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Riodinid butterfly fauna (Lepidoptera) of the Cosñipata Region, Peru: Annotated checklist, community structure, and contrast with Lycaenidae

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Riodinid butterfly fauna (Lepidoptera) of the Cosñipata Region, Peru: Annotated checklist, community structure, and contrast with Lycaenidae

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Abstract. A team of experienced lepidopterists sampled the butterfly fauna of Peru's Cosñipata Region from 400 to 4,000 m elevation for more than a decade (7,440 field person-hours) and supplemented this sample with data from museum specimens and the scientific literature. An annotated checklist of Cosñipata Riodinidae (Lepidoptera: Papilionoidea) documents 398 species, which represents 29% of the world Riodinidae fauna. For each, it lists sample abundance, adult behavior, elevation, and temporal distribution. In the fieldwork sample, 75 species (20.9%) were sampled once and 39 (9.8%) were not encountered (collected or imaged by others). A riodinid species of median abundance was sampled an average of once every 826 field person-hours. Sampled sex ratios were 81.2% male, but were not statistically higher in species in which male perching behavior was observed. We document examples of conspicuous geographic variation in the time of male perching behavior. Species richness is greatest at low elevation and at the transition between the dry and wet seasons. There is little evidence that the community is composed of species restricted to narrow elevational bands or restricted in the adult stage to a single season. Compared with Lycaenidae, Riodinidae are significantly more restricted to lowland habitats and were sampled 2.5 times as frequently with a mean number of individuals per species more than twice as great as that of Lycaenidae.

Key words. Elevation, perching behavior, seasonality, sex ratio, species richness.

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Introduction

Building upon nearly two centuries of Lepidoptera sampling in southeastern Peru's Cosñipata Region (Lamas 1989), in 2008 we initiated sampling of the diurnal butterfly fauna at different elevations and seasons. A previous paper characterized the Cosñipata Region and the fauna belonging to the family Lycaenidae (Lamas et al. 2021).

The first purpose of this paper is to report the taxonomic composition of the Cosñipata Region lepidopteran family Riodinidae. The results are based on 7,267 adult riodinids sampled during 7,440 field person-hours over 12 years, on museum specimens, and on data from the literature. Given that most species are rarely encountered (Kunin and Gaston 1993), long-term faunal studies, such as this one, and museum collections are oftentimes the

primary sources of information about the majority of species. The Appendix in this paper includes a wealth of behavioral observations as well as details on habitat, elevation, seasonality, and sampled sex ratios.

The second purpose of this paper is to characterize elevational and seasonal patterns of species richness in the Cosñipata Riodinidae. Long-term sampling allows these patterns to be characterized quantitatively, as was done with the Lycaenidae (Lamas et al. 2021). However, adult butterfly sampling is biased by factors such as "apparency" and differential attraction to baits (Dennis et al. 2006; Busby et al. 2017). We attempt to assess these biases, especially how male mate-locating behavior biases collection samples.

The third purpose of this paper is to contrast the ecological structure of the riodinid and lycaenid communities in the Cosñipata Region. Sister families Riodinidae and Lycaenidae consist primarily of relatively small-sized butterflies that may be myrmecophilous in the larval stage (Espeland et al. 2018). The datasets in this paper and in Lamas et al. (2021) on Lycaenidae are an opportunity to ask in what ways these families differ.

Materials and Methods

The Cosñipata Region (Fig. 1–2) is an interconnected complex of valleys in Cuzco and Madre de Dios Departments, Peru. The study site was characterized, and field localities were described and mapped in Lamas et al. (2021). In brief, we conducted fieldwork along the Paucartambo-Shintuya road from Abra Acjanaco (3,600 m) to

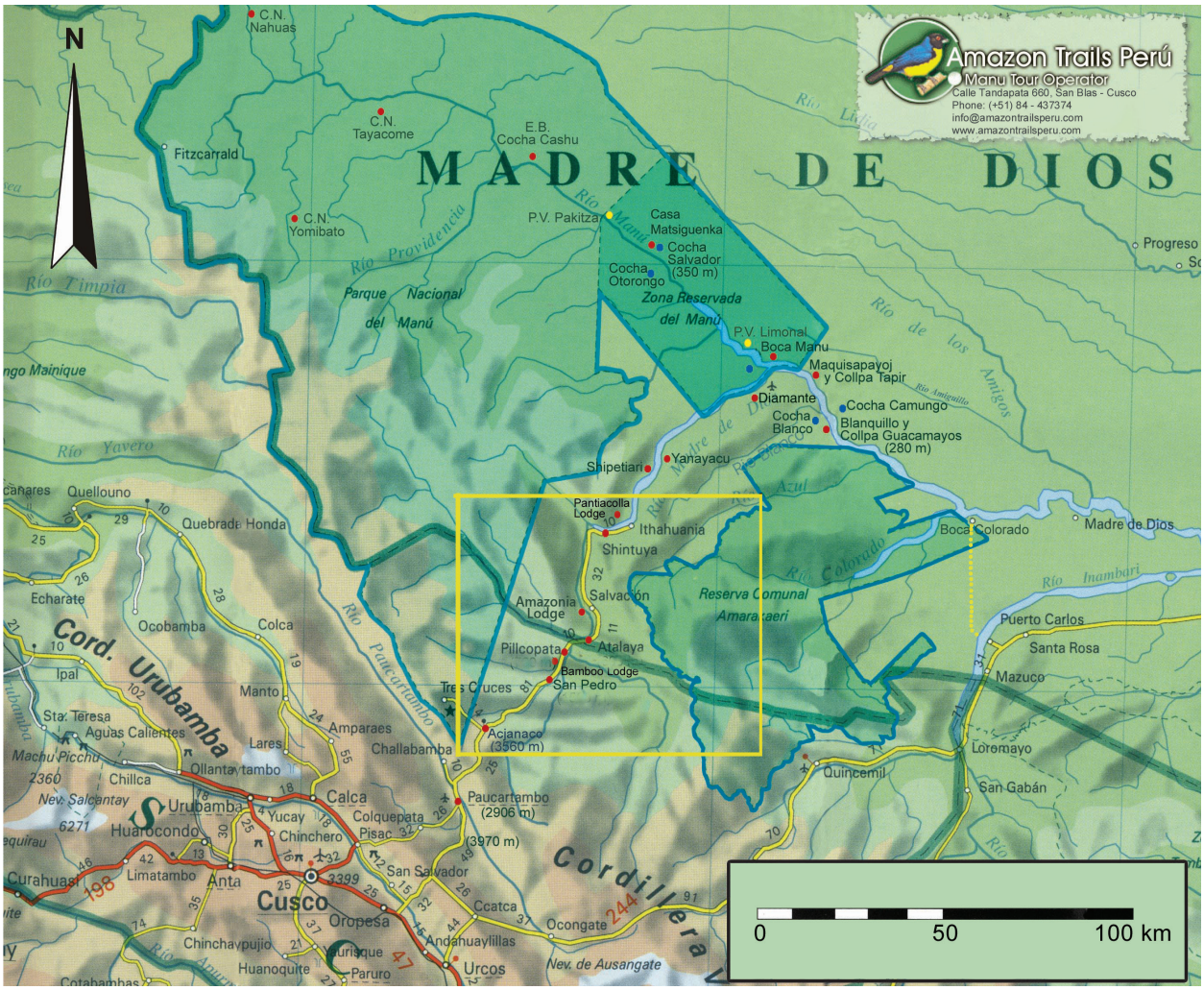

Figure 1. Location of the Cosñipata Region (yellow box) in southeast Peru. © Amazonia Lodge.

Figure 2. The Cosñipata Valley at 1,200 m looking towards the northeast. © Loran D. Gibson.

Shintuya (400 m) (Fig. 1), a road distance of 126 kilometers. The sampling area comprises approximately 1,000 hectares with a rainy season from December to February.

Sampling methods were also detailed in Lamas et al. (2021). In brief, experienced lepidopterists sampled the riodinid fauna of the Cosñipata Region using a combination of nets, traps, and baited vegetation during field trips of 2–3 weeks. Field person-hours were recorded during weather when butterflies were active. The locality, date, and sex for each sampled specimen were recorded in an Excel spreadsheet.

Specimens were identified from Callaghan and Lamas (2004) and subsequent revisions. Vouchers for fieldwork were deposited in the Museo de Historia Natural, Universidad Nacional Mayor de San Marcos, Lima, Peru (MUSM) and in the National Museum of Natural History, Smithsonian Institution, Washington, D.C., USA (USNM). Sampled abundances and sex ratios were tabulated for each species.

Sampling projects generate prodigious quantities of specimen counts that are often analyzed statistically (e.g., Cómbita et al. 2022), but such analyses assume independence among individuals. To avoid assuming the independence of specimen counts, we limit our statistical analyses to non-parametric tests of species counts. The assumption that species are ecologically independent is plausible. There is no published evidence that the abundance of one riodinid species affects the abundance of another. For example, there is no published evidence for competition among riodinid species that use the same caterpillar food plants.

We recorded behavioral data since 2014 for over 2,800 individuals in the Annotated Checklist (Appendix 1). In addition to date and time, data include topographic forest location (Callaghan 1983), wing position, leaf position, and estimated height above the ground. Feeding activities include drinking floral or extrafloral nectar, saliva/salt water/urine (as bait on the ground or on foliage), and decaying fish liquids with or without urine on traps or foliage. We use the term perching, as characterized in Scott (1975) and adopted in the riodinid literature (Callaghan 1983; Brévignon and Gallard 1995; Hall 1999, 2005a, 2018) for male mate locating behavior. Briefly, perching describes a behavior in which landed males fly at passing individuals. If the passerby is a conspecific

male, the perched male returns to the same or nearby perch site, often following brief spiral flights. If the passerby is a female, the male initiates courtship. In some cases, male behavior was difficult to interpret and was recorded as uncertain. Behavior specific to females includes oviposition or presence at a perching site. To determine whether the occurrence of perching behavior affects sampled sex ratios, we tabulated for each species whether perching was recorded and whether it had more sampled males than females. We then did a non-parametric one-tailed Fisher exact test for a 2×2 contingency table using the calculator at http://vassarstats.net/.

To document the distribution of riodinid species by elevation, we partitioned the Cosñipata Region into seven elevation zones of 500 m (the lowest zone was 600 m) and recorded the number of species observed in each zone. As a measure of the completeness of these counts, we calculated the sample mean and standard deviation of the coverage (Good 1953; Esty 1983; Chao and Lee 1992) as follows:

$$\text{Mean (Coverage)} = 1 - \frac{N_1}{N}, \text{ Standard Deviation (Coverage)} = \sqrt{\frac{(N_1 + 2\,N_2)}{N^2} - \frac{(N_1)^2}{N^3}}$$

where N is sample size, N_1 is the number of species represented by one individual, and N_2 is the number of species represented by two individuals. In brief, coverage is the proportion of all individuals that belong to the set of sampled species. To calculate elevational range, we assumed that each species occurred throughout the zones in which it was observed and in zones between the highest and lowest zones at which it was recorded. The bias introduced by this assumption is discussed below.

To document the distribution of riodinids by season, we recorded the month(s) during which each species was sampled and then tabulated the number of species recorded during each month. We then calculated the mean and standard deviation of the coverage by month, again as a measure of sampling completeness.

We compared the cumulative distributions of riodinid species by elevation and month with those of lycaenid species, as recorded in Lamas et al. (2021). To test distribution differences, we used the non-parametric two-sample Kolmogorov–Smirnov test as implemented in the Xrealstats add-in package for Excel software.

Results

Annotated Checklist

We recorded 7,267 riodinid adults representing 398 species in the Cosñipata Region (Appendix 1). *Mesosemia icare* Hübner, [1819] (species #104a,b) is represented by two elevational wing pattern variants that have different subspecies names. *Emesis* (*Aphacitis*) *heteroclita* Stichel, 1929 (species #305a,b,c) has three wing pattern variants with subspecies names. One is elevationally segregated, but two occur at similar elevations. The taxonomy needs resolution.

Fieldwork Sample

A total of 6,639 individuals and 359 species were sampled during the 12 years and 7,440 field person-hours for this project. Records for another 628 individuals and 39 species were derived from the literature or from museum specimens.

The riodinid field sample contains 75 species (21%) with one individual and 39 (10%) with zero individuals (e.g., collected or photographed by others). There is an average of 18.5 and a median of 9 specimens per species. A riodinid of median abundance was sampled on average once every 826 field person-hours.

The sex ratio of the Cosñipata Region riodinid fieldwork sample is markedly skewed. Of 6,639 individuals, 5,393 (81%) are males. Of 359 species, 312 (87%) are represented by more males than females. Of the 180 species represented by nine or more specimens (the median sampled abundance in the field sample), 173 (96%) had more males than females.

Mate locating behavior was recorded for 133 of the 359 species (37%), was unrecorded for 214 species, and was uncertain in 12 species. Among those 180 species with more than nine sampled individuals, we documented perching behavior for 107, of which 105 had more sampled males than females. For the 73 "non-perching" species, 68 had more sampled males than females. A relationship between perching behavior and sex ratio was not

statistically significant (p=0.0973, Fisher Exact Probability one-tailed test). In other words, mate locating behavior does not significantly contribute to the observed skewed sex ratios.

Elevation

The number of riodinid species occurring in each elevation zone decreases with increasing elevation (Table 1). Although sampling effort also decreased with increasing elevation, statistical coverage (Table 1) shows that sampling at all elevations was nearly complete. Maximum richness occurs at the lowest elevation zone for the Cosñipata Region (400–1,000 m). Cumulative species richness (Fig. 3) is a monotonically increasing convex function of elevation. A mid-elevation peak in species richness among zones was not observed.

Species richness decreases markedly above 1,500 m elevation (Table 1). The maximum elevation at which a riodinid was observed was 2,500 m, at Quebrada Buenos Aires, where *Chorinea* sp. n. 2 and *Baeotis creusis* Hewitson, 1874 were recorded. *Mesosemia zorea toparcha* Stichel, 1910, *Rhetus dysonii psecas* (Saunders, 1850) and *Emesis* (*Tenedia*) *angularis* Hewitson, 1870, were sampled in the vicinity of Quebrada Buenos Aires, at slightly lower elevations of 2,400 – 2,410 m.

The elevation range for riodinid species was a mean of 869 m and a median of 950 m. One hundred and fifty-three species (38%) were recorded from only one elevation zone (Table 1), but only one of these species was encountered more frequently than average (18.5 specimens).

The cumulative distribution of riodinid species that occur below a given elevation was significantly different from that of lycaenids (Fig. 3, p << 0.001). The distribution of riodinids was significantly more skewed towards lowlands than that of lycaenids.

Table 1. The number of species in each elevation zone. Coverage (with standard deviation) is the proportion of individuals that belongs to species sampled in that elevation zone. Elevation restricted is the number of species recorded only at that elevation. The number of restricted species more common than average in the field sample (≥19 specimens) is shown in parentheses.

Elevation (m)	400–1,000	1,000–1,500	1,500–2,000	2,000–2,500	2,500–3,000	3,000–3,500	3,500–4,000
Species recorded	307	223	59	19	2	0	0
Coverage mean coverage	0.987	0.986	0.996	0.987	0.993	0	0
SD	0.003	0.008	0.002	0.014	0.016		
Elevation restricted	93 (0)	47 (1)	10 (0)	3 (0)	0	0	0
Field person-hours	3,356	2,543	808	375	215	95	48

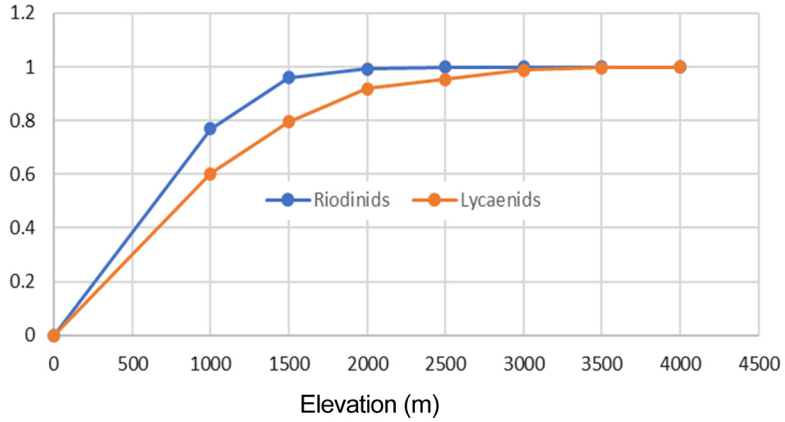

Figure 3. Proportion of species recorded below a given elevation for Riodinidae (398 species) and Lycaenidae (342 species). Using a two-sample Kolmogorov-Smirnov test for cumulative distributions differences, D-stat = 0.16650504, D-crit = 0.099199506, p = 6.13109E-05.

Seasonality

Riodinid species richness was greatest at all elevations from September to November during the transition from the dry to the wet season (Table 2). All but 50 species (13%) were recorded during this seasonal transition (Appendix 1). Although sampling effort was greatest during this seasonal transition, statistical coverage (Table 2) shows that sampling was nearly complete for all months except July and December.

One hundred and forty-four riodinid species (36%) were restricted to a 3-month period, including 104 species that were found only during the transition between dry and wet seasons. However, all 144 species that are potentially restricted seasonally were encountered less frequently than the average of 18.5 specimens per species.

The cumulative distribution of riodinid species that occurs earlier in the calendar year than a given month was marginally different from that of lycaenids (Fig. 4, $p = .042$). While sampled adults of both families were most species rich at the transition from the dry to wet seasons, lycaenids were slightly more seasonal than riodinids.

Discussion

Species Richness

The Cosñipata Region has more than 29% (398 species) of the world's approximately 1,366 riodinid species (Lamas 2008). Evidence that actual species richness is significantly greater is that over 30% of the field sample is

Table 2. Occurrence of riodinid species by month, including data from fieldwork, museum specimens, and the literature. Coverage (with standard deviation) is the proportion of individuals that belongs to species sampled during that month.

Elevation	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Entire fauna	124	145	79	132	158	133	3	90	227	262	269	28
400–600 m	96	105	59	106	132	110	3	59	192	209	212	23
600–1,000 m	99	102	64	108	125	105	3	63	170	176	177	23
1,000–1,500 m	98	109	73	108	122	94	3	85	150	165	177	19
1,500–2,000 m	27	41	25	29	24	24	0	29	33	43	42	10
2,000–2,500 m	11	11	8	10	7	7	0	9	12	16	14	6
% Fieldwork effort	5.5	10.2	2.1	5.9	9.2	5.6	0	3.5	9.4	22.4	26.2	0
Coverage ± SD)	0.983 ±0.012	0.966 ±0.017	1.000 ±0.006	0.994 ±0.005	0.996 ±0.005	0.980 ±0.010	na	0.996 ±0.008	0.993 ±0.005	0.987 ±0.005	0.989 ±0.0046	na

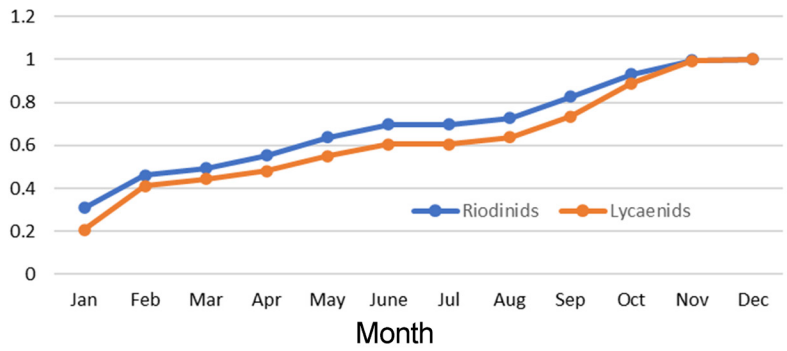

Figure 4. Proportion of species recorded from January to the given month for Riodinidae (398 species) and Lycaenidae (342 species). Using a two-sample Kolmogorov–Smirnov test for cumulative distributions differences, D-stat = 0.101443, D-crit = 0.0992, $p = 0.042$.

represented by one individual or no individuals (recorded by others). The high coverage values at each elevation emphasize the rarity of the unsampled species.

Most sampled species were rarely encountered. As noted, a species of median abundance was encountered an average of once every 826 field hours. Low encounter rates highlight the significance of the information in the annotated checklist.

Sex Ratio and Perching Behavior

The sex ratio of the Cosñipata Region riodinid sample is skewed (81% male). Given that a skewed sex ratio among reared riodinids has not been reported, as far as we are aware, the riodinid sample is markedly biased.

The location and timing of perching behavior makes males potentially more "apparent" (sensu Dennis et al. 2006) to collectors, but we were unable to support this idea. While 59% of the 180 commonest species had documented perching behavior versus 15% for the 179 rarest species, a larger sample size for a species probably increases the chances that perching behavior will be observed. For this reason, we cannot logically assess a relationship between perching and sampled abundance. Further, if perching behavior increased the sampling "apparency" of males, we would expect a greater incidence of male-skewed sex ratios among perching species. We found no significant statistical relation between skewed sex ratio and documentation of perching behavior.

The perching data in the Appendix provides new information for some species and documents geographic variation in others. New data are included for species such as *Styx infernalis* Staudinger, 1876. In some cases, our data demonstrates marked geographic variation when compared with published data from Ecuador (Hall 2005a, 2018). For example, *Nymphidium velatum* Stichel, 1914 males perch during the early morning (0636–0815 hrs. (n = 10)) in the Cosñipata Region whereas they perch between 1300-1445 hrs. (sample size not reported) in Ecuador. As another example, *Ithomiola tanos* (Stichel, 1910) males perch from 0856–1140 hrs. (n = 10) in the Cosñipata Region while they perch from 1315–1600 hrs. in Ecuador.

Elevation

Riodinids primarily inhabit lowlands with warmer temperatures (Brown and Freitas 2000; Brown 2005; Francini et al. 2011). In the Cosñipata Region, almost 77% (306 species) occur under 1,000 m elevation (Fig. 3). Less than 5% occur above 2,000 m. None have been recorded above 2,500 m elevation. With coverage values greater than 98.5% (Table 1), this pattern is unlikely to be an artifact of variation in sampling effort. The elevational distribution at which riodinids occur is significantly different – with a greater proportion of lowland species – than that of lycaenids (Fig. 3).

There is no evidence for a mid-elevation peak in riodinid species richness (Table 1, Fig. 3; Colwell and Lees 2000). However, with insufficient sampling between 600 and 1,000 m elevation because of a predominance of disturbed habitats, we would not detect a mid-elevation peak at these elevations.

Cosñipata Region riodinid species have a median elevational range of 950 m, but the calculation of elevational range suffers from three sources of error, as previously noted (Lamas et al. 2021). First, a single outlier record can overestimate elevational range. However, the use of median ranges obviates this kind of error. Second, elevational range is overestimated because we assumed that a species found in an elevation zone occurred throughout that zone. Third, elevational range is underestimated because further sampling can increase the range of zones in which each species is found. Regardless of how the sources of error in the measurement of elevational range offset each other, we are unaware of other community-wide estimates for elevational range of Neotropical riodinids.

Some riodinids in genus *Ithomiola* (C. Felder and R. Felder, [1865]) are distributed in narrow parapatric elevation zones (Hall 2005b), but narrowly stratified elevation zones do not seem to be widespread among the riodinids of the Cosñipata Region. About 62% of the species in the Cosñipata Region occur in more than one elevational zone. Of six *Ithomiola* species, four have recorded elevational ranges greater than 500 m (Appendix 1). No riodinid species that was encountered more frequently than average was restricted to one elevational zone. We cannot rule out the possibility, however, that elevationally restricted species tend to be rare species.

Seasonality

Maximum riodinid species richness at all elevations occurred from September through November during the transition from the dry to the wet seasons (Table 2). Only 50 species (12.6%) were not sampled during this transition period (Appendix 1). With coverage values for each month above 96%, this result is not likely an artifact of monthly variation in fieldwork effort.

The evidence suggests that few riodinid species have adults restricted to one season. Although 144 species were sampled in a single three-month window, none was more common than average. It is possible, once again, that some rare species are seasonally restricted.

Similarities between Riodinidae and Lycaenidae

The butterfly sister families Riodinidae and Lycaenidae share many similarities. Most species have a forewing length less than 2.5 cm. They often have slug-shaped caterpillars, which may be myrmecophilous and are sometimes predatory on ants or insects tended by ants (Pierce et al. 2002). Adult head morphology in these families is unique among the butterflies (Ehrlich 1958). These similarities are probably the reason that the two families were sometimes considered to be one family (Ehrlich 1958; Pierce et al. 2002).

The Cosñipata Region Riodinidae and Lycaenidae communities are similar in other respects. Both have diverse faunas with more than 300 species. Most species of both families are rarely encountered. Although some Andean butterfly communities are stratified by narrow elevation bands (Adams 1985; Pyrcz and Wojtusiak 2002), both families exhibit a median elevational range exceeding 900 m. Both families have a peak species richness of adults during the transition from dry to wet seasons.

Differences between Riodinidae and Lycaenidae

The butterfly sister families Riodinidae and Lycaenidae differ in many respects. While lycaenids in South America are widely reported to lay eggs on flowers and fruits (Chew and Robbins 1984; Silva et al. 2011), similar reports for riodinids in South America are rare. While the Riodinidae exhibit substantial diversity of wing shapes and patterns, the Lycaenidae tend to have a basic pattern (despite obvious exceptions, Robbins 2004), which is likely one reason why most Neotropical Lycaenidae were placed in "*Thecla*" for more than a century (Swainson 1820–1823). Finally, while males of about 25% of riodinid species have androconia (Hall and Harvey 2002), males of more than 90% of the lycaenid tribe Eumaeini have male secondary sexual organs (Valencia-Montoya et al. 2021).

The sampled Cosñipata Region Riodinidae and Lycaenidae communities differ in two other respects. First, the median number of sampled individuals per species for Riodinidae (9 specimens) was more than twice that for Lycaenidae (4 specimens). The number of sampled riodinid specimens (7,267 specimens) was more than twice that of lycaenids (2,692 specimens). We do not know the extent to which these differences are due to community differences in abundance versus sampling biases. Regardless, the differences in "apparency" to collectors might also be perceived by predators. Second, the riodinid community occurs at lower elevations than the lycaenid community (Fig. 3). Almost the entire riodinid fauna (96%) was observed under 1,500 m in contrast to 80% of the lycaenid fauna. While no riodinid species was found above 2,500 m elevation, lycaenids were recorded up to the highest elevation at which we sampled (3,520 m), with 38 species occurring above 2,500 m. This result is consistent with the relative species richness of riodinids and lycaenids in southeastern Brazil, where riodinids have richer faunas at lower elevations (Francini et al. 2011).

Whether the similarities and differences between the Cosñipata Region Riodinidae and Lycaenidae are shared with the other butterfly families awaits characterization of the entire Cosñipata butterfly fauna.

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Appendix 1. Cosñipata species checklist. Localities are mapped in Lamas et al. (2021). Male perching data is based on local time of initial observation with intervals (for two or more data points) and n = number of individuals. Raw data reported without rounding or averaging. A continuous perching interval is assumed unless there is more than a 90 minute gap between observations, in which case a bimodal pattern is assumed, as per Hall (2018).

	Species	Elevation range (m)	Monthly occurrence	Notes and observations
RIODINIDAE/EUSELASIINAE/EUSELASIINI				
1	*Euselasia urites urites* (Hewitson, [1853])	400–450	Oct	A single male from the Pantiacolla Lodge.
2	*Euselasia toppin*i Sharpe, 1915	400–500	Jun, Sep	Four males of this gaudy species from the Amazonia and Pantiacolla Lodges. Three of the males were visiting fish bait on the same day.
3	*Euselasia arpi* Gallard 2013	400–450	Nov	A single male, taken at the Pantiacolla Lodge.
4	*Euselasia attrita* Seitz, 1916	400–450	Oct–Nov	4 males and 2 females from the Pantiacolla Lodge, all but one of which were observed during a two-day period in 2016.
5	*Euselasia serapis* Stichel, 1919	400–450	Oct	2 males from the Pantiacolla Lodge, both in low vegetation less than a meter above ground level. Brévignon (2008) synonymized *serapis* with *attrita,* which may be correct.
6	*Euselasia waponaka uypiranga* Brévignon, 2008	400–450	Nov	A single male from the Pantiacolla Lodge at the beginning of the rainy season.
7	*Euselasia eutychus* (Hewitson, 1856)	400–800	Feb, Apr–May, Sep–Nov	Commonly encountered from the Pantiacolla and Amazonia Lodges to Pilcopata. There is a single outlier from San Pedro that is likely mislabeled. Most individuals were observed during Oct–Nov. 74% of observations were of males and this species is not attracted to bait. Perching males from 0602–0811 hrs. (n = 3) and 0948–1130 hrs. (n = 4); may represent bimodal perching activity
8	*Euselasia clithra* (H. W. Bates, 1868)	400–450	Oct	A single male from the Pantiacolla Lodge at the beginning of the rainy season.
9	*Euselasia euodias euodias* (Hewitson, 1856)	400–1,050	Oct–Nov	2 males from the Pantiacolla Lodge. There is also a very surprising photograph of a male 600 m higher at Quitacalzón. Perching males from 0951–1122 hrs. (n = 2).
10	*Euselasia orba spectralis* Stichel, 1919	400–450	Jun	A single perching male (0847 hrs.) from the Pantiacolla Lodge during the beginning of the dry season.
11	*Euselasia issoria* (Hewitson, 1869)	400–1,100	Aug, Oct–Nov	Uncommonly encountered from the Pantiacolla Lodge to Quitacalzón. Females (75%) were much more frequently seen than males. Single perching male at 0946 hrs.
12	*Euselasia euriteus* (Cramer, 1777)	400–450	Jun, Oct–Nov	All records were from the Pantiacolla Lodge, where this species is frequently encountered. Males perched between 0851–0914 hrs. (n = 3) and are attracted to bait later in the day. Individuals were also observed resting in low vegetation along forest trails from 1100 to 1300 hrs. 18 males (0 females) have been observed.
13	*Euselasia corduena corduena* (Hewitson, 1874)	450–1,450	Feb–Jun, Aug–Nov	One of the most frequently encountered mid-elevation Euselasiini. This species is most common at Quitacalzón, but occurs from the Amazonia Lodge to San Pedro. Less than 20% of encounters were with females and this species is not attracted to bait. Males perch 3–5 m in height between 0642–1034 hrs. (n = 7), at forest edge.
14	*Euselasia zena* (Hewitson, 1860)	400–450	Oct	2 males of this beautiful species were taken on the same day at the Pantiacolla Lodge in 2016. It has not been seen since. One of the males was perching at 0911 hrs.

	Species	Elevation range (m)	Monthly occurrence	Notes and observations
15	*Euselasia gyda gyda* (Hewitson, 1860)	950–1,400	Feb–Mar, Jun, Nov	Uncommon from Chontachaca to San Pedro. 85% of specimens were males. One perching observation at 0955 hrs.
16	*Euselasia opalescens opigena* Stichel, 1919	475–525	Nov	A single male was captured at the Amazonia Lodge in 2012.
17	*Euselasia opimia* Stichel, 1919	1,400–1,425	Nov	A single male from San Pedro in 2007, before the survey started. We have not seen this species again in the subsequent 13 years.
18	*Euselasia gelanor* (Stoll, 1780)	1,050–1,100	May	One male, photographed at Quitacalzón in 2016.
19	*Euselasia erilis* Stichel, 1919	400–450	Nov	One male from the Pantiacolla Lodge in 2018.
20	*Euselasia murina* Stichel, 1925	450–1,100	Feb, Jun, Sep	3 males and a female from the Pantiacolla Lodge to Quitacalzón. Encounters during the dry season, rainy season, and the transition between them, indicating no seasonality.
21	*Euselasia teleclus* (Stoll, 1787)	400–950	May–Jun, Sep–Nov	Quite common from the Pantiacolla Lodge to Chontachaca and strongly attracted to bait. Perching males with wings closed under leaf, at heights of 2–3 m, between 1256–1406 hrs. (n = 2). Most other encounters with males were associated with fish bait attraction. Females represent nearly one-quarter of encounters. There were no records during the rainy season.
22	*Euselasia archelaus archelaus* Seitz, 1916	1,050–1,100	Oct	A single male from Quitacalzón in 2016.
23	*Euselasia midas crotopina* Seitz, 1916	550–1,050	Feb, Sep	A male from Pilcopata and a female from Quitacalzón. Very similar to the more common *E. kartopus*.
24	*Euselasia kartopus* Stichel, 1919	400–1,200	Jun, Sep–Nov	Common between the Pantiacolla Lodge and Chontachaca, with single records from Quitacalzón and Quebrada Santa Isabel.
25	*Euselasia mutator* Seitz, 1916	1,050–2,000	Feb, Nov	Six males from Quitacalzón to Rocotal. All encounters have been during the transition to the rains or the rainy season. Most encounters have been during early morning.
26	*Euselasia rava* Stichel, 1928	400–450	Oct	Known from a single female at the Pantiacolla Lodge, during October 2016. That month produced a number of unique records from the Pantiacolla Lodge.
27	*Euselasia gordios* Stichel, 1919	400–1,100	Sep–Nov	Three males, with one each from the Pantiacolla Lodge, the Amazonia Lodge and Quitacalzón.
28	*Euselasia uria angustifacia* Lathy. 1926	400–450	Oct–Nov	Three males, all from the Pantiacolla Lodge over a two-day period (Oct-31, Nov-1) in 2018. Male perching observed at a hilltop area from 1431–1605 hrs. (n = 2). One male observed at same perch site (without voucher specimen); 3-5m height, wings closed under leaf.
29	*Euselasia* sp. n. 7 (aff. *eumithres* Stichel, 1919)	475–525	Sep–Oct	Two males from the Amazonia Lodge, one each in 2013 and 2014.
30	*Euselasia lysimachus* Staudinger, 1888	525–550	Oct	A single male from Mascoitania in 2007.
31	*Euselasia angulata* (H. W. Bates, 1868)	400–525	Sep, Nov	One male from Mascoitania in 2008 and a second male 10 years later at the Pantiacolla Lodge.
32	*Euselasia euphaes* (Hewitson, [1855])	925–950	Jun	One male at bait on a forest trail in Chontachaca.
33	*Euselasia* sp. n. 9 (aff. *euoras* (Hewitson, [1855]))	400–450	Nov	A single female from the Pantiacolla Lodge in 2018.

	Species	Elevation range (m)	Monthly occurrence	Notes and observations
34	*Erythia labdacus labdacus* (Stoll, 1780)	925–975	Jan	A single male from Chontachaca.
35	*Pelolasia ignitus* (Stichel, 1924)	925–975	Jan, Apr–Jun	Known from 3 males and a female taken on forest trails in Chontachaca. Males were attracted to fish bait.
36	*Pelolasia euboea euboea* (Hewitson, [1853])	400–975	Feb, Jun, Oct–Nov	Occurs from Chontachaca to the Pantiacolla Lodge. 80% of specimens were males. Single perching observation at 1422 hrs.
37	*Pelolasia eumedia eumedia* (Hewitson, [1853])	575–975	Jun, Nov	Known from a male at Chontachaca (fish bait) and a female from Quebrada Bienvenida.
38	*Pelolasia eusepus* (Hewitson, [1853])	400–1,400	Jan–Feb, Apr–Jun, Aug–Nov	Frequently encountered from the lowlands to San Pedro. Of 84 encounters, only 7 individuals were females (8.3%). Males were observed perching between 0635–0955 hrs. (n = 15). At other times they were attracted to fish bait.
39	*Pelolasia melaphaea condensa* (Stichel, 1927)	450–1,400	Jan, Mar–Jun, Aug–Nov	A common mid-elevation species with most records from Quitacalzón. Our sample is strongly skewed to males, with females representing only 5% of 44 encounters. Perching occurred on the upper surface of leaves, 3–5 m in height, with wings closed, from 1400–1639 hrs. (n = 7).
40	*Pelolasia fervida fervida* (Butler, 1874)	475–2,300	Jan–Jun, Aug–Dec	Along with *P. hahneli*, the most common mid-elevation *Pelolasia* in the Valley. Range is primarily between Quitacalzón and San Pedro, with two of 57 records below 1,000 m and four above 2,000 m. Males outnumber females 13 to 1. Observed in every month surveyed. Males perch from 0846–1214 hrs. (n = 15) at lower elevations and from 1015–1054 hrs. at higher elevation (Rocotal, 1,970 m).
41	*Pelolasia hahneli* (Staudinger, [1887])	475–2,000	Jan–Feb, Apr–Jun, Aug–Nov	Most frequently encountered around Quitacalzón, with records ranging from the Amazonia Lodge to Rocotal. Males perched from 0735–1109 hrs. (n = 22) at heights up to 5–6 m. Females constitute less than 10% of sampled individuals.
42	*Myselasia ella ella* (Seitz, 1916)	1,000–1,400	Mar, May–Jun, Sep–Nov	Frequent from Quitacalzón to San Pedro. Females constitute 24% of observed individuals. Male perching between 0745–0940 hrs. (n = 4).
43	*Myselasia hygenius hygenius* (Stoll, 1787)	400–950	Jan–Mar, May–Jun, Sep–Nov	Frequently encountered between the Pantiacolla Lodge and Pilcopata with one record from Chontachaca. Males were far more numerous than females, 15 to 2. Males perched on the forest edge of a ridge plateau from 0720–0747 hrs. (n = 6). Two additional observations occurred without voucher specimens, from 0800–0820 hrs. Perching males had wings closed and were observed both above and below leaves, usually 2–3 m in height. Later in the day, this species frequents fish bait.
44	*Myselasia eustola eustola* (Stichel, 1919)	925–975	Feb	A single male from Villa Carmen.
45	*Myselasia cafusa* (H.W. Bates, 1868)	400–1,100	Oct–Nov	Two males and a female from the Pantiacolla Lodge to Quitacalzón. All were taken during the transition to the rainy season.
46	*Myselasia janigena* (Stichel, 1919)	400–600	Jan, May, Aug–Sep, Nov	Not uncommon from the Pantiacolla Lodge to Villa Carmen. 33% of encounters were females.
47	*Myselasia eulione* (Hewitson, 1856)	925–975	Oct	A single female from Chontachaca that was attracted to bait.
48	*Myselasia* sp. n. 4 (aff. *eulione* (Hewitson, 1856))	400–450	Jun	One male from the Pantiacolla Lodge, collected during the dry season.

	Species	Elevation range (m)	Monthly occurrence	Notes and observations
49	*Myselasia* sp. n. 5 (aff. *eulione* (Hewitson, 1856))	500–550	Sep	A single female from the Amazonia Lodge.
50	*Myselasia alcmena* (H. Druce, 1878)	400–450	Oct	A single female from the Pantiacolla Lodge, encountered at the onset of the rains.
51	*Myselasia mys mys* (Herrich-Schäffer, [1853])	400–450	Oct	A single male from the Pantiacolla Lodge, encountered at the onset of the rains, on the same day as *M. alcmena*.
52	*Myselasia crinon* (Stichel, 1919)	400–1,725	Feb, Jun, Sep–Nov	Frequent from the Pantiacolla Lodge to Quitacalzón (400–1,100 m), with one male captured at the Mirador (1,720 m). Single male observed perching at 0954 hrs.
53	*Eurylasia euryone* (Hewitson, 1856)	400–950	Jan, Sep, Nov–Dec	Frequent from the Pantiacolla Lodge to Chontachaca. 45% of specimens were females and both sexes have been observed at bait. One perching observation at 0840 hrs.
54	*Eugelasia brevicauda* (Lathy, 1926)	400–500	Sep–Oct	Two males, one each from the Pantiacolla and Amazonia Lodges. Single male seen perching at 1152 hrs. This species was also attracted to toilet paper lures and has been observed resting under leaves, less than a meter in height.
55	*Methone cecilia magnarea* (Seitz, 1913)	400–1,400	Jan–Feb, Apr–Jun, Aug–Nov	Very common below 600 m, with many additional records up to San Pedro. Males perch from 0634–1149 hrs. (n = 12); 2-4m height, wings closed under leaf. 26% of the sample were females. One individual was attracted to a trap.
56	*Methone hecamede hecamede* (Hewitson, 1870)	2,135–2,250	Feb, Oct	Two males from Quebrada Morro Leguía, one each in 2010 and 2011. Despite extensive subsequent effort around Morro Leguía, no additional individuals were seen during the last nine years.
57	*Methone authe ocalea* (H. Druce, 1904)	525–1,100	Jan, Apr–Jun, Sep–Nov	Frequent from Chontachaca to Quitacalzón with two records from the lowlands. Strongly attracted to bait and normally seen less than a meter above-ground. Males were much more likely to be encountered than females.
58	*Methone dolichos* (Staudinger, [1887])	400–550	Oct–Nov	A frequent lowland species during the transition between the dry season and the rains. Strongly attracted to bait and normally seen within a meter of ground-level. Only 7% of encounters were females.
59	*Methone eucrates eucrates* (Hewitson, 1872)	825–1,400	May–Jun, Nov	An infrequently encountered species that is attracted to bait. Only males seen thus far.
60	*Methone* sp. n. (aff. *hypophaea* Godman & Salvin, 1878)	525–550	Feb	A single female from Villa Carmen.
RIODINIDAE/EUSELASIINAE/NEMEOBIINI/CORRACHIINA				
61	*Styx* (*Styx*) *infernalis* Staudinger, 1876	1,400–2,000	Feb, Oct–Nov	Females have been encountered slightly more frequently than males. Males observed, on a mostly overcast morning, perching from 0930–1035 hrs. (n = 6) at a streamside lek used by perching *Myselasia ella*, *Ithomiola floralis*, *Crocozona fasciata* and *Ancyluris rubrofilum*. Up to 4 males observed perching simultaneously along forest edge, 2–4 m height, on leaf tip with wings half open but not vertical. Relatively slow flight with occasional half spiral conspecific male interaction and spontaneous flight from perch site without interaction. Occasional exchange of perch sites by males. A mated pair was seen in tall roadside grass at Rocotal (1,970 m). This species is sometimes observed flying very slowly at heights of 2 to 6m in late afternoon and females (n = 3) are occasionally attracted to light at night, (personal observation and personal communication with J. Heppner).

	Species	Elevation range (m)	Monthly occurrence	Notes and observations
RIODINIDAE/RIODININAE/MESOSEMIINI/EUNOGYRINA				
62	*Eunogyra satyrus* Westwood, 1851	400–1,100	May–Jun, Sep–Nov	Common below 500 m, during the transition to the rainy season, Sep-Nov. Two records from Quitacalzón (1,050-1,100 m). Almost one-third of records were females.
63	*Teratophthalma axilla axilla* (H. Druce, 1904)	1,050–1,200	Jan, Apr–May, Sep–Nov	The most frequently encountered *Teratophthalma*, with all but one specimen from Quitacalzón. Most were located on a dark forest trail bordering the Quebrada. The remaining specimen is from Quebrada Santa Isabel. This species is attracted to fish bait and to paper lures. Males perching from 1329–1344 hrs. (n = 2); 4m height; wings spread on leaf. Male/female ratio of 5 to 1.
64	*Teratophthalma* sp. n. 2	1,300–1,720	Jun, Nov	Two females from San Pedro and an additional female along the road near the Mirador.
65	*Teratophthalma adulter* Stichel, 1929	1,400–1,650	Aug	A single male from San Pedro in 2001. No additional records in the subsequent 19 years.
66	*Teratophthalma phelina phelina* (C. Felder and R. Felder, 1862)	500–525	May	One female from the Amazonia Lodge in 2012.
RIODINIDAE/RIODININAE/MESOSEMIINI/MESOSEMIINA				
67	*Mesosemia metura polyglauca* Stichel, 1910	400–1,400	Jan, Mar, May	Frequent from the Pantiacolla Lodge to Quitacalzón, with one record from San Pedro. Perching males observed from 1048–1133 hrs. (n = 4). Almost 30% of encounters were females.
68	*Mesosemia teulem* Brévignon, 1995	400–1,050	Jun, Sep–Nov	Three males and two females, with four specimens below 500 m and a single female from Quitacalzón.
69	*Mesosemia* sp. n. 2	400–1,100	Jun, Nov	A female from the Pantiacolla Lodge and a photo of a male from Quitacalzón.
70	*Mesosemia maeotis maeotis* Hewitson, 1859	500–525	Sep	One female from the Amazonia Lodge in 2011.
71	*Mesosemia cippus* Hewitson, 1859	400–1,200	Jan, Mar–Jun, Sep–Nov	A common lowland species with most records below 500 m. There were three records from Quitacalzón and one from Santa Isabel. Perching males observed from 0825–1220 hrs. (n = 8). More than a third of records were females.
72	*Mesosemia walteri walteri* Brévignon, 1998	400–600	Apr–Jun, Aug–Nov	Less frequently encountered than *M. cippus,* but still quite common in the lowlands. Perching males observed from 1210–1513 hrs. (n = 6). 17% of records were of females.
73	*Mesosemia ibycus* Hewitson, 1859	400–1,400	Jan, Mar–Jun, Oct	12 of 13 sightings were during 2016 along a ditch just uphill from the Quebrada Santa Isabel bridge. The other record was surprisingly low, at the Pantiacolla Lodge, 800 m below Santa Isabel. This species tends to rest less than one-third meter above-ground and is very sedentary. Perching males were observed from 1151–1354 hrs. (n = 5). Similar mate locating behavior was observed in Rondônia, Brazil, adjacent to a small slow-flowing stream. Only one female was seen.
74	*Mesosemia luperca* Stichel, 1910	400–550	May, Sep–Nov	Relatively uncommon, and limited to elevations below 550 m between the Pantiacolla Lodge and Villa Carmen. 14% of sample were females.
75	*Mesosemia ahava veleda* Stichel, 1910	400–1,700	Jan–Mar, Jun, Aug–Nov	Very common at Quitacalzón (1,050 m), with individual records from the Pantiacolla Lodge (400 m) and the Mirador (1,700 m). Males were observed perching from 0943–1240 hrs. (n = 8). All 38 encounters have been with males.
76	*Mesosemia olivencia* H.W. Bates, 1868	400–600	Sep–Nov	Four males from the Pantiacolla Lodge to Quebrada Bienvenida, all during the transition to the rains.

	Species	Elevation range (m)	Monthly occurrence	Notes and observations
77	*Mesosemia philocles thyestes* H. Druce, 1878	400–1,100	May, Sep–Nov	Frequent below 500 m, with 3 records from Quitacalzón. Individuals commonly rest beneath leaves on low-growing vegetation. Almost 40% of records were females.
78	*Mesosemia machaera machaera* Hewitson, 1860	400–1,400	Feb–Jun, Sep–Nov	Common between the Pantiacolla Lodge and Quebrada Santa Isabel. Males outnumber females 7 to 1 and have been observed perching at 2-5m heights, along forest edges, from 1022–1430 hrs. (n = 6).
79	*Mesosemia* sp. (aff. *modulata* Stichel, 1910)	1,125–1,175	Nov	1 female photographed near Quebrada Santa Isabel.
80	*Mesosemia quadralineata* J. Hall and Harvey, 2004	400–1,725	Apr–Jun, Aug–Nov	Frequent from the Pantiacolla Lodge to Villa Carmen, with two records from Quitacalzón and a single record from the Mirador (1,720 m). Males perched from 1321–1425 hrs. (n = 2). Less than 20% of records were females.
81	*Mesosemia thymetus umbrosa* Stichel, 1909	400–1,600	Jan–Feb, May–Jun, Aug–Dec	Extremely common below 1,100 m, with records as high as Puente Unión. Perching males observed from 1142–1510 hrs. (n = 45) exhibited frequent flight and conspecific male spiral interaction. 8% of encounters were females.
82	*Mesosemia myrmecias* Stichel, 1910	1,050–1,100	Nov	One male from Quitacalzón, attracted to fish bait, in 2017.
83	*Mesosemia hedwigis* Stichel, 1910	525–1,400	Jan–Apr, Jun, Sep–Nov	Frequently seen at Quitacalzón, with one record from Villa Carmen and two from San Pedro. Males outnumber females 3 to 1 and perched from 1136- 1403 hrs. (n = 6).
84	*Mesosemia amarantus* Stichel, 1910	400–1,100	Mar, May, Sep–Nov	Not rare, with most records from the Pantiacolla Lodge to Villa Carmen. There is a single record from Quitacalzón. Males perched from 1358–1359 hrs. with mutual conspecific interaction (n = 2). Almost 40% of records were females.
85	*Mesosemia naiadella naiadella* Stichel, 1909	400–1,400	Jan, Apr, Aug–Dec	Frequent from the Pantiacolla Lodge to San Pedro. Perching occurred from 1240–1506 hrs. (n = 4). Almost a third of records were females.
86	*Mesosemia nerine* Stichel, 1909	490–1,400	Mar–May, Sep–Oct	Found from the Amazonia Lodge to San Pedro. Surprisingly, not recorded from the Pantiacolla Lodge. Males outnumber females 7.5 to 1. 30% of all records were from San Pedro, March 26-31, 2016.
87	*Mesosemia tenebricosa anica* H. Druce, 1904	400–1450	Feb–May, Sep–Nov	Frequent from the Pantiacolla Lodge to San Pedro. Perching occurred from 0607–0939 (n = 6) and 1555–1602 hrs. (n = 4), consistent with a bimodal pattern. Less than 13% of records were females.
88	*Mesosemia sirenia* Stichel, 1909	400–1,400	Jan–Jun, Sep–Nov	Very common from the Pantiacolla Lodge to Quitacalzón, with strays to San Pedro. A quarter of records were females.
89	*Mesosemia judicialis* Butler, 1874	400–1,600	Jan–Jun Aug–Nov	The most common *Mesosemia*, ranging from the Pantiacolla Lodge to Puente Unión. Active throughout the day but mate locating behavior noted 0614–0815 hrs. (n = 7) and again 1315–1541 hrs. (n = 8), suggesting bimodal frequency. Mating pair observed mid-morning. A third of all encounters were females, which were seen more often after noon.
90	*Mesosemia latissima* Stichel, 1909	400–1,400	Jan–Mar, May, Aug–Nov	Quite common from Quitacalzón to San Pedro, with two records from the lowlands, at the Pantiacolla Lodge. Males outnumber females 6 to 1.
91	*Mesosemia menoetes paetula* Stichel, 1915	550–1,400	Apr, Jun, Sep–Nov	3 males and 2 females from Chontachaca to San Pedro. There is an additional female from the Erika Lodge, located on the Alto Madre de Dios River between the Amazonia and PantiacollaLodges.

	Species	Elevation range (m)	Monthly occurrence	Notes and observations
92	*Mesosemia metuana glaucoma* Stichel, 1909	1,100–2,150	Aug–Nov	Infrequently encountered between Quitacalzón and Quebrada Morro Leguía. 55% of records were females and all encounters have been during the late dry season and the transition to the rains. Males perched from 1048–1133 hrs. (n = 4).
93	*Mesosemia zorea toparcha* Stichel, 1910	1,000–2,400	Jan–Feb, Apr–Jun, Aug–Nov	Common from San Pedro to Quebrada Morro Leguía, with single records at Quitacalzón and Quebrada Buenos Aires. Reliably found resting on vegetation adjacent to the QuebradaMorro Leguía bridge. The ratio of males to females is 14 to 1. Perching occurs later in the day as elevation increases; 0651–0925 hrs. at San Pedro (1,375 m, n = 2); 0950–1130 hrs. (n = 19) at Rocotal and Morro Leguía (1,950 – 2,200 m).
94	*Mesosemia praeculta* Stichel, 1910	2,125–2,150	Sep, Nov	A female and a male from Quebrada Morro Leguía in 2008 and 2011, respectively.
95	*Mesosemia messeis amona* Hewitson, 1876	400–1,450	Jan–May, Aug–Nov	Very common from Quitacalzón to San Pedro with records as low as the Pantiacolla Lodge. Males perched from 1137–1644 hrs. (n = 22). They are active in early to mid-morning without displaying features of mate locating behavior. Almost a quarter of specimens were females.
96	*Mesosemia lapillus* Stichel, 1910	1,000–1,200	Mar–May, Sep–Nov	An uncommon and beautiful species that is primarily restricted to the Quitacalzón bridge area and a trail along the quebrada. Individuals perch above the quebrada in sunlit openings. There is one record from Quebrada Santa Isabel. All records were of males, which exhibit typical perching behavior between 1036–1220 hrs. (n = 10).
97	*Mesosemia* sp. n. 9	1,350–1,450	Aug	A male and a female from San Pedro on the same day in 2001.
98	*Mesosemia* sp. n. 10	1,050–1,100	May, Aug	A male and 2 females from Quitacalzón.
99	*Mesosemia* sp. n. 12	950–1,200	Jun, Aug, Nov	4 males and a female from Chontachaca to Quebrada Santa Isabel.
100	*Mesosemia* sp. n. 13	500–1,200	Jan, Nov	A male and 2 females from the Amazonia Lodge to Quebrada Santa Isabel.
101	*Mesosemia croesus siccata* (Stichel, 1919)	400–1,100	May, Jun, Sep–Nov	Common at the Pantiacolla Lodge, with records up to Quitacalzón. Males perched from 0845–1039 hrs. (n = 5). 41% of records were females.
102	*Mesosemia* sp. n. 15	400–450	Jun, Nov	6 males and a female, all from the Pantiacolla Lodge. All but one record from November. Only 2 data points for perching males, 0951 and 1146 hrs.
103	*Mesosemia tenella tenella* (Stichel, 1910)	400–950	May–Jun, Sep–Nov	Most frequently seen at the Amazonia Lodge, but recorded as high as Chontachaca. Only 16% of records were females.
104a	*Mesosemia icare subalbata* (Seitz, 1913)	1,050–1,500	Jan–May, Aug–Sep, Nov–Dec	Ranging from Quitacalzón to San Pedro with 57% females.
104b	*Mesosemia icare icare* Hübner, [1819]	400–950	Jan, Apr–Jun, Sep–Nov	The low elevation subspecies of *M. icare*, ranging up to Chontachaca (950 m) with 23% females.
105	*Mesosemia lagora* (Herrich-Schäffer, [1853])	500–550	Sep–Nov	A male from the Amazonia Lodge and a female from the Pantiacolla Lodge. Males perched from 1234–1304 hrs. (n = 2).
106	*Mesosemia hyphea pallida* (Lathy, 1932)	500–1,200	Jan–Apr, Jun, Sep–Nov	Frequently encountered between the Amazonia Lodge and Quebrada Santa Isabel. Males perched from 1326–1522 hrs. (n = 6). 21% of the sample were females.

	Species	Elevation range (m)	Monthly occurrence	Notes and observations
107	*Mesosemia matisca* Hewitson, 1860	475–525	May, Oct	2 females from the Amazonia Lodge.
108	*Mesosemia anophthalma* (C. Felder and R. Felder, 1865)	1,050–2,000	Mar, Apr, Oct	4 males and a female from Quitacalzón to Rocotal. Perching males observed from 1335–1406 hrs. (n = 2). No perching was observed during morning flight activity.
109	*Mesosemia tullius* (Fabricius, 1787)	500–950	Jan, May, Sep–Nov	From Mascoitania to Chontachaca with 15% females. Males perched between 1142 -1412 hours (n = 9). Additional observations without voucher specimens occurred on ridge plateaus, hilltops, and at streamsides.
110	*Ectosemia eumene furia* (Stichel, 1910)	400–1,100	Mar–May, Sep–Nov	Ranges from the Pantiacolla Lodge to Quitacalzón. Half of all records came during a 6-day period in 2017 at the PantiacollaLodge.There were several observations of activity, but only one at 0926 hrs. with features of mate locating behavior. Almost a third of records were females.
111	*Ectosemia erinnya* (Stichel, 1910)	400–450	Nov	All records were from a 6-day period in 2017 at the Pantiacolla Lodge. A third of specimens were females.
112	*Ectosemia steli* (Hewitson, 1858)	400–650	Feb–May, Aug–Nov	Frequently encountered between the Pantiacolla Lodge and Villa Carmen. Adults were found along trails in dense shaded forest. They usually rest under leaves, on vegetation less than a meter high. Several observation times, but unable to separate chance encounter with resting position vs. mate locating behavior. A third of records were females.
113	*Endosemia ulrica ulrica* (Cramer, 1777)	400–750	Feb, May–Jun, Aug–Sep, Nov–Dec	A lowland species with all records between the Pantiacolla Lodge and Quebrada Bienvenida. 25% of records were females.
114	*Endosemia macella* (Hewitson, 1859)	500–550	Feb, Jun, Nov	2 males and a female from Mascoitania in 2007 and 2008.
RIODINIDAE/RIODININAE/MESOSEMIINI/NAPAEINA				
115	*Hyphilaria parthenis* (Westwood, 1851)	400–1,100	May, Sep, Nov	Uncommon, with 4 males and 2 females from the Pantiacolla Lodge to Quitacalzón.
116	*Hyphilaria nicia* Hübner, [1819]	400–1,100	Mar–May, Sep–Nov	Frequently encountered from the Pantiacolla Lodge to Quitacalzón. Males perched from 1422–1550 hrs. (n = 11); usually at 4-6m height. Males outnumbered females 9 to 1.
117	*Hyphilaria anthias* (Hewitson, 1874)	1,350–1,400	Apr	One male from San Pedro in 2015.
118	*Cremna (Cremna) heteroea* H. W. Bates, 1867	400–1,100	Jan–Feb, Apr–Jun, Aug–Sep, Nov	Frequent below 600 m, with two records from Quitacalzón. Males perched from 1030–1138 hrs. (n = 5). Females constituted 11% of records.
119	*Napaea beltiana* (H. W. Bates, 1867)	400–1,100	Apr, Nov	A male from the Pantiacolla Lodge and a photo of a male from Quitacalzón.
120	*Napaea mellosa* J. Hall and Harvey, 2005	1,050–1,100	May	A single female from Quitacalzón.
121	*Ithomiola* (*Ithomiola*) *floralis celtilla* (Hewitson, 1870)	500–1,400	Jan–Jun, Aug–Nov	Very common at Quitacalzón, with records from the Amazonia Lodge to San Pedro. Males perched from 1118–1448 hrs. (n = 26). Females were rarely encountered (5% of records).
122	*Ithomiola* (*Ithomiola*) *orpheus* (Westwood, 1851)	475–1,100	Feb, Oct	A male,perching at 1125 hrs., from the Amazonia Lodge and a female from Quitacalzón.

	Species	Elevation range (m)	Monthly occurrence	Notes and observations
123	*Ithomiola* (*Ithomiola*) *bajotanos* J. Hall, 2005	1,050–1,650	Sep–Nov	6 males and 3 females from Quitacalzón to Puente Unión. All encounters during the transition from the dry season to the rains.
124	*Ithomiola* (*Ithomiola*) *tanos* (Stichel, 1910)	1,050–2,250	Jan, Mar, Aug–Nov	Frequent from San Pedro to Quebrada Morro Leguía, with 13% females. Most records during brief periods (4 days or less) in Aug. 2009, Nov. 2012, Nov. 2017, and Oct. 2018. Males perched from 0856–1140 hrs. (n = 10); usually 2-4m (but up to 6m) above-ground level on leaf tip.
125	*Ithomiola* (*Ithomiola*) sp. n. (aff. *tanos* (Stichel, 1910))	1,975–2,300	Oct	A male (photo) from Rocotal and a female from Quebrada Morro Leguía.
126	*Ithomiola* (*Hermathena*) *candidata* (Hewitson, 1874)	1,000–1,400	May, Aug, Oct–Nov	Uncommon at Quitacalzón, with one record from San Pedro. Males rest under leaves on trees above quebradas, at heights of 6 to 8m. No voucher specimens with specific times but perching was observed at 5-7m height during mid-late morning with conspecific flight interaction. 20% of records were females.
RIODINIDAE/RIODININAE/EURYBIINI				
127	*Eurybia nicaeus nicaeus* (Fabricius, 1775)	400–900	Jan–Feb, Apr–Jun, Sep–Nov	Common below 600 m, with one record from Chontachaca. This species can be flushed from trailside vegetation during early morning or on cloudy days. Males encountered much more frequently than females (19 to 1). Only two data points for perching activity, 1509–1518 hrs.
128	*Eurybia caerulescens caerulescens* H. Druce, 1904	400–1,100	Jan–Jun, Sep–Nov	Common at the Amazonia and Pantiacolla Lodges with two records from Quitacalzón. Behavior similar to *E. nicaeus* with male/female ratio of 6 to 1. Males perched from 1533–1604 hrs. (n = 3).
129	*Eurybia franciscana* C. Felder and R. Felder, 1862	400–1,100	Feb–Jun, Sep–Nov	Slightly less frequently encountered than *E. nicaeus* or *E. caerulescens*, but still quite common at the Amazonia and Pantiacolla Lodges. One record from Quitacalzón. Habits were similar to those species and males outnumber females 28 to 1. Perching males observed from 1409–1602 hrs. (n = 5). This species is often observed after disturbing individuals from resting or roosting sites.
130	*Eurybia annulata* Stichel, 1910	400–1,450	Jan–Jun, Aug–Nov	The most common *Eurybia*, ranging from the Pantiacolla Lodge to San Pedro. A common visitor to flowers in lodge gardens. Males perched from 1106–1356 hrs. (n = 15). Like other *Eurybia*, females were much less commonly encountered than males.
131	*Eurybia dardus fassli* Seitz, 1913	400–1,400	Jan–Jun, Sep–Dec	Occurs from the Pantiacolla Lodge to San Pedro. Similar in appearance and habits to *E. annulata* and like that species, fond of garden flowers. Males perched from 0951–1319 hrs. (n = 17). Almost 13 to 1 ratio of males to females.
132	*Eurybia patrona promota* Stichel, 1910	400–550	Feb, May–Jun, Sep–Nov	Uncommon from the Pantiacolla Lodge to Villa Carmen. Perching observed from 1430–1608 hrs. (n = 3). One third of records were females.
133	*Eurybia juturna hari* Weeks, 1901	525–1,200	Jan–Jun, Aug–Dec	Uncommon and primarily restricted to small quebradas near Quitacalzón. There is one record from Villa Carmen and another from Quebrada Santa Isabel. Males search for mates 2 to 4m above small streams from 1100 to 1300 hrs. Almost a quarter of records were females.
134	*Eurybia albiseriata stellifera* Stichel, 1910	400–950	Jan–Feb, Apr–Jun, Sep–Nov	Frequent from the Pantiacolla Lodge to Pilcopata, with one record from Chontachaca. Almost 40% of records were females.

	Species	Elevation range (m)	Monthly occurrence	Notes and observations
135	*Eurybia elvina granulata* Stichel, 1910	400–1,400	Apr, Jun, Sep–Oct	Less common than *E. albiseriata*, with 5 males and 2 females. Ranges from the Pantiacolla Lodge to the Amazonia Lodge. There is also a male from San Pedro.
136	*Alesa prema* (Godart, [1824])	925–975	Mar	One male from Chontachaca in 2016.
137	*Alesa telephae* (Boisduval, 1836)	550–600	Nov	A single female from Quebrada Bienvenida.
138	*Alesa amesis* (Cramer, 1777)	400–950	Feb, Apr, Jun, Sep–Dec	Common from the Pantiacolla Lodge to Pilcopata, with one record from Chontachaca. Males perched from 1207–1412 hrs. (*n* = 4). 51% of encounters were with females.
139	*Alesa hemiurga* H. W. Bates, 1867	400–450	Jun, Oct–Nov	Uncommon, and restricted to trails at the Pantiacolla Lodge. One third of records were females.
140	*Alesa*sp. n. 3 (aff. *lipara* H. W. Bates, 1867)	550–575	Sep	A single male from Mascoitania in 2008.
RIODINIDAE/RIODININAE/RIODININI				
141	*Lyropteryx apollonia apollonia* Westwood, 1851	500–1,400	Jan–Jun, Sep–Nov	Not common, but occurs from Amazonia to San Pedro. Adults often sit on moist sand or mud and occasionally occur in small groups (5 specimens on 25-Sep-2014 at Chontachaca). Less than 14% of records were of females. One female specimen belongs to form *canens* Stichel, 1910.
142	*Necyria bellona whitelyiana* H. Druce, 1874	1,050–2,150	Jan–May, Aug–Dec	Occurs from Quitacalzón to Quebrada Morro Leguía, with most encounters between San Pedro and Rocotal. Only 15% of encounters were with females.
143	*Cyrenia martia martia* Westwood, 1851	400–950	Jun, Sep–Nov	Occurs at the Amazonia and Pantiacolla Lodges and is common at Chontachaca. Only seen on traps and vegetation baited with rotten fish. Males outnumber females 16 to 1.
144	*Ancyluris* "*meliboeus*" *eudaemon* Stichel, 1910	475–1,400	Jan–Jun, Aug–Nov	The most common *Ancyluris*, with males very attracted to bait. Ranges from just north of Salvación to San Pedro. Males perched from 0725–1052 hrs. (*n* = 27). 18% of records were females.
145	*Ancyluris rubrofilum* Stichel, 1909	500–1,400	Jan–Feb, Jun, Aug–Nov	Frequently seen at Chontachaca and Quitacalzón, with strays as low as the Amazonia Lodge and as high as San Pedro. Males perched from 0818–0904 hrs. (*n* = 2). Attracted to bait, with females as 13% of sample. It is not clear if *A. "meliboeus" eudaemon* and *A. rubrofilum* are separate species and/or how to reliably separate them.
146	*Ancyluris etias mendita* (H. Druce, 1904)	500–1,050	Jan–Feb, Apr–Jun, Sep–Nov	Uncommon from the Amazonia Lodge to Quitacalzón. Attracted to bait. 17 male sightings, without a single female.
147	*Ancyluris tedea silvicultrix* Stichel, 1909	950–1,200	Jan–Feb, Apr–Jun, Aug–Nov	Uncommon from Chontachaca to Quebrada Santa Isabel. Comes to bait, with females comprising 22% of the sample.
148	*Ancyluris auleste seryxo* (Saunders, 1859)	500–1,400	Jan–Feb, Apr–May, Aug–Nov	Occurs from the Amazonia Lodge to San Pedro. Attracted to bait, with 26% females.
149	*Ancyluris colubra* (Saunders, 1859)	950–1,200	Jan–Jun, Aug–Nov	Common at Quitacalzón and strongly attracted to bait. Ranges from Chontachaca to Quebrada Santa Isabel. Females were only 6% of sample.
150	*Ancyluris mira thaumasia* Stichel, 1910	1,050–1,725	Jan–Jun, Aug–Nov	Very common at Quitacalzón,ranging to San Pedro. There is one record from the Mirador, at 1,720 m. Strongly attracted to bait,with 9% of encounters being females. Perching males observed from 1035–1303 hrs. (*n* = 2). An insufficient number of

	Species	Elevation range (m)	Monthly occurrence	Notes and observations
				perching data points exist to determine whether mate-selection is continuous or bimodal.
151	*Ancyluris formosissima venerabilis* Stichel, 1916	1,050–1,450	Jan–Feb, May–Jun, Oct	The least frequently encountered *Ancyluris* in the Valley, this species is always found in proximity to Quebradas. Fond of resting on vegetation, 2 to 5m over the water, at mid-day. There were 6 males and a female from Quitacalzón and a male from San Pedro. Not attracted to fish bait. Perching observed between 1152–1326 hrs. (without voucher specimens).
152	*Ancyluris inca miranda* (Hewitson, 1874)	500–1,720	Jan–May Aug–Nov	Frequent at Quitacalzón. Ranging from the Amazonia Lodge to the Mirador. Perching observed from 0842–1013 hrs. (n = 7), with wings spread on leaves, at 3-5m height. Only 4% of records were females.
153	*Rhetus arcius huana* (Saunders, 1859)	400–500	Jun, Nov	2 males, one each from the Amazonia and Pantiacolla Lodges. Both were attracted to fish-baited traps.
154	*Rhetus periander laonome* (Morisse, 1838)	400–1,400	Feb, Apr–Jun, Sep–Nov	Most common below 600 m, with records as high as San Pedro. 12% of records were females.
155	*Rhetus dysonii psecas* (Saunders, 1850)	1,050–2,425	Jan–Jun, Aug–Nov	Very common at Quitacalzón and above, where it gradually replaces *R. periander*. There is one record from Villa Carmen that is likely mis-labeled. 10% of records were of females.
156	*Chorinea octauius* ssp. n.	500–1,050	May–Jun, Sep–Nov	Uncommon from the Amazonia Lodge to Quitacalzón. Attracted to bait, and in one case to a dead snake. 12 males have been observed, but no females.
157	*Chorinea sylphina* (H. W. Bates, 1868)	1,000–2,150	Mar–Apr, Oct–Nov	Common at Quitacalzón and ranging up to the bridge at Quebrada Morro Leguía. Adults were frequently observed sitting on sand and were attracted to bait. Males perched from 0909–1257 hrs. (n = 7). Only one of 71 specimens was a female.
158	*Chorinea* sp. n. 2	1,600–2,500	Jan–Feb, Apr, Oct–Dec	Differs from C. sylphina in the red markings on the anal angle of the dorsal hindwing. This species is most often seen between 1000 and 1200 hrs. around the Quebrada Morro Leguía bridge. It ranges from Puente Unión to Quebrada Buenos Aires (the highest elevation that a riodinid has been observed in the Valley). Known from 22 males and 1 female.
159	*Ithomeis astrea* (C. Felder and R. Felder, 1862)	1,100–1,400	Jan, May, Sep, Nov	4 males and 3 females from Quitacalzón to San Pedro.
160	*Ithomeis aurantiaca lauronia* Schaus, 1902	500–1,100	Jan, Mar, Sep–Nov	From the Amazonia Lodge to Quitacalzón, where it is most often seen. Attracted to bait, with 11% of records being females.
161	*Panara phereclus* (Linnaeus, 1758)	525–550	Oct	One male from Villa Carmen, in 2014.
162	*Isapis agyrtus sestus* (Stichel, 1909)	550–1,100	Jan–Feb, May–Jun, Sep–Nov	From the Erika Lodge to Quitacalzón. It is very common at Chontachaca when fish bait is sprayed on vegetation. 10% of observations were females.
163	*Themone pais* ssp. n.	525–550	Nov	One male from Mascoitania, in 2007.
164	*Themone poecila* H. W. Bates, 1868	950–1,000	Oct	One female above Chontachaca, in 2014.
165	*Brachyglenis esthema esthema* C. Felder and R. Felder, 1862	500–1,725	Jan–Jun, Aug–Nov	Common at Quitacalzón, with a range from Atalaya to the Mirador. Males perched from 1155–1528 hrs. (n = 8), at 4-7 m height, often at a streamside. 31% of sightings were females.
166	*Notheme erota diadema* Stichel, 1910	400–525	May–Jun, Sep–Nov	Frequent at the Amazonia and Pantiacolla Lodges. There is one Cuzco Department record from Atalaya. Females outnumber males 23 to 1. Fond of sitting on sand and mud.

	Species	Elevation range (m)	Monthly occurrence	Notes and observations
167	*Monethe albertus albertus* C. Felder and R. Felder, 1862	400–1,200	Mar–May, Aug–Dec	Common from the Pantiacolla Lodge to Quitacalzón, with one record from Quebrada Santa Isabel. Perching observed from 1119–1550 hrs. (n = 15). This species frequently visits puddles and bait. 8% of our sample were females.
168	*Paraphthonia cteatus* Seitz, 1917	500–1,400	Sep–Nov	4 of the 5 known specimens (3 males and a female) of this species are from the Cosñipata. One of the males was visiting fish bait and the female was nectaring at a flowering tree. Records were from Mascoitania to San Pedro.
169	*Chalodeta theodora* (C. Felder and R. Felder, 1862)	400–1,100	Jan–Feb, Apr–Jun, Sep–Nov	Frequent from the Pantiacolla Lodge to Quitacalzón. Males were attracted to bait and outnumber females 26 to 1.
170	*Chalodeta lypera* (H. W. Bates, 1868)	400–1,050	Jan, Jun, Oct–Nov	Uncommon, with most records from Chontachaca at bait. Only males have been observed.
171	*Chalodeta panurga* Stichel, 1910	400–450	Jun	One male, photographed at the Pantiacolla Lodge in 2013.
172	*Chalodeta pescada* J. Hall and Willmott, 1998	1,700–1,725	Feb	One male from the Mirador in 2010.
173	*Chalodeta chitinosa* J. Hall, 2002	400–1,100	Jan–Feb, Apr–May, Sep–Nov	Frequent from the Pantiacolla Lodge to Villa Carmen, with two records from Quitacalzón. Attracted to bait, with a male/female ratio of 19 to 1.
174	*Chalodeta chaonitis* (Hewitson, 1866)	425–950	Jan, May–Jun, Sep.	Uncommon from the Pantiacolla Lodge to Villa Carmen. Attracted to bait, with a male/female ratio of 11 to 1.
175	*Dachetola virido virido* (Lathy, 1958)	525–550	Nov	One male photographed at Villa Carmen in 2016.
176	*Metacharis lucius* (Fabricius, 1793)	400–550	Jan, Jun, Sep–Nov	Frequent from the Pantiacolla Lodge to Villa Carmen. Attracted to bait, with males outnumbering females 17 to 1. Perching from 0748–0906 hrs. (n = 4).
177	*Metacharis regalis regalis* Butler, 1867	400–1,100	Feb, May–Jun, Sep–Nov	Frequent from the Pantiacolla Lodge to Quitacalzón, with a male/female ratio of 5 to 1. Frequently visits bait.
178	*Metacharis nigrella* H. W. Bates, 1868	525–550	Jan	A single male from Villa Carmen in 2020.
179	*Metacharis syloes* Hewitson, 1877	1,050–1,400	Aug, Oct–Nov	Uncommon, with 3 males and two females from Quitacalzón and a female from San Pedro.
180	*Cariomothis erythromelas erythromelas* (Sepp, [1840])	500–550	Oct	A single male from the Amazonia Lodge in 2010.
181	*Cariomothis erotylus* Stichel, 1910	1,050–1,400	Jun, Nov	A male and female from Quitacalzón and a female from San Pedro.
182	*Pheles heliconides* ssp. n.	425–1,100	Sep–Nov	4 males and 3 females from the Pantiacolla Lodge to Quitacalzón. All records were during the transition between the dry season and the rains.
183	*Syrmatia lamia* H. W. Bates, 1868	550–600	Nov	A female from Quebrada Bienvenida in 2019.
184	*Syrmatia aethiops* Staudinger, 1888	500–550	Sep–Nov	Over 90% of records were from the Amazonia Lodge where this species engages in early morning perching (0634–0830 hrs. (n = 7)), up to 3-4m, at or near forest edges. Longer perching intervals seemed to be related to overcast conditions or cloudy skies. Perching activity appears to halt when sunlight hits the perch site. Later in the day, adults can occasionally be spooked from

	Species	Elevation range (m)	Monthly occurrence	Notes and observations
				dense shady areas where they rest in low (less than 2m) vegetation. All records were for males during the transition between the dry season and the rains.
185	*Chamaelimnas tircis iaeris* H. W. Bates, 1868	500–600	May, Sep–Oct	Uncommon from the Amazonia Lodge to Pilcopata. Females represent almost 30% of records.
186	*Chamaelimnas briola urbana* Stichel, 1916	400–500	Oct–Nov	2 males from the Pantiacolla Lodge and a female from the Amazonia Lodge.
187	*Detritivora matic* (Harvey and J. Hall, 2002)	400–1,450	Jan–Feb, Apr–Jun, Aug–Nov	Common from the Pantiacolla Lodge to Quitacalzón, with one record from San Pedro. Male/female ratio of 11 to 3.
188	*Detritivora manu* (Harvey and J. Hall, 2002)	400–1,050	Jan–Feb, May, Jul–Nov	Common from the Pantiacolla Lodge to Villa Carmen, with one record each from Chontachaca and Quitacalzón. 36% of records were females.
189	*Detritivora zama* (H. W. Bates, 1868)	400–950	Jan, Oct–Nov	4 males from the Pantiacolla Lodge and two males from Chontachaca.
190	*Putridivora argyrea* (H. W. Bates, 1868)	400–1,200	Apr–May, Sep–Oct	Common at the Amazonia Lodge. Rarely encountered elsewhere (Pantiacolla Lodge, Quitacalzón, and Santa Isabel). Perching from 0635–0859 hrs. (n = 13); at 1-2 m height; at or near forest edges. Male/female ratio of 3 to 1.
191	*Charis anius* (Cramer, 1776)	400–1,400	Jan–Jun Sep–Dec	Very common from the Pantiacolla Lodge to Quitacalzón, with a single record from San Pedro. Perching from 0634–1010 hrs. (n = 13). Despite the wide range of perching times, a bimodal pattern was not suggested. Females were 27% of sample.
192	*Parcella amarynthina* (C. Felder and R. Felder, 1865)	500–950	Feb, Sep–Nov	7 males from the Amazonia Lodge to Chontachaca. This species flies very low to the ground and is fond of sitting on damp sand or mud. It is also attracted to urine-soaked soil.
193	*Caria trochilus arete* (C. Felder and R. Felder, 1861)	500–1,050	Jan, Apr–May, Sep–Nov	Frequently encountered at the Amazonia Lodge. Occurs from there to Quitacalzón. Male/female ratio of 8 to 1. Males of *Caria* were attracted to damp and urine-soaked soil. Males perched from 0752–0920 hrs. (n = 4); at 5-6m height; usually with wings spread under leaf (but occasionally on upper leaf surface).
194	*Caria castalia* (Ménétriés, 1855)	500–575	Feb, Oct–Nov	3 males from the Amazonia Lodge and the road above Atalaya, between 2011 and 2013.
195	*Caria mantinea mantinea* (C. Felder and R. Felder, 1861)	400–500	May, Sep, Nov	6 males from the Amazonia Lodge and one male from the Pantiacolla Lodge.
196	*Caria plutargus amazonica* (H. W. Bates, 1868)	500–600	Sep–Nov	12 males from the Amazonia Lodge to Pilcopata. All records were during the transition to the rainy season.
197	*Caria chrysame psittacus* (Hopffer, 1874)	1,100–1,450	Oct–Nov	6 males from Quitacalzón to San Pedro. Males were attracted to damp soil and bait. All records were during the transition to the rainy season.
198	*Caria sponsa* (Staudinger, [1887])	500–1,050	Sep, Nov	3 males from the Amazonia Lodge and one from Quitacalzón. All records were during the transition to the rainy season.
199	*Crocozona fasciata fasciata* (Hopffer, 1874)	1,050–1,600	Feb–Jun, Aug–Dec	Very common from Quitacalzón to Puente Unión. Perching from 0833–1053 hrs. (n = 16). 18% of records were females.
200	*Crocozona coecias coecias* (Hewitson, 1866)	400–1,100	Feb, Apr–May,Aug–Dec	Common from the Pantiacolla Lodge to Quitacalzón. Males perched from 0746–0907 hrs. (n = 8). Like *C. fasciata*, 18% of records were females.

	Species	Elevation range (m)	Monthly occurrence	Notes and observations
201	*Baeotis elegantula* Hopffer, 1874	1,050–2,150	Jan–Jun, Aug–Nov	Abundant from Quitacalzón to the Mirador. Three records from Quebrada Morro Leguía. Attracted to bait and to moist soil. No females among 75 individuals observed.
202	*Baeotis creusis* Hewitson, 1874	1,950–2,500	Jan–Feb, Oct–Dec	Common from Rocotal to Quebrada Yanamayo, with one record from Quebrada Buenos Aires. Only males recorded (66 specimens). Most frequently seen at moisture where small quebradas cross the road. At Rocotal we observed perching behavior by males from 1136–1238 hrs. (n = 9), while other individuals were simultaneously puddling, in a separate area, from 1130–1215 hrs.
203	*Baeotis staudingeri* D'Abrera, 1994	500–1,050	May, Sep–Nov	10 males from the Amazonia Lodge to Quitacalzón.Males perched from 1510–1546 hrs. (n = 2) and are attracted to rotten fish and urine.
204	*Baeotis euprepes orthotaenia* Seitz, 1916	525–550	Apr, Nov	2 males photographed at Villa Carmen.
205	*Baeotis felix felix* Hewitson, 1874	1.050–1,600	Jan–Jun, Aug, Oct–Nov	Common from Quitacalzón to Puente Unión. There were two low-elevation records that may be mis-labeled. *B. felix* is attracted to bait and moist soil. Mate locating behavior from 1202–1526 hrs. (n = 33). In contrast to most other riodinid perching, male mate locating behavior involves almost continuous flight between several small trees (up to 7-8m), often at forest edges, along streams. Only occasionally do the males alight on leaves. Flight height is variable, between 2-8m, and this species often encircles treetops and interacts with conspecific males. Similar behavior has been seen with certain other species in this genus. Later in the perching interval, individuals tended to fly less and to spend more time at the perch site. It is the only *Baeotis* species whose female has been observed (20% of records).
206	*Lasaia arsis* Staudinger, [1887]	500–1,050	May, Sep–Nov	6 males from the Amazonia Lodge to Quitacalzón. *Lasaia* were strongly attracted to moist or urine-soaked soil.
207	*Lasaia agesilas agesilas* (Latreille, [1809])	500–1,050	Jan–Feb, Apr, Sep–Nov	Occurs from the Amazonia Lodge to Quitacalzón. Male/female ratio of 19 to 1.
208	*Lasaia moeros* Staudinger, 1888	1,100–1,400	May, Nov	4 males from Quitacalzón to San Pedro.
209	*Lasaia* sp. n.	1,700–1,725	Feb	A male and 2 females from the Mirador between 2010 and 2013, during the rainy season. Subsequent visits to this location during the rainy season have failed to produce additional observations.
210	*Amarynthis meneria* (Cramer, 1776)	400–1,200	Jan–Feb, Apr–Jun, Aug–Dec	Frequent between the Pantiacolla Lodge and Quebrada Santa Isabel. Commonly active throughout the day. Perching observed only in early morning. 19% of records were of females.
211	*Exoplisia cadmeis* (Hewitson, 1866)	400–600	Feb, May–Jun, Sep–Nov	16 males from the Pantiacolla Lodge to Quebrada Bienvenida.
212	*Melanis smithiae smithiae* (Westwood, 1851)	500–950	Jan–Feb, Apr–Jun, Aug–Oct, Dec	Common at Villa Carmen, with records from Amazonia Lodge to Chontachaca. Male/female ratio of 16 to 1. Strongly attracted to bait.
213	*Melanis cinaron* (C. Felder and R. Felder, 1861)	950–1,200	Feb, Apr–May,Aug–Nov	Frequent from Chontachaca to Quebrada Santa Isabel. Male/female ratio of 4 to 1.

	Species	Elevation range (m)	Monthly occurrence	Notes and observations
214	*Melanis passiena* (Hewitson, 1870)	1,050–2,000	Feb, Nov	Rarely encountered, with a female from Quitacalzón and a photo of a male from Rocotal.
215	*Melanis marathon stenotaenia* (Röber, 1904)	400–1,100	Jan–Feb, Apr–May, Aug–Nov	Common from the Amazonia Lodge to Villa Carmen, with records from the Pantiacolla Lodge to Quitacalzón. Attracted to bait. Active during morning and early afternoon. Only two data points for perching activity, 1034 and 1105 hrs. Male/female ratio of 4.5 to 1.
216	*Siseme alectryo lucilius* Hopffer, 1874	400–2,150	Jan–Jun, Aug–Nov	Common from Quitacalzón to the Mirador, with records up to Quebrada Morro Leguía. Male/female ratio of 11 to 1. Attracted to moist or urine-soaked soil. The record from Pantiacolla Lodge is very doubtful.
217	*Siseme atrytone* Thieme, 1907	1,050–1,400	May, Aug	3 males from Quitacalzón to San Pedro.
218	*Siseme neurodes caudalis* H. W. Bates, 1868	950–1,400	Jan–Apr, Aug–Nov	Frequent from Quitacalzón to San Pedro, with one record from Chontachaca. 41 males encountered, without a single female. Most frequently observed puddling at moist or urine-soaked soil. Mate locating behavior observed at San Pedro at 6m height, along stream, from 1207–1246 hrs. (n = 2). At least 3 additional observations occurred at the same site without voucher specimen.
RIODINIDAE/RIODININAE/SYMMACHIINI				
219	*Mesene leucophrys* H. W. Bates, 1868	400–650	May, Sep–Nov	7 males and a female from the Pantiacolla Lodge to Pilcopata.
220	*Mesene paraena* ssp. n.	500–1,050	May, Aug–Nov	The most frequently seen *Mesene*, with all but one record from the Amazonia Lodge. The remaining record is from Quitacalzón in 2009. Males perch (1538–1604 hrs. (n = 3)) over small quebradas on vegetation 1 to 2m from the water and outnumber females 4 to 1.
221	*Mesene cyneas* (Hewitson, 1874)	1,050–1,400	Feb, Sep	One female from Quitacalzón in 1989 and a second female from San Pedro in 2010.
222	*Mesene nepticula stigmosa* Stichel, 1910	825–850	Oct–Nov	Photographs of a male (2017) and a female (2019) on the Ticary Amazon Lodge Trail in Chontachaca.
223	*Mesene leucogyna notia* J. Hall and Lamas, 2007	1,100–1,600	Aug–Sep, Nov	One male and 3 females from Quitacalzón to Puente Unión.
224	*Mesene monostigma discolor* Stichel, 1929	475–500	Sep	A female (2011) and male (2014) from the Amazonia Lodge.
225	*Mesene margaretta anartia* J. Hall and Lamas, 2007	500–750	Feb, Sep–Oct	2 males and a female from the Amazonia Lodge during 2010 and 2011. There is also a record of a female from Pilcopata in 1975.
226	*Mesene silaris* Godman and Salvin, 1878	475–500	Oct	A single male from the Amazonia Lodge in 2010.
227	*Mesene celina* (H. W. Bates, 1868)	500–1,050	Apr–May, Sep–Nov	12 males from the Amazonia Lodge and 1 female from Quitacalzón. Males perched from 1628–1645 hrs. (n = 3) at edge of secondary growth (2m height with wings spread under leaf). Conspecific males were engaged, with spiraling interaction.
228	*Esthemopsis* (*Esthemopsis*) *jesse aeniacus* Hewitson, 1876	1,050–1,725	Feb, Sep, Nov	4 males and 2 females from Quitacalzón to the Mirador.
229	*Esthemopsis* (*Esthemopsis*) *sericina* (H. W. Bates, 1867)	600–1,050	Jan–Feb, Jun	A male and 2 females from the Río Tono (near Pilcopata) to Quitacalzón.

	Species	Elevation range (m)	Monthly occurrence	Notes and observations
230	*Esthemopsis* (*Lucillella*) *pomposa* (Stichel, 1910)	1,050–1,725	Jan–Jun, Aug–Sep, Nov	Most frequent at Quitacalzón, with records up to the Mirador. Males frequently patrol over and perch above small quebradas. Perching from 1143–1220 hrs. (n = 5), at 2-5m height. There is one male from Quitacalzón that differs from typical *pomposa* in the shape of the orange dorsal forewing band and the amount of blue on the dorsal hindwing. It is treated here as an aberration, rather than an undescribed species. Male/female ratio of 22 to 1.
231	*Symmachia* (*Symmachia*) *probetor* (Stoll, 1782)	925–950	Jun	1 female from a trail near Chontachaca, resting on a leaf in a sun-lit opening at 0930 hrs.
232	*Symmachia* (*Symmachia*) *estellina* Gallard, 2008	450–1,100	Jan, Jul, Sep, Nov	4 males and a female from Shintuya to Quitacalzón.
233	*Symmachia* (*Symmachia*) *rubina separata* Lathy, 1932	475–600	Apr–May, Sep–Nov	Ranges from Salvación to Quebrada Bienvenida. Most records were from the Amazonia Lodge, where males perched 1 to 2m over a small stream. Male to female ratio of 3 to 1.
234	*Symmachia* (*Symmachia*) *suevia* Hewitson, 1877	1,100–1,400	Apr, Nov	3 males and 2 females from Quitacalzón to San Pedro. Perching from 1158–1251 (n = 2) at 4m height.
235	*Symmachia* (*Symmachia*) *pardalia* Stichel, 1924	1,700–1,725	Feb	A single female from the Mirador in 2010, during the rainy season.
236	*Symmachia* (*Symmachia*) *accusatrix* Westwood, 1851	500–525	Nov	One female from Atalaya in 2017.
237	*Symmachia* (*Symmachia*) *busbyi* J. Hall and Willmott, 2007	1,050	Nov	2 males from Quitacalzón during November 2008. They were perching on sunlit vegetation on the east side of the Quebrada, during late morning.
238	*Symmachia* (*Symmachia*) *aurigera* (Weeks, 1902)	1,100–1,400	Jan, Aug	One female each from Quitacalzón and San Pedro.
239	*Symmachia* (*Symmachia*) *tricolor* Hewitson, 1867	1,050–1,100	Nov	A photo of a female from Quitacalzón, in 2015.
240	*Symmachia* (*Symmachia*) sp. n.	1,700–1,725	Feb, Oct	2 males from the Mirador. One was visiting a blooming *Miconia* tree during the rainy season and the other was hilltopping with numerous hairstreaks at mid-day.
241	*Symmachia* (*Mesenopsis*) *lithosina cynosema* (Hewitson, 1874)	500–1,400	Jan–Feb, Apr,Aug–Nov	6 males and 2 females from the Amazonia Lodge to San Pedro.
242	*Symmachia* (*Xenandra*) *helius cruentata* (Stichel, 1909)	1,100	Nov	A photograph of a male from Quitacalzón in 2015.
243	*Symmachia* (*Xenandra*) *poliotactis* (Stichel, 1910)	500	Oct	A single female from the Amazonia Lodge in 2010.
244	*Phaenochitonia sophists sophistes* (H. W. Bates, 1868)	1,100	Feb	A single male from ~~the~~ Quitacalzón, in 2011.
245	*Pterographium* (*Pirascca*) *arbuscula arbuscula* (Möschler, 1883)	1,050	Apr	A photo of a female from Quitacalzón, in 2016.
246	*Pterographium* (*Pirascca*) *iasis* (Godman, 1903)	1,200	Apr	A single male from Quebrada Santa Isabel, in 2016.
247	*Pterographium* (*Pirascca*) *pluto* (Stichel, 1911)	1,050	Oct	A photo of a male from Quitacalzón, in 2017.

	Species	Elevation range (m)	Monthly occurrence	Notes and observations
248	*Pterographium* (*Pirascca*) sp. n. 1	975–1,400	Sep–Nov	A male and a female photographed at Chontachaca and San Pedro, respectively.
249	*Pterographium*(*Pirascca*) sp. n. 2	1,700–1,725	Jan	A single male from the Mirador in 2020.
250	*Astraeodes areuta* (Westwood, 1851)	400	Jun	One male from the Pantiacolla Lodge, in 2019.
251	*Argyrogrammana stilbe stilbe* (Godart, [1824])	1,100	Oct	A single female from Quitacalzón, in 2010.
252	*Argyrogrammana sublimis* Brévignon and Gallard, 1995	1,100	Feb	A single female from Quitacalzón, in 2013.
253	*Argyrogrammana nurtia nurtia* (Stichel, 1911)	1,375–1,720	Feb, Aug–Oct	11 females, from San Pedro to the Mirador.
254	*Argyrogrammana praestigiosa* (Stichel, 1929)	400–1,050	Nov	A male from the Pantiacolla Lodge and a photo of a male from Quitacalzón.
255	*Argyrogrammana trochilia* (Westwood, 1851)	1,050–1,200	May, Sep–Oct	A male and 2 females from Quitacalzón and a male from Quebrada Santa Isabel.
256	*Argyrogrammana rameli* (Stichel, 1930)	500–550	Apr	A photo of a male from Villa Carmen, in 2016.
257	*Argyrogrammana johnannismarci* Brévignon, 1995	500–550	Sep	One male from Villa Carmen, in 2014.
258	*Argyrogrammana natalita* J. Hall and Willmott, 1995	1,575–1,625	Apr, Sep–Oct	3 males and 2 females, from Puente Unión. Males observed perching from 1245–1318 hrs. (n = 3) at 6-7m height.
259	*Argyrogrammana pacsa* J. Hall and Willmott, 1998	1,720	Feb	1 male from the Mirador, in 2010.
260	*Argyrogrammana pastaza* J. Hall and Willmott, 1996	1,050–2,200	Jan–Apr, Aug–Nov	The only commonly observed *Argyrogrammana* in the Valley. Its primary range is from Quitacalzón to the Mirador. Males perched from 1234–1355 hrs. (n = 10) at 2.5-5m height. The male/female ratio is 4.2 to 1.
261	*Argyrogrammana willmotti* Dolibaina and Dias, 2015	1,100	Apr	One single female from Quitacalzón, in 2015.
262	*Argyrogrammana* sp. n. 1	1,720	Feb, Oct	Five males from the Mirador.
263	"*Argyrogrammana*" sp. n. 2	500–600	Feb, Nov	One female from Mascoitania and an additional female, from Quebrada Bienvenida.
264	*"Argyrogrammana"* sp. n. 3	1,050	Nov	A photograph, of a male from Quitacalzón, in 2016.
265	*Argyrogrammana* sp. n. 4	800–850	Nov	A photograph, of a male from Chontachaca, in 2017.
RIODINIDAE/RIODININAE/HELICOPINI				
266	*Sarota chrysus* (Stoll, 1781)	500–1,400	Jan–Feb, Apr–May, Aug–Nov	Occurs from the Amazonia Lodge to San Pedro. Frequently rests on trailside vegetation less than 2m high. Male/female ratio of 1.6 to 1.
267	*Sarota spicata* (Staudinger, 1888)	500–1,050	Feb, Apr–May, Sep–Nov	The second most commonly encountered *Sarota*, ranging from the Amazonia Lodge to Quitacalzón. Perching occurred from 0630–0820 hrs. (n = 21). Usually males perched on a leaf, at 1.5-2.5m, with wings closed. Frequent spiral interactions occurred with conspecific males. Male/female ratio of 15 to 1.
268	*Sarota wilmotti* J. Hall, 1998	500–1,050	Apr, Aug–Oct	2 males and 2 females, from the Amazonia Lodge to Quitacalzón.

	Species	Elevation range (m)	Monthly occurrence	Notes and observations
269	*Sarota estrada sabanilla* J. Hall, 1998	1,400–2,000	Feb, Sep	Two males from San Pedro and a female from Rocotal.
270	*Sarota gamelia alba* J. Hall, 1998	540	Jan	A single female from Villa Carmen.
271	*Sarota acantus* (Stoll, 1781)	500–550	Apr–May, Nov	3 males from the Amazonia Lodge (2012 and 2015). A single male was observed perching at 0649 hrs.
272	*Sarota miranda* Brévignon, 1998	500–750	Jan–Feb, Sep, Dec	A male and 3 females, from the Amazonia Lodge to 6 km north of Patria.
273	*Sarota gyas* (Cramer, 1775)	400–1,100	May, Aug–Nov	85% of records from the Amazonia and Pantiacolla Lodges, with additional records from Villa Carmen and Quitacalzón. Males perched, with wings closed, from 0628–0720 hrs. (n = 7), on a leaf 2-3m high. Frequent conspecific spiral interaction was observed. Male/female ratio of 4.3 to 1.
274	*Sarota myrtea* Godman and Salvin, 1886	500–1,720	Jan–Jun, Aug–Nov	The most frequently encountered *Sarota*, occurring from Pilcopata to the Mirador. Perching from 0852–1007 hours (n = 6). 16% of records were females.
275	*Sarota flavicincta* (Lathy, 1932)	500–1,100	May, Oct–Nov	3 males and a female, from the Amazonia Lodge to Quitacalzón. Single male perching at 0754 hrs.
276	*Sarota completa* J. Hall, 1998	400–1,400	May, Aug, Oct–Nov	7 males and a female from the Pantiacolla Lodge to San Pedro. Single male perching at 1023 hrs.
277	*Anteros allectus allectus* Westwood, 1851	1,050–1,200	Jan–Mar, Aug–Oct	Commonly encountered at Quitacalzón, with one record from Quebrada Santa Isabel. Attracted to bait with a male/female ratio of 6.1 to 1.
278	*Anteros chrysoprasta chrysoprasta* Hewitson, 1867	500–1,100	Jan, Apr–Jun, Aug–Oct	Commonly seen at Quitacalzón, with additional records from the Amazonia Lodge and Chontachaca. Strongly attracted to bait. Perching from 0934–0945 hrs. (n = 3). Males outnumber females 24 to 1.
279	*Anteros formosus formosus* (Cramer, 1777)	400–1,400	Jan–Feb, Apr–Jun, Aug–Nov	With *A. allectus and bracteata*, the most frequently observed *Anteros*. Strongly attracted to bait, ranging from the Pantiacolla Lodge to San Pedro. Male/female ratio of 9 to 1.
280	*Anteros theleia* Stichel, 1910	1,550–1,600	Nov	A single male from Puente Unión, in 2012.
281	*Anteros gentilis* Rebillard, 1958	2,250–2,275	Sep	Besides the male holotype, described from Pasco, Peru, this is the second known specimen, a male from Quebrada Morro Leguía. This individual was basking in the sun 2m up a steep rocky ledge, just above the bridge, during mid-morning.
282	*Anteros acheus troas* Stichel, 1909	500–1,050	Jan, May–Jun, Sep–Nov	Frequently seen, at bait, along the Ticary Amazon Lodge trail, near Chontachaca. Ranges from the Pantiacolla and Amazonia lodges to Quitacalzón, with a male/female ratio of 5 to 1.
283	*Anteros kupris aureocultus* Stichel, 1909	950–2,000	Feb–Apr, Oct–Nov	Uncommon from Chontachaca to Rocotal. Females have been taken nectaring on *Miconia* blooms and tall yellow composites. Males infrequently visit bait. Single perching male at 1254 hrs. Observed at nectar from 1055–1101 hrs. (n = 3). Males outnumber females 6.5 to 1.
284	*Anteros bracteata bracteata* Hewitson, 1867	500–1,100	Jan–Apr, Jun, Sep–Nov	The most commonly observed *Anteros* is strongly attracted to bait and occurs from the Amazonia Lodge to Quitacalzón. Male/female ratio is 22 to 1.
285	*Ourocnemis aerosus* (Stichel, 1924)	525–1,050	Oct–Nov	2 males and 1 female photographed visiting bait, at Villa Carmen (2) and Quitacalzón (1).
286	*Ourocnemis renaldus renaldus* (Stoll, 1790)	400–950	Jan, Jun, Sep–Nov	Common at fish-baited traps and bait, from the Pantiacolla Lodge to Chontachaca. All observations have been of males.

	Species	Elevation range (m)	Monthly occurrence	Notes and observations
287	*Ourocnemis archytas* (Stoll, 1787)	500–550	Nov	A single male, photographed at Villa Carmen (visiting bait), in 2016.
288	*Ourocnemis boulleti* Le Cerf, 1911	1,700–1,725	Feb	A single male, nectaring on *Miconia* blooms below the Mirador, during the rainy season.
RIODINIDAE/RIODININAE/CALYDNINI				
289	*Echydna punctata* (C. Felder and R. Felder, 1861)	400–1,050	May–Jun, Sep–Nov	Very common at the low-elevation lodges, with records up to Quitacalzón. Active during entire day and especially attracted to fish bait. Mate locating behavior during early morning, from 0620–0628 hrs. (n = 2). In Ecuador (personal observation), perching occurred from approximately 0630–0800 hrs. Male/female ratio of 8.3 to 1.
290	*Echenais* (*Imelda*) *aenetus* (Hewitson, 1874)	1,050–1,720	Jan–Jun, Aug–Nov	Very common from Quitacalzón to Puente Unión. Range extends to the Mirador. A record from Atalaya is probably erroneous. Most individuals were encountered resting or perching over small quebradas. Perching observed from 1251–1548 hrs. (n = 21). Male/female ratio is 5.9 to 1.
RIODINIDAE/RIODININAE/EMESIDINI				
291	*Emesis* (*Emesis*) *fatimella fatimella* Westwood, 1851	400–2,150	Jan, Jun, Sep–Nov	Uncommon from the Pantiacolla Lodge to Chontachaca, with an unusual record from Quebrada Morro Leguía. Will visit bait occasionally. Females represent over a third of records.
292	*Emesis* (*Emesis*) *cereus cereus* (Linnaeus, 1767)	500–1,100	Jan, Mar, Jun, Sep–Oct	Uncommon from the Amazonia Lodge to Quitacalzón. Equal numbers of males and females have been observed. Both sexes attracted to bait. A single perching observation at 1402 hrs. and 4.5m height.
293	*Emesis* (*Emesis*) *orichalceus* Stichel, 1916	550–600	Nov	One single male from km 115 of the Pilcopata/Atalaya road, in 2012.
294	*Emesis* (*Mandania*) *mandana* (Cramer, 1780)	400–1,200	Jan–Mar, Jun, Aug–Dec	Commonly seen at Quitacalzón and highly attracted to bait. Ranges from the Pantiacolla Lodge to Quebrada Santa Isabel. Males outnumber females 16 to 1.
295	*Emesis* (*Brimia*) *temesa peruviana* (Lathy, 1904)	500–1,200	Jan–Jun, Aug–Nov	Frequent from the Amazonia Lodge to Quitacalzón, with one record from Quebrada Santa Isabel. Attracted to bait, with a male/female ratio of 14.5 to 1.
296	*Emesis* (*Brimia*) *progne* (Godman, 1903)	500–550	Sep–Nov	4 males, with two each from the Amazonia Lodge and Villa Carmen. All records from the transition period to the rainy season.
297	*Emesis* (*Tenedia*) *ocypore ocypore* (Geyer, 1837)	500–1,400	Feb–Jun, Sep–Nov	Frequent from the Amazonia Lodge to Quitacalzón, with one record from San Pedro. 80% of records were males. Like most other *Emesis*, this species is attracted to bait. Male perching from 1007–1206 hrs. (n = 3).
298	*Emesis* (*Tenedia*) *angularis* Hewitson, 1870	1,375–2,425	Jan, Apr–Jun, Aug, Oct–Dec	Frequent from Rocotal to Quebrada Morro Leguía, with records as low as San Pedro. This species has not been observed at bait, but frequents moist soil. Ratio of males to females is 4.3 to 1.
299	*Emesis* (*Tenedia*) *cypria cypria* C. Felder and R. Felder, 1861	500–1,720	May–Jun, Sep–Nov	Not uncommon from the Amazonia Lodge to Quitacalzón. There is one record from the Mirador. Adults will visit bait. Perching observed from 1220–1225 hrs. (n = 2), at a height of 2-3m. Only 1 female observed in 21 encounters.
300	*Emesis* (*Tenedia*) *heterochroa* Hopffer, 1874	1,050–1,400	Feb, Oct–Nov	Uncommon from Quitacalzón to San Pedro (8 males, 0 females). Attracted to bait. Not seen since 2016.
301	*Emesis* (*Aphacitis*) *castigata* Stichel, 1910	400–1,600	Jan–Jun, Aug–Dec	Common from the Pantiacolla Lodge to Quitacalzón, with records up to Puente Unión. Attracted to damp soil and bait with a male/female ratio of 9.6 to 1.

	Species	Elevation range (m)	Monthly occurrence	Notes and observations
302	*Emesis* (*Aphacitis*) *condigna* Stichel, 1925	400–1,400	Jan–Feb, Apr–Jun, Aug–Nov	Very similar to *E. castigata* and slightly less commonly seen than that species. Ranges from the Pantiacolla Lodge to San Pedro. Males exceed females by 8.4 to 1. This species also favors damp soil and bait. A single perching observation at 0909 hrs.
303	*Emesis* (*Aphacitis*) *spreta* H. W. Bates, 1868	400–1,100	May–Jun, Sep–Nov	Frequent from the Pantiacolla Lodge to Quitacalzón. Male/Female ratio of 7.5 to 1.
304	*Emesis* (*Aphacitis*) *diogenia* Prittwitz, 1865	500–1,400	Feb, Jun, Sep–Nov	Common from the Amazonia Lodge to Quitacalzón, with one record from San Pedro. Attracted to bait with a male/female ratio of 23 to 1. Perching observed from 0950–1153 hrs. (n = 3).
305a	*Emesis* (*Aphacitis*) *heteróclita adelpha* Le Cerf, 1958	400–450	Jun	1 male from the Pantiacolla Lodge, on bait, during 2019.
305b	*Emesis* (*Aphacitis*) *heteroclita vicaria* Le Cerf, 1958	950–1,100	Jan–Feb, May, Oct–Nov	9 males and 3 females from Quitacalzón, most on bait. One additional male from Chontachaca.
305c	*Emesis* (*Aphacitis*) *heteróclita heteróclita* Stichel, 1929	500–550	Sep	One male from the Amazonia Lodge, in 2011. Zhang, *et.al.* (2019) analyzed whole genome shotgun sequences of *E. heteroclita adelpha* and *E. heteroclita heteroclita*, and concluded that they were subspecies. However, the proximity (both spatially and elevationally) of these two taxa may warrant additional research. It may be best to consider *heteroclita* and *adelpha* as synonyms, as their phenotypic differences are quite slight, whereas *vicaria* is rather distinct, and the spatial relationships of *heteroclita* and *vicaria* resemble those of *Mesosemia icare subalbata* and *M. i. icare*.
306	*Emesis* sp. n.	1,050–1,720	Feb, Oct	7 males and 3 females of this beautiful species were taken on *Miconia* flowers during February 2010 and 2011. It was not seen again, until a male was photographed at Quitacalzón in October 2019. This new species was illustrated by D'Abrera (1994: 1066).
307	*Apodemia* (*Roeberella*) *calvus* (Staudinger, [1887])	1,050–1,100	Jan, Oct–Nov	5 males from Quitacalzón. Adults sit on moist earth.
RIODINIDAE/RIODININAE/NYMPHIDIINI/PACHYTHONINA				
308	*Pachythone* (*Pachythone*) sp. n. (aff. *distigma* H. W. Bates, 1868)	500–1,050	Apr–May, Sep, Nov	7 males from the Amazonia Lodge and one male from Quitacalzón. Typical perching behavior under leaf at 3m height (1530–1608 hrs. (n = 2)).
309	*Pachythone* (*Pachythone*) *xanthe xanthe* H. W. Bates, 1868	500–650	Sep–Oct	A male from the Erika Lodge and a female from the Amazonia Lodge.
310	*Pachythone* (*Pachythone*) *conspersa* Stichel, 1926	400–450	Nov	A single female, from the Pantiacolla Lodge, in 2017.
RIODINIDAE/RIODININAE/NYMPHIDIINI/ZABUELLINA				
311	*Teenie tinea* (H. W. Bates, 1868)	500–550	Sep–Oct	9 males from the Amazonia Lodge. All records were during the transition from dry to wet seasons.
RIODINIDAE/RIODININAE/NYMPHIDIINI/LEMONIADINA				
312	*Lemonias egaensis* (Butler, 1867)	500–1,100	Jan–Jun, Aug–Nov	Very common at Quitacalzón, with a single record from Chontachaca and three low elevation records (Quebrada Bienvenida and Amazonia and Pantiacolla lodges). Perching occurred from 1313–1515 hrs. (n = 8). Male/female ratio of 1.2 to 1.
313	*Thisbe irenea* (Stoll, 1790)	400–1,400	Jan–Jun, Aug–Nov	Very common at Quitacalzón, with records from the Pantiacolla Lodge to San Pedro. Perching observed from 1254–1430 hrs. (n = 11). Females represent 15% of individuals.

	Species	Elevation range (m)	Monthly occurrence	Notes and observations
314	*Thisbe molela* (Hewitson, 1865)	400–450	Unknown	One male from Shintuya, cited by Penz and DeVries (2001: 11).
315	*Thisbe hyalina* (Butler, 1867)	400–1,200	Feb, Apr, Oct–Nov	5 males and a female, from the Pantiacolla Lodge to Quebrada Santa Isabel.
316	*Juditha odites odites* (Cramer, 1775)	400–550	Jan–Feb, Apr–May, Sep–Oct	Ten males and 3 females from the Amazonia Lodge. One additional male from the Pantiacolla Lodge, and 2 males and 2 females from Villa Carmen. Males perch from 1240–1541 hrs. (*n* = 4).
317	*Juditha pulcherrima comparata* (Stichel, 1911)	400–1,400	Jan–Mar, May–Jun, Aug–Nov	Commonly seen from the Pantiacolla Lodge to San Pedro. Perching observed from 1430–1620 hrs. (*n* = 4). Females represent a third of encounters.
318	*Juditha azan completa* (Lathy, 1904)	475–1,050	Jan–Feb, Apr, Aug–Nov	Frequent, from just north of Salvación to Quitacalzón. Equal numbers of males and females.
319	*Juditha molpe* (Hübner, [1808])	400–1,100	Jan–May, Sep–Dec	Frequent, from the Amazonia and Pantiacolla Lodges, with records to Quitacalzón. Perching observed from 1413–1628 hrs. (*n* = 6). Male/female ratio of 2 to 1.
320	*Synargis orestessa* Hübner, [1819]	400–950	Feb, Jun, Sep–Nov	Frequent, from the Amazonia and Pantiacolla Lodges, with records to Chontachaca. A single male observed perching at 1532 hrs. Females outnumber males 3 to 2.
321	*Synargis abaris* (Cramer, 1776)	400–650	Feb, May, Sep–Nov	Frequent, from the Amazonia Lodge, with records from the Pantiacolla Lodge and from Erika to Quebrada Bienvenida. Males perch from 1256–1335 hrs. (*n* = 4). Male/female ratio of 5.3 to 1.
322	*Synargis gela* (Hewitson, [1853])	400–600	Mar, Oct–Dec	2 males and 2 females, from the Pantiacolla Lodge to Villa Carmen. A single male observed perching at 1426 hrs.
323	*Synargis ochra* (H. W. Bates, 1868)	400–625	Feb, Apr–May Sep–Nov	Frequently seen, from the Pantiacolla Lodge to the vicinity of Patria. Females were 22% of sample.
324	*Synargis regulus* (Fabricius, 1793)	1,050–1,100	Sep, Nov	3 males from Quitacalzón, in 2012 and 2014. One perching observation at 1425 hrs.
325	*Minstrellus grandis* (Callaghan, 1999)	400–550	Apr–May, Sep–Oct	Most sightings were from the Amazonia Lodge, but records exist from the Pantiacolla Lodge to Villa Carmen. Males perch, with wings spread, at 2-4m height, on upperside of leaves, from 1250–1359 hrs. (*n* = 3) .25% of encounters were with females.
326	*Minstrellus leucotopus* (Stichel, 1911)	500–575	Nov	3 males, from the road to Pilcopata, above Atalaya. Observed perching on small trees above a quebrada at 4 to 5m, during late morning.
RIODINIDAE/RIODININAE/NYMPHIDIINI/NYMPHIDIINA				
327	*Periplacis apotheta* (H. W. Bates, 1868)	1,050–1,375	Sep–Oct	5 males, from 5 km ENE Shintuya to San Pedro.
328	*Periplacis coruscans* (Butler, 1867)	1,050–1,100	unknown	2 males from Quitacalzón, cited by Hall (2018: 599).
329	*Periplacis menander* (Stoll, 1780)	500–1,200	Jan–Apr, Sep–Nov	Frequently encountered, from the Amazonia Lodge to Quebrada Santa Isabel. Male/female ratio of 3.3 to 1.
330	*Periplacis pretus* (Cramer, 1777)	500–1,400	May, Oct–Nov	4 males and a female, from the Amazonia Lodge to San Pedro.
331	*Periplacis hebrus* (Cramer, 1775)	500–1,100	Jan–Feb, Apr–May, Aug–Nov	Formerly common downstream of the Quebrada Quitacalzón bridge, perching during early afternoon, on the east side of the quebrada. It has not been seen since 2017. This disappearance may be due to vegetation growth that disrupted the lek or a popu-

	Species	Elevation range (m)	Monthly occurrence	Notes and observations
				lation crash, for unknown reasons. This species ranges from the Amazonia Lodge up to Quitacalzón. Perching observed from 1320–1506 hrs. (*n* = 7). Females represent just 6% of the sample.
332	*Pandemos pasiphae* (Cramer, 1775)	500–525	Oct	A single male from the Amazonia Lodge in 2010. The specimen flew under a trailside leaf, less than one-third meter above ground-level, during early afternoon. In Ecuador, this species has been observed perching 5 to 6m above small clearings on ridges from 1400–1500 hrs.
333	*Calospila rhodope amphis* (Hewitson, 1870)	400–500	Apr–May, Sep–Nov	Frequent, but restricted to the Amazonia and Pantiacolla Lodges. Male/female ratio of 3.7 to 1.
334	*Calospila parthaon parthaon* (Dalman, 1823)	400–650	Jan, Apr, Jun, Sep–Nov	Ranges from the Pantiacolla and Erika Lodges to Villa Carmen, with most records from the Amazonia Lodge. Males were seen 9 times more often than females.
335	*Calospila furvolinea* J. Hall, 2018	925–950	Oct	Two males from Chontachaca, in 2018 and 2020. One male was observed perching at 1212 hrs. The other male was attracted to fish bait.
336	*Argyraspila tavakiliani* (Brévignon and Gallard, 1995)	500–525	May, Sep	2 females from the Amazonia Lodge (2011 and 2015).
337	*Argyraspila gyges* (Stichel, 1911)	550–650	Sep	A single male from the Erika Lodge, in 1989.
338	*Argyraspila zeanger* (Stoll, 1790)	525–550	May	One single male from Villa Carmen, in 2015.
339	*Calliona irene* (Westwood, 1851)	480–950	Jan–Feb, Apr, Sep–Nov	Uncommon, with most records from Chontachaca and the Río Tono road, 6 km from Patria. The species is also known from Mascoitania. Male perching observed from 1215–1555 hrs. (*n* = 6). The strikingly dimorphic females were seen only 18% as often as males.
340	*Livendula balista* (Hewitson, 1863)	400–500	Oct–Nov	One male each from the Pantiacolla and Amazonia Lodges.
341	*Livendula aminias* (Hewitson, 1863)	400–500	Oct–Nov	2 males and 4 females from the Pantiacolla and Amazonia Lodges. Thus far, temporally restricted to the transition period between dry and wet seasons.
342	*Livendula jasonhalli* (Brévignon and Gallard, 1999)	400–425	Jun, Oct–Nov	4 males, all from the Pantiacolla Lodge. Perching observed from 0944–1140 hrs. (*n* = 3).
343	*Livendula pauxilla* (Stichel, 1911)	400–500	Jun, Sep–Nov	Restricted to the Pantiacolla and Amazonia Lodges, where it is frequently seen, 19% of encounters were females. A single perching male was observed at 1110 hrs.
344	*Livendula violacea* (Butler, 1867)	400–1,050	Apr–Jun, Sep–Dec	Common from the Pantiacolla Lodge to Villa Carmen, with records up to Quitacalzón. Perching males observed from 1423–1652 hrs. (*n* = 5). Females constitute 11% of the sample.
345	*Annulata annulifera* (Godman, 1903)	400–600	Oct–Nov	One male each from the Pantiacolla Lodge and Quebrada Bienvenida, during the transition to the rains. Perching observed from 1332–1356 hrs. (*n* = 2).
346	*Thenpea penthea* (Cramer, 1777)	400–450	Oct–Nov	8 males and 3 females, all from the Pantiacolla Lodge during the transition to the rains.Perching observed from 1328–1549 hrs. (*n* = 7).
347	*Parvospila lucianus* (Fabricius, 1793)	475–1,050	Jan–Feb, Apr–May, Sep–Nov	Frequent, from 7.3 km N of Salvación to Quitacalzón. Females outnumber males by 2 to 1.

	Species	Elevation range (m)	Monthly occurrence	Notes and observations
348	*Parvospila emylius* (Cramer, 1775)	400–1,050	Feb, Apr–Jul, Sep–Nov	Very commonly encountered between the Pantiacolla Lodge and Quebrada Bienvenida. There is one record from Quitacalzón. Perching on upper side of leaves with wings spread, at 1-2m, from 1203–1536 hrs. (n = 9). Male/female ratio is 1.3 to 1.
349	*Setabis flammula* (H. W. Bates, 1868)	450–500	Sep	A single male from Mascoitania, in 2008.
350	*Setabis pythioides* (Butler, 1867)	450–1,375	Apr–Jun, Sep–Nov	The second most frequently encountered *Setabis*, ranging from the Pantiacolla Lodge to San Pedro. Females outnumber males almost 2 to 1.
351	*Setabis buckleyi* (Grose-Smith, 1898)	1,050–1,100	Unknown	One female from Quitacalzón, cited by Hall (2018: 919).
352	*Setabis epitus* (Cramer, 1780)	400–1,100	Feb, Apr, Sep–Dec	The most frequently encountered *Setabis* occurs from the Pantiacolla Lodge to Quitacalzón. 55% of the sample were females.
353	*Setabis velutina* (Butler, 1867)	400–500	Oct–Nov	2 males and a female from the Pantiacolla and Amazonia Lodges. All during the transition period to the rains.
354	*Setabis serica* (Westwood, 1851)	500–950	Sep–Dec	From the Erika and Amazonia Lodges to Chontachaca. Male/female ratio is 1.6 to 1. Records extend from the transition period to the early wet season.
355	*Nymphidium nealces* (Hewitson, 1871)	1.050–1,100	May, Nov	2 females from Quitacalzón, in 2008 and 2012.
356	*Nymphidium azanoides amazonensis* Callaghan, 1986	400–1,400	Apr–May Sep–Nov	Very commonly encountered below 600 m, with strays to San Pedro. Perching observed from 1205–1622 hrs. (n = 5). Male/female ratio of 6.4 to 1.
357	*Nymphidium fulminans fulminans* H. W. Bates, 1868	540–625	Mar–Apr	A male from Villa Carmen and a female from the Patria-RíoTono road.
358	*Nymphidium olinda* H. W. Bates, 1865	550–650	Sep	A female from the Erika Lodge, in 1989.
359	*Nymphidium mantus* (Cramer, 1775)	400–1,050	Sep, Nov	One male each from the Pantiacolla Lodge and Quitacalzón.
360	*Nymphidium minuta* H. Druce, 1904	400–550	Apr–May Sep–Nov	Uncommon from the Pantiacolla Lodge to Villa Carmen. Females outnumber males almost 3 to 1.
361	*Nymphidium baeotia* Hewitson, [1853]	400–650	Jan–May, Sep–Nov	Frequent, from the Pantiacolla Lodge to the Erika Lodge and Quebrada Bienvenida. Males perch from 1252–1528 (n = 6). Morning perching was not observed. Male/female ratio of 1.4 to 1.
362	*Nymphidium medusa medusa* H. Druce, 1904	400–1,050	Jan–Feb, Apr–Jun, Sep–Nov	Common below 600 m, with one stray from Quitacalzón. Males observed perching from 1219–1422 hrs. (n = 3). Male/female ratio of 3.4 to 1.
363	*Nymphidium cachrus* (Fabricius, 1787)	400–1,400	Jan–Jun, Aug–Dec	Abundant from the Pantiacolla Lodge to San Pedro. This species is active mid to late morning, but is more frequently seen after noon. Perching occurs 3 to 6m above trails or quebradas from 1154–1529 hrs. (n = 41). Male/female ratio of 2.5 to 1.
364	*Nymphidium acherois* (Boisduval, 1836)	400–550	May–Jun, Sep–Nov	Common below 600 m, from the Pantiacolla Lodge to Villa Carmen. Perching males observed from 1156–1301 hrs. (n = 4). Male/female ratio of 7.7 to 1.
365	*Nymphidium lisimon* (Stoll, 1790)	400–1,100	Jan–Jun, Aug–Nov	Abundant from the Pantiacolla Lodge to Quitacalzón. Perching occurred from 1255–1643 hrs. (n = 20). Male/female ratio of 2.9 to 1.

	Species	Elevation range (m)	Monthly occurrence	Notes and observations
366	*Nymphidium velatum* Stichel, 1914	400–625	Jan–Feb, May, Sep–Oct	Frequent below 600 m, from the Pantiacolla Lodge to Quebrada Bienvenida. One record from the Río Tono-Patria road. Males perch on leaf tips, at 3-5m height, from 0636–0815 hrs. (n = 10), at forest edges. Afternoon perching was not observed. Male/female ratio of 4 to 1.
367	*Nymphidium plinthobaphis* Stichel, 1910	400–425	Oct–Nov	4 males from the Pantiacolla Lodge. All records were in the transition period before the rainy season. Perching observed from 1326–1430 hrs. (n = 2).
368	*Nymphidium carmentis* Stichel, 1910	540–950	Jan	2 males, one from Villa Carmen, the other from Chontachaca, in 2020.
369	*Nymphidium caricae caricae* (Linnaeus, 1758)	400–1,200	Jan–Jun, Sep–Dec	Very common below 600 m, with strays as high as Quebrada Santa Isabel. Perching occurred from 1356–1516 hrs. (n = 8). Male/female ratio of 2.6 to 1.
370	*Catocyclotis malca* (Schaus, 1902)	1,050	Jan	One single female from Quitacalzón, in 2020.
371	*Catocyclotis sejuncta* (Stichel, 1910)	1,050–1,375	Aug–Oct	Occurs from Quitacalzón to San Pedro with all records during the late dry season and the transition to the rains. Perching males observed from 1040–1418 hrs. (n = 6). Male/female ratio of 18 to 1.
372	*Catocyclotis densemaculata* (Hewitson, 1870)	400–1,100	Feb, Sep–Nov	Occurs from the Pantiacolla Lodge to Quitacalzón. Mate selection occurs 2 to 3m above ground from 1128–1536 hrs. (n = 18), with many males perching on tree trunks. Male/female ratio of 41 to 1.
RIODINIDAE/RIODININAE/NYMPHIDIINI/THEOPINA				
373	*Protonymphidia senta* (Hewitson, 1853)	400–550	Sep–Nov	4 males from Mascoitania to the Río Coloradito (a quebrada between Atalaya and Pilcopata). Only seen during the dry/wet transition.
374	*Archaeonympha* sp. n.	600–625	Oct	A single female from near Patria (Río Hospital) in 2014.
375	*Pseudotinea* sp. n.	1,050–1,100	Aug	One male from Quitacalzón in 2009.
376	*Theope nycteis* (Westwood, 1851)	500–550	Sep	One male from the Amazonia Lodge, in 2014.
377	*Theope brevignoni* (Gallard, 1996)	1.050–1,100	Aug–Oct	A male and 3 females from Quitacalzón.
378	*Theope fayneli* Gallard, 2002	950–1,100	Jun, Aug, Oct–Nov	4 males and 3 females from Quitacalzón and one female from Chontachaca.
379	*Theope philotes* (Westwood, 1851)	950–1,050	Jan, Jun	A single female from Chontachaca, in 2019 and a single male from Quitacalzón in 2020.
380	*Theope hypoleuca* H. W. Bates, 1868	500	Sep	One male from the Amazonia Lodge, in 2014.
381	*Theope archimedes archimedes* (Fabricius, 1793)	Probably 400–500	unknown	One female from 5 km NE of Shintuya, cited by Hall (1999: 43).
382	*Theope pedias* Herrich-Schäffer, [1853]	400–650	Sep–Nov	The most commonly observed *Theope*. 7 males and 5 females from the Pantiacolla Lodge to the Erika and Amazonia Lodges. Only seen during the transition period to the rains.
383	*Theope eudocia* Westwood, 1851	540–1,100	Jan–Feb	One male from Quitacalzón, in 2013 and one female from Villa Carmen, in 2020.
384	*Theope excelsa* H. W. Bates, 1868	550–650	Sep	A single male from the Erika Lodge, in 1989.

	Species	Elevation range (m)	Monthly occurrence	Notes and observations
385	*Theope barea* Godman and Salvin, 1878	550–650	Sep	A single male from the Erika Lodge, in 1989.
386	*Theope eurygonina* H. W. Bates, 1868	500	Nov	One female from the Amazonia Lodge, in 2012.
387	*Theope antanitis* (Hewitson, 1874)	1,050–1,100	Mar, May, Sep, Nov	Other than the syntype, labeled "Bolivia", all known specimens of this species (3 males, 1 female) were from Quitacalzón. Adults fly in a large sunlit opening, over the eastern side of the quebrada, at mid-day.
388	*Theope terambus* (Godart, [1824])	500	Oct	One female from the Amazonia Lodge, in 2011.
389	*Theope phaeo* Prittwitz, 1865	500–550	Sep–Oct	2 males and a female from the Amazonia Lodge to Villa Carmen.
390	*Theope thootes* Hewitson, 1860	500	Sep–Oct	2 males and a female from the Amazonia Lodge.
391	*Theope thestias* Hewitson, 1860	1,375–1,400	Aug	A single female from San Pedro in 1989.
392	*Theope decorata* Godman and Salvin, 1878	1,050–1,100	Feb	A single female from Quitacalzón, in 2011.
393	*Theope lycaenina* H. W. Bates, 1868	550–650	Sep	Three males from the Erika Lodge, in 1989.
394	*Theope wallacei* J. Hall, 1998	500	Oct	One female from the Amazonia Lodge, in 2011.
395	*Theope pakitza* J. Hall and Harvey, 1998	540	Feb	A single female from Villa Carmen in 2020.
396	*Theope* sp. n. 1	1,400–1,600	Oct	Two males, one each from San Pedro and Puente Unión, in 2016.
397	*Theope* sp. n. 2 (aff. *batesi* J. Hall, 1998)	950	Oct	One male from Chontachaca, in 2018.
RIODINIDAE/RIODININAE/STALACHTINI				
398	*Stalachtis calliope* ssp. n. 3	400–550	Oct–Nov	Only known from the Pantiacolla Lodge, where it is primarily seen on the lower trails. It has only been observed during the transition season to the rains. Males outnumber females 2 to 1.