clarify difficulties which we have encountered in the earlier keys.

KEY TO GENERA OF POLYTHORIDAE

- 1 Anal vein unbranched 6
- 1' Anal vein 2 or 3-branched 2
- 2 Superior male appendage without an internal ventral tooth, with only an internal ridge. (DE MARMELS, 1988b, figs 1, 2) 3
- 2' Superior male appendage with an internal ventral tooth or thumb 4
- 3 Fore wing longer and narrower than the very broad iridescent hind wing *Chalcopteryx*
- 3' Fore and hind wings of same size and shape (DE MARMELS, 1988b, fig. 8) *Chalcothore*
- 4 Maximum width of hind wings 4.8-7.2 mm; 4-12 cells between A3 and wing margin *Cora*
- 4' Maximum width of hind wings 7.4-12 mm; 12-25 cells between A3 and wing margin 5
- 5 Two thickened (primary) antenodals; no sector 4 or more cells long between MA & CuP; distance from wing base to nodus and from nodus to pterostigma almost equal *Euthore*
- 5' Only 1 thickened antenodal; 1-4 sectors 4 or more cells long between MA & CuP; distance from nodus to pterostigma 4-8 mm greater than distance from base to nodus *Polythore*
- 6 Abdominal segment 10 with a conspicuous, tall, narrow, dorsal horn (KENNEDY, 1940, fig. 8) *Stenocora*
- 6' Without such a horn 7
- 7 Wing length not more than 3/4 times width; a broad dark band in middle of wings. (KENNEDY, 1940, fig. 1) *Kalacora*
- 7' Wing length 4-5 times the width; wings hyaline or only narrowly dark-pigmented 8
- 8 Penis horns long, 0.20 mm (BICK & BICK, 1990, fig. 11); wings entirely hyaline *Cora confusa*
- 8' Penis horns shorter, 0.10 mm (KENNEDY, 1940, figs 12, 19); wings either entirely hyaline or distally dark *Miocora*

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