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**A PRELIMINARY SURVEY OF THE BUTTERFLY FAUNA OF
PAKITZA, PARQUE NACIONAL DEL MANU, PERU, WITH AN
ESTIMATE OF ITS SPECIES RICHNESS**

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ABSTRACT

We collected 560 butterfly species in 200 field-hours during September 1989 at Pakitza, a biological station in the reserved zone of Parque Nacional del Manu, Madre de Dios, Peru. These species are listed with first dates of capture. Sight records and species collected by others are also listed, giving a total of 616 species. We modify a Michaelis-Menten type equation for estimating species richness. Our data show a close fit to this model, which predicts a fauna of 905 species at Pakitza.

RESUMEN

En Pakitza, una estación biológica en la zona reservada del Parque Nacional del Manu, Madre de Dios, Perú, hemos obtenido 560 especies de mariposas diurnas, luego de 200 horas de colecta, en setiembre de 1989. Ofrecemos una lista de ellas, indicando la primera fecha de captura para cada una; además, enumeramos también los registros visuales y las especies colectadas por otros, dando un total de 616 especies. Presentamos aquí una ecuación del tipo Michaelis-Menten, modificada para estimar la riqueza en especies. Nuestros datos muestran gran concordancia con este modelo, que predice una fauna de 905 especies para Pakitza.

INTRODUCTION

The Río Madre de Dios drainage in southeastern Peru is the world's richest area for butterflies. For example, 1,209 butterfly species are known at the 55 km² Tambopata Reserve (Madre de Dios) (Lamas, 1981, 1983, 1985, unpubl.) in contrast to 1,008 recorded species in the Malay Peninsula (131,287 km²; Corbet & Pendlebury, 1978) and 720 recorded species in Liberia (111,370 km²; Owen, 1971). Further, new species are still being discovered at Tambopata (Lamas & Robbins unpubl.), but there are no statistical estimates of how many species might occur there.

When the opportunity arose to census a new site in the Río Madre de Dios drainage, we decided to develop and test methods for estimating species richness that would also maximize the number of species collected, so that it would be possible to compare this fauna with that of Tambopata and other sites. A secondary goal was to accomplish the first goal within five years. Land-use decisions may be based, in part, on geographical differences in species richness, so there is a political necessity to be able to estimate the number of species quickly.

In this paper, we present a preliminary list of butterflies that occur at Pakitza, a biological station in Parque Nacional Manu (Madre de Dios), and a statistical method for estimating the number of species that occur there. Because we will be continuing work at Pakitza, it will be possible to test the predictions of the model.

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STUDY SITE AND METHODS

Pakitza is a biological station (11°55'48"S, 71°15'18"W) in lowland rain forest (about 350 m elevation) on the Río Manu in the Reserved Zone of Parque Nacional Manu, Madre de Dios, Peru. Although meteorological data are unavailable for Pakitza, Terborgh (1983) recorded general characteristics of the forest and some meteorological data for Cocha Cashu, a biological station about 21 km north of Pakitza, upstream on the Río Manu. Similar information is also available for the Tambopata Reserve (Erwin, 1985), approximately 235 km SEE of Pakitza on the Río Tambopata. At both sites, there is a marked dry season from April-May to September-October.

We began field work on 8 September 1989; two of us stayed for 17 days and one for seven days. We collected with nets along approximately 20 km of trails through undisturbed forest, in disturbed areas around buildings in camp, and on mud at the edge of the Río Manu. Although we did not use bait traps, we did collect at feces and rotting fruits that were encountered in the forest. We ignored specimens of species already collected when they could be recognized, but in many groups, species cannot be readily identified in the field. At the end of each day, we recorded the total number of person-hours spent collecting to the nearest half-hour.

After preparation, collected specimens were identified as well as possible using the taxonomic expertise of the authors and using the collections, type photographs, and literature at our respective institutions, where all vouchers are deposited. We listed each species found at Pakitza, including its date of first capture. Some identifications in taxonomically difficult groups were preliminary. Although not included in this data analysis, we also listed sight records and species collected at Pakitza by others.

DATA ANALYSIS

Using dates of first capture from the Pakitza species list, we plotted cumulative number of species versus cumulative number of person-hours (Fig. 1). Such "species accumulation curves" reach a maximum value when all species at a site have been collected, but estimating this value from a sample, such as that in Figure 1, is difficult.

Various workers (Clench, 1968, 1979; de Caprariis *et al.*, 1976, 1978, 1981; Raguso & Llorente, 1991) suggested that species accumulation curves for butterflies and molluscs (with shell mass, rather than time, as the independent variable) are closely approximated by

$$(1) \quad s = S - (ST)/(T+t)$$

where "s" is the number of species in the sample at time "t", "S" is the number of species at the site, and "T" is the amount of time needed to sample half the species at the site. By fitting Equation (1), which is identical to the Michaelis-Menten curve of enzyme kinetics (Lehninger, 1970; de Caprariis *et al.*, 1981; Raguso & Llorente, 1991), to species accumulation data, it is possible to obtain an estimate of species number.

Equation (1) is easy to manipulate mathematically. De Caprariis *et al.* (1976) and Raguso & Llorente (1991) fitted a least squares line to a plot of the reciprocal of time versus the reciprocal of species number, in which the reciprocal of the y-intercept was the species number estimate. An alternate method is to rearrange Equation (1) as

$$(2) \quad s = -T(s/t) + S$$

and to plot "species number" versus "species/time".

Analyzing species accumulation data using Equation (2) has a number of advantages. The variables, number of species and number of species per unit time, have straightforward biological interpretations. Unlike the lognormal, broken stick, geometric, and other "parametric" models (discussed in Magurran, 1988), Equation (2) makes no assumptions about relative abundances or sampling method other than that the data fit the equation. A least squares line allows the "fit" to be checked visually. Lastly, whether or not the plot is indeed linear, the projected y-intercept is an estimate of species number. In other words, the asymptote of a species accumulation curve (Fig. 1) is equivalent to the y-intercept of a species versus species/time plot (Fig. 2).

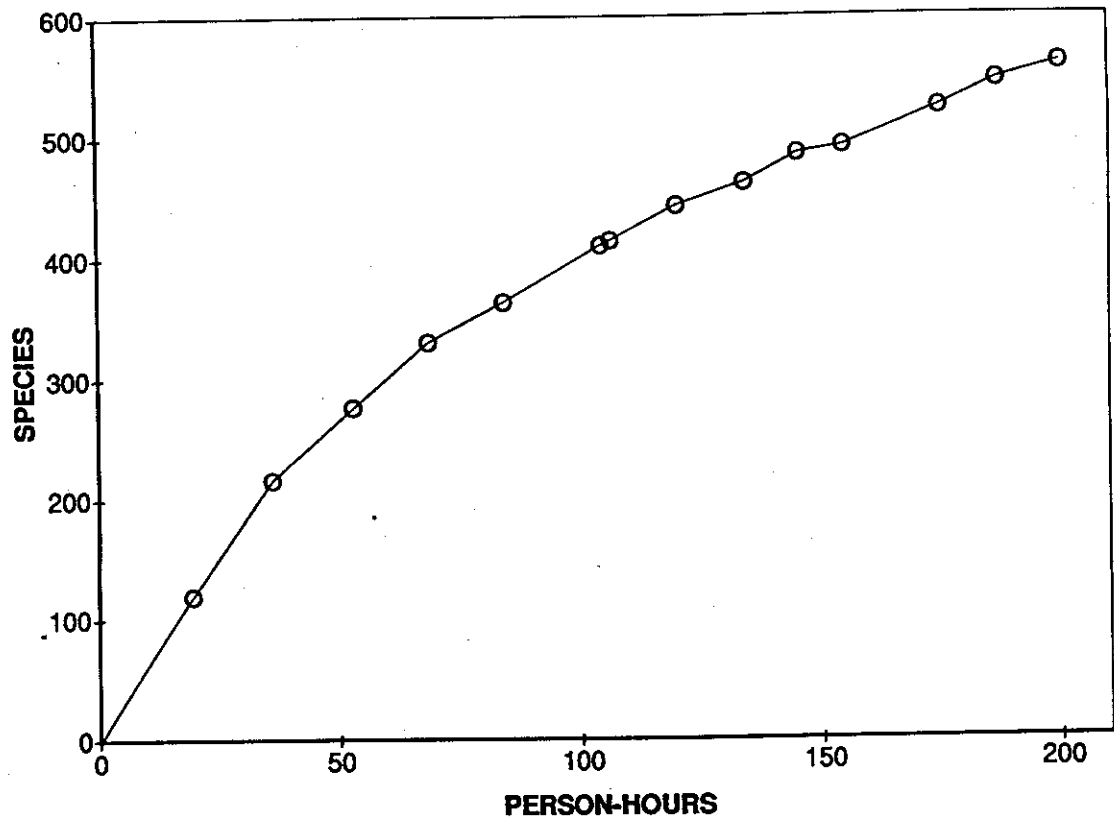


Fig. 1.- Species accumulation curve for 1989 Pakitza data.

A drawback to the use of Equation (2) for estimating species number is that a least squares line may intersect the y-axis below the last data point. Thus, the estimated species richness would be unreasonable because it would be less than the number of species in the last sample (cf. Raguso & Llorente, 1991 for an example). A solution is to have the least squares line intersect the last data point. Although this solution gives undue weight to the last data point, this point is the best information available on the number of species at the site and is dependent, in part, on previous data points. The estimated number of species, given that the least squares line intersects the last data point, is

$$(3) \quad S = [a] / [ns_n^2 - 2s_n t_n \sum (s_i / t_i) + t_n^2 \sum (s_i / t_i)^2]$$

where $a = s_n t_n^2 \sum (s_i / t_i)^2 + s_n^2 \sum (s_i) - s_n t_n \sum (s_i^2 / t_i) - s_n^2 t_n \sum (s_i / t_i)$

and where there are " s_i " species at time " t_i ", there are " n " data points, " s_n, t_n " is the last data point, " $i=1, 2, \dots, n$ ", and " S " is the parametric number of species at the site. Graphically, the line passes through the last data point " s_n, t_n " and the y-axis at " $0, S$."

While the absolute value of the slope is the expected amount of time needed to collect half the species at a site, it is also useful for planning purposes to know how long " t_p " it will take to sample any proportion " p " of the species. Rearranging Equation (2) and noting that " $p = s/S$ ",

$$(4) \quad t_p = T(p/[1-p])$$

Thus, for example, it takes an estimated 3T person-hours to collect 75% of the species at a site, 19T person-hours to collect 95% of the species, and 199T person-hours for 99.5% of the species.

There are other drawbacks to the use of Equation (2). The least squares line is not a maximum likelihood estimator because the data do not meet the assumptions of a regression model. For example, successive data points are not independent of previous ones. Equation (2) is deterministic, not stochastic (de Caprariis *et al.*, 1981), giving an "estimated" number of species, but there is no variance or likely interval for this estimate.

RESULTS AND DISCUSSION

The 1989 data are from one 17 day period at the end of the dry season in 1989. Our analysis thus applies to the fauna that was present at that time (the "standing crop") and assumes, perhaps incorrectly, that seasonality and yearly changes in relative abundances would not alter our results. Furthermore, the trail system we utilized in Pakitza does not cover the entire range of habitat diversity present in the area. We collected 560 species in 200 field-hours (Fig. 1) and recorded another 52 species found by others and sight records for an additional four species (see Appendix). The plot of species versus species/time for the 1989 Pakitza data (Fig. 2) consisted of 15 data points - no collecting was done on two days of inclement weather.

Estimated species richness at Pakitza using Equation (3) was 905 species, and the least squares line was

$$(5) \quad s = -123.1(s/t) + 905$$

If this estimate is accurate, then we sampled 61.9% of the butterfly fauna at Pakitza in 200 person-hours.

Using Equation (4), it will take an estimated 369 person-hours to collect 75% of the species at Pakitza, 2,339 person-hours to sample 95% of the fauna, and 24,497 person-hours for 99.5% of Pakitza's fauna. We averaged 34.1 field-hours per person per week of residence at Pakitza. The model predicts that a person would collect 93.5% of Pakitza's butterfly species in a year of 34.1 field-hour weeks.

The regression line (Fig. 2) is a reasonably close match to the data points except for the first two points. When these two points were omitted from the analysis, however, the estimate of species richness barely changed (905 to 907 species). To give an idea of the consistency of the estimator in Equation (3), we calculated estimated species number (Fig. 2, top) as a function of sample size. The first point on the right is the estimate (999 species) after four days, the second after six days, the third after eight days, etc. From six days onwards, the estimator varied by less than 6.3% from 905 species.

The estimate of 905 species at Pakitza is likely to be an underestimate. The data closely fit the model (Fig. 2) but, as mentioned above, we collected during one season and on 17 consecutive days. A species that is rare or absent one day is likely to be rare or absent the next, but may be common in another season or during the same season in a different year. For this reason, we expect a greater increase in the number of new species, when the results of our 1990 collecting season are analyzed, than is predicted by Equation (5). More generally, we expect that as Pakitza is sampled in different years and seasons, as has been done at Tambopata, the estimate of 905 species will prove to be too low. This hypothesis can be tested because Equation (5) is an explicit prediction of how many species will be found in the future as a function of person-hours.

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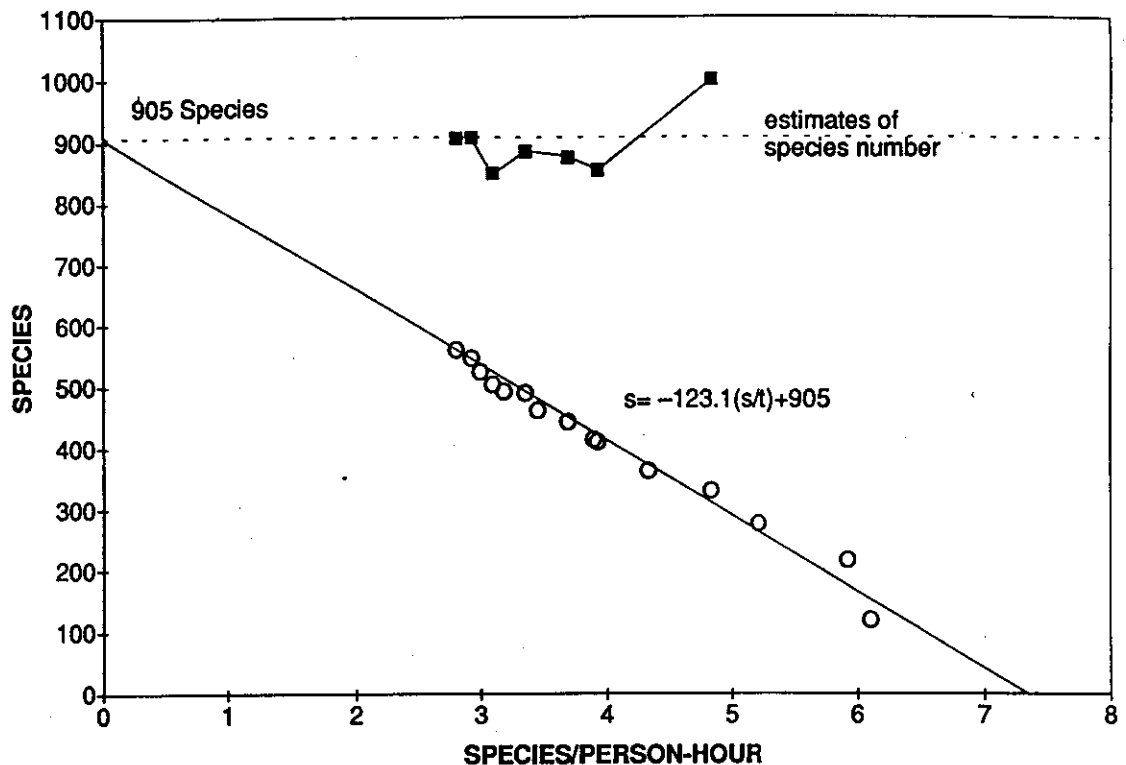


Fig. 2.- Least squares line (calculations in text) and its fit to the data (circles). The projected y-intercept (905 species) is the species number estimate. The solid squares are species number estimates (from right to left) after 4, 6, 8, 10, 12, 14 and 15 days.

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APPENDIX

LIST OF BUTTERFLIES FROM PAKITZA

In the following list, the higher classification of the Nymphalidae adopted is that proposed by Harvey (1991). On the right-hand column, numbers indicate the first day of capture in September 1989. Species recorded by others are noted by "xx" and sight records by a dash (—).

PAPILIONIDAE

1.	Protesilaus agesilaus autosilaus (Bates, 1861)	9
2.	P. glaucolaus leucas (Rothschild & Jordan, 1906)	9
3.	P. pausanias pausanias (Hewitson, 1852)	9
4.	Parides anchises drucei (Butler, 1874)	21
5.	P. echemon empistocles Küppers, 1975	xx
6.	P. sesostris sesostris (Cramer, 1780)	18
7.	Heraclides astyalus phanias (Rothschild & Jordan, 1906)	9
8.	H. torquatus torquatus (Cramer, 1777)	10

PIERIDAE

9.	Dismorphia theucharila argochloe (Bates, 1861)	13
10.	Enantia lina galanthis (Bates, 1861)	19
11.	E. melite linealis (Prüffer, 1922)	xx
12.	Moschoneura pinthous ssp. n.	8
13.	Patia orise denigrata (Rosenberg & Talbot, 1914)	20
14.	Aphrissa fluminensis (d'Almeida, 1921)	11
15.	A. statira statira (Cramer, 1777)	9
16.	Klotsius menippe (Hübner, 1818)	9
17.	Eurema albula espinosae (Fernández, 1928)	8
18.	E. paulina (Bates, 1861)	10
19.	Pyrisitia nise ssp. n.	9
20.	Phoebis argante larra (Fabricius, 1798)	9
21.	P. philea philea (Linnaeus, 1763)	9

22. <i>Glutophrissa drusilla drusilla</i> (Cramer, 1777)	9
23. <i>Itaballia demophile lucania</i> (Fruhstorfer, 1907)	9
24. <i>I. pandosia pisonis</i> (Hewitson, 1861)	8
25. <i>Melete lycimnia peruviana</i> (Lucas, 1852)	9
26. <i>Perrhybris pamela mazuka</i> Lamas, 1981	xx

NYMPHALIDAE

Heliconiinae Acraeini

27. <i>Actinote pellenea hyalina</i> Jordan, 1913	8
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Heliconiini

28. <i>Dryas iulia alcionea</i> (Cramer, 1780)	8
29. <i>Eueides aliphera aliphera</i> (Godart, 1819)	xx
30. <i>E. tales tabernula</i> Lamas, 1985	11
31. <i>Laparus doris doris</i> (Linnaeus, 1771)	20
32. <i>Neruda aoede manu</i> (Lamas, 1976)	9
33. <i>Heliconius burneyi ada</i> Neustetter, 1925	8
34. <i>H. demeter tambopata</i> Lamas, 1985	8
35. <i>H. elevatus lapis</i> Lamas, 1976	9
36. <i>H. erato luscombei</i> Lamas, 1976	8
37. <i>H. hecale sisyphus</i> Salvin, 1871	11
38. <i>H. leucadia</i> Bates, 1862	9
39. <i>H. melpomene schunkei</i> Lamas, 1976	9
40. <i>H. numata lycraeus</i> Weymer, 1891	8
41. <i>H. sara thamar</i> (Hübner, 1806)	8
42. <i>H. xanthocles quindecim</i> Lamas, 1976	9

Nymphalinae Kallimini

43. <i>Metamorpha elissa elissa</i> Hübner, 1819	17
44. <i>Siproeta stelenes meridionalis</i> (Fruhstorfer, 1909)	xx
45. <i>Junonia genoveva occidentalis</i> C. & R. Felder, 1862	17

Melitaeini

46. <i>Telenassa burchelli</i> (Moulton, 1909)	16
47. <i>Eresia eunice</i> ssp.	17
48. <i>E. nauplius plagiata</i> (Röber, 1914)	11
49. <i>Castilia angusta</i> (Hewitson, 1866)	21

Limenitidinae Coloburini

50. <i>Historis acheronta acheronta</i> (Fabricius, 1775)	9
51. <i>H. odius</i> ssp. n.	—
52. <i>Bacotus amazonicus</i> (Riley, 1919)	16
53. <i>B. deucalion</i> (C. & R. Felder, 1860)	11
54. <i>B. japetus</i> (Staudinger, 1885)	21
55. <i>Smyrna blomfieldia blomfieldia</i> (Fabricius, 1782)	xx

56.	<i>Colobura dirce dirce</i> (Linnaeus, 1758)	—
57.	<i>Tigridia acesta tapajona</i> (Butler, 1873)	xx
58.	<i>Vila emilia caecilia</i> (C. & R. Felder, 1862)	9
59.	<i>Myscelia capenas octomaculata</i> (Butler, 1873)	9
60.	<i>Catonephele acontius acontius</i> (Linnaeus, 1771)	9
61.	<i>C. numilia numilia</i> (Cramer, 1776)	13
62.	<i>Nessaea hewitsonii boliviensis</i> Jenkins, 1989	12
63.	<i>N. obrina lesoudieri</i> LeMoult, 1933	8
64.	<i>Eunica amelia erroneata</i> Oberthür, 1916	19
65.	<i>E. bechina bechina</i> (Hewitson, 1852)	23
66.	<i>E. caelina alycia</i> Fruhstorfer, 1909	13
67.	<i>E. clytia</i> (Hewitson, 1852)	12
68.	<i>E. concordia</i> (Hewitson, 1852)	xx
69.	<i>E. eurota eurota</i> (Cramer, 1776)	12
70.	<i>E. marsolia fasula</i> Fruhstorfer, 1909	8
71.	<i>E. mygdonia mygdonia</i> (Godart, 1824)	9
72.	<i>E. orphise</i> (Cramer, 1776)	18
73.	<i>E. sophonisba agele</i> Seitz, 1916	xx
74.	<i>Hamadryas chloe chloe</i> (Stoll, 1791)	8
75.	<i>Panacea prola amazonica</i> Fruhstorfer, 1915	8
76.	<i>P. regina</i> (Bates, 1864)	10
77.	<i>Batesia hypochlora hypoxantha</i> Salvin & Godman, 1868	8
78.	<i>Pyrrhogyra crameri hagnodorus</i> Fruhstorfer, 1908	9
79.	<i>P. otolais olivenca</i> Fruhstorfer, 1908	8
80.	<i>Temenis laothoe laothoe</i> (Cramer, 1777)	9
81.	<i>Peria lamis</i> (Cramer, 1780)	13
82.	<i>Dynamine chryseis</i> (Bates, 1865)	9
83.	<i>D. coenus leucothea</i> (Bates, 1865)	12
84.	<i>D. paulina</i> (Bates, 1865)	9
85.	<i>Diaethria clymena peruviana</i> (Guenée, 1872)	xx
86.	<i>Paulogramma pyracmon peristera</i> (Hewitson, 1853)	11
87.	<i>Callicore cynosura cynosura</i> (Doubleday, 1847)	9
88.	<i>C. hesperis</i> (Guérin, 1844)	11

Limenitidini

89.	<i>Adelpha cocala urraca</i> (C. & R. Felder, 1862)	11
90.	<i>A. iphicus iphicus</i> (Linnaeus, 1758)	9
91.	<i>A. lerna lerna</i> (Hewitson, 1847)	xx
92.	<i>A. mesentina chancha</i> Staudinger, 1886	9
93.	<i>A. phylaca davisii</i> (Butler, 1877)	9
94.	<i>A. plesaure phliassa</i> (Godart, 1824)	9

Cyrestidini

95.	<i>Marpesia berania berania</i> (Hewitson, 1852)	13
96.	<i>M. chiron marius</i> (Cramer, 1780)	9
97.	<i>M. crethon</i> (Fabricius, 1776)	xx
98.	<i>M. furcula oechalia</i> (Westwood, 1850)	9
99.	<i>M. themistocles norica</i> (Hewitson, 1852)	8

Charaxinae

100. <i>Siderone galanthis thebais</i> C. & R. Felder, 1862	xx
101. <i>Zaretis itus itus</i> (Cramer, 1777)	13
102. <i>Fountainea ryphea ryphea</i> (Cramer 1776)	18
103. <i>Memphis basilia drucei</i> (Staudinger, 1887)	8
104. <i>M. cambyses</i> (Druce, 1877)	xx
105. <i>M. glauce glauce</i> (C. & R. Felder, 1862)	9
106. <i>M. moruus memphis</i> (C. & R. Felder, 1867)	8
107. <i>M. polycarmes</i> (Fabricius, 1775)	11
108. <i>M. xenocles xenocles</i> (Hewitson, 1850)	9
109. <i>Archaeoprepona demophon muson</i> (Fruhstorfer, 1905)	8
110. <i>Agrias claudina sardanapalus</i> Bates, 1860	11

Apaturinae

111. <i>Doxocopa agathina agathina</i> (Cramer, 1777)	9
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Morphinae

112. <i>Antirrhea philoctetes avernus</i> Hopffer, 1874	10
113. <i>A. taygetina taygetina</i> (Butler, 1868)	8
114. <i>Morpho achilles felipensis</i> LeMoult & Réal, 1962	8
115. <i>M. deidamia grambergi</i> Weber, 1944	—

Brassolinae

116. <i>Ooptera aorsa hilara</i> Stichel, 1902	18
117. <i>Catoblepia berecynthia adjecta</i> Stichel, 1906	8
118. <i>C. soranus</i> Westwood, 1851	12
119. <i>C. xanthicles belisar</i> Stichel, 1904	8
120. <i>Selenophanes cassiope mapiriensis</i> Bristow, 1982	9
121. <i>Caligopsis seleucida seleucida</i> (Hewitson, 1877)	xx
122. <i>Caligo placidianus</i> Staudinger, 1887	xx
123. <i>Eryphanis automedon tristis</i> Staudinger, 1887	13
124. <i>Opsiphanes invirae notandus</i> Stichel, 1904	xx

Satyrinae

125. <i>Cithaerias pireta</i> ssp. n.	11
126. <i>Haetera piera</i> ssp. n.	8
127. <i>Pierella hortona albofasciata</i> Rosenberg & Talbot, 1914	8
128. <i>P. lamia chalybaea</i> Godman, 1905	10
129. <i>P. lena brasiliensis</i> (C. & R. Felder, 1862)	8
130. <i>Bia actorion rebeli</i> Bryk, 1953	8
131. <i>Harjesia blanda</i> (Möschler, 1877)	8
132. <i>H. oreba</i> (Butler, 1870)	13
133. <i>Harjesia</i> (?) sp. n.	8
134. <i>Pseudodebis dubiosa</i> Forster, 1964	8
135. <i>P. marpessa</i> (Hewitson, 1862)	xx
136. <i>P. valentina</i> (Cramer, 1780)	8

137. <i>Taygetis celia</i> (Cramer, 1780)	8
138. <i>T. cleopatra</i> C. & R. Felder, 1867	13
139. <i>T. larua</i> C. & R. Felder, 1867	8
140. <i>T. mermeria mermeria</i> (Cramer, 1776)	11
141. <i>T. sylvia</i> Bates, 1866	12
142. <i>T. thamyra</i> (Cramer, 1780)	9
143. <i>T. virgilia</i> (Cramer, 1776)	8
144. <i>Caeruleptychia aegrota</i> (Butler, 1867)	8
145. <i>C. brixius</i> (Godart, 1824)	8
146. <i>C. coelestis</i> (Butler, 1867)	8
147. <i>C. cyanites</i> (Butler, 1871)	8
148. <i>Caeruleptychia</i> sp. n.	xx
149. <i>Cepheptychia</i> sp. n.	8
150. <i>Chloreptychia arnaca</i> (Fabricius, 1776)	13
151. <i>C. chlorimene</i> (Hübner, 1819)	9
152. <i>C. herseis</i> (Godart, 1824)	8
153. <i>C. marica</i> (Weymer, 1911)	8
154. <i>Cissia myncea</i> (Cramer, 1782)	8
155. <i>C. proba</i> (Weymer, 1911)	9
156. <i>Erichthodes erichtho</i> (Butler, 1867)	11
157. <i>Hermeptychia hermes</i> (Fabricius, 1775)	13
158. <i>Magneptychia analis</i> (Godman, 1905)	8
159. <i>M. ayaya</i> (Butler, 1867)	8
160. <i>M. libye</i> (Linnaeus, 1767)	8
161. <i>M. moderata moderata</i> (Weymer, 1911)	9
162. <i>M. modesta</i> (Butler, 1867)	12
163. <i>M. ocypete</i> (Fabricius, 1776)	8
164. <i>Magneptychia</i> sp. n.	xx
165. <i>Megeptychia amonoe</i> (Cramer, 1776)	8
166. <i>Pareptychia interjecta hesionides</i> Forster, 1964	8
167. <i>P. ocirrhoe</i> (Fabricius, 1776)	8
168. <i>Pareptychia</i> sp. n.	8
169. <i>Posttaygetis penelea penelea</i> (Cramer, 1777)	18
170. <i>Rareptychia clio</i> (Weymer, 1911)	13
171. <i>Splendeptychia aurigera</i> (Weymer, 1911)	10
172. <i>S. boliviensis</i> Forster, 1964	10
173. <i>S. itonis</i> (Hewitson, 1862)	21
174. <i>S. purusana</i> (Aurivillius, 1929)	8
175. <i>S. quadrina</i> (Butler, 1869)	16
176. <i>Splendeptychia</i> sp. n. 1	13
177. <i>Splendeptychia</i> sp. n. 2	9
178. <i>Splendeptychia</i> sp. n. 3	10
179. <i>Splendeptychia</i> sp. n. 4	8
180. <i>Splendeptychia</i> sp. n. 5	18
181. <i>Yphthimoides mythra</i> (Weymer, 1911)	16
182. <i>Zischkaia amalda</i> (Weymer, 1911)	23
	11

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183. <i>Lycorea halia pales</i> C. & R. Felder, 1862	10
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Ithomiinae

184. <i>Athyrtis mechanitis salvini</i> Srnka, 1884	11
185. <i>Tithorea harmonia brunnea</i> Haensch, 1905	8
186. <i>Melinaea maelus lamasi</i> Brown, 1977	11
187. <i>M. marsaeus clara</i> Rosenberg & Talbot, 1914	8
188. <i>M. menophilus orestes</i> Salvin, 1871	9
189. <i>Paititia neglecta</i> Lamas, 1979	xx
190. <i>Thyridia psidii</i> ino C. & R. Felder, 1862	10
191. <i>Forbestra olivencia aeneola</i> Fox, 1967	xx
192. <i>Mechanitis lysimnia meneclis</i> Hewitson, 1860	17
193. <i>Scada batesi batesi</i> Haensch, 1903	9
194. <i>S. reckia labyrinthia</i> Lamas, 1985	8
195. <i>Methona confusa psamathe</i> Godman & Salvin, 1898	8
196. <i>M. curvifascia</i> Weymer, 1883	9
197. <i>M. grandior</i> ssp. n.	8
198. <i>Napeogenes aethra deucalion</i> Haensch, 1905	11
199. <i>N. inachia patientia</i> Lamas, 1985	12
200. <i>N. pharo pharo</i> (C. & R. Felder, 1862)	11
201. <i>N. sylphis sylphis</i> (Guérin, 1844)	9
202. <i>Rhodussa cantobrica pamina</i> (Haensch, 1905)	12
203. <i>Hypothyris semifulva</i> ssp. n.	xx
204. <i>Oleria denuda calatha</i> Lamas, 1985	8
205. <i>O. didymaea didymaea</i> (Hewitson, 1876)	23
206. <i>O. ilerda lentita</i> Lamas, 1985	12
207. <i>O. victorine victorine</i> (Guérin, 1844)	12
208. <i>Hyposcada anchiala richardsi</i> Fox, 1941	13
209. <i>Ithomia arduinna arduinna</i> d'Almeida, 1952	11
210. <i>I. agnosia agnosia</i> Hewitson, 1855	xx
211. <i>I. lichyi neivai</i> d'Almeida, 1940	9
212. <i>I. salapia ardea</i> Hewitson, 1855	xx
213. <i>Callithomia lenea zelie</i> (Guérin, 1844)	9
214. <i>Dircenna loreta acreana</i> d'Almeida, 1950	21
215. <i>Ceratinia neso peruensis</i> (Haensch, 1905)	19
216. <i>Episcada sulphurea sulphurea</i> Haensch, 1905	xx
217. <i>Ceraticada hymen hymen</i> (Haensch, 1905)	xx
218. <i>Pteronymia antisao guntheri</i> Lamas, 1985	21
219. <i>P. forsteri</i> Baumann, 1985	11
220. <i>P. vestilla ucaya</i> Haensch, 1909	13
221. <i>Godyris zavaleta</i> ssp. n.	xx
222. <i>Hypoleria lavinia cajona</i> Haensch, 1905	19
223. <i>H. virginia vitiosa</i> Lamas, 1985	12
224. "Hypoleria" <i>aelia brevicula</i> (d'Almeida, 1951)	xx
225. "H." <i>orolina arzalia</i> (Hewitson, 1876)	xx
226. <i>Mcclungia cymo salonina</i> (Hewitson, 1855)	14
227. <i>Heterosais nephele nephele</i> (Bates, 1862)	14

LYCAENIDAE

228. <i>Thestius meridionalis</i> (Draudt, 1921)	11
229. <i>Thecla falerina</i> Hewitson, 1867	11
230. <i>T. gibberosa</i> Hewitson, 1867	18
231. <i>Arcas imperialis</i> (Cramer, 1776)	11

11

232. <i>Thecla hemon</i> (Cramer, 1776)	11
233. <i>T. phegeus</i> Hewitson, 1865	22
234. <i>T. viresco</i> Druce, 1907	18
235. <i>Arawacus separata</i> (Lathy, 1926)	10
236. <i>Paiwarria telemus</i> (Cramer, 1776)	xx
237. <i>Thereus columbicola</i> (Strand, 1916)	11
238. <i>Ocaria ocrisia</i> (Hewitson, 1868)	10
239. <i>Thecla</i> nr. <i>biston</i> Möschler, 1876	21
240. <i>Cyanophrys amyntor</i> (Cramer, 1776)	17
241. <i>Michaelus ira</i> (Hewitson, 1867)	20
242. <i>M. vibidia</i> (Hewitson, 1869)	9
243. <i>Oenomaus ortygnus</i> (Cramer, 1780)	22
244. <i>Olynthus punctum</i> (Herrich-Schäffer, 1853)	18
245. <i>Panthiades bitias</i> (Cramer, 1777)	8
246. <i>P. phaleros</i> (Linnaeus, 1767)	9
247. <i>Parthasius orgia</i> (Hewitson, 1867)	22
248. <i>P. polibetes</i> (Cramer, 1782)	22
249. <i>Thecla echelta</i> Hewitson, 1867	22
250. <i>T. gemma</i> Druce, 1907	11
251. <i>T. norax</i> Godman & Salvin, 1887	10
252. <i>T. nr. gadira</i> Hewitson, 1867	9
253. <i>Strymon ziba</i> (Hewitson, 1868)	9
254. <i>Calycopis atrius</i> (Herrich-Schäffer, 1853)	8
255. <i>C. buphonia</i> (Hewitson, 1868)	16
256. <i>C. calus</i> (Godart, 1824)	13
257. <i>C. demonassa</i> (Hewitson, 1868)	8
258. <i>C. nr. atrius</i> (Herrich-Schäffer, 1853)	10
259. <i>C. caesaries</i> (Druce, 1907)	8
260. <i>C. cerata</i> (Hewitson, 1877)	13
261. <i>C. pisis</i> complex 1	8
262. <i>C. pisis</i> complex 2	16
263. <i>C. trebula</i> (Hewitson, 1868)	20
264. <i>C. vidulus</i> (Druce, 1907)	23
265. <i>C. keta</i> complex 1	10
266. <i>C. keta</i> complex 2	17
267. <i>C. keta</i> complex 3	11
268. <i>C. keta</i> complex 4	8
269. <i>C. keta</i> complex 5	13
270. <i>C. keta</i> complex 6	12
271. <i>C. keta</i> complex 7	12
272. <i>C. centoripa</i> (Hewitson, 1868)	9
273. <i>C. devia</i> (Möschler, 1883)	8
274. <i>C. indigo</i> (Druce, 1907)	8
275. <i>C. nr. devia</i> (Möschler, 1883)	10
276. <i>C. vitruvia</i> (Hewitson, 1877)	8
277. <i>Electrostrymon ecbatana</i> (Hewitson, 1868)	22
278. <i>Lamprospilus orcidia</i> (Hewitson, 1874)	20
279. <i>Symbiopsis peruviana</i> (Lathy, 1936) - homonym	8
280. <i>Thecla aruma</i> Hewitson, 1877	17
281. <i>T. hesperitis</i> (Butler & Druce, 1872)	9
282. <i>T. nr. aruma</i> Hewitson, 1877	9
283. <i>T. suada</i> Hewitson, 1877	11
284. <i>T. syllis</i> Godman & Salvin, 1877	17
285. <i>T. taminella</i> Schaus, 1902	22

286. <i>T. vesper</i> Druce, 1909	11
287. <i>T. adela</i> Staudinger, 1888	16
288. <i>T. carteia</i> Hewitson, 1870	11
289. <i>T. dindymus</i> (Cramer, 1776)	21
290. <i>T. nr. foyi</i> Schaus, 1902	18
291. <i>T. nr. perola</i> Hewitson, 1867	16
292. <i>T. nr. strephon</i> (Fabricius, 1775)	18
293. <i>T. nr. syedra</i> Hewitson, 1867	12
294. <i>T. nr. tyriam</i> Druce, 1907	xx
295. <i>T. parvipuncta</i> Lathy, 1926	18
296. <i>T. reducta</i> Lathy, 1926	10
297. <i>T. syedra</i> Hewitson, 1867	23
298. <i>T. tephraeus</i> (Geyer, 1837)	9
299. <i>T. tyriam</i> Druce, 1907	11
300. <i>Ministrymon cleon</i> (Fabricius, 1775)	9
301. <i>M. vena</i> complex 1	12
302. <i>M. vena</i> complex 2	20
303. <i>M. vena</i> complex 3	22
304. <i>M. zilda</i> (Hewitson, 1873)	13
305. <i>Thecla alda</i> Hewitson, 1868	10
306. <i>T. athymbra</i> Hewitson, 1867	22
307. <i>T. caninius?</i> Druce, 1907	13
308. <i>T. emessa</i> Hewitson, 1867	18
309. <i>T. metanira</i> Hewitson, 1867	13
310. <i>T. nr. guapila</i> 1	8
311. <i>T. nr. guapila</i> 2	12
312. <i>T. nr. mycon</i> Godman & Salvin, 1887	21
313. <i>T. nr. opalia</i> Hewitson, 1868	10
314. <i>T. nr. tympania</i> 1	23
315. <i>T. nr. tympania</i> 2	8
316. <i>T. nr. tympania</i> 3	20
317. <i>T. nr. tympania</i> 4	13
318. <i>T. terentia</i> Hewitson, 1868	12
319. <i>T. tympania</i> Hewitson, 1869	8
320. <i>Theclopsis gargara</i> (Hewitson, 1868)	12
321. <i>T. lydus</i> (Hübner, 1819)	10
322. <i>Tmolus cydrara</i> (Hewitson, 1868)	13
323. <i>T. echion</i> (Linnaeus, 1767)	9
324. <i>T. mutina</i> (Hewitson, 1867)	9
325. <i>T. nr. cydrara</i> (Hewitson, 1868)	9
326. <i>T. nr. ufentina</i> (Hewitson, 1868)	10
327. <i>T. ufentina</i> (Hewitson, 1868)	11
328. <i>Erora gabina</i> (Godman & Salvin, 1887)	10
329. <i>Hypostrymon asa</i> (Hewitson, 1873)	8
330. <i>Iaspis nr. beera</i> (Hewitson, 1870)	12
331. <i>Thecla rocena</i> (Hewitson, 1867)	13
332. <i>T. sista</i> (Hewitson, 1867)	10
333. <i>T. celmus</i> (Cramer, 1776)	8
334. <i>T. cupentus</i> (Cramer, 1782)	18
335. <i>T. mecrida</i> Hewitson, 1867	10
336. <i>T. tema</i> Hewitson, 1867	8

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337. <i>Euselasia euryone euryone</i> (Hewitson, 1856)	xx
338. <i>E. violetta</i> (Bates, 1868)	xx
339. <i>E. arbas</i> ssp.	xx
340. <i>E. euoras</i> (Hewitson, 1855)	xx
341. <i>E. euriteus euriteus</i> (Cramer, 1777)	23
342. <i>E. cafusa janigena</i> Stichel, 1919	xx
343. <i>E. alcmena</i> (Druce, 1878)	12
344. <i>Euselasia</i> sp.	xx
345. <i>E. uria angustifascia</i> Lathy, 1926	xx
346. <i>E. lysimachus</i> Staudinger, 1888	12
347. <i>E. extensa</i> (Bates, 1868) (?)	xx
348. <i>Mesophthalma idotea</i> ssp. (n.?)	8
349. <i>Leucochimona mathata subalbata</i> Seitz, 1914	12
350. <i>Semomesia croesus siccata</i> Stichel, 1919	11
351. <i>Mesosemia</i> aff. <i>ephyne</i> (Cramer, 1776)	xx
352. <i>M. ibycus</i> Hewitson, 1859	18
353. <i>M. philocles thyestes</i> Druce, 1878	20
354. <i>M. machaera</i> ssp.	9
355. <i>M. materna</i> Stichel, 1909	9
356. <i>M. hedwigis</i> Stichel, 1910	18
357. <i>M. naiadella naiadella</i> Stichel, 1909	13
358. <i>M. sirenia sirenia</i> Stichel, 1909	17
359. <i>M. aff. sirenia</i> Stichel, 1909	16
360. <i>M. judicialis latissima</i> Stichel, 1909	22
361. <i>M. menoetes paetula</i> Stichel, 1915	16
362. <i>M. eumene furia</i> Stichel, 1910 (?)	20
363. <i>M. decolorata</i> Lathy, 1932	8
364. <i>Mesosemia</i> sp.	21
365. <i>Eurybia nicaea</i> ssp.	8
366. <i>E. caerulea</i> ssp.	16
367. <i>E. dardus franciscana</i> C. & R. Felder, 1862	22
368. <i>E. halimede halimede</i> (Hübner, 1808)	11
369. <i>Alesa</i> aff. <i>telephae</i> (Boisduval, 1836)	8
370. <i>A. amesis</i> (Cramer, 1777)	8
371. <i>A. hemiurga</i> Bates, 1868	16
372. <i>Mimocastnia rothschildi</i> Seitz, 1917	22
373. <i>Hyphilaria parthenis tigrinella</i> Stichel, 1909	10
374. <i>Cremna actoris meleagris</i> Hopffer, 1874	10
375. <i>C. thasus subrutula</i> (Cramer, 1780)	16
376. <i>Ancyluris meliboeus meliboeus</i> (Fabricius, 1776)	23
377. <i>A. aulestes eryxo</i> (Saunders, 1859)	13
378. <i>Rhetus perianther laonome</i> (Morisse, 1838)	10
379. <i>Ithomeis lauronia</i> Schaus, 1902	8
380. <i>Isapis agyrtus sestus</i> (Stichel, 1909)	10
381. <i>Themone poecila</i> Bates, 1868	22
382. <i>Metacharis lucius</i> (Fabricius, 1793)	17
383. <i>M. regalis regalis</i> Butler, 1867	8
384. <i>Cariomothis erythromelas fulvus</i> Lathy, 1932 (?)	12
385. <i>Syrmatia nyx</i> (Hübner, 1817) (?)	22
386. <i>Chamaelimnas urbana</i> Stichel, 1916	8
387. <i>Parcella amarynthina</i> (C. & R. Felder, 1865)	11
388. <i>Charis anius</i> (Cramer, 1776)	9

389. <i>Charis</i> sp. n.	8
390. <i>C. gynaea zama</i> Bates, 1868	8
391. <i>C. argyrea</i> Bates, 1868	8
392. <i>Chalodeta theodora theodora</i> (C. & R. Felder, 1862)	13
393. <i>C. chaonitis</i> (Hewitson, 1866)	10
394. <i>Caria mantinea amazonica</i> (Bates, 1868)	23
395. <i>C. sponsa</i> (Staudinger, 1887)	21
396. <i>Bacotis bacaenis bacaenita</i> Schaus, 1902 (?)	17
397. <i>B. euprepes orthotaenia</i> Seitz, 1916	9
398. <i>Lasaia agesilas agesilas</i> (Latreille, 1809)	10
399. <i>L. arsis</i> Staudinger, 1887	11
400. <i>Amarynthis meneria</i> (Cramer, 1776)	16
401. <i>Mesene leucophrys</i> Bates, 1868	8
402. <i>M. nola eupteryx</i> Bates, 1868 (?)	16
403. <i>Mesene</i> sp. n.	xx
404. <i>Symmachia rubina separata</i> Lathy, 1932	xx
405. <i>Sarota acantus acantus</i> (Cramer, 1782)	11
406. <i>Sarota</i> sp. n. nr. <i>acantus</i> (Cramer, 1782)	13
407. <i>S. myrtea</i> Godman & Salvin, 1886	22
408. <i>S. chrysus chrysus</i> (Cramer, 1782)	xx
409. <i>Anteros formosus formosus</i> (Cramer, 1777)	13
410. <i>Calydna punctata</i> C. & R. Felder, 1861	13
411. <i>C. maculosa</i> Bates, 1868	8
412. <i>Emesis lucinda lucinda</i> (Cramer, 1776)	13
413. <i>E. castigata castigata</i> Stichel, 1910	11
414. <i>E. spreta</i> Bates, 1868	xx
415. <i>E. diogenia</i> Prittwitz, 1865	11
416. <i>E. temesa emesina</i> (Staudinger, 1887)	12
417. <i>Argyrogrammana trochilia rameli</i> (Stichel, 1930)	13
418. <i>Uraneis hyalina</i> (Butler, 1867)	23
419. <i>Juditha azan</i> ssp. n.	9
420. <i>J. molpe molpe</i> (Hübner, 1808)	9
421. <i>Synargis orestessa</i> (Hübner, 1819)	10
422. <i>S. gela gela</i> (Hewitson, 1853)	9
423. <i>Menander hebrus hebrus</i> (Cramer, 1776)	10
424. <i>Calospila lucianus</i> (Fabricius, 1793)	17
425. <i>C. emylus emylia</i> (Stichel, 1911)	9
426. <i>C. rhodope</i> ssp.	10
427. <i>C. parthaon</i> (Dalman, 1823)	22
428. <i>C. zeanger pirene</i> (Godman, 1903)	21
429. <i>Calospila</i> sp.	18
430. <i>C. thara</i> ssp.	13
431. <i>Calospila</i> aff. <i>hemileuca</i> (Bates, 1868)	16
432. <i>C. siaka siaka</i> (Hewitson, 1858)	16
433. <i>Adelotypa aristus</i> ssp.	10
434. <i>A. huebneri pauxilla</i> (Stichel, 1911)	8
435. <i>A. mollis asemna</i> Stichel, 1910	8
436. <i>A. amasis</i> (Hewitson, 1870)	13
437. <i>Adelotypa</i> sp. 1	8
438. <i>Adelotypa</i> sp. 2	11
439. <i>A. leucocyana</i> (Geyer, 1837)	8
440. <i>A. epixanthe</i> (Stichel, 1911)	11
441. <i>A. aminias</i> (Hewitson, 1863)	21
442. <i>A. densemaculata</i> (Hewitson, 1870)	xx

443. <i>A. annulifera</i> (Godman, 1903)	8
444. <i>Adelotypa</i> sp. nr. <i>annulifera</i> (Godman, 1903)	21
445. " <i>Adelotypa</i> " <i>lampros</i> (Bates, 1868)	11
446. <i>Setabis</i> <i>epitus</i> <i>epiphanis</i> (Stichel, 1910)	10
447. <i>S. lagus</i> ssp. (?)	21
448. <i>S. flammula</i> (Bates, 1868)	12
449. <i>Setabis</i> sp. n.	9
450. <i>Theope eudocia eudocia</i> Westwood, 1851	10
451. <i>T. hypoleuca</i> Bates, 1868	19
452. <i>T. lycaenina</i> Bates, 1868	11
453. <i>Theope</i> sp.	23
454. <i>T. pedias pedias</i> Herrich-Schäffer, 1853	9
455. <i>T. excelsa</i> Bates, 1868	22
456. <i>Theope</i> aff. <i>theritas</i> Hewitson, 1860	17
457. <i>Theope</i> aff. <i>thootes</i> Hewitson, 1860	18
458. <i>T. phaeo folia</i> Godman & Salvin, 1868	22
459. <i>T. comosa</i> Stichel, 1911	11
460. <i>Calociasma pulcherrima comparata</i> Stichel, 1911	8
461. <i>Nymphidium mantus</i> (Cramer, 1776)	10
462. <i>N. fulminans fulminans</i> Bates, 1868	10
463. <i>N. baeotia</i> Hewitson, 1853	8
464. <i>N. minuta</i> Druce, 1904	9
465. <i>N. azanoides amazonensis</i> Callaghan, 1986	10
466. <i>N. ascolia augea</i> Druce, 1904	9
467. <i>N. leucosia medusa</i> Druce, 1904	8
468. <i>N. acherois erymanthus</i> Ménétriers, 1855	8
469. <i>N. caricae parthenium</i> Stichel, 1924	8
470. <i>N. lisimon lisimon</i> (Stoll, 1791)	8
471. <i>Stalachtis calliope</i> ssp. n.	10

HESPERIIDAE
Pyrrhopyginae

472. <i>Elbella etna etna</i> Evans, 1951	10
473. <i>Jemadia hewitsonii hewitsonii</i> (Mabille, 1878)	9
474. <i>Myscelus assaricus mapirica</i> Strand, 1920	8
475. <i>Passova passova rudex</i> Evans, 1951	11

Pyrginae

476. <i>Phocides pigmalion hewitsonius</i> (Mabille, 1883)	10
477. <i>Phanus vitreus</i> (Cramer, 1782)	10
478. <i>Drephalys eous</i> (Hewitson, 1867)	9
479. <i>Augiades criniscus</i> (Cramer, 1782)	9
480. <i>Hyalothyrsus neleus neleus</i> (Linnaeus, 1758)	11
481. <i>Entheus gentius</i> (Cramer, 1777)	16
482. <i>E. priassus telemus</i> Mabille, 1898	8
483. <i>Proteides mercurius mercurius</i> (Fabricius, 1787)	—
484. <i>Epargyreus socus sinus</i> Evans, 1952	12
485. <i>Polygonus manueli manueli</i> Bell & Comstock, 1948	9
486. <i>Aguna claxon</i> Evans, 1955	11
487. <i>A. aurunce</i> (Hewitson, 1867)	18
488. <i>A. coelus</i> (Cramer, 1782)	23

489.	<i>A. metophis</i> (Latreille, 1824)	12
490.	<i>Polythrix auginus</i> (Hewitson, 1867)	17
491.	<i>Urbanus acawoios</i> (Williams, 1926)	10
492.	<i>U. chalco</i> (Hübner, 1823)	8
493.	<i>U. doryssus doryssus</i> (Swainson, 1831)	8
494.	<i>Cephise cephise</i> (Herrich-Schäffer, 1869)	xx
495.	<i>Astraptes fulgurator fulgurator</i> (Walch, 1775)	8
496.	<i>A. cretatus cretatus</i> (Hayward, 1939)	10
497.	<i>A. creteus creteus</i> (Cramer, 1780)	13
498.	<i>A. alector hopfferi</i> (Plötz, 1882)	17
499.	<i>Autochton zarex</i> (Hübner, 1818)	8
500.	<i>A. neis</i> (Geyer, 1832)	9
501.	<i>Dyscophellus sebalus</i> (Cramer, 1782)	xx
502.	<i>D. porcius porcius</i> (C. & R. Felder, 1862)	22
503.	<i>Celaenorrhinus jao</i> (Mabille, 1889)	20
504.	<i>C. syllius</i> (C. & R. Felder, 1862)	16
505.	<i>Telemiades epicalus epicalus</i> Hübner, 1819	17
506.	<i>T. delalande</i> (Latreille, 1824)	8
507.	<i>T. amphion misitheus</i> Mabille, 1888	8
508.	<i>Nisoniades macarius</i> Herrich-Schäffer, 1870	16
509.	<i>Pachyneuria herophile</i> (Hayward, 1940)	10
510.	<i>Pellicia klugi</i> Williams & Bell, 1939	22
511.	<i>Morvina fissimacula rema</i> Evans, 1953	9
512.	<i>Staphylus lizeri lizeri</i> (Hayward, 1938)	16
513.	<i>Gorgythion beggina escalophoides</i> Evans, 1953	9
514.	<i>Ouleus matria matria</i> Evans, 1953	11
515.	<i>O. accedens noctis</i> (Lindsey, 1925)	13
516.	<i>Quadrus deyrollei porta</i> Evans, 1953	8
517.	<i>Q. cerialis</i> (Cramer, 1782)	13
518.	<i>Q. contubernalis contubernalis</i> (Mabille, 1883)	21
519.	<i>Pythonides jovianus fabricii</i> Kirby, 1871	8
520.	<i>P. lerina</i> (Hewitson, 1868)	9
521.	<i>Sostrata pusilla pusilla</i> Godman & Salvin, 1895	9
522.	<i>Paches trifasciatus</i> Lindsey, 1925	11
523.	<i>Milanion pilumnus pilumnus</i> Mabille & Boulet, 1917	13
524.	<i>Mylon menippus</i> (Fabricius, 1777)	10
525.	<i>M. jason</i> (Ehrmann, 1907)	10
526.	<i>Carrhenes fuscescens conia</i> Evans, 1953	9
527.	<i>Antigonus nearchus</i> (Latreille, 1817)	10
528.	<i>Aethilla echina echina</i> Hewitson, 1870	10
529.	<i>Achlyodes busirus heros</i> Ehrmann, 1909	22
530.	<i>Anastrus sempiternus simplicior</i> (Möschler, 1877)	9
531.	<i>Ebrietas infanda</i> (Butler, 1877)	9
532.	<i>E. anacreon anacreon</i> (Staudinger, 1876)	9
533.	<i>E. evanidus</i> Mabille, 1898	13
534.	<i>Cycloglypha tisia</i> (Godman & Salvin, 1896)	16
535.	<i>C. enega</i> (Möschler, 1877)	16
536.	<i>Helias phalaenoides phalaenoides</i> (Hübner, 1812)	18
537.	<i>Campopleura auxo</i> (Möschler, 1879)	9
538.	<i>Pyrgus oileus orcus</i> (Cramer, 1782)	9

Hesperiinae

539. <i>Synapte silius</i> (Latreille, 1824)	8
540. <i>Vinius sagitta</i> (Mabille, 1889)	13
541. <i>V. tryhana tryhana</i> (Kaye, 1914)	8
542. <i>Pheraeus</i> sp. 1 (aff. <i>rumba</i> Evans, 1955)	23
543. <i>Pheraeus</i> sp. 2	17
544. <i>Misius misius</i> (Mabille, 1891)	12
545. <i>Molo mango</i> (Guenée, 1865)	14
546. <i>M. menta menta</i> Evans, 1955	9
547. <i>Apaustus gracilis smarti</i> Evans, 1955	18
548. <i>Eutocus quichua</i> Lindsey, 1921	8
549. <i>Ludens ludens</i> (Mabille, 1891)	13
550. <i>Methionopsis ina</i> (Plötz, 1882)	11
551. <i>Thargella caura caura</i> (Plötz, 1882)	11
552. <i>Venas evans</i> (Butler, 1877)	16
553. <i>Vidius laska</i> Evans, 1955	8
554. <i>Nastra insignis</i> (Plötz, 1882)	20
555. <i>Cymaenes tripunctata alumna</i> (Butler, 1877)	xx
556. <i>C. cavalla</i> Evans, 1955	19
557. <i>C. uruba taberi</i> (Weeks, 1901)	21
558. <i>Vehilius</i> sp. n.	8
559. <i>Remella remus</i> (Fabricius, 1798)	9
560. <i>Parphorus felta</i> Evans, 1955	8
561. <i>Papias phainis</i> Godman, 1900	12
562. <i>P. subcostulata subcostulata</i> (Herrich-Schäffer, 1870)	10
563. <i>P. proximus</i> (Bell, 1934)	8
564. <i>Cobalopsis nero</i> (Herrich-Schäffer, 1869)	11
565. <i>Vettius richardi</i> (Weeks, 1906)	9
566. <i>V. monacha</i> (Plötz, 1882)	12
567. <i>V. phyllus phyllus</i> (Cramer, 1777)	18
568. <i>V. marcus marcus</i> (Fabricius, 1787)	13
569. <i>Paracarystus menestries rona</i> (Hewitson, 1866)	11
570. <i>Turesis lucas</i> (Fabricius, 1793)	17
571. <i>T. basta</i> Evans, 1955	21
572. <i>Thoon canta</i> Evans, 1955	16
573. <i>T. taxes</i> (Godman, 1900)	12
574. <i>Justinia phaetusa phaetusa</i> (Hewitson, 1866)	11
575. <i>Eutyichide complana</i> (Herrich-Schäffer, 1869)	21
576. <i>Enosis iccius</i> Evans, 1955	xx
577. <i>Moeros moeros</i> (Möschler, 1877)	21
578. <i>Cobalus virbius virbius</i> (Cramer, 1777)	11
579. <i>Dubiella dubius</i> (Cramer, 1782)	12
580. <i>Damas clavus</i> (Herrich-Schäffer, 1869)	9
581. <i>Carystoides basoches</i> (Latreille, 1824)	8
582. <i>C. ?lebbaeus</i> ssp.	22
583. <i>Alera furcata</i> Mabille, 1891	8
584. <i>Lycas argentea</i> (Hewitson, 1866)	xx
585. <i>Saturnus metonidia</i> (Schaus, 1902)	8
586. <i>Saturnus</i> sp. n.	10
587. <i>Phlebodes pertinax</i> (Cramer, 1782)	13
588. <i>P. campo sifax</i> Evans, 1955	21
589. <i>P. notex</i> Evans, 1955	10
590. <i>P. eteocla</i> (Plötz, 1882)	13

591. <i>Phlebodes</i> sp. n. 1 (aff. <i>virgo</i> Evans, 1955)	13
592. <i>Phlebodes</i> sp. n. 2 (aff. <i>xanthobasis</i> Hayward, 1939)	14
593. <i>Phlebodes</i> sp. n. 3 (?)	16
594. <i>Joanna boxi</i> Evans, 1955	10
595. <i>Cynea iquita</i> (Bell, 1941)	10
596. <i>C. popla</i> Evans, 1955	9
597. <i>Cynea</i> cf. <i>megalops</i> (Godman, 1900)	8
598. <i>Penicula bryanti</i> (Weeks, 1906)	9
599. <i>P. reducta reducta</i> (Bell, 1930)	13
600. <i>P. crista</i> Evans, 1955	xx
601. <i>Decinea milesi</i> (Weeks, 1901)	9
602. <i>Orthos orthos orthos</i> (Godman, 1900)	16
603. <i>Arotis</i> (?) sp.	16
604. <i>Hansa devergens devergens</i> (Draudt, 1923)	8
605. <i>Propertius propertius</i> (Fabricius, 1793)	xx
606. <i>Pheмиades pseudophineus</i> de Jong, 1983	10
607. <i>Calpodes ethlius</i> (Cramer, 1782)	18
608. <i>Panoquina fusina fusina</i> (Hewitson, 1868)	10
609. <i>P. sylvicola</i> (Herrich-Schäffer, 1865)	10
610. <i>Tirynthia conflua</i> (Herrich-Schäffer, 1869)	17
611. <i>Niconiades xanthaphes</i> Hübner, 1821	9
612. <i>N. linga</i> Evans, 1955	10
613. <i>Aides duma argyrina</i> Cowan, 1970	13
614. <i>Saliana saladin culta</i> Evans, 1955	9
615. <i>Neoxeniades braesia braesia</i> (Hewitson, 1867)	13
616. <i>Aroma aroma</i> (Hewitson, 1867)	18

