Treubia 2003 33 (1) 71-87

SYSTEMATICS OF VAGRANTINI BUTTERFLIES (LEPIDOPTERA: NYMPHALIDAE). PART 1. CLADISTIC ANALYSIS

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Abstract

Eight genera of Indo-Australian butterflies: Algia, Algiachroa, Cirrochroa, Cupha, Phalanta, Terinos, Vagrans, *and* Vindula *are presented here. These genera together with two Afrotropical genera:* Lachnoptera *and* Smerina, *and a Central American genus* Euptoieta *were previously placed as subtribe uncertain.*

One-hundred adult morphological characters were scored for fifty-four taxa, and were analyzed simultaneously (Nixon and Carpenter, 1993). The cladistic analysis showed that all species were properly assigned to monophyletic genera, and the arrangement of the outgroup taxa is in concordance with the classification previously suggested. The eight Indo-Australian and two Afrotropical genera belong to the tribe ***Vagrantini*** *within the subfamily Heliconiinae.*

Key words: Heliconiines, Vagrantini, Indo-Australian, butterflies.

Introduction

The subfamily Heliconiinae is recognized by most authorities but the included taxa may differ. Ackery (in Vane-Wright and Ackery, 1984) suggested that the heliconiines may prove to represent a highly specialized subgroup of the Argynnini sensu lato. Heliconiinae sensu Harvey (in Nijhout, 1991) also include Acraeinae and Argynninae of Ackery (1988). Parsons (1999) included argynnines within Heliconiinae but retained Acraeinae as a distinct subfamily.

Harvey (in Nijhout, 1991) recognized three tribes of Heliconiinae: Pardopsini, Acraeini, and Heliconiini. The Heliconiini include the Neotropical Heliconiina (Brower, 2000), some genera which were placed as "subtribe uncertain", Argynnina, Boloriina and three other genera (the Neotropical genus *Yramea*, the Oriental *Kuekenthaliella*, and *Prokuekenthaliella*) with uncertain relationships.

The present study is concerned with the genera of the subtribe uncertain, which include eight Indo-Australian genera: *Algia, Algiachroa, Cirrochroa, Cupha, Phalanta, Terinos, Vagrans, Vindula*; two Afrotropical genera: *Lachnoptera* and *Smerina*; and a Neotropical genus, *Euptoieta*. Penz and Peggie (2003) showed the monophyly of the eight Indo-Australian genera and two Afrotropical genera, and recognized the group as Vagrantini. The genera were recognized as subtribe Vagrantiti by Pinratana and Eliot (1996). The placement of the genera and the phylogenetic hypothesis for the relationships of the genera based on the result of cladistic analysis will be presented.

Materials and Methods

The ingroup taxa include most species of each genus of the "subtribe uncertain" of Harvey (in Nijhout, 1991). Examples of the genera are given in Figure 1. Outgroups were selected based on their current or previous association with the ingroup taxa (see Appendix 2).

Species were used as terminals and were intended to serve as replications for the genera they represent. At least one male and one female specimen of each species were dissected for examination. For species with a wide distribution range, representatives from western and eastern areas were examined.

The wings were removed from the body and were put in a glassine envelope with a label corresponding to the body. The wings were examined separately for characters. The body, kept intact whenever possible, was dampened with 70% ethanol and macerated in a small beaker with 10% potassium hydroxide (KOH), and boiled for 10-20 minutes on a hot plate; or soaked overnight in KOH without boiling. The softened body then was rinsed with 70% ethanol or a mixture of ethanol and water. The left pleuron was split longitudinally, and the specimen was then ready for examination under a stereo dissecting microscope. After examination, the cleared specimen was placed into a vial with a label. When necessary, the dissection was stained using a 1% solution of Chlorazol Black in 70% ethyl alcohol (Braby, 2000).

Many characters are defined as binary, i.e., the presence or absence of a structure. For consistency throughout the list, absence is scored as 0 and presence as 1. This scoring does not imply character polarity. Question marks indicate inapplicable data. Some other characters consist of multiple states, and in all cases the characters were scored as non-additive since justified assumptions as to the transformation of the characters could not be made. The transformation series were unrooted, with the rooting conducted during the analysis by the outgroup method (Farris, 1982, Nixon and Carpenter, 1993). The scores are given in parentheses following the description of each character state.

Some autopomorphies are included in the analysis in order to retain the information that might be useful for future work, although Farris (1989), Goloboff (1991), and Bryant (1995) noted that autapomorphies are not informative and will inflate CI artificially.

The cladistic programs used (Goloboff, 1996; Nixon, 1999, 2000) start counting characters from 0 instead of 1, so a hypothetical character 0 with entry of all 0s is added to the matrix, and is later deactivated in the analysis. In this way, the counting of actual characters can start from 1.

Various morphological character systems of adult butterflies were directly assessed and considered for inclusion in the cladistic analysis (see Appendix 1 for the list of characters). The primary sources for character definitions include Penz (1999), Penz and Peggie (2003), which were based on prior studies by Michener (1942), Emsley (1963), and Brown (1981). Other characters used by Corbet and Pendlebury (1992), and Parsons (1989, 1999) were also evaluated and included.

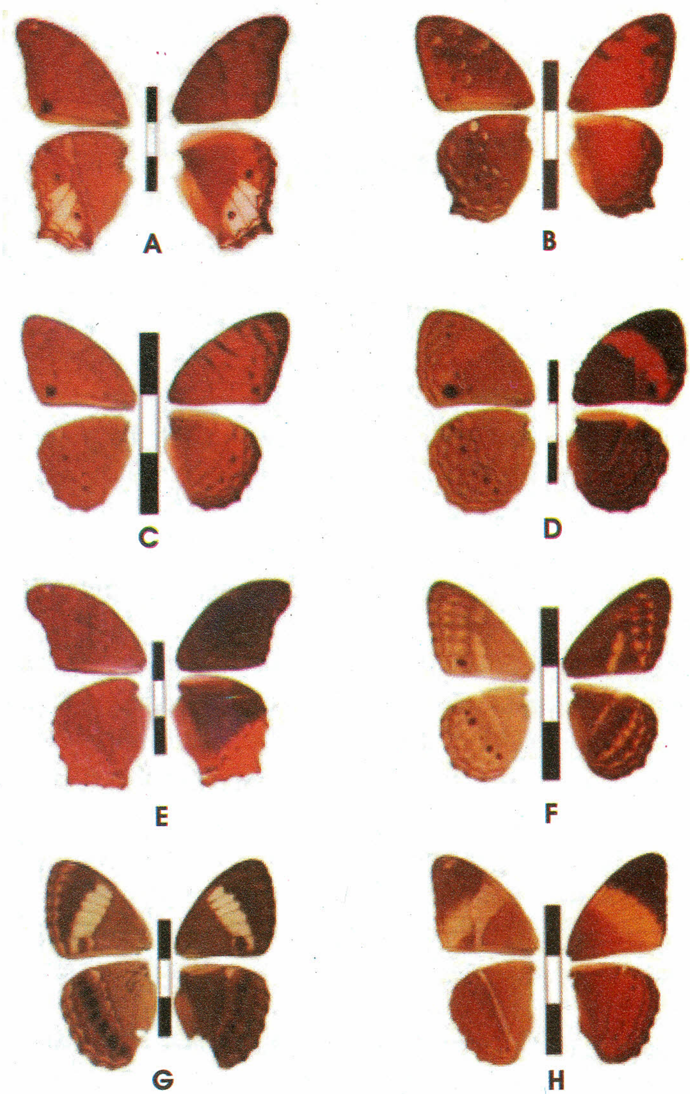

Figure 1. Examples of the ingroup taxa. Male specimens of: A. *Vindula sapor*, B. *Vagrans egista*, C. *Phalanta alcippe*, D. *Cupha maeonides*, E. *Terinos clarissa*, F. *Algia fasciata*, G. *Algiachroa woodfordii*, and H. *Cirrochroa orissa*. Photographs by T. Nguyen (AMNH).

Terminology of wing venation followed Comstock's system as illustrated in Comstock and Needham (1899), Comstock and Kellogg (1925), Downey and Allyn (1975), Common and Waterhouse (1981), Miller (1987), Scoble (1992), and others. Observations and examination of the thoracic and abdominal segments followed Penz (1999), Penz and Peggie (2003), Ehrlich (1958), and Eaton (1988). Pertinent characters include tarsomeres, spiracles, and apodeme on the anterior edge of the second abdominal tergite. For terminology of male and female genitalic characters, Klots (in

Tuxen, 1970) was followed, with reference also to Ogata *et al.* (1957), Okagaki *et al.* (1955), Sibatani *et al.* (1954), Sibatani (1972), Warren (1944, 1955), Häuser (1993).

Results and discussion

Observations on the characters across the taxa were recorded as a matrix of taxa and characters. The final matrix of 54 taxa by 100 characters is presented in Appendix 2. All ingroup and outgroup taxa were scored and analyzed together simultaneously (Nixon and Carpenter, 1996). No a priori assumptions of character transformation were included in the analysis.

The data matrix was analyzed using the NONA (Goloboff, 1996) and Winclada programs (Nixon, 1999, 2000). Using equal weighting of NONA, and heuristic search using the command "hold/20; mult*50; max*;" the matrix results in 6 equally parsimonious trees of TL = 281. The strict consensus tree (Figure 2) has a total length 284, CI= 0.43, and RI = 0.85. This cladistic analysis shows that all species are properly assigned to monophyletic genera, as previously defined by Parsons (1989, 1999).

In order to ensure a thorough search, I also used the amb=; poly-; max*; and amb-; poly=; best; options. The analysis was allowed to have ambiguous support and treat trees as dichotomous using the command of: amb=; poly-;max*; and then was returned to the more constrained criteria of allowing only unambiguous support and collapsing unsupported nodes, using the command of: amb-; poly=; best; the analysis also resulted in 6 equally parsimonious trees. The consensus tree is identical to the one obtained above (Figure 2).

Bremer support was applied to the strict consensus tree to show relative character support across the tree. I used h 20000; suboptimal 10; to allow 20000 trees and keeping suboptimal trees with up to 10 steps longer. The branch support values are indicated in Figure 2.

For the purpose of character mapping, it is desirable to choose one of the most parsimonious trees, as it is shorter and therefore contains more information and resolution than the strict consensus tree (Farris, 1979, 1983; Carpenter, 1988). The preferred tree (divided to show outgroup taxa on Figure 3 and ingroup taxa on Figure 4) has a total length 281, CI = 0.44, RI = 0.86. This tree forms the basis for subsequent discussion of character distributions.

The trees including the clade (*Vagrans egista* (*Phalanta phalantha* + *Phalanta alcippe*)) were chosen over those containing clade (*Phalanta phalantha* (*Vagrans egista* + *Phalanta alcippe*)). Character 79 (the presence of notched condition on the last tarsomere of female foreleg) supported the latter clade. Characters 11 (termen is about the same length with dorsum), 14 (the presence of tail at end of M3 hindwing), 39 (eighth abdominal tergite is not narrowed posteriorly), 57 (juxta forming elongate bulbous projection), and 66 (no expansion of vesica at the opening of aedeagus) support *Vagrans egista*.

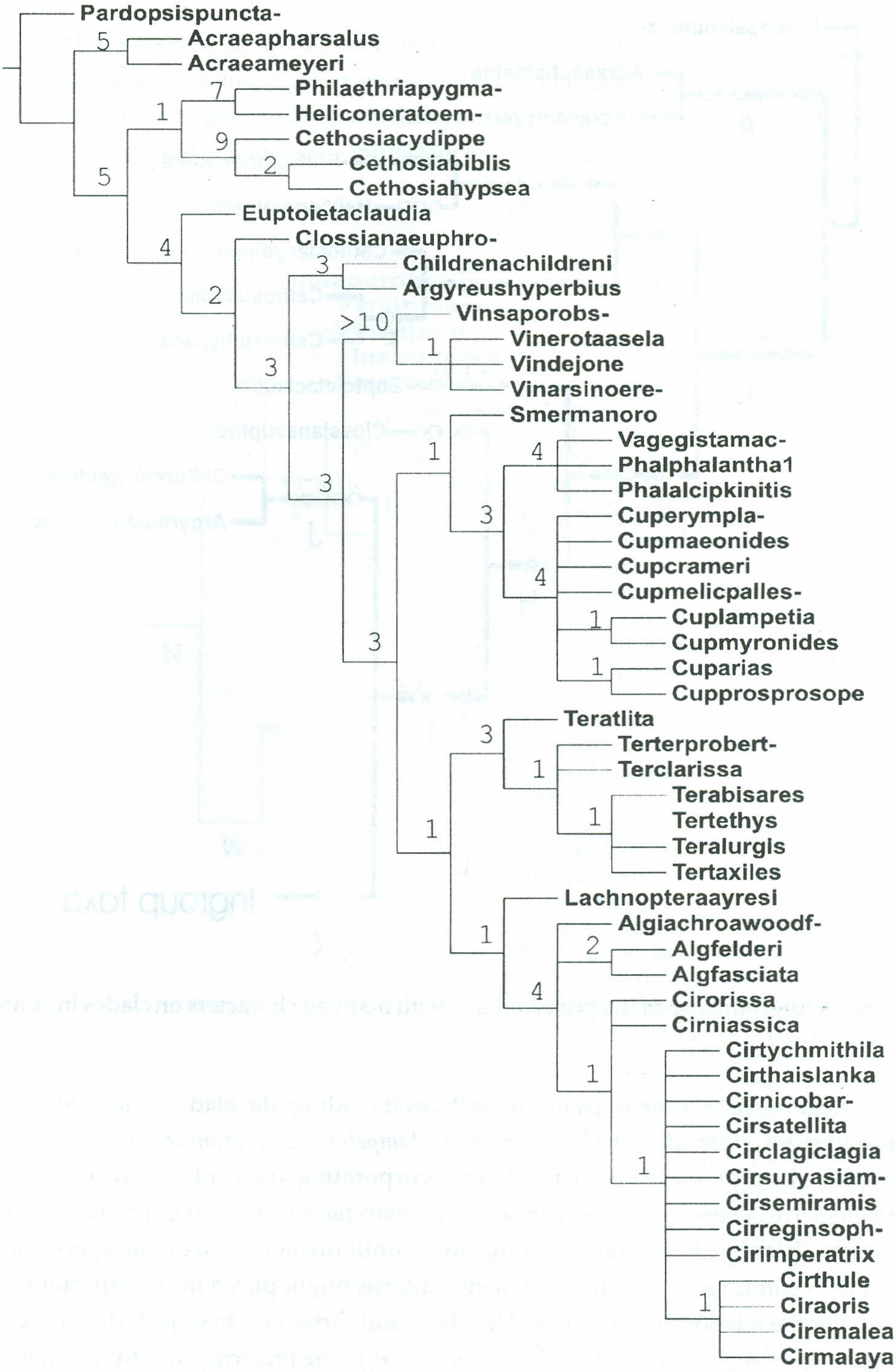

Figure 2. Strict consensus tree of 6 most parsimonious trees. The Bremer branch support values are indicated.

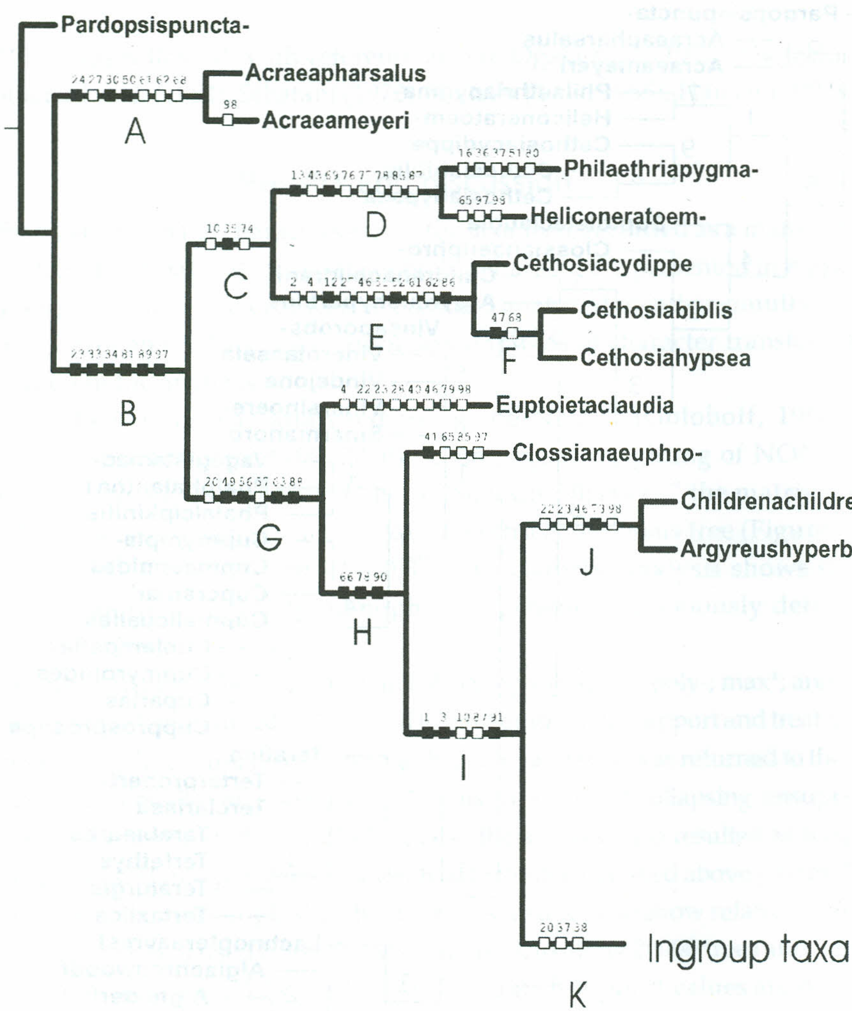

Figure 3. Outgroup taxa of the preferred tree with mapped characters on clades indicated.

Regarding relationships of *Cupha*, trees including the clade (*C. melichrysos* (*C. erymanthis* + *C. maeonides* + *C. crameri* + (*C. lampetia* + *C. myronides*) + (*C. arias* + *C. prosope*))) were preferred over the trees incorporating the clade (*C. erymanthis* (*C. maeonides* + *C. crameri* + *C. melichrysos* + (*C. lampetia* + *C. myronides*) + (*C. arias* + *C. prosope*))). I accept this tentative arrangement until further work on the species-level analysis is conducted, within which wing patterns might play a more important role.

For the relationships of *Algia*, *Algiachroa*, and *Cirrochroa*, trees including the clade ((*Algia felderi* + *Algia fasciata*) (*Algiachroa* + *Cirrochroa*)) were preferred over the tree with the clade ((*Algiachroa* + (*Algia felderi* + *Algia fasciata*)) *Cirrochroa*). Relationships of *Algiachroa* and *Cirrochroa* are supported by characters 11 (the forewing termen is longer than dorsum) and 64 (the presence of spines on external wall of aedeagus opening), whereas the relationships of *Algia* and *Algiachroa* are defined by character 37 (anterior margin of the eighth abdominal tergite similar in width to posterior margin of seventh tergite). I consider characters 11 and 64 contain more important features than character 37.

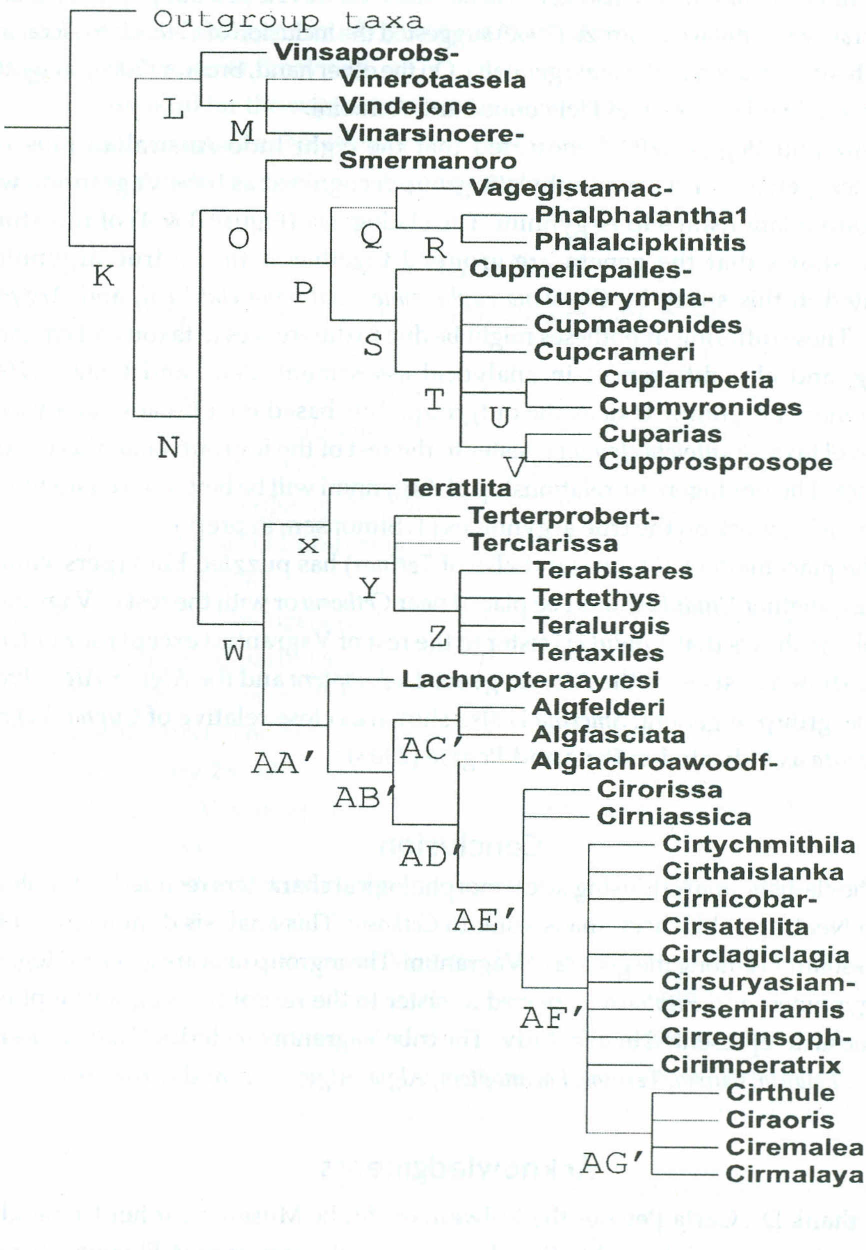

Figure 4. Ingroup taxa of the preferred tree with clades indicated.

The sister-group relationship between Neotropical Heliconiina and *Cethosia* is indicated in this analysis, as suggested by Brown (1981), Corbet and Pendlebury (1992), Penz (1999) and Penz and Peggie (2003). The monophyly is supported by the presence of paired ribs on apodeme of the second abdominal tergite (character 35). Harvey (in Nijhout, 1991), however, did not agree with this view because *Cethosia* lacks the abdominal glands found in all Heliconiina, and also *Cethosia* has the well-developed subpapillary glands seen in acraeines. Similarly, Shirozu (1960) suggested the inclusion of *Cethosia* to Acraeinae based on his observation of the male genitalia. On the other hand, Brower (2000) suggested the sister-group relationship of Heliconiina and Acraeini.

Penz and Peggie (2003) indicated that the eight Indo-Australian plus two Afrotropical genera form a monophyletic group recognized as tribe Vagrantini, with sister-group relationships to Argynnini. The cladogram (Figure 3 & 4) of this study, however, shows that the genera are grouped together with the true argynnines represented in this study by *Clossiana euphrosyne*, *Childrena childreni*, and *Argyreus hyperbius*. These differing hypotheses might be due to differences in taxon and character sampling, and also differences in analytical assessment. Penz and Peggie (2003) included more argynnine taxa as the outgroup, thus based on a broader analysis on higher level taxa. *Euptoieta claudia* is sister to the rest of the ingroup taxa plus the true argynnines. The phylogenetic relationship of Argynnini will be better understood with comprehensive work on the true argynnines (T. Simonsen, in prep.).

The placement of *Vindula* (and also of *Terinos*) has puzzled Eliot (pers. comm., 2000) as to whether *Vindula* should be placed near *Cethosia* or with the rest of Vagrantini. This analysis shows that *Vindula* is sister to the rest of Vagrantini except for *Euptoieta*. *Terinos* is shown as sister to the African genus *Lachnoptera* and the *Algia* + *Algiachroa* + *Cirrochroa* group of genera. *Smerina* is also shown as close relative of *Cupha*, *Vagrans* and *Phalanta* as indicated in Penz and Peggie (2003).

Conclusion

The cladistic analysis using adult morphological characters resulted in topologies in which Neotropical Heliconiina is sister to *Cethosia*. This analysis demonstrated that there is resolution among the genera of Vagrantini. The ingroup taxa are grouped together with argynnines, and *Euptoieta* is placed as sister to the rest of the Vagrantini plus all argynnine taxa represented in this study. The tribe Vagrantini includes *Vindula*, *Smerina*, *Vagrans*, *Phalanta*, *Cupha*, *Terinos*, *Lachnoptera*, *Algia*, *Algiachroa*, and *Cirrochroa*.

Acknowledgments

I thank Dr. Carla Penz of the Milwaukee Public Museum for her tremendous support and many useful insights. She also reviewed the manuscript. Financial support was provided by the AMNH. Materials on loan were kindly provided by the following curators: R.I.Vane-Wright, P.R. Ackery, C. Smith, and J. Reynolds of the Natural History Museum (British Museum); J.K. Liebherr and R. Hoebeke of CUIC; J.S. Miller, F. Rindge, and E. Quinter of AMNH; Rosichon Ubaidillah and Pudji Aswari of Museum Zoologi Bogor; S. Miller, R. Robbins, and D. Harvey of Smithsonian Institution, National Museum of Natural History; J. Rawlins of Carnegie Museum of Natural History; J. Miller of Allyn Museum. Bruder Henk van Mastrigt, Sadaharu Morinaka, and the late Lt. Col. John Eliot have generously given me some specimens. T. Nguyen of AMNH took the photographs of the wings.

I am thankful for the support and encouragement provided by Drs. Moh. Amir, MSc. and all colleagues in Museum Zoologi Bogor. My family deserve my sincerest thanks for their moral support and for their understanding.

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Appendix 1. The list of characters used in the cladistic analysis:

1. Forewing vein Sc: over ½ length of costal margin (0); about ½ length of costal margin (1); less than ½ length of costal margin (2).
2. Forewing R1 arises: basal to the cell apex (0); from the cell apex or very close to apex (1).
3. Forewing vein R2 arises: from the cell (0); from vein R5 (1).
4. Forewing vein R4 arises: basal to end of R2 (0); apical to or at about the end of R2 (1).
5. Forewing vein R4 ends: on costal margin (0); at apex or termen (1).
6. Forewing discocellular M2-M3 connected with cubitus: proximal to / basal to the base of CuA1 (0); at the base of CuA1 (1); distal to / apical to the origin of CuA1 (2).
7. Forewing apex of cell: is more distant than is the origin of CuA1 to the wing base (0); is of the same distance with the origin of CuA1 to the wing base (1); is closer than is the origin of CuA1 to the wing base (2).
8. Forewing cell: about 1/3 fw length (0); between 1/3 and ½ fw length (1); about ½ fw length (2).
9. Scales on forewing discal cell, ventral surface: rounded or ellipsoid (0); rectangular with smooth edge (1); rectangular with denticulate edge (2).
10. Forewing basal spur (Munroe, 1961): absent (0); present (1).
11. Forewing termen and dorsum: termen is longer than dorsum (0); termen is about the same length as dorsum (1); termen is shorter than dorsum (2).
12. Termens of both wings: smoothly and shallowly dentate or almost rounded (0); prominently dentate or scalloped, and accentuated on underside by distinct zigzag submarginal line (1).
13. Hindwing humeral vein: forked (0); curved towards tip of wing or almost forked with a very small branch toward base of wing (1); curved towards base of wing (2).
14. Hindwing tail at the end of vein M3: absent (0); present (1).
15. Hindwing with yellowish cream submedian band on upperside: absent (0); present (1).
16. Hindwing cell: open (0); closed (1).
17. When hindwing cell closed, M2-M3 connects with cubitus: proximal to or before the base of CuA1 (0); at the base of CuA1 (1); distal to or after the origin of CuA1 (2).
18. When hindwing cell closed, cross-vein M2-M3: not so apparent (0); well developed (1).
19. Male androconial scale patch: absent (0); present on hindwings only (1); present on forewings and hindwings (2).
20. Antennae: thread-like, almost no club (0); gradually clubbed (1); abruptly clubbed (2).
21. Eyes: glabrous (0); hairy (1).
22. Labial palpi: second segment inflated or enlarged apically, third segment very small (0); second segment cylindrical throughout, third segment not small (1).

23. Tegula: very small, smaller than patagium (0); from 1/3 to less than ½ the length of the mesoscutum (1); about ½ or longer the length of the mesoscutum (2).
24. Male foreleg tarsus composed of: one segment (0); more than one segment (1).
25. Arolium: absent (0); present (1).
26. Arolium: clearly narrower than the last tarsomere (0); similar in width or wider than the last tarsomere (1).
27. Pulvillus: absent (0); present (1).
28. Pulvillus composed of: two pairs of processes (0); a single pair of process (1).
29. Distal end of dorsal and ventral pulvillar processes: both narrow (0); dorsal process wide and ventral process narrow (1); both wide (2).
30. Male pre-tarsal claws: symmetrical (0); asymmetrical (1).
31. Male pre-tarsal claws: straight at the middle (0); curved (1).
32. Location of spiracles on pleural membrane of third to sixth abdominal segments: at midline or slightly above (0); above midline, very near tergites (1).
33. Apodeme located at the anterior edge of second abdominal tergite: entire at the middle (0); divided at the middle (1).
34. Apodeme located at the anterior edge of the second abdominal tergite: small (0); large (1).
35. Paired ribs on the apodeme at the anterior of second abdominal tergite: absent (0); present (1).
36. Length of seventh abdominal sternite: 2/3 or more the length of sixth sternite (0); 1/2 the length of sixth sternite (1).
37. Anterior margin of the eighth abdominal tergite: conspicuously narrower than posterior margin of seventh tergite (0); similar in width to posterior margin of seventh tergite (1).
38. Apophyses of the eighth abdominal tergite: absent (0); present (1).
39. Eighth abdominal tergite: narrowed posteriorly (0); not narrowed posteriorly (1).
40. Contour of the posterior edge of the eighth abdominal tergite: convex (0); straight (1); concave (2).
41. Uncus: entire (0); bifid (1).
42. Fenestrula or dorsal window of uncus: absent (0); present (1).
43. Gnathos: absent (0); present (1).
44. Gnathos: fused ventrally (0); not fused ventrally (1).
45. When not fused ventrally, gnathos appears as: smooth elongated arms (0); elongated arms with distal spiny lobes (1).
46. Plate as extension of appendix angularis: absent (0); present but small (1); present and quite large (2). Note: vannus is included in this definition.
47. Dorsal projections of tegumen: absent (0); present (1).
48. Saccus: poorly developed (0); markedly developed (1).

49. Costula of vinculum: extended anteriorly to surround saccus, with saccus bowl-shaped (0); not surrounding saccus, saccus elongate proximally (1).
50. Vinculum + saccus: forming an arch (0); straight (1).
51. Arch formed by tegumen + pedunculum: larger than arch formed by vinculum + saccus (0); similar to arch formed by vinculum + saccus (1); smaller than arch formed by vinculum + saccus (2).
52. Tip of pedunculum: extended ventrally beyond tip of vinculum (0); meets vinculum at tip (1).
53. Dorsal projections of vinculum: absent (0); present (1).
54. Dorsal projections of vinculum: closely attached to pedunculum (0); projecting dorso-laterally (1).
55. Juxta: absent (0); present (1).
56. Juxta: split for most of its length (0); fused for half or more of its length (1).
57. Shape of juxta: flat, thin and lamellate (0); bulbous and elongated (1).
58. When bulbous and elongated, the juxta: plain and simple (0); sharp at tip (1); modified or branched but not sharp at tip (2); distal edges strongly dentate (3).
59. Setae on juxta: absent (0); present (1).
60. Setae on transtilla: absent (0); present (1).
61. Aedeagus: longer than valva (0); shorter than valva (1).
62. Aedeagus: broad, not needle-like (0); thin, needle-like (1).
63. Aedeagus: flared distally or broadened at tip (0); tubular, not broadened at tip (1).
64. Spines on external wall of aedeagus opening: absent (0); present (1).
65. Coecum penis: absent (0); present (1).
66. Expansion of vesica at the aedeagus opening: absent (0); present (1).
67. When present, the expansion of vesica as: a pair of heavily sclerotized and modified sclerites (0), a pair of lateral flaps (1); heavily-spined structures or cornuti, often asymmetrical and sometimes internal (2).
68. Costa: forming a "pocket" easily distinguishable from harpe (0); not forming a "pocket" (1).
69. Costal "pocket": expanded laterally, anterior edge forms a rounded pouch (0); flattened laterally, anterior edge does not form a rounded pouch (1).
70. Crista: absent (0); present (1). Note: crista oblique is a process developed from the costa.
71. Spiny projection at the center of valva: absent (0); present (1).
72. Stylus of valva (Fox, 1964): absent (0); present (1). Note: this whip-like structure was termed a "flagellum" by Roepke (1938).
73. Hook-like projections as a modification at the proximal margin of harpe on the inner side of valva: absent (0); present (1).
74. Distal tarsomeres of female foreleg: cylindrical (0); rounded (1).

75. Basal tarsomere of female foreleg: slightly broader than, or similar in width to those distal to it (0); conspicuously narrower than those distal to it (1).
76. Sensilla in female foreleg tarsus: few (0); numerous (1).
77. Pre-tarsal pad of female foreleg: absent (0); present (1).
78. Apical tarsomere of female foreleg: shorter that penultimate (0); equal to penultimate (1); longer than penultimate (2).
79. In ventral view, last tarsomere of female foreleg: notched (0); rounded or flat (1).
80. Length of the basal tarsomere of female foreleg: similar in length to the combined length of the others (0); longer than the combined length of the others (1); shorter than the combined length of the others (2).
81. Eighth tergite articulated to seventh tergite: by a narrow membrane (0); by a wide membranous pouch (1).
82. Wide membranous pouch: lightly textured (0); with fine spines (1); densely covered with fine scales and developed into paired abdominal glands (2).
83. Clavatium or stink-club: absent (0); present but small, only the base is a raised hump, sclerotized at the edge, without a club or scales (1); present and distinct (2).
84. When distinct, specialized scales on the clubs: filiform (0); conical with apical spikes (1).
85. Sterigma (=genital plate): only as heavily sclerotized plates (0); modified as lateral stays (1); modified as other structures (2).
86. Large sclerotized projection anterior to ostium bursa: absent (0); present (1).
87. Setae on seventh abdominal sternite: absent (0); present but fine (1); present and thick (2).
88. Antrum: narrow (0); broad (1).
89. Ductus seminalis attachment: directly distal to antrum (0); at some distance distal to antrum (1).
90. Ductus bursa: narrow (0); broad (1).
91. Corpus bursa: elongated (0); rounded (1).
92. When elongated, the bursa is: not as long as the abdomen (0); almost as long as or longer than the abdomen (1).
93. Appendix bursa: absent (0); present (1).
94. Signum: absent (0); present (1).
95. Signum: single (0); paired (1).
96. Signum: elongated and straight (0); elongated and bent or arched (1).
97. Lobes of papilla anales: narrower dorsally than ventrally (0); uniform in width both dorsally and ventrally (1).
98. Apophyses posteriores: longer than, or equal to the height of papilla anales (0); less than the height of papilla anales (1).
99. Base of apophyses posteriores: uniformly well sclerotized from ventral to dorsal edge (0); upper edge poorly sclerotized (1).
100. Sub-papillary glands: unsclerotized (0); well sclerotized (1).

Appendix 2. Matrix of taxa and characters observed. The eleven outgroup taxa are shown in the beginning (from *Pardopsis punctatissima* to *Argyreus hyperbius*).

Taxon name	0 . . . . 5 . . . . 10 . . . . 15 . . . . 20 . . . . 25 . . . . 30 . . . . 35 . . . . 40 . . . . 45 . . . . 50 . . . . 55 . . . . 60 . . . . 65 . . . . 70 . . . . 75 . . . . 80 . . . . 85 . . . . 90 . . . . 95 100
Pardopsis punctatissima	0 0 0 1 0 1 2 1 2 0 0 0 0 1 0 0 1 2 1 0 1 0 1 0 0 1 0 1 0 0 0 1 1 1 0 0 0 0 0 1 1 0 1 0 ? ? 0 0 0 1 0 1 1 0 ? 0 ? ? ? ? 0 1 0 1 0 0 0 ? 0 1 0 0 0 0 0 0 1 0 0 1 0 0 ? 0 ? 2 0 0 0 1 0 0 ? 0 0 ? ? 1 1 1 1
Acraea pharsalus	0 0 0 1 0 1 2 2 2 0 0 0 0 1 0 0 1 2 1 0 1 0 1 0 1 0 ? 0 ? ? 1 0 1 1 0 0 0 1 0 1 1 0 0 0 ? ? 0 0 1 1 1 1 1 0 ? 1 1 0 ? 0 0 0 1 1 0 0 0 ? 1 ? 0 0 0 0 0 0 0 0 0 1 2 0 ? 0 ? 2 0 0 0 1 0 0 ? 0 0 ? ? 1 1 1 1
Acraea meyeri	0 0 0 1 0 1 2 2 2 0 0 0 0 1 0 0 1 2 1 0 1 0 1 0 1 0 ? 0 ? ? 1 0 1 1 0 0 0 1 0 1 1 0 0 0 ? ? 0 0 1 1 1 1 1 0 ? 1 1 0 ? 0 0 0 1 1 0 0 0 ? 1 ? 0 0 0 0 0 0 0 0 0 1 2 0 ? 0 ? 2 0 0 0 1 0 0 ? 0 0 ? ? 1 0 1 1
Cethosia biblis	0 0 1 1 1 1 2 0 1 2 1 1 1 1 0 0 1 1 1 0 1 0 1 1 0 0 ? 0 ? ? 0 0 0 0 1 1 0 1 0 1 1 0 0 0 ? ? 2 1 1 1 0 0 0 1 0 1 1 0 ? 0 0 0 1 1 0 0 0 ? 1 ? 0 0 0 0 1 0 0 0 0 1 1 1 0 0 ? 2 1 0 0 0 0 0 ? 0 1 0 0 0 1 1 1
Cethosia hypsea	0 0 1 1 1 1 2 0 1 2 1 1 1 1 0 0 1 1 1 0 1 0 1 1 0 0 ? 0 ? ? 0 0 0 0 1 1 0 1 0 1 1 0 0 0 ? ? 2 1 1 1 0 0 0 1 0 1 1 0 ? 0 0 0 1 1 0 0 0 ? 1 ? 0 0 0 0 1 0 0 0 0 1 1 1 0 0 ? 2 1 0 0 0 0 0 ? 0 1 0 0 0 1 1 1
Cethosia cydippe	0 0 1 1 1 1 2 0 1 2 1 1 1 1 0 0 1 1 1 0 1 0 1 1 0 0 ? 0 ? ? 0 0 0 0 1 1 0 1 0 1 1 0 0 0 ? ? 2 0 1 1 0 0 0 0 ? 1 1 0 ? 0 0 0 1 1 0 0 0 ? 0 1 0 0 0 0 1 0 0 0 0 1 1 1 0 0 ? 0 1 0 0 0 0 0 ? 0 1 0 0 0 1 1 1
Clossiana euphrosyne	0 0 0 1 0 1 2 0 1 1 0 2 0 1 0 0 1 1 1 0 2 0 1 1 0 1 1 1 0 0 0 1 0 0 1 0 0 1 0 1 1 1 1 0 ? ? 0 0 1 0 0 2 1 0 ? 1 0 1 0 0 0 1 0 0 0 1 1 1 0 1 0 0 0 0 0 0 0 0 1 1 1 1 1 0 ? 0 0 0 1 0 1 0 ? 0 0 ? ? 1 1 1 0
Philaethria pygmalion	0 0 0 1 0 1 2 0 2 2 1 2 0 2 0 0 0 ? ? 0 1 0 1 1 0 1 1 1 0 0 0 1 0 0 1 1 1 0 0 1 2 0 0 1 0 ? 0 0 1 1 0 2 1 1 1 1 1 0 ? 0 0 1 0 1 0 0 0 ? 0 0 0 0 0 0 1 0 1 1 2 1 0 1 2 2 1 0 0 1 0 0 0 0 ? 0 1 1 1 0 1 1 0
Heliconius erato	0 0 0 1 0 1 2 0 2 2 1 2 0 2 0 0 1 2 1 0 1 0 1 1 0 1 0 1 0 0 0 1 0 0 1 1 0 1 0 1 0 0 0 1 0 ? 0 0 1 1 0 1 1 1 1 1 1 0 ? 0 0 1 0 1 0 1 0 ? 0 0 0 0 0 0 1 0 1 1 2 1 1 1 2 2 1 0 0 1 0 0 0 0 ? 0 0 ? ? 1 0 1 0
Childrena childreni	0 1 0 0 0 1 2 0 1 1 1 2 0 1 0 0 1 1 1 0 2 0 0 2 0 1 0 1 0 0 0 1 0 0 1 0 0 1 0 1 1 0 1 0 ? ? 2 0 1 0 0 2 1 0 ? 1 0 1 0 1 0 1 0 0 0 0 1 2 0 1 0 0 0 1 0 0 0 0 1 1 1 1 1 0 ? 2 0 1 1 0 1 1 0 0 0 ? ? 0 0 1 0
Argyreus hyperbius	0 1 0 0 0 1 2 0 1 1 1 2 0 1 0 0 1 1 1 0 2 0 0 2 0 1 0 1 0 0 0 1 0 0 1 0 1 1 0 1 1 0 1 0 ? ? 2 0 1 0 0 2 1 0 ? 1 0 1 0 1 0 1 0 0 0 0 1 2 0 1 0 0 0 1 0 0 0 0 1 1 1 1 1 0 ? 2 0 1 1 0 1 1 0 0 0 ? ? 0 0 1 0
Lachnoptera ayresi	0 1 1 1 1 1 0 1 1 1 0 1 0 1 0 0 0 ? ? 1 1 0 0 2 0 1 1 1 0 2 0 1 0 0 1 0 1 0 1 1 1 0 1 1 1 2 2 0 1 0 0 0 1 0 ? 1 0 0 ? 0 1 1 0 0 0 1 1 2 0 1 1 0 0 0 0 0 1 1 2 1 1 1 2 2 0 2 0 2 1 0 1 1 0 0 0 ? ? 0 1 1 0
Smerina manoro	0 1 1 0 0 1 2 0 1 1 1 0 0 1 0 0 1 0 1 0 2 1 0 2 0 1 1 1 0 1 0 1 0 0 1 0 1 0 1 0 1 0 1 0 ? ? 0 0 1 0 0 1 1 0 ? 1 0 0 ? 1 0 1 0 1 0 0 1 2 0 1 0 0 0 0 1 0 1 0 1 1 1 1 0 0 ? 0 0 2 1 0 1 1 0 0 0 ? ? 1 1 1 0
Euptoieta claudia	0 0 0 1 1 1 2 0 1 1 0 0 0 1 0 0 1 1 1 0 2 0 0 2 0 0 ? 1 1 ? 0 0 1 0 1 0 0 1 0 1 0 0 1 0 ? ? 2 0 1 0 0 1 1 0 ? 1 0 1 0 1 0 1 0 0 0 0 0 ? 0 1 0 0 0 0 0 0 0 0 0 0 1 1 1 0 ? 2 0 0 1 0 0 0 ? 0 0 ? ? 0 0 1 0
Vindula erota	0 1 0 0 0 1 2 0 1 1 1 0 0 0 1 0 0 ? ? 0 1 0 1 1 0 1 1 1 1 ? 0 0 0 0 1 0 1 0 1 1 2 0 0 1 0 ? 0 0 1 1 0 1 1 0 ? 1 0 1 3 1 1 1 0 0 0 0 1 0 0 1 0 0 0 0 0 1 1 0 1 1 1 1 1 0 ? 2 0 1 1 0 1 1 0 1 1 0 0 0 1 0 1
Vindula dejone	0 1 0 0 0 1 2 0 1 1 1 0 0 0 1 0 0 ? ? 0 1 0 1 1 0 1 1 1 1 ? 0 0 0 0 1 0 1 0 1 1 2 0 0 1 0 ? 0 0 1 1 0 1 1 0 ? 1 0 1 3 1 1 1 0 0 0 0 1 0 0 1 0 0 0 0 0 1 1 0 1 1 1 1 1 0 ? 2 0 1 1 0 1 1 0 1 1 0 0 0 1 0 1
Vindula arsinoe	0 1 0 0 0 1 2 0 1 1 1 0 0 0 1 0 0 ? ? 0 1 0 1 1 0 1 1 1 1 ? 0 0 0 0 1 0 1 0 1 1 2 0 0 1 0 ? 0 0 1 1 0 1 1 0 ? 1 0 1 3 1 1 1 0 0 0 0 1 0 0 1 0 0 0 0 0 1 1 0 1 1 1 1 1 0 ? 2 0 1 1 0 1 1 0 1 1 0 0 0 1 0 1
Vindula sapor	0 1 0 0 0 1 2 0 1 1 1 0 0 0 1 0 0 ? ? 0 1 0 1 1 0 1 1 1 1 ? 0 0 0 0 1 0 1 0 1 1 2 0 0 1 0 ? 0 0 1 1 0 1 1 0 ? 1 0 1 3 1 0 1 0 0 0 0 1 0 0 1 0 0 0 0 0 1 1 1 1 1 1 1 1 0 ? 2 0 1 1 0 1 1 0 1 1 0 0 0 1 0 1
Cirrochroa tyche	0 2 0 0 0 1 0 1 0 1 0 0 0 1 0 0 0 ? ? 0 0 0 1 2 0 1 1 1 0 1 0 1 0 0 0 0 0 0 1 1 0 0 1 0 ? ? 2 0 1 1 0 1 1 0 ? 1 0 1 2 1 1 1 0 0 1 1 0 ? 0 1 1 0 0 0 1 0 1 1 2 1 1 1 0 2 1 1 0 1 1 1 1 1 0 0 0 ? ? 0 1 1 0
Cirrochroa thule	0 2 0 0 1 1 0 1 0 1 0 0 0 1 0 0 0 ? ? 0 0 0 1 2 0 1 1 1 0 1 0 1 0 0 0 0 0 0 1 1 0 0 1 0 ? ? 2 0 1 1 0 1 1 0 ? 1 0 1 2 1 1 1 0 0 1 1 0 ? 0 1 1 0 0 0 1 0 1 1 2 1 1 1 0 2 1 1 0 1 1 1 1 1 0 0 0 ? ? 0 1 1 0
Cirrochroa aoris	0 2 0 0 1 1 0 1 0 1 0 0 0 1 0 0 0 ? ? 0 0 0 1 2 0 1 1 1 0 1 0 1 0 0 0 0 0 0 1 1 0 0 1 0 ? ? 2 0 1 1 0 1 1 0 ? 1 0 1 2 1 1 1 0 0 1 1 0 ? 0 1 1 0 0 0 1 0 1 1 2 1 1 1 0 2 1 1 0 1 1 1 1 1 0 0 0 ? ? 0 1 1 0
Cirrochroa thais	0 2 0 0 0 1 0 1 0 1 0 0 0 1 0 0 0 ? ? 0 0 0 1 2 0 1 1 1 0 1 0 1 0 0 0 0 0 0 1 1 0 0 1 0 ? ? 2 0 1 1 0 1 1 0 ? 1 0 1 2 1 1 1 0 0 1 1 0 ? 0 1 1 0 0 0 1 0 1 1 2 1 1 1 0 2 1 1 0 1 1 1 1 1 0 0 0 ? ? 0 1 1 0
Cirrochroa nicobarica	0 2 0 0 0 1 0 1 0 1 0 0 0 1 0 0 0 ? ? 0 0 0 1 2 0 1 1 1 0 1 0 1 0 0 0 0 0 0 1 1 0 0 1 0 ? ? 2 0 1 1 0 1 1 0 ? 1 0 1 2 1 1 1 0 0 1 1 0 ? 0 1 1 0 0 0 1 0 1 1 2 1 1 1 0 2 1 1 0 1 1 1 1 1 0 0 0 ? ? 0 1 1 0
Cirrochroa emalea	0 2 0 0 1 1 0 1 0 1 0 0 0 1 0 0 0 ? ? 0 0 0 1 2 0 1 1 1 0 1 0 1 0 0 0 0 0 0 1 1 0 0 1 0 ? ? 2 0 1 1 0 1 1 0 ? 1 0 1 2 1 1 1 0 0 1 1 0 ? 0 1 1 0 0 0 1 0 1 1 2 1 1 1 0 2 1 1 0 1 1 1 1 1 0 0 0 ? ? 0 1 1 0
Cirrochroa malaya	0 2 0 0 1 1 0 1 0 1 0 0 0 1 0 0 0 ? ? 0 0 0 1 2 0 1 1 1 0 1 0 1 0 0 0 0 0 0 1 1 0 0 1 0 ? ? 2 0 1 1 0 1 1 0 ? 1 0 1 2 1 1 1 0 0 1 1 0 ? 0 1 1 0 0 0 1 0 1 1 2 1 1 1 0 2 1 1 0 1 1 1 1 1 0 0 0 ? ? 0 1 1 0
Cirrochroa satellita	0 2 0 0 0 1 0 1 0 1 0 0 0 1 0 0 0 ? ? 0 0 0 1 2 0 1 1 1 0 1 0 1 0 0 0 0 0 0 1 1 0 0 1 1 1 0 2 0 1 1 0 1 1 0 ? 1 0 1 2 1 1 1 0 0 1 0 0 ? 0 1 1 0 0 0 1 0 1 1 2 1 1 1 0 2 1 1 0 1 1 1 1 1 0 0 0 ? ? 0 1 1 0
Cirrochroa clagia	0 2 0 0 0 1 0 1 0 1 0 0 0 1 0 0 0 ? ? 0 0 0 1 2 0 1 1 1 0 1 0 1 0 0 0 0 0 0 1 1 0 0 1 0 ? ? 2 0 1 1 0 1 1 0 ? 1 0 1 2 1 1 1 0 0 1 1 0 ? 0 1 1 0 0 0 1 0 1 1 2 1 1 1 0 2 1 1 0 1 1 1 1 1 0 0 0 ? ? 0 1 1 0
Cirrochroa orissa	0 2 0 0 0 1 0 1 0 1 0 0 0 1 0 0 0 ? ? 0 0 0 1 2 0 1 1 1 0 1 0 1 0 0 0 0 1 0 1 1 0 0 1 0 ? ? 2 0 1 1 0 1 1 0 ? 1 0 1 2 1 1 1 0 0 1 1 0 ? 0 1 1 0 0 0 1 0 1 1 2 1 1 1 0 2 1 1 0 1 1 1 1 1 0 0 0 ? ? 0 1 1 0
Cirrochroa surya	0 2 0 0 0 1 0 1 0 1 0 0 0 1 0 0 0 ? ? 0 0 0 1 2 0 1 1 1 0 1 0 1 0 0 0 0 0 0 1 1 0 0 1 0 ? ? 2 0 1 1 0 1 1 0 ? 1 0 1 2 1 1 1 0 0 1 1 0 ? 0 1 1 0 0 0 1 0 1 1 2 1 1 1 0 2 1 1 0 1 1 1 1 1 0 0 0 ? ? 0 1 1 0
Cirrochroa niassica	0 2 0 0 0 1 0 1 0 1 0 0 0 1 0 0 0 ? ? 0 0 0 1 2 0 1 1 1 0 1 0 1 0 0 0 0 1 0 1 1 0 0 1 0 ? ? 2 0 1 1 0 1 1 0 ? 1 0 1 2 1 1 1 0 0 1 1 0 ? 0 1 1 0 0 0 1 0 1 1 2 1 1 1 0 2 1 1 0 1 1 1 1 1 0 0 0 ? ? 0 1 1 0
Cirrochroa semiramis	0 2 0 0 0 1 0 1 0 1 0 0 0 1 0 0 0 ? ? 0 0 0 1 2 0 1 1 1 0 1 0 1 0 0 0 0 0 0 1 1 0 0 1 0 ? ? 2 0 1 1 0 1 1 0 ? 1 0 1 2 1 1 1 0 0 1 1 0 ? 0 1 1 0 0 0 1 0 1 1 2 1 1 1 0 2 1 1 0 1 1 1 1 1 0 0 0 ? ? 0 1 1 0
Cirrochroa regina	0 2 0 0 0 1 0 1 0 1 0 0 0 1 0 0 0 ? ? 0 0 0 1 2 0 1 1 1 0 1 0 1 0 0 0 0 0 0 1 1 0 0 1 0 ? ? 2 0 1 1 0 1 1 0 ? 1 0 1 2 1 1 1 0 0 1 1 0 ? 0 1 1 0 0 0 1 0 1 1 2 1 1 1 0 2 1 1 0 1 1 1 1 1 0 0 0 ? ? 0 1 1 0
Cirrochroa imperatrix	0 2 0 0 0 1 0 1 0 1 0 0 0 1 0 0 0 ? ? 0 0 0 1 2 0 1 1 1 0 1 0 1 0 0 0 0 0 0 1 1 0 0 1 0 ? ? 2 0 1 1 0 1 1 0 ? 1 0 1 2 1 1 1 0 0 1 1 0 ? 0 1 1 0 0 0 1 0 1 1 2 1 1 1 0 2 1 1 0 1 1 1 1 1 0 0 0 ? ? 0 1 1 0
Algia felderi	0 2 0 0 1 1 0 1 0 1 0 1 0 1 0 1 0 ? ? 0 0 0 1 2 0 1 1 1 0 1 0 1 0 0 0 0 1 1 1 1 0 0 1 0 ? ? 1 0 1 1 0 1 1 0 ? 1 0 1 1 1 0 1 0 0 0 1 0 ? 0 1 1 0 0 0 1 0 1 1 2 1 1 1 0 2 1 1 0 1 1 1 1 1 0 0 0 ? ? 0 1 1 0
Algia fasciata	0 2 0 0 1 1 0 1 0 1 0 1 0 1 0 1 0 ? ? 0 0 0 1 2 0 1 1 1 0 1 0 1 0 0 0 0 1 1 1 1 1 0 1 0 ? ? 1 0 1 1 0 1 1 0 ? 1 0 1 1 1 0 1 0 0 0 1 0 ? 0 1 1 0 0 0 1 0 1 1 2 1 1 1 0 2 1 1 0 1 1 1 1 1 0 0 0 ? ? 0 1 1 0
Terinos terpander	0 2 0 0 0 1 0 1 0 1 0 0 0 1 0 0 1 0 0 2 1 1 1 1 0 1 1 1 0 1 0 1 0 0 1 0 1 0 0 0 2 0 1 1 1 0 0 0 1 0 0 1 1 0 ? 1 0 0 ? 1 0 1 0 1 0 0 1 2 0 1 0 1 0 0 1 0 1 1 2 1 1 1 0 2 0 0 0 1 1 0 1 1 0 0 0 ? ? 1 1 1 0
Terinos clarissa	0 2 0 0 0 1 0 1 0 1 0 0 0 1 0 0 1 0 0 2 1 1 1 1 0 1 1 1 0 1 0 1 0 0 1 0 1 0 0 0 2 0 1 1 1 0 0 0 1 0 0 1 1 0 ? 1 0 0 ? 1 0 1 0 1 0 0 1 2 0 1 0 1 0 0 1 0 1 1 2 1 1 1 0 2 0 0 0 1 1 0 1 1 0 0 0 ? ? 1 1 1 0

Taxon name	**0 . . . . 5 . . . . 10 . . . . 15 . . . . 20 . . . . 25 . . . . 30 . . . . 35 . . . . 40 . . . . 45 . . . . 50 . . . . 55 . . . . 60 . . . . 65 . . . . 70 . . . . 75 . . . . 80 . . . . 85 . . . . 90 . . . . 95 . . . . 100**
Terinos atlita	0 2 0 0 0 1 0 1 0 1 0 0 0 1 0 0 1 0 0 2 1 0 1 1 0 1 1 1 0 1 0 1 0 0 1 0 1 0 0 0 2 0 1 0 ? ? 0 0 1 0 0 1 1 0 ? 1 0 0 ? 1 0 1 0 1 0 0 1 2 0 1 0 1 0 0 1 0 1 1 2 1 1 1 0 2 0 0 0 1 1 0 1 1 0 0 0 ? ? 1 1 1 0
Terinos abisares	0 2 0 0 0 1 0 1 0 1 0 1 0 1 0 0 1 0 0 2 1 1 1 1 0 1 1 1 0 1 0 1 0 0 1 0 1 0 0 0 2 0 1 1 1 0 0 0 1 0 0 1 1 0 ? 1 0 0 ? 1 0 1 0 1 0 0 1 2 0 1 0 1 0 0 1 0 1 1 2 1 1 1 0 2 0 0 0 1 1 0 1 1 0 0 0 ? ? 1 1 1 0
Terinos tethys	0 2 0 0 0 1 0 1 0 1 0 1 0 1 0 0 1 0 0 2 1 1 1 1 0 1 1 1 0 1 0 1 0 0 1 0 1 0 0 0 2 0 1 1 1 0 0 0 1 0 0 1 1 0 ? 1 0 0 ? 1 0 1 0 1 0 0 1 2 0 1 0 1 0 0 1 0 1 1 2 1 1 1 0 2 0 0 0 1 1 0 1 1 0 0 0 ? ? 1 1 1 0
Terinos alurgis	0 2 0 0 0 1 0 1 0 1 0 1 0 1 0 0 1 0 0 2 1 1 1 1 0 1 1 1 0 1 0 1 0 0 1 0 1 0 0 0 2 0 1 1 1 0 0 0 1 0 0 2 1 0 ? 1 0 0 ? 1 0 1 0 1 0 0 1 2 0 1 0 1 0 0 1 0 1 1 2 1 1 1 0 2 0 0 0 1 1 0 1 1 0 0 0 ? ? 1 1 1 0
Terinos taxiles	0 2 0 0 0 1 0 1 0 1 0 1 0 1 0 0 1 0 0 2 1 1 1 1 0 1 1 1 0 1 0 1 0 0 1 0 1 0 0 0 2 0 1 1 1 0 0 0 1 0 0 1 1 0 ? 1 0 0 ? 1 0 1 0 1 0 0 1 2 0 1 0 1 0 0 1 0 1 1 2 1 1 1 0 2 0 0 0 1 1 0 1 1 0 0 0 ? ? 1 1 1 0
Cupha erymanthis	0 2 1 1 1 0 1 2 0 1 1 2 0 1 0 0 0 ? ? 0 0 0 0 1 0 1 1 1 0 1 0 1 0 0 1 0 1 0 1 0 1 0 1 1 1 1 1 0 1 0 0 2 1 0 ? 1 0 0 ? 1 1 1 0 1 0 0 1 2 0 1 0 0 1 0 0 0 1 0 1 1 1 1 0 1 ? 0 0 2 1 0 1 1 1 0 0 ? ? 1 1 1 0
Cupha arias	0 2 1 1 1 0 1 2 0 1 1 2 0 1 0 0 0 ? ? 0 0 0 0 1 0 1 1 1 0 1 0 1 0 0 1 0 1 0 0 0 1 0 1 1 1 1 1 0 1 0 0 2 1 0 ? 1 0 0 ? 1 1 1 0 1 0 0 1 2 0 1 0 0 1 0 0 0 1 0 0 1 1 1 0 1 ? 0 0 2 1 0 1 1 1 0 0 ? ? 1 1 1 0
Cupha maeonides	0 2 1 1 1 0 1 2 0 1 1 2 0 1 0 0 0 ? ? 0 0 0 0 1 0 1 1 1 0 1 0 1 0 0 1 0 1 0 0 0 1 0 1 1 1 1 1 0 1 0 0 2 1 0 ? 1 0 0 ? 1 1 1 0 1 0 0 1 2 0 1 0 0 1 0 0 0 1 0 1 1 1 1 0 1 ? 0 0 2 1 0 1 1 1 0 0 ? ? 1 1 1 0
Cupha crameri	0 2 1 1 1 0 1 2 0 1 1 2 0 1 0 0 0 ? ? 0 0 0 0 1 0 1 1 1 0 1 0 1 0 0 1 0 1 0 0 1 1 0 1 1 1 1 1 0 1 0 0 2 1 0 ? 1 0 0 ? 1 1 1 0 1 0 0 1 2 0 1 0 0 1 0 0 0 1 0 1 1 1 1 0 1 ? 0 0 2 1 0 1 1 1 0 0 ? ? 1 1 1 0
Cupha lampetia	0 2 1 1 1 0 1 2 0 1 1 2 0 1 0 0 0 ? ? 0 0 0 0 1 0 1 1 1 0 1 0 1 0 0 1 0 0 0 0 0 1 0 1 1 1 1 1 0 1 0 0 2 1 0 ? 1 0 0 ? 1 1 1 0 1 0 0 1 2 0 1 0 0 1 0 0 0 1 0 1 1 1 1 0 1 ? 0 0 2 1 0 1 1 1 0 0 ? ? 1 1 1 0
Cupha myronides	0 2 1 1 1 0 1 2 0 1 1 2 0 1 0 0 0 ? ? 0 0 0 0 1 0 1 1 1 0 1 0 1 0 0 1 0 0 0 0 0 1 0 1 1 1 1 1 0 1 0 0 2 1 0 ? 1 0 0 ? 1 1 1 0 1 0 0 1 2 0 1 0 0 1 0 0 0 1 0 1 1 1 1 0 1 ? 0 0 2 1 0 1 1 1 0 0 ? ? 1 1 1 0
Cupha prosope	0 2 1 1 1 0 1 2 0 1 1 2 0 1 0 0 0 ? ? 0 0 0 0 1 0 1 1 1 0 1 0 1 0 0 1 0 1 0 0 0 1 0 1 1 1 1 1 0 1 0 0 2 1 0 ? 1 0 0 ? 1 1 1 0 1 0 0 1 2 0 1 0 0 1 0 0 0 1 0 0 1 1 1 0 1 ? 0 0 2 1 0 1 1 1 0 0 ? ? 1 1 1 0
Cupha melichrysos	0 2 1 1 1 0 1 2 0 1 1 2 0 1 0 0 0 ? ? 0 0 0 0 1 0 1 1 1 0 1 0 1 0 0 1 0 1 0 0 0 1 0 1 1 1 1 1 0 1 0 0 0 1 0 ? 1 0 0 ? 1 1 1 0 1 0 0 1 2 0 1 0 0 1 0 0 0 1 0 1 1 1 1 0 1 ? 0 0 2 1 0 1 1 1 0 0 ? ? 1 1 1 0
Algiachroa woodfordii	0 2 0 0 0 1 0 2 0 1 0 0 0 1 0 0 0 ? ? 0 0 0 1 2 0 1 1 1 0 1 0 1 0 0 0 0 1 1 1 1 1 0 1 0 ? ? 2 0 1 1 0 0 1 0 ? 1 0 1 2 1 1 1 0 0 1 0 0 2 0 1 1 0 0 0 1 0 1 1 2 1 1 1 0 2 1 1 0 1 1 1 1 1 0 0 0 ? ? 0 1 1 0
Vagrans egista	0 1 1 1 1 0 1 1 1 1 1 1 0 1 1 0 1 1 0 0 1 0 0 1 0 1 1 1 0 1 0 1 0 0 1 0 1 0 1 1 0 0 1 1 1 1 1 0 1 0 0 0 1 0 ? 1 0 1 0 1 0 1 0 1 0 0 0 ? 0 1 0 0 1 0 0 0 0 0 0 1 1 1 0 1 ? 0 0 2 1 0 1 1 1 0 0 ? ? 0 0 0 0
Phalanta phalantha	0 1 1 1 1 0 1 1 1 1 1 2 0 1 0 0 1 1 0 0 1 0 0 1 0 1 1 1 0 1 0 1 0 0 1 0 1 0 1 0 0 0 1 1 1 1 1 0 1 0 0 2 1 0 ? 1 0 0 ? 1 0 1 0 1 0 0 1 2 0 1 0 0 1 0 0 0 0 0 0 0 1 1 0 1 ? 0 0 2 1 0 1 1 1 0 0 ? ? 0 0 0 0
Phalanta alcippe	0 1 1 1 1 0 1 1 1 1 1 2 0 1 0 0 1 1 0 0 1 0 0 1 0 1 1 1 0 1 0 1 0 0 1 0 1 0 1 0 0 0 1 1 1 1 1 0 1 0 0 0 1 0 ? 1 0 0 ? 1 0 1 0 1 0 0 1 2 0 1 0 0 1 0 0 0 0 0 0 0 1 1 0 1 ? 0 0 2 1 0 1 1 1 0 0 ? ? 0 0 0 0

Accepted November 2003