





The butterflies of Cristalino Lodge, in the Brazilian southern Amazonia: An updated species list with a significant contribution from citizen science

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Abstract: The richest butterfly communities in the world are found in the Amazon rainforest. Despite of this, and the importance of species inventories for the knowledge of diversity patterns, there are few comprehensive lists of butterflies for localities in the Brazilian Amazon. Here, we present an updated list of the butterflies of Cristalino Lodge (Alta Floresta, Mato Grosso, Brazil), in southern Amazonia, based on specimens collected by researchers and photographic records taken by ecotourists, butterfly watchers, and tour guides. With 1010 species recorded, this is currently the largest list of butterflies published for a single locality in Brazil and the first to reach (and surpass) 1000 species, with more than one third of the records coming from citizen science. The region has about 29% of the butterfly species in Brazil and one of the greatest richnesses known in the country, inferior only to areas in the western Amazon. Its fauna is mainly composed of species widely distributed in lowland Amazonia, with the addition of some species typical of the Cerrado. It has a relatively low number of species of the tribe Ithomiini (Nymphalidae: Danainae), generally considered a good indicator of the total butterfly diversity in neotropical forests, which points to the need for caution when using a single taxonomic group as a surrogate of richness of entire communities. The present work highlights the importance of citizen science and ecotourism centers for inventories and data on species distribution in diverse tropical forests.

Keywords: Amazon Forest; arch of deforestation; butterfly watching; ecotourism; iNaturalist.

As borboletas do Cristalino Lodge, no sul da Amazônia: Uma lista atualizada de espécies com contribuição significativa da ciência cidadã

Resumo: As comunidades de borboletas mais ricas do mundo são encontradas na Amazônia. Apesar disso, e da importância dos inventários de espécies para o conhecimento dos padrões de diversidade, existem poucas listas abrangentes de borboletas para localidades da Amazônia brasileira. Aqui, apresentamos uma lista atualizada das borboletas do Cristalino Lodge (Alta Floresta, Mato Grosso, Brasil), no sul da Amazônia, baseada em espécimes

coletados por pesquisadores e em registros fotográficos feitos por ecoturistas, observadores de borboletas e guias turísticos. Com 1010 espécies registradas, essa é atualmente a maior lista de borboletas publicada para uma localidade no Brasil e a primeira a atingir 1000 espécies, sendo mais de um terço dos registros provenientes da ciência cidadã. A região apresenta cerca de 29% das espécies de borboletas do Brasil e uma das maiores riquezas conhecidas no país, inferior apenas a áreas no oeste da Amazônia. Sua fauna é composta principalmente por espécies amplamente distribuídas na planície amazônica, com adição de algumas típicas do Cerrado. Possui um número relativamente baixo de espécies da tribo Ithomiini (Nymphalidae: Danainae), que é geralmente considerada uma boa indicadora da riqueza total de borboletas em florestas neotropicais, o que aponta para a necessidade de cautela ao se usar um grupo taxonômico como previsor da riqueza de comunidades inteiras. O presente trabalho destaca a importância da ciência cidadã e dos centros de ecoturismo para inventários e dados sobre distribuição de espécies em florestas tropicais diversas.

Palavras-chave: Floresta Amazônica; arco do desmatamento; observação de borboletas; ecoturismo; iNaturalist.

Introduction

The world faces a biodiversity crisis, with habitats being lost and species becoming extinct at a rate that is unprecedented in historical times (Hoekstra et al. 2005, Ceballos et al. 2015). In this context, local species inventories are especially important because they help to clarify diversity patterns and species distribution, and to identify efficient conservation strategies (Balmford & Gaston 1999, Meyer et al. 2015). However, even for a relatively well-known group of invertebrates such as the butterflies, there are areas where available occurrence data is scanty, especially in portions of tropical forests, which contain the bulk of the planet's terrestrial biodiversity, such as the Amazon Basin (Girardello et al. 2019). Historically, a great part of our knowledge of the Amazonian fauna has come from expeditions that followed rivers stopping periodically to sample, instead of focusing on single areas, and the specimens gathered by such expeditions, frequently without precise geographic data, are scattered through museum collections and in need of thorough review (Casagrande et al. 2012). As for studies that focus on local faunas, the richest butterfly communities in the world have been found in western Amazonia (Lamas 1985, Emmel & Austin 1990, Robbins et al. 1996, Brown & Freitas 2002). Yet, Santos et al. (2008) showed that there are few species lists for the Brazilian Amazon Forest, compared to most other biomes in the country. Although the number of butterfly inventories in Brazil has increased considerably since then (Shirai et al. 2019), the number of comprehensive inventories for single localities in the more than 4000000 km² of Brazilian Amazonia is still low, considering that most of the studies rely on relatively small sampling efforts (e.g., Ebert 1965, Garcia et al. 1990, Mielke & Casagrande 1991, Mielke et al. 2010, Martins et al. 2017a, Oliveira et al. 2021), do not include actual species lists (e.g., Brown 1984, 2005, Brown & Freitas 2002), or use a small subset of the butterflies, the fruit-feeding nymphalids, to answer ecological questions (e.g., Ramos 2000, Ribeiro & Freitas 2012, Graça et al. 2017a, b, Martins et al. 2017b, Montejo-Kovacevich et al. 2018, Araujo et al. 2020, Rabelo et al. 2021). Contributing reasons for this outcome include low human population densities near these sites, difficult access, and distance to most Brazilian research centers, which makes it difficult and expensive for scientists to produce long-term inventories in most of the Brazilian Amazon Forest.

In recent years, however, the growing interest in citizen science has proven to be increasingly helpful for the documentation and generation of biodiversity data, by taking advantage of new and easier ways to gather, access, produce and share this information (Dickinson et al.

2012, Mazumdar et al. 2018). Such efforts can aid in filling knowledge gaps for butterflies (Girardello et al. 2019, Mesaglio et al. 2021). One interesting case relevant to the Amazon Forest was the publication of the book “Butterflies of Southern Amazonia: A Photographic Checklist of Common Species” (Garwood & Lehman 2007), which compiled images of live butterflies representing some 2000 species, recorded by several butterfly watchers and ecotourists, especially in Amazonian lodges and ecotourism centers across Peru, Bolivia, and Brazil. This publication included several images taken at Cristalino Lodge, in Alta Floresta, Mato Grosso state, Brazil, information that has already been used in studies of the state of knowledge of butterflies in Brazil (Santos et al. 2008, Queiroz-Santos et al. 2016, Shirai et al. 2019). Photographic records have continued to be made in this location ever since; furthermore, the region has been equally attractive to researchers, and the focus of several expeditions by the authors of this paper, which have resulted in the description of a Satyrini genus (Freitas et al. 2019), a new subspecies of ithomiine (Mota et al. 2022), descriptions of immature stages (Freitas & Brown 2002, 2008, Mota et al. 2020), and research on butterfly communities and mimicry (Mota et al., in preparation). Here, we present a butterfly list for the Cristalino Lodge based on all data collected during field expeditions and the records made by butterfly watchers and ecotourists.

Materials and Methods

1. Study site

The Cristalino Lodge (centered at 9°35'51”S, 55°55'52”W) is located in northern Mato Grosso State, in the municipality of Alta Floresta, central Brazil (Figure 1). The climate in the region is warm and humid, with average annual temperature of 24°C, annual rainfall above 2400 mm, with a marked dry season lasting from 3 to 5 months (Nimer 1989). Soils are mostly red-yellow latosols and altitudes vary from 100 m to 400 m at the top of small rocky outcrops (locally known as “serras”) (Sazaki & Farias 2008, Müller & Farias 2010). The region is in the southern part of the Amazon Forest, and the vegetation is heterogeneous, presenting various phytophysognomies (Figure 2 A-D) including evergreen (Figure 2 A,B), igapó (floodplain), bamboo, semi-deciduous and deciduous forests (the latter usually associated with patches of rocky outcrops in the “serras”) (Figure 2 D). Despite the proximity to the Cerrado savannas, these are not represented in the region; the open vegetation types in this area are of a different origin (Zappi et al. 2011). The region is situated in the so-called “arch

The butterflies of Cristalino Lodge

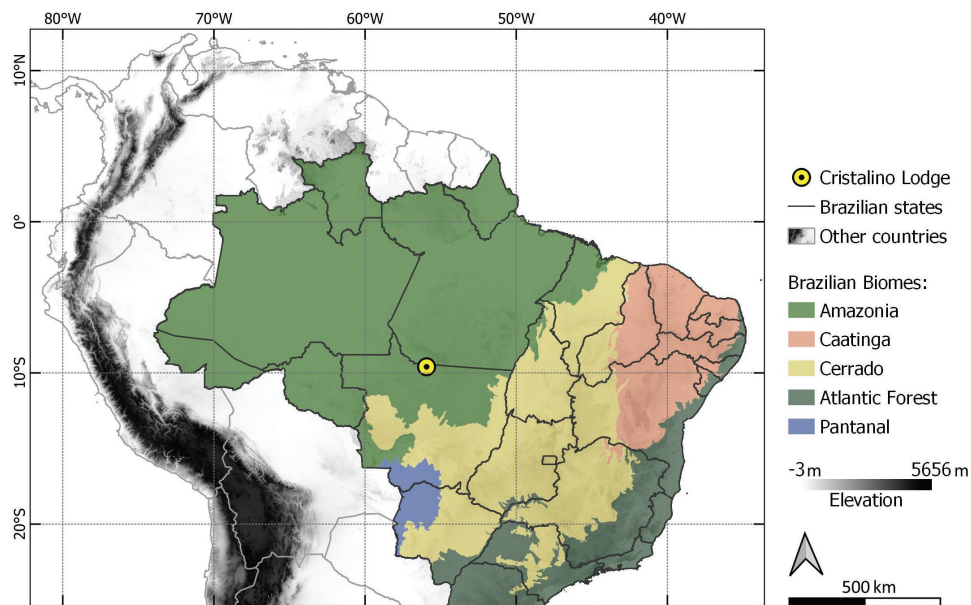


Figure 1. Map showing the location of Cristalino Lodge within the Brazilian Amazon Forest.

of deforestation” and has undergone great land-use change related to goldmining, agriculture, and cattle ranching since the foundation of Alta Floresta in 1976 (Dubreuil et al. 2012).

Cristalino Lodge was created in 1992 and has attracted ecotourists, photographers, and bird and butterfly watchers ever since. It is associated with an ecological foundation (Cristalino Ecological Foundation, CEF) and four contiguous private reserves (Reservas Particulares do Patrimônio Natural) that surround it, located in the municipalities of Alta Floresta and Novo Mundo. The lodge was named after the black waters of the Cristalino river (Figure 2 C), that crosses the area of the private reserves and is a tributary of the larger Teles Pires river, which delimits the reserves to the south. While most of the forest south of Cristalino Lodge is fragmented (Lees & Peres 2006), the 72 km² of the Cristalino private reserves are contiguous to the Cristalino State Parks I and II (1849 km²), which are also contiguous to other large conservation areas in the state of Pará. However, it is important to emphasize that Cristalino State Park II currently has its existence under legal dispute and suffers from deforestation and fires (<https://g1.globo.com/mt/mato-grosso/noticia/2022/08/17/incendio-no-parque-do-cristalino-ii-em-mt-pode-ter-sido-causado-por-aeronave-diz-delegado.ghtml>). Here, we consider as “Cristalino Lodge” the areas of the lodge itself, the four private reserves, the margins of the Cristalino river adjacent to the RPPNs, the Ariosto Island and the forest area located at the southern margin of the Teles Pires river, adjacent to the reserves, where visitors board the boats to access the lodge. These all form an area of forest that, apart from the rivers, is continuous and have a trail system that is explored by tourists that visit Cristalino Lodge.

2. Field inventory

Butterfly sampling was carried out during expeditions of 7–15 days between June and September (during the dry season, when butterflies are apparently more diverse and abundant in the region) in 2000 (twice), 2017 and 2018, and in a longer period between September 2015 and September 2016, with few temporal gaps, as part of a study that was not designed for inventorying species. Most collecting was made

through active searching with entomological nets. Additionally, a few Van Someren-Rydon traps baited with banana fermented with beer and installed in the understory were used in the earlier expeditions, in addition to the Ahrenholz technique in 2018, which consists of attaching paper soaked in saliva on leaves in the understory, to attract mostly HesperIIDae (Lamas et al. 1993). Collected butterfly specimens were stored in a freezer, and at least one of each morphospecies was spread and deposited in the entomological collection of the Museu de Diversidade Biológica, Universidade Estadual de Campinas (Unicamp), Campinas, São Paulo, Brazil.

3. Image searching

To examine butterfly images for additional species from the region, we intensively searched a number of sources, including websites and books. We focused on the images that could add new records to the list, with a search process in two phases. Firstly, we conducted an initial rapid assessment in which pictures of species that are easy to identify and that had already been recorded were ignored, and separated out other images for further examination. In the second phase, selected images were checked as to their photographer and provenance, to confirm whether they had actually been taken at Cristalino Lodge, and reviewed for potential new taxonomic records. The images selected in the second phase were subsequently sent for identification by specialists and the authors of this paper. Not all pictures could be reliably identified to species level (even if the source suggested an identification), either due to poor image quality or because the specimen belonged to a group which requires dissection or closer inspection for identification. We thus ignored any pictures which the specialists were unable to confirm as a new taxon (e.g., species group, genus or tribe) for Cristalino. We only used photographic records; trip reports and other written records were ignored if not associated with images that could be checked, even if those records were made by knowledgeable people and might be reliable.

The sources and specific searching methods, following the two-phase approach described above, were as follows: We checked every record in the books “Butterflies of Southern Amazonia” (Garwood & Lehman 2007),

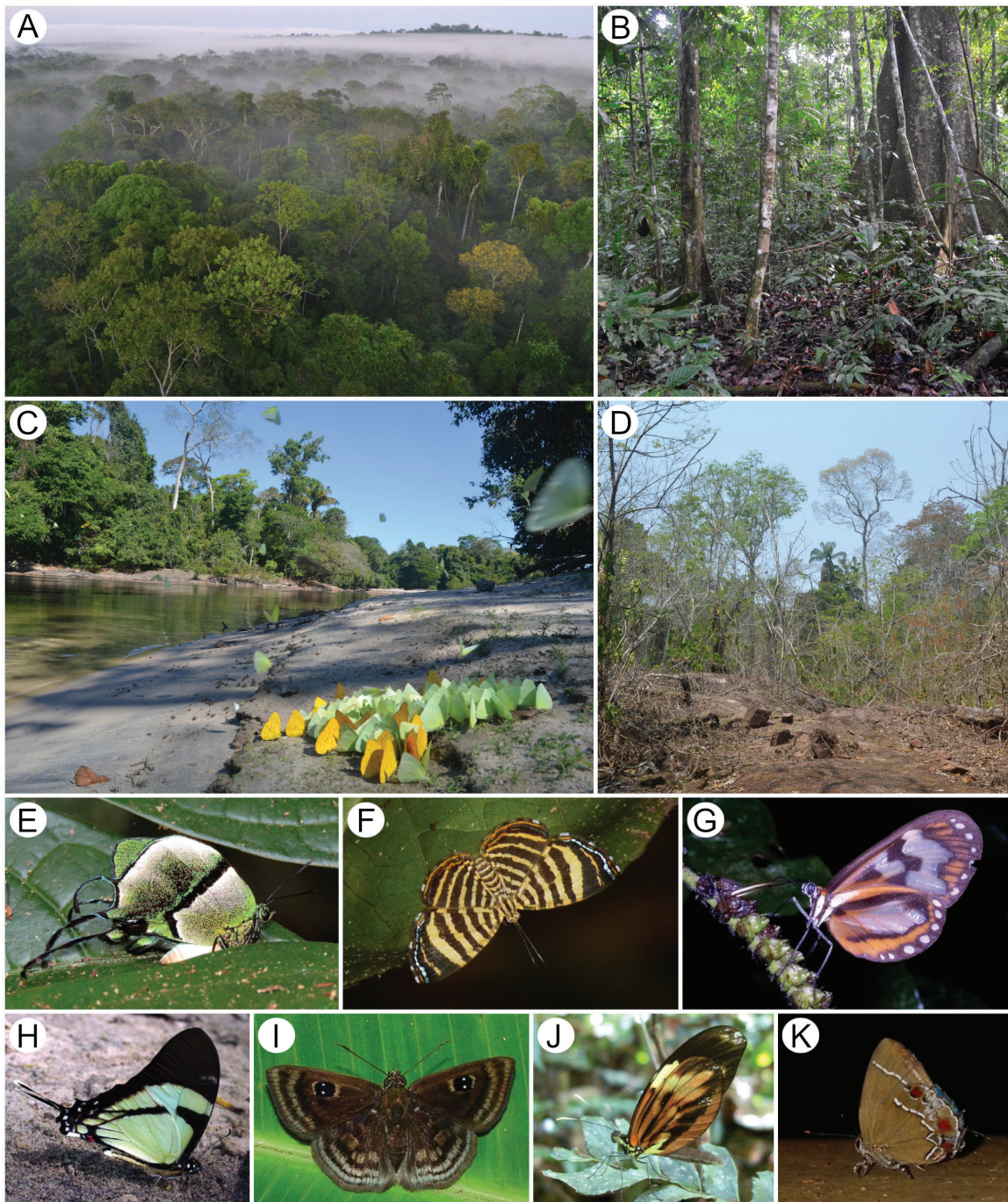


Figure 2. Environments and butterflies of Cristalino Lodge. A) View of evergreen forest from a 50 m. observation tower; B) Interior view of evergreen forest; C) *Phoebis* spp. puddling near the Cristalino River; D) View of deciduous forest during the dry season (~June-September); E-G) Examples of butterfly species that have been recorded in Cristalino Lodge through pictures only. E) *Arcas tuneta* (Lycaenidae), picture by Sidnei M. Dantas; F) *Argyrogrammana glaucopsis* (Riodinidae), picture by Stephen J. Boddington; G) *Hypothyris leprieuri ninyas* (Nymphalidae), picture by Richard C. Hoyer; H) *Eurytides callias* (Papilionidae), picture by Kim Garwood; I) *Cyclosemia* sp. (Hesperiidae), picture by Will Carter; J) *Dismorphia amphione* (Pieridae), picture by Gill Carter; K) Undescribed Lycaenidae (tentatively identified as *Arumecla* sp.), picture by Sidnei M. Dantas.

“Borboletas do Brasil (three volumes)” (Palo jr. 2017) and “Lepidoptera: Borboletas e Mariposas do Brasil” (Almeida & Freitas 2012). The first contains several pictures from Cristalino Lodge, identified by the initials “CL”. We used the online search platforms Google Search and Google Images, where all combinations of the keywords “butterflies”, “butterfly”, “borboletas”, “borboleta” or “lepidoptera” with “Cristalino”, “Cristalino Lodge” or “Alta Floresta” were used. At Google Search,

we visited all sites and blogs in the first ten pages of results for each keyword combination; at Google Images, we checked every picture retrieved for every combination.

We also searched in specific websites and social media sites that specialize in pictures and/or butterflies where there was a reasonable likelihood of finding new records. In Flickr’s search tool, we used the same combinations of keywords cited above, and checked all results

(<https://www.flickr.com>). At Instagram (<https://www.instagram.com>), we searched for images of butterflies among every public picture with the hashtag “#cristalinolodge”. At Tolweb (<http://tolweb.org>), we used “Cristalino Lodge” in the search resource, and checked all the pages about butterfly taxa shown in the results. At Borboletas e Mariposas (<http://borboletaskmariposas.blogspot.com>), we used “Cristalino” in the search resource and checked all the results. At Calydna database (<https://calydna.com>), we manually found the Cristalino region in the map present in the site, clicked at one of the records from the area, and then clicked in the location name (“Cristalino Jungle Lodge”) beyond the taxon name; this led to a page with all records made at Cristalino Lodge, and we checked each one. We searched manually among the live specimen records at Butterflies of America (Warren et al. 2016), and checked every picture at the site Neotropical Butterflies (<https://www.neotropicalbutterflies.com>), which includes many of the same records of Butterflies of Southern Amazonia, and the “Butterflies of the Amazon and Andes” section of the site Learn about Butterflies (<https://www.learnaboutbutterflies.com>). The website Butterfly Catalogs (<https://www.butterflycatalogs.com>) provides a useful guide and checklist of the butterflies of Cristalino Lodge (Garwood & Jaramillo V. 2021), but it was not used here because the locality of each picture is given only as country. However, it includes many pictures that are also available in other sources, with finer locality data, and could therefore be used.

We made a special effort to compile and examine records submitted to iNaturalist (www.inaturalist.org). To more easily find records of interest, we created the project “Butterflies of Cristalino Lodge” in June 2019. In this kind of project, iNaturalist automatically adds all the pictures of the selected taxa (in this case, “butterflies”) from a given locality. For this, we created in iNaturalist a locality named “Cristalino Lodge” that consists of a polygon which encompasses and slightly surpasses our area of interest (to account for imprecisions in the record locations given by the users).

The search for pictures was made in June of 2020, and the statistics of iNaturalist are from January 2022, about two years and a half after the creation of the project. Additionally, we checked pictures from the Cristalino Lodge archives and the images made by the first author during fieldwork (which were not added to iNaturalist before the submission of this work, to separate them from the citizen science records).

4. Identification and taxonomy

Collected specimens and pictures of live butterflies selected in the second phase of the image search were identified by specialists and the authors of this study. Although the live specimen images are usually identified at their sources, and frequently by knowledgeable people, all the images were sent to specialists and, thus, the identifications provided in the species list might differ from those at the original source. Apart from a few records available upon request to the first author, all the photographic records are published in books or on the internet and therefore can be checked, updated, or disputed. Information on the identification, photographers and photography sources of each taxon is available as supplementary material (Table S1).

We follow Heikkilä et al. (2012) for Papilionoidea, and the taxonomy of butterflies follows mostly Lamas (2004), updated after Wahlberg et al. (2009) for higher classification of Nymphalidae, Tyler et al. (1994) for Papilionidae, the Riodinidae Species Checklist (Seraphim 2019) and Zhang et al. (2021) for Riodinidae, Robbins (2004) and subsequent

publications for Lycaenidae, the Euptychiina Species Checklist (Zacca et al. 2018) for Euptychiina, Murillo-Ramos et al. (2018) for *Phoebis*, Penz et al. (2017) for *Bia*, Penz (2021) for *Cithaerias*, Paluch (2006) for *Actinote* and Núñez et al. (2021) for *Agraulis* and *Dryas*. *Eurema furtadoi* Casagrande & Mielke, 1979, synonymized with *Eurema lirina* (H. Bates, 1861) by Lamas (2004), is tentatively used for a specimen different from another that is morphologically similar to the type of *Eurema lirina*. We follow the higher classification of Hesperidae summarized by Zhang et al. (2019a), and the taxonomy of the group follows Mielke (2005) with recent updates (Cong et al. 2019, Li et al. 2019, Medeiros et al. 2019, 2020, Zhang et al. 2019b, c, 2022, Siewert et al. 2020, 2022).

5. Species richness estimates

Beccaloni & Gaston (1995) suggest that the nymphalid tribe Ithomiini is a good surrogate of the total butterfly fauna of neotropical forests, since this group is easy to sample and represent 4.3–4.6% of the butterfly species. Brown & Freitas (2000) indicates that the Nymphalidae fauna of a well sampled site represents 25–29% of the total butterfly community. Therefore, the numbers of recorded species of Nymphalidae and Ithomiini were both used to estimate the total butterfly species richness of Cristalino Lodge.

Results

We collected approximately 2500 specimens and searched for new records among thousands of images, whose number cannot be quantified because of our searching methods and the presence of many images that were repeated in more than one source and frequently cropped, inverted or with different identifications. As an example, the search for “butterfly” plus “Cristalino” at Flickr resulted in 782 images, and there were 157 images of butterflies among 4290 images tagged with “#cristalinolodge” at Instagram. About two years and a half after being created, the project “butterflies of Cristalino Lodge” in iNaturalist reported in its statistics a total of 3398 observations (specimens recorded), 839 species, 168 identifiers, and 59 observers (photographers). These numbers have continued to grow. Although not all images were labeled with correct species names or even could lead to a precise identification, these numbers give a good estimate of the scope of the project.

Combining information from collected specimens and photographic records, a total of 1010 species (1012 taxa, including subspecies), including Hedyliidae and all butterfly families, were recorded at Cristalino Lodge (Table 1). The most represented family was Hesperidae with 314 species, followed by Nymphalidae (301), Riodinidae (221), Lycaenidae (123), Papilionidae (24), Pieridae (23) and Hedyliidae (4). The two species that had more than one recorded subspecies were the nymphalids *Heliconius numata* (Cramer, 1780) and *Memphis acidalia* (Hübner, [1819]).

A total of 351 species, representing 34.7% of all species, were recorded only through photographs (examples in Figure 2 E-K). Such records contributed with at least one quarter of each family. They were particularly important to the Lycaenidae, representing more than half of its species (52,8%) and to the Hesperidae (41,1% of the species). A total of 318 of the species with photographic records only were recorded by 5 photographers (but not necessarily only them), who are either expert butterfly watchers and/or expedition guides: SMD (155), RCH (109), GC (74), SJB (57) and WC (50).

Table 1. List of the butterflies and moth-butterflies (Papilionoidea) of Cristalino Lodge. Total number: 1010 species. The number of species of each major taxa is provided within parenthesis. * Species recorded only through live specimen photographs; ** including or restricted to images made by the 5 photographers with the most records.

Papilionoidea (1010)	
Hedylidae (4)	
	<i>Macrosoma heliconiaria</i> (Guenée, 1858)
	<i>Macrosoma lucivittata</i> Walker, 1863
	<i>Macrosoma rubedinaria</i> Walker, 1862 **
	<i>Macrosoma tipulata</i> Hübner, 1818
Papilionidae (24)	
Papilioninae (24)	
Leptocircini (8)	<i>Eurytides callias</i> (Rothschild & Jordan, 1906) **
	<i>Eurytides dolicaon</i> (Cramer, 1775) **
	<i>Mimoides ariathes arianus</i> (Staudinger, 1884)
	<i>Mimoides pausanias pausanias</i> (Hewitson, 1852)
	<i>Neographium agesilau</i> (Guérin-Méneville & Percheron, 1835)
	<i>Neographium thyastes</i> (Drury, 1782)
	<i>Protesilaus glaucolau</i> (H. Bates, 1864)
	<i>Protesilaus telesilau</i> (C. Felder & R. Felder, 1864)
Troidini (10)	<i>Battus belus</i> (Cramer, 1777)
	<i>Battus crassus</i> (Cramer, 1777)
	<i>Battus lycidas</i> (Cramer, 1777)
	<i>Battus polydamas</i> (Linnaeus, 1758) **
	<i>Parides aeneas linoides</i> K. Brown & Lamas, 1994
	<i>Parides anchises</i> cf. <i>humaita</i> D'Abreu, 1981
	<i>Parides chabrias</i> (Hewitson, 1852) **
	<i>Parides neophilus eurybates</i> (G. Gray, [1853])
	<i>Parides sesostris sesostris</i> (Cramer, 1779)
	<i>Parides vertumnus cutora</i> (G. Gray, [1853])
Papilionini (6)	<i>Heraclides anchisiades</i> (Esper, 1788)
	<i>Heraclides androgeus</i> (Cramer, 1775) **
	<i>Heraclides astyalus</i> (Godart, 1819)
	<i>Heraclides hyppason</i> (Cramer, 1775) **
	<i>Heraclides thoas</i> (Linnaeus, 1771) **
	<i>Heraclides torquatus</i> (Cramer, 1777) **
Pieridae (23)	
Dismorphiinae (5)	
	<i>Dismorphia amphione</i> (Cramer, 1779) **
	<i>Enantia lina</i> (Herbst, 1792) **
	<i>Enantia melite vilma</i> Lamas, 2004
	<i>Moschoneura pinthous</i> ssp.
	<i>Pseudopieris nehemia limbalis</i> Röber, 1924 **

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Coliadinae (12)	
	<i>Anteos menippe</i> (Hübner, [1818]) **
	<i>Eurema albula</i> (Cramer, 1775)
	<i>Eurema elathea</i> (Cramer, 1777)
	<i>Eurema furtadoi</i> Casagrande & Mielke, 1979
	<i>Eurema lirina</i> (H. Bates, 1861)
	<i>Phoebis</i> cf. <i>argante</i> (Fabricius, 1775)
	<i>Phoebis philea</i> (Linnaeus, 1763)
	<i>Phoebis</i> cf. <i>sennae</i> (Linnaeus, 1758) *
	<i>Phoebis statira</i> (Cramer, 1777)
	<i>Phoebis trite</i> (Linnaeus, 1758)
	<i>Pyrisita nise tenella</i> (Boisduval, 1836)
	<i>Pyrisitia leuce</i> (Boisduval, 1836)
Pierinae (6)	
Anthocharidini (2)	<i>Cunizza hirlanda</i> (Stoll, 1790)
	<i>Hesperocharis nera</i> (Hewitson, 1852) **
Pierini (4)	<i>Ganyra phaloe phaloe</i> (Godart, 1819) **
	<i>Glutophrissa drusilla drusilla</i> (Cramer, 1777)
	<i>Melete lycimnia</i> (Cramer, 1777)
	<i>Perrhybris pamela</i> (Stoll, 1780) **
Lycaenidae (123)	
Polyommatainae (2)	
	<i>Hemiargus hanno</i> (Stoll, 1790)
	<i>Leptotes cassius</i> (Cramer, 1775)
Theclinae (121)	
Eumaeini (121)	<i>Arawacus separata</i> (Lathy, 1926)
	<i>Arawacus tarania</i> (Hewitson, 1868) **
	<i>Arcas imperialis</i> (Cramer, 1775)
	<i>Arcas tuneta</i> (Hewitson, 1865) **
	<i>Arumecla</i> sp. **
	<i>Atlides atys</i> (Cramer, 1779) **
	<i>Atlides polybe</i> (Linnaeus, 1763) **
	<i>Aubergina alda</i> (Hewitson, 1868)
	<i>Brangas getus</i> (Fabricius, 1787) **
	<i>Brevianta ematheon</i> (Cramer, 1777) **
	<i>Calycopis anastasia</i> complex
	<i>Calycopis anfracta</i> complex
	<i>Calycopis atnius</i> (Herrich-Schäffer, [1853])
	<i>Calycopis bellera</i> (Hewitson, 1877)
	<i>Calycopis caesaries</i> (H. Druce, 1907) **
	<i>Calycopis centoripa</i> (Hewitson, 1868) **
	<i>Calycopis cerata</i> (Hewitson, 1877)
	<i>Calycopis demonassa</i> (Hewitson, 1868)

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Calycopis lerbela W. D. Field, 1967
Calycopis sp.1
Calycopis sp.2
Calycopis sp.3
Camissecla vesper (H. Druce, 1909)
Celmia celmus (Cramer, 1775)
Celmia color (H. Druce, 1907) **
Celmia conoveria (Schaus, 1902) **
Celmia mecrida (Hewitson, 1867) *
Chalybs janius (Cramer, 1779)
Cupathecla cupentus (Stoll, 1781)
Cyanophrys herodotus (Fabricius, 1793) **
Denivia hemon (Cramer, 1775)
Denivia lisus (Stoll, 1790)
Denivia phegeus (Hewitson, 1865)
Enos polka Lamas & Robbins, 2009 *
Erora sp.
Eumaeini sp.
Evenus batesii (Hewitson, 1865) **
Evenus satyroides (Hewitson, 1865)
Evenus sp. **
Hypostrymon asa (Hewitson, 1868)
Iaspis castinotus (K. Johnson & Le Crom, 1997) **
Iaspis sp. **
Iaspis temesa (Hewitson, 1868)
Iaspis verania (Hewitson, 1868) *
Ignata mulsus (H. Druce, 1907) **
Ipidecla crepundia (H. Druce, 1909) **
Janthecla lea Venables & Robbins, 1991
Janthecla malvina (Hewitson, 1867) **
Janthecla rocena (Hewitson, 1867)
Janthecla sista (Hewitson, 1867)
Kisutam syllis (Godman & Salvin, 1887)
Kolana cf. *buccina* (H. Druce, 1907) **
Lamprospilus orchidia (Hewitson, 1874) *
Michaelus jebus (Godart, [1824])
Michaelus joseph Robbins, 2010 **
Michaelus phoenissa (Hewitson, 1867)
Michaelus thordesa (Hewitson, 1867) **
Ministrymon azia (Hewitson, 1873) **
Ministrymon cleon (Fabricius, 1775) **

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Ministrymon cruenta (Gosse, 1880)
Ministrymon megacles (Stoll, 1780)
Ministrymon una (Hewitson, 1873)
Ministrymon zilda (Hewitson, 1873)
Mithras nautes (Cramer, 1779)
Nicolaea fabulla (Hewitson, 1868) **
Nicolaea opalia (Hewitson, 1868) **
Nicolaea petilla (Hewitson, 1868) **
Ocaria ocrisia (Hewitson, 1868)
Ocaria thales (Fabricius, 1793)
Oenomaus cf. *magnus* Faynel & Moser, 2008 **
Oenomaus minyia (Hewitson, 1867) **
Oenomaus ortygnus (Cramer, 1779) **
Oenomaus sp.1 **
Oenomaus sp.2 **
Olyntus essus (Herrich-Schäffer, [1853])
Olyntus cf. *obsoleta* (Lathy, 1926) **
Ostrinotes gentiana (H. Druce, 1907)
Ostrinotes silva (Faynel & Robbins, 2014) **
Ostrinotes sp.
Paiwarria telemus (Cramer, 1775)
Panthiades aeolus (Fabricius, 1775) **
Panthiades bitias (Cramer, 1777)
Panthiades boreas (C. Felder & R. Felder, 1865) **
Panthiades phaleros (Linnaeus, 1767) **
Paraspiculatus cf. *emma* Busby & Robbins, 2017 **
Paraspiculatus elis (Cramer, 1779) **
Parrhasius orgia (Hewitson, 1867)
Parrhasius polibetes (Stoll, 1781) **
Pseudolycaena marsyas (Linnaeus, 1758) **
Rekoa meton (Cramer, 1779) **
Rekoa palegon (Cramer, 1780) **
Rekoa stagira (Hewitson, 1867) **
Rubroserrata ecbatana (Hewitson, 1868) **
Siderus athymbra (Hewitson, 1867) **
Siderus cf. *leucophaeus* (Hübner, [1813]) **
Strephonota ambrax (Westwood, 1852)
Strephonota cyllarissus (Herbst, 1800)
Strephonota dindymus (Cramer, 1775) **
Strephonota cf. *parvipuncta* (Lathy, 1926) **

Continue...

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<i>Strephonota</i> cf. <i>strephon</i> (Fabricius, 1775) **
<i>Strephonota</i> sp. **
<i>Strymon astiocha</i> (Prittowitz, 1865) **
<i>Strymon megarus</i> (Godart, [1824])
<i>Strymon mulucha</i> (Hewitson, 1867) **
<i>Strymon yojoa</i> (Reakirt, [1867])
<i>Strymon ziba</i> (Hewitson, 1868) **
<i>Symbiopsis</i> sp.
<i>Terenthina terentia</i> (Hewitson, 1868)
<i>Theclopsis gargara</i> (Hewitson, 1868)
<i>Theclopsis lydus</i> (Hübner, [1819])
<i>Thereus enenia</i> (Hewitson, 1867) **
<i>Thereus pedusa</i> (Hewitson, 1867) **
<i>Theritas mavors</i> Hübner, 1818
<i>Thestius selina</i> (Hewitson, 1869)
<i>Tmolus cydrara</i> (Hewitson, 1868) **
<i>Tmolus echion</i> (Linnaeus, 1767)
<i>Tmolus mutina</i> (Hewitson, 1867)
<i>Tmolus ufentina</i> (Hewitson, 1868) **
<i>Trichonis immaculata</i> Lathy, 1930 **
<i>Ziegleria ceromia</i> (Hewitson, 1877) **
<i>Ziegleria hesperitis</i> (A. Butler & H. Druce, 1872) **
Riodinidae (221)
Nemeobiinae (35)
Euselasiini (35)
<i>Erythia labdacus</i> (Stoll, 1780) **
<i>Eugelasia brevicauda</i> (Lathy, 1926)
<i>Eugelasia eugeon</i> (Hewitson, 1856)
<i>Eurylasia euryone</i> (Hewitson, 1856)
<i>Euselasia angulata</i> (H. Bates, 1868)
<i>Euselasia calligramma</i> (H. Bates, 1868) **
<i>Euselasia</i> cf. <i>praeclara</i> (Hewitson, 1869) **
<i>Euselasia clithra</i> (H. Bates, 1868)
<i>Euselasia erilis</i> Stichel, 1919
<i>Euselasia euphaes</i> (Hewitson, [1855]) **
<i>Euselasia euriteus</i> (Cramer, 1777)
<i>Euselasia euromus</i> (Hewitson, 1856)
<i>Euselasia eurypus</i> (Hewitson, 1856)
<i>Euselasia eutaea</i> (Hewitson, [1853])
<i>Euselasia eutyclus</i> (Hewitson, 1856)
<i>Euselasia gelanor</i> (Stoll, 1780)
<i>Euselasia kartopus</i> Stichel, 1919

Continue...

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<i>Euselasia</i> nr. <i>attrita</i>
<i>Euselasia orba</i> Stichel, 1919
<i>Euselasia phelina</i> (H. Druce, 1878)
<i>Euselasia scotinosa</i> Stichel, 1930 **
<i>Euselasia toppini</i> Sharpe, 1915
<i>Euselasia uria</i> (Hewitson, [1853])
<i>Euselasia uzita</i> (Hewitson, [1853]) **
<i>Euselasiae euoras</i> (Hewitson, [1855])
<i>Methone cecilia magnarea</i> (Seitz, 1913)
<i>Methone dolichos</i> (Staudinger, [1887]) **
<i>Myselasia cafusa</i> (H. Bates, 1868) **
<i>Myselasia crinon</i> (Stichel, 1919)
<i>Myselasia eustola</i> (Stichel, 1919)
<i>Myselasia mys</i> (Herrich-Schäffer, [1853])
<i>Pelolasia euboea</i> (Hewitson, [1853])
<i>Pelolasia eumenes</i> (Hewitson, [1853])
<i>Pelolasia melaphaea</i> (Hübner, 1823)
<i>Pelolasia pellonia</i> (Stichel, 1919)
Riodininae (186)
Eurybiini (42)
<i>Alesa amesis</i> (Cramer, 1777)
<i>Alesa lipara</i> H. Bates, 1867
<i>Alesa prema</i> (Godart, [1824]) **
<i>Ectosemia eumene</i> (Cramer, 1776)
<i>Eurybia albiseriata stellifera</i> Stichel, 1910 **
<i>Eurybia caerulescens</i> H. Druce, 1904 **
<i>Eurybia dardus</i> (Fabricius, 1787) **
<i>Eurybia halimede halimede</i> (Hübner, [1807])
<i>Eurybia molochina hyathincina</i> Stichel, 1910
<i>Eurybia nicaeus</i> (Fabricius, 1775) **
<i>Eurybia patrona</i> Weymer, 1875 **
<i>Hyphilaria parthenis</i> (Westwood, 1851)
<i>Ithomiola orpheus</i> (Westwood, 1851) **
<i>Mesosemia</i> cf. <i>antaerice</i> Hewitson, 1859 **
<i>Mesosemia cippus</i> Hewitson, 1859
<i>Mesosemia croesus trilineata</i> (A. Butler, 1874)
<i>Mesosemia esperanza</i> Schaus, 1913
<i>Mesosemia evias</i> Stichel, 1923
<i>Mesosemia gneris</i> Westwood, 1851 **
<i>Mesosemia hesperina tenuivittata</i> Stichel, 1910
<i>Mesosemia hyphea pallida</i> (Lathy, 1932)
<i>Mesosemia ibycus</i> Hewitson, 1859
<i>Mesosemia icare</i> (Hübner, [1819])
<i>Mesosemia idotea</i> (Westwood, 1851)

Continue...

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<i>Mesosemia jucunda</i> Stichel, 1923
<i>Mesosemia lacernata</i> Stichel, 1909
<i>Mesosemia lagora</i> (Herrich-Schäffer, [1853])
<i>Mesosemia marisa marisa</i> (Hewitson, 1858)
<i>Mesosemia melaene</i> Hewitson, 1859
<i>Mesosemia melpia</i> Hewitson, 1859
<i>Mesosemia metope</i> Hewitson, 1859
<i>Mesosemia minos modica</i> Stichel, 1910
<i>Mesosemia nesti</i> (Hewitson, 1858) **
<i>Mesosemia</i> nr. <i>sirenia</i> **
<i>Mesosemia nyctea</i> (Hoffmannsegg, 1818)
<i>Mesosemia philocles laetifica</i> H. Bates, 1868
<i>Mesosemia tenella</i> (Stichel, 1910)
<i>Mesosemia thetys</i> Godman & Salvin, 1885
<i>Mesosemia thymetus</i> (Cramer, 1777)
<i>Mesosemia tullius</i> (Fabricius, 1787)
<i>Napaea eucharila</i> (H. Bates, 1867) **
<i>Napaea heteroea</i> (H. Bates, 1867)
Nymphidiini (61) <i>Adelotypa</i> sp.
<i>Archaeonympha drepana</i> (H. Bates, 1868)
<i>Argyraspila gyges</i> (Stichel, 1911)
<i>Argyraspila pirene</i> (Godman 1903)
<i>Argyraspila rhesa</i> (Hewitson, 1858) **
<i>Aricoris propitia</i> (Stichel, 1910)
<i>Calospila parthaon</i> (Dalman, 1823)
<i>Dysmathia portia</i> H. Bates, 1868
<i>Hallonympha maculosa</i> (H. Bates, 1868)
<i>Juditha azan</i> (Westwood, 1851) **
<i>Juditha molpe</i> (Hübner, [1808])
<i>Juditha odites</i> (Cramer, 1775)
<i>Lemonias zygia</i> (Hübner, [1807])
<i>Livendula aristus</i> (Stoll, 1790)
<i>Livendula huebneri</i> (Butler, 1867)
<i>Livendula jasonhalli</i> (Brévignon & Gallard, 1999)
<i>Livendula pauxilla</i> (Stichel, 1911)
<i>Livendula violacea</i> (A. Butler, 1867)
<i>Nymphidium acherois</i> (Boisduval, 1836)
<i>Nymphidium aurum</i> Callaghan, 1985
<i>Nymphidium azanoides</i> A. Butler, 1867
<i>Nymphidium baeotia</i> Hewitson, [1853]
<i>Nymphidium callaghani</i> Brévignon, 1999 **

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<i>Nymphidium caricae</i> (Linnaeus, 1758)
<i>Nymphidium carmentis</i> Stichel, 1910
<i>Nymphidium chione</i> H. Bates, 1867
<i>Nymphidium leucosia</i> (Hübner, [1806])
<i>Nymphidium manicorensis</i> Callaghan, 1985
<i>Nymphidium mantus</i> (Cramer, 1775)
<i>Nymphidium minuta</i> H. Druce, 1904
<i>Nymphidium robiginosum</i> Stichel, 1929
<i>Nymphidium velatum</i> Stichel, 1914
<i>Pachythone</i> cf. <i>conspersa</i> Stichel, 1926 *
<i>Pachythone xanthe</i> H. Bates, 1868
<i>Pandemos pasiphae</i> (Cramer, 1775)
<i>Parvospila emylius</i> (Cramer, 1775)
<i>Periplacis menander</i> (Stoll, 1780) **
<i>Protonymphidia senta</i> (Hewitson, 1853)
<i>Rodinia calphurnia</i> (Saunders, 1850)
<i>Setabis epitus</i> (Cramer, 1780) **
<i>Setabis flammula</i> (H. Bates, 1868)
<i>Setabis lagus</i> (Cramer, 1777)
<i>Setabis serica serica</i> (Westwood, 1851) **
<i>Stalachtis calliope</i> (Linnaeus, 1758)
<i>Stalachtis phaedusa</i> (Hübner, [1813])
<i>Stalachtis phlegia</i> (Cramer, 1779) *
<i>Synargis abaris</i> (Cramer, 1776)
<i>Synargis gela</i> (Hewitson, [1853])
<i>Synargis ochra</i> (H. Bates, 1868)
<i>Synargis orestessa</i> Hübner, [1819]
<i>Synargis regulus</i> Hübner, [1819]
<i>Theope</i> cf. <i>archimedes</i> (Fabricius, 1793) **
<i>Theope discus</i> H. Bates, 1868
<i>Theope eurygonina</i> H. Bates, 1868
<i>Theope leucanthe</i> H. Bates, 1868
<i>Theope lycaenina</i> H. Bates, 1868
<i>Theope nycteis</i> (Westwood, 1851)
<i>Theope pedias</i> Herrich-Schäffer, [1853]
<i>Theope philotes</i> (Westwood, 1851)
<i>Theope thootes</i> Hewitson, 1860
<i>Zelotaea phasma</i> H. Bates, 1868
Calydnini (8) <i>Calydna caieta</i> Hewitson, 1854
<i>Calydna carneia</i> Hewitson, 1859
<i>Calydna catana</i> Hewitson, 1859

Continue...

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	<i>Calydna charila</i> Hewitson, 1854
	<i>Calydna jeannea</i> J. Hall, 2002 **
	<i>Calydna nicolayi</i> J. Hall, 2002
	<i>Echenais thelephus</i> (Cramer, 1775) **
	<i>Echydna punctata</i> (C. Felder & R. Felder, 1861)
Symmachiini (15)	<i>Argyrogrammana glaucopis</i> (H. W. Bates, 1868) **
	<i>Argyrogrammana</i> nr. <i>venilia</i> **
	<i>Argyrogrammana talboti</i> Brévignon & Gallard, 1998 *
	<i>Argyrogrammana trochilia</i> (Westwood, 1851)
	<i>Mesene</i> cf. <i>bigemmis</i> Stichel, 1925 **
	<i>Mesene</i> cf. <i>silaris</i> Godman & Salvin, 1878 **
	<i>Mesene epaphus pyrrha</i> (H. Bates, 1868)
	<i>Mesene leucophrys</i> (H. Bates, 1868)
	<i>Mesene nola</i> Herrich-Schäffer, [1853]
	<i>Mesene phareus</i> (Cramer, 1777)
	<i>Phaenochitonia pyrsoles</i> (H. Bates, 1868)
	<i>Pterographium thyatira</i> (Hewitson, [1853]) **
	<i>Symmachia accusatrix</i> Westwood, 1851
	<i>Symmachia estellina</i> Gallard, 2008
	<i>Symmachia tricolor</i> Hewitson, 1867
Helicopini (11)	<i>Anteros acheus</i> (Stoll, 1781) **
	<i>Anteros bracteata</i> Hewitson, 1867 **
	<i>Anteros formosus</i> (Cramer, 1777)
	<i>Ourocnemis aerosus</i> (Stichel, 1924) **
	<i>Ourocnemis renaldus</i> (Stoll, 1790) **
	<i>Sarota acanthoides</i> (Herrich-Schäffer, [1853])
	<i>Sarota acantus</i> (Stoll, 1781)
	<i>Sarota chrysus</i> (Stoll, 1781)
	<i>Sarota gyas</i> (Cramer, 1775)
	<i>Sarota lasciva</i> (Stichel, 1911) **
	<i>Sarota miranda</i> Brévignon, 1998
Emesidini (8)	<i>Emesis angularis</i> Hewitson, 1870 *
	<i>Emesis cerea</i> (Linnaeus, 1767) **
	<i>Emesis condigna</i> Stichel, 1925
	<i>Emesis diogenia</i> Prittwitz, 1865 **
	<i>Emesis fatimella</i> Westwood, 1851
	<i>Emesis mandana</i> (Cramer, 1780)
	<i>Emesis spreta</i> H. Bates, 1868
	<i>Emesis temesa</i> (Hewitson, 1870)
Riodinini (41)	<i>Amarynthis meneria</i> (Cramer, 1776)

Continue...

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	<i>Ancyluris aulestes</i> (Cramer, 1777)
	<i>Ancyluris colubra</i> (Saunders, 1859) **
	<i>Ancyluris etias</i> (Saunders, 1859) **
	<i>Ancyluris meliboeus</i> (Fabricius, 1776)
	<i>Caria mantinea</i> (C. Felder & R. Felder, 1861)
	<i>Caria sponsa</i> (Staudinger, [1887]) *
	<i>Caria trochilus arete</i> (C. Felder & R. Felder, 1861)
	<i>Cariomothis erythromelas</i> (Sepp, [1841]) **
	<i>Chalodeta chitinsa</i> J. Hall, 2002
	<i>Chalodeta theodora</i> (C. Felder & R. Felder, 1862)
	<i>Chamaelimnas tircis</i> C. Felder & R. Felder, 1865
	<i>Chorinea octauis</i> (Fabricius, 1787) **
	<i>Crocozona coecias</i> (Hewitson, 1866) **
	<i>Detritivora cuiaba</i> (Harvey & J. Hall, 2002)
	<i>Detritivora zama</i> (H. Bates, 1868)
	<i>Isapis agyrtus sestus</i> (Stichel, 1909)
	<i>Ithomeis aurantiaca</i> H. Bates, 1862
	<i>Lasaia agesilas</i> (Latreille, [1809])
	<i>Lasaia arsis</i> Staudinger, [1887]
	<i>Lyropteryx apollonia</i> Westwood, 1851 **
	<i>Melanis aegates</i> (Hewitson, 1874)
	<i>Melanis electron</i> (Fabricius, 1793)
	<i>Melanis marathos</i> (C. Felder & R. Felder, 1865)
	<i>Melanis smithiae</i> (Westwood, 1851) **
	<i>Metacharis lucius</i> (Fabricius, 1793)
	<i>Metacharis regalis</i> A. Butler, 1867
	<i>Monethe albertus</i> C. Felder & R. Felder, 1862
	<i>Nothome erota</i> (Cramer, 1780)
	<i>Panara phereclus</i> (Linnaeus, 1758) **
	<i>Parcella amarynthina</i> (C. Felder & R. Felder, 1865) **
	<i>Pheles heliconides heliconides</i> Herrich-Schäffer, [1853]
	<i>Pheles incerta</i> Staudinger, [1887] **
	<i>Rhetus arcus</i> (Linnaeus, 1763) **
	<i>Rhetus periander</i> (Cramer, 1777)
	<i>Riodina lysippus</i> (Linnaeus, 1758)
	Riodinini sp.
	<i>Syrmatia lamia</i> H. Bates, 1868
	<i>Themone pais</i> (Hübner, [1820])

Continue...

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	<i>Themone poecila</i> H. Bates, 1868
	<i>Themone pulcherrima</i> (Herrich-Schäffer, [1853])
Nymphalidae (301)	
Libytheinae (1)	
	<i>Libytheana carinenta</i> (Cramer, 1777)
Danainae (32)	
Danaini (2)	<i>Lycorea halia pales</i> C. Felder & R. Felder, 1862
	<i>Lycorea pasimuntia</i> (Stoll, 1780)
Ithomiini (30)	<i>Aeria eurimedia eurimedia</i> (Cramer, 1777)
	<i>Brevioleria aelia jamariensis</i> (R.F. d'Almeida, 1951) **
	<i>Callithomia alexirrhoe zeuxippe</i> H. Bates, 1862
	<i>Callithomia lenea epidero</i> (H. Bates, 1862)
	<i>Ceratinia cayana giparanaensis</i> R.F. d'Almeida, 1964
	<i>Dircenna loreta acreana</i> R.F. d'Almeida, 1950
	<i>Hypoleria alema consimilis</i> Talbot, 1928 **
	<i>Hyposcada anchiala cynara</i> R.F. d'Almeida, 1945 **
	<i>Hypothyris euclea barii</i> (H. Bates, 1862)
	<i>Hypothyris leprieuri ninyas</i> R.F. d'Almeida, 1945 **
	<i>Hypothyris maenas</i> ssp.
	<i>Hypothyris ninonia</i> ssp.
	<i>Ithomia agnosia pellucida</i> Weymer, 1875
	<i>Mechanitis lysimnia tapajona</i> Freitas & Mota, 2022
	<i>Mechanitis polymnia</i> cf. <i>mauensis</i> W. Forbes, 1948
	<i>Melinaea marsaeus pothete</i> R.F. d'Almeida, 1945
	<i>Melinaea mneme</i> cf. <i>mauensis</i> Weymer, 1891
	<i>Melinaea ludovica ludovica</i> (Cramer, 1780)
	<i>Methona confusa confusa</i> A.G. Butler, 1873 **
	<i>Methona grandior grandior</i> (W.T.M. Forbes, 1944)
	<i>Napeogenes inachia pyrois</i> H. Bates, 1862
	<i>Napeogenes rhezia adelphe</i> H. Bates, 1862
	<i>Napeogenes sylphis ithra</i> (Hewitson, 1855)
	<i>Oleria aegle</i> ssp. **
	<i>Oleria antaxis</i> ssp.
	<i>Oleria astrea</i> ssp.
	<i>Sais rosalia rosalinde</i> Weymer, 1890
	<i>Scada reckia labyrinth</i> Lamas, 1985
	<i>Thyridia psidii psidii</i> (Linnaeus, 1758)

Continue...

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	<i>Tithorea harmonia pseudonyma</i> Staudinger, 1894
Heliconiinae (22)	
Acreini (1)	<i>Actinote pyrrha crucis</i> Jordan, 1913
Heliconiini (20)	<i>Agraulis maculosa</i> (H.F.E.J. Stichel, [1908]) **
	<i>Dione juno</i> (Cramer, 1779) **
	<i>Dryas alcionea</i> (Cramer, 1779)
	<i>Eueides aliphera</i> (Godart, 1819)
	<i>Eueides isabella dissoluta</i> Stichel, 1903
	<i>Eueides lybia</i> (Fabricius, 1775)
	<i>Eueides vibilia unifasciatus</i> A. Butler, 1873
	<i>Heliconius antiochus antiochus</i> (Linnaeus, 1767)
	<i>Heliconius aoede aoede</i> (Hübner, [1813])
	<i>Heliconius burneyi</i> (Hübner, [1831])
	<i>Heliconius doris doris</i> (Linnaeus, 1771)
	<i>Heliconius erato amazona</i> Staudinger, 1897
	<i>Heliconius eratosignis</i> (Joicey & Talbot, 1925)
	<i>Heliconius ethilla</i> cf. <i>penthesilea</i> Neukirchen, 1994
	<i>Heliconius</i> cf. <i>hecale</i> (Fabricius, 1776)
	<i>Heliconius numata silvana</i> (Stoll, 1781)
	<i>Heliconius numata superioris</i> A. Butler, 1875
	<i>Heliconius ricini ricini</i> (Linnaeus, 1758)
	<i>Heliconius sara sara</i> (Fabricius, 1793)
	<i>Heliconius wallacei flavescens</i> Weymer, 1891
	<i>Philaethria dido dido</i> (Linnaeus, 1763)
Argynnini (1)	<i>Euptoieta hegesia</i> (Cramer, 1779) *
Limenitidinae (15)	
Limenitidini (15)	<i>Adelpha barnesia</i> Schaus, 1902 **
	<i>Adelpha boeotia</i> (C. Felder & R. Felder, 1867) **
	<i>Adelpha capucinus capucinus</i> (Walch, 1775)
	<i>Adelpha cocala cocala</i> (Walch, 1775)
	<i>Adelpha cytherea cytherea</i> (Linnaeus, 1758)
	<i>Adelpha epione agilla</i> Fruhstorfer, 1907
	<i>Adelpha erotia</i> (Hewitson, 1847) **
	<i>Adelpha iphichus iphichus</i> (Linnaeus, 1758)
	<i>Adelpha melona</i> (Hewitson, 1847) **
	<i>Adelpha mesentina</i> (Cramer, 1777)
	<i>Adelpha paraena</i> (H. Bates, 1865) **
	<i>Adelpha plesasure phliassa</i> (Godart, [1824])
	<i>Adelpha pollina</i> Fruhstorfer, 1915 *

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	<i>Adelpha thesprotia</i> (C. Felder & R. Felder, 1867) **
	<i>Adelpha thoasa</i> (Hewitson, 1850) **
Apaturinae (5)	
	<i>Doxocopa agathina</i> (Cramer, 1777)
	<i>Doxocopa laure</i> (Drury, 1773) **
	<i>Doxocopa lavinia</i> (A. Butler, 1866)
	<i>Doxocopa linda linda</i> (C. Felder & R. Felder, 1862)
	<i>Doxocopa zunilda</i> (Godart, [1824])
Biblidinae (53)	
Biblidini (1)	<i>Vila emilia</i> (Cramer, 1779)
Catonephelini (20)	<i>Catonephele acontius</i> (Linnaeus, 1771)
	<i>Catonephele antinoe</i> (Godart, [1824])
	<i>Catonephele numilia</i> (Cramer, 1775) **
	<i>Eunica alpais alpais</i> (Godart, [1824])
	<i>Eunica amelia</i> (Cramer, 1777)
	<i>Eunica anna</i> (Cramer, 1780)
	<i>Eunica bechina bechina</i> (Hewitson, 1852)
	<i>Eunica caelina</i> (Godart, [1824]) **
	<i>Eunica concordia</i> (Hewitson, 1852) **
	<i>Eunica eurota eurota</i> (Cramer, 1775)
	<i>Eunica ingens</i> Seitz, 1915
	<i>Eunica malvina</i> H. Bates, 1864 **
	<i>Eunica mygdonia</i> (Godart, [1824]) **
	<i>Eunica orphise</i> (Cramer, 1775)
	<i>Eunica phasis</i> C. Felder & R. Felder, 1862 **
	<i>Eunica pusilla</i> H. Bates, 1864
	<i>Eunica sydonia</i> (Godart, [1824]) **
	<i>Eunica tatila bellaria</i> Fruhstorfer, 1908
	<i>Eunica volumna</i> (Godart, [1824]) **
	<i>Nessaea obrinus</i> (Linnaeus, 1758)
Ageroniini (9)	<i>Ectima iona</i> E. Doubleday, [1848]
	<i>Ectima thecla</i> (Fabricius, 1796)
	<i>Hamadryas amphinome</i> (Linnaeus, 1767)
	<i>Hamadryas belladonna</i> (H. Bates, 1865) **
	<i>Hamadryas chloe</i> (Stoll, 1787)
	<i>Hamadryas februa</i> (Hübner, [1823]) *
	<i>Hamadryas feronia</i> (Linnaeus, 1758)
	<i>Hamadryas laodamia</i> (Cramer, 1777)
	<i>Hamadryas velutina</i> (H. Bates, 1865) **
Epiphelini (6)	<i>Nica flavilla</i> cf. <i>flavilla</i> (Godart, [1824])

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	<i>Peria lamis</i> (Cramer, 1779)
	<i>Pyrrhogyra amphiro</i> H. Bates, 1865
	<i>Pyrrhogyra crameri</i> Aurivillius, 1882
	<i>Temenis laothoe</i> (Cramer, 1777)
	<i>Temenis pulchra</i> (Hewitson, 1861) **
Eubagini (8)	<i>Dynamine agacles</i> (Dalman, 1823)
	<i>Dynamine arene</i> Hübner, [1823]
	<i>Dynamine artemisia</i> (Fabricius, 1793)
	<i>Dynamine athemon</i> (Linnaeus, 1758)
	<i>Dynamine myrson</i> (E. Doubleday, 1849)
	<i>Dynamine pebana</i> Staudinger, [1885]
	<i>Dynamine postverta</i> (Cramer, 1779) **
	<i>Dynamine racidula</i> (Hewitson, 1852) **
Callicorini (9)	<i>Callicore astarte</i> (Cramer, 1779)
	<i>Callicore cynosura</i> (E. Doubleday, [1847])
	<i>Callicore hesperis</i> (Guérin-Méneville, [1844]) **
	<i>Callicore texa</i> (Hewitson, [1855])
	<i>Catagramma hystaspes hystaspes</i> (Fabricius, 1781)
	<i>Diaethria clymena</i> (Cramer, 1775)
	<i>Diaethria kolyma pasithea</i> (Hewitson, 1864)
	<i>Paulogramma pygas</i> (Godart, [1824])
	<i>Paulogramma pyracmon</i> (Godart, [1824]) **
Cyrestinae (10)	
Cyrestini (10)	<i>Marpesia berania</i> (Hewitson, 1852)
	<i>Marpesia chiron</i> (Fabricius, 1775)
	<i>Marpesia crethon</i> (Fabricius, 1776) **
	<i>Marpesia egina</i> (H. Bates, 1865) **
	<i>Marpesia furcula</i> (Fabricius, 1793)
	<i>Marpesia livius</i> (W. F. Kirby, 1871) *
	<i>Marpesia orsilochus</i> (Fabricius, 1776)
	<i>Marpesia petreus</i> (Cramer, 1776) **
	<i>Marpesia themistocles</i> (Fabricius, 1793)
	<i>Marpesia tutelina</i> (Hewitson, 1852)
Nymphalinae (26)	
Cocini (5)	<i>Baeotus aeilus</i> (Stoll, 1780) **
	<i>Baeotus deucalion</i> (C. Felder & R. Felder, 1860) **
	<i>Baeotus japetus</i> (Staudinger, [1885])
	<i>Historis acheronta</i> (Fabricius, 1775) **
	<i>Historis odius</i> (Fabricius, 1775)

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Nymphalini (5)	<i>Colobura annulata</i> Willmott, Constantino & J. Hall, 2001 <i>Colobura dirce</i> (Linnaeus, 1758) <i>Hypanartia lethe</i> (Fabricius, 1793) ** <i>Smyrna blomfieldia</i> (Fabricius, 1781) ** <i>Tigridia acesta</i> (Linnaeus, 1758)
Victorini (3)	<i>Anartia amathea</i> (Linnaeus, 1758) ** <i>Napeocles jucunda</i> (Hübner, [1808]) ** <i>Siproeta stelenes</i> (Linnaeus, 1758)
Junoniini (1)	<i>Junonia</i> sp. **
Melitaeini (12)	<i>Anthanassa drusilla</i> (C. Felder & R. Felder, 1861) <i>Anthanassa hermas hermas</i> (Hewitson, 1864) * <i>Chlosyne lacinia</i> (Geyer, 1837) ** <i>Eresia clio</i> (Linnaeus, 1758) ** <i>Eresia eunice</i> (Hübner, [1807]) <i>Eresia nauplius</i> (Linnaeus, 1758) <i>Eresia perna averyona</i> H. Bates, 1864 <i>Mazia amazonica</i> (H. Bates, 1864) <i>Ortilia gentina</i> Higgins, 1981 <i>Ortilia ithra</i> (W. F. Kirby, 1900) ** <i>Tegosa</i> cf. <i>fragilis</i> (H. Bates, 1864) <i>Telenassa teletusa burchelli</i> (Moulton, 1909)
Charaxinae (20)	
Anacini (11)	<i>Consul fabius</i> ssp. <i>Fountainea ryphea</i> (Cramer, 1775) ** <i>Hypna clytemnestra</i> (Cramer, 1777) <i>Memphis acidalia acidalia</i> (Hübner, [1819]) <i>Memphis acidalia memphis</i> (C. Felder & R. Felder, 1867) ** <i>Memphis leonida</i> (Stoll, 1782) <i>Memphis moruus moruus</i> (Fabricius, 1775) ** <i>Memphis philumena philumena</i> (E. Doubleday, [1849]) ** <i>Polygrapha xenocrates</i> (Westwood, 1850) <i>Siderone galanthis</i> (Cramer, 1775) ** <i>Zaretis isidora</i> (Cramer, 1779) <i>Zaretis strigosus</i> (Gmelin, [1790])
Preponini (9)	<i>Archaeoprepona amphimachus</i> (Fabricius, 1775) ** <i>Archaeoprepona demophon</i> (Linnaeus, 1758) ** <i>Archaeoprepona demophon</i> (Hübner, [1814]) <i>Archaeoprepona licomedes</i> (Cramer, 1777)

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	<i>Archaeoprepona meander</i> (Cramer, 1775) ** <i>Mesoprepona pheridamas</i> (Cramer, 1777) <i>Prepona claudina</i> (Godart, [1824]) ** <i>Prepona eugenes</i> H. Bates, 1865 ** <i>Prepona laertes</i> (Hübner, [1811])
Satyrinae (117)	
Morphini (12)	<i>Antirrhea philoctetes</i> (Linnaeus, 1758) ** <i>Antirrhea taygetina</i> (A. Butler, 1868) <i>Antirrhea watkinsi</i> Rosenberg & Talbot, 1914 ** <i>Caerois chorinaeus</i> (Fabricius, 1775) ** <i>Morpho achilles phokylides</i> Fruhstorfer, 1912 <i>Morpho cisseis</i> C. Felder & R. Felder, 1860 <i>Morpho deidamia</i> (Hübner, [1819]) <i>Morpho helenor helenor</i> (Cramer, 1776) <i>Morpho menelaus</i> (Linnaeus, 1758) <i>Morpho rhetenor</i> (Cramer, 1775) ** <i>Morpho telemachus</i> (Linnaeus, 1758) ** <i>Morpho zephyritis</i> A. Butler, 1873 *
Brassolini (18)	<i>Bia rebeli</i> Bryk, 1953 <i>Brassolis sophorae</i> (Linnaeus, 1758) ** <i>Caligo eurilochus</i> (Cramer, 1775) ** <i>Caligo idomeneus idomeneus</i> (Linnaeus, 1758) <i>Caligo illioneus</i> (Cramer, 1775) <i>Caligo teucer</i> (Linnaeus, 1758) ** <i>Caligopsis seleucida</i> (Hewitson, 1877) ** <i>Catoblepia berecynthia unditaenia</i> Fruhstorfer, 1907 <i>Catoblepia soranus</i> (Westwood, 1851) <i>Catoblepia xanthicles</i> (Godman & Salvin, 1881) ** <i>Dynastor darius</i> (Fabricius, 1775) * <i>Eryphanis automedon</i> (Cramer, 1775) <i>Narope denticulatus</i> Talbot, 1928 <i>Narope panniculus</i> Stichel, 1904 <i>Ooptera hilaris</i> Stichel, 1901 <i>Opsiphanes invirae</i> (Hübner, [1808]) <i>Opsiphanes quiteria</i> (Stoll, 1780) <i>Selenophanes cassiope</i> (Cramer, 1775) **
Haeterini (7)	<i>Cithaerias bandusia</i> Staudinger, 1887 <i>Haetera piera</i> (Linnaeus, 1758) <i>Pierella astyoche stollei</i> Ribeiro, 1931 <i>Pierella chalybaea</i> Godman, 1905 <i>Pierella hortona</i> (Hewitson, 1854) **

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Pierella hyalinus hyalinus (Gmelin, [1790])
Pierella lena lena (Linnaeus, 1767)
 Melanitini (1) *Manataria hercyna* (Hübner, [1821])
 Satyrini (79) *Amiga arnaca* (Fabricius, 1776)
Amphidecta calliomma (C. Felder & R. Felder, 1862)
Amphidecta pignerator A. Butler, 1867
Amphidecta reynoldsi Sharpe, 1890 **
Caeruleptychia aegrota (A. Butler, 1867)
Caeruleptychia cf. *coelestis* (A. Butler, 1867) **
Caeruleptychia glauca (Weymer, 1911)
Caeruleptychia cf. *penicillata* (Godman, 1905)
Caeruleptychia cf. *scopulata* (Godman, 1905)
Caeruleptychia twalela Brévignon, 2005
Caeruleptychia umbrosa (Butler, 1870) **
Cepheptychia cephus (Fabricius, 1775)
Chloreptychia agatha (A. Butler, 1867) *
Chloreptychia chlorimene (Hübner, [1819])
Chloreptychia herseis (Godart, [1824])
Chloreptychia hewitsonii (A. Butler, 1867)
Chloreptychia marica (Weymer, 1911) **
Chloreptychia rectilinea Brévignon, Rosant, Lamas & Willmott, 2019
Chloreptychia tolumnia (Cramer, 1777)
Cisandina lea (Cramer, 1777)
Cissia maripa (Brévignon, 2005)
Cissia myncea (Cramer, 1780)
Cissia penelope (Fabricius, 1775)
Cissia proba (Weymer, 1911)
Cristalinaia vitoria Mota, Zacca & Freitas, 2019
Erichthodes antonina (C. Felder & R. Felder, 1867)
Euptychia mollina (Hübner, [1813])
Euptychia cf. *picea* A. Butler, 1867
Euptychia sp.
Euptychia westwoodi A. Butler, 1867
Harjesia blanda (Möschler, 1877) **
Harjesia cf. *obscura* (A. Butler, 1867)
Hermeptychia sp.1
Hermeptychia sp.2
Macrocssia iris (C. Felder & R. Felder, 1867)
Magneptychia ca. *analisis*

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Magneptychia harpyia batesii (A. Butler, 1867)
Magneptychia lethra (H.B. Möschler, 1883)
Magneptychia ocypte (Fabricius, 1776)
Magneptychia tricolor (Hewitson, 1850)
Malaveria affinis (A. Butler, 1867)
Megeptychia antonoe (Cramer, 1775)
Modestia cf. *modesta* (A. Butler, 1867) **
Nubila moderata (Weymer, 1911)
Pareptychia binocula (A. Butler, 1869)
Pareptychia lydia (Cramer, 1777)
Pareptychia ocirrhoe (Fabricius, 1776)
Paryphthimoides brixius (Godart, [1824])
Paryphthimoides poltys (Prittwitz, 1865)
Paryphthimoides sylvina (C. Felder & R. Felder, 1867)
Paryphthimoides terrestris muyrakytan Zacca, Casagrande & Mielke, 2020
Posttaygetis penelea (Cramer, 1777)
Pseudodebis celia (Cramer, 1779)
Pseudodebis valentina (Cramer, 1779)
Sepona punctata (Weymer, 1911)
Splendeptychia clorimena (Stoll, 1790) **
Splendeptychia itonis (Hewitson, 1862)
Splendeptychia salvini (A. Butler, 1867) *
Splendeptychia sp.1
Splendeptychia sp.3
Splendeptychia sp.4
Splendeptychia sp.2
Splendeptychia tupinamba Freitas, Huertas & Rosa, 2021
Splendeptychia zischkai Forster, 1964
Taygetina gulnare (A. Butler, 1870)
Taygetina sp.
Taygetis angulosa Weymer, 1907
Taygetis echo (Cramer, 1775)
Taygetis laches (Fabricius, 1793)
Taygetis larua C. Felder & R. Felder, 1867
Taygetis mermeria (Cramer, 1776)
Taygetis sosis Hopffer, 1874
Taygetis sylvia H. Bates, 1866
Taygetis tripunctata Weymer, 1907
Taygetis cf. *virgilia* (Cramer, 1776)
Taygetis sp.
Yphthimoides eriphule (A. Butler, 1867)

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	<i>Ypthimoides renata</i> (Stoll, 1780)
	<i>Zischkaia baku</i> Zacca, Dolibaina & Dias, 2019
Hesperiidae (314)	
Eudaminae (89)	
Entheini (15)	<i>Augiades crinisis</i> (Cramer, 1780)
	<i>Augiades vespasius bicolor</i> (Mabille & Boulet, 1919)
	<i>Drephalys alcmon</i> (Cramer, 1780) **
	<i>Drephalys dumeril</i> (Latreille, [1824])
	<i>Drephalys eous</i> (Hewitson, 1867)
	<i>Drephalys oriander</i> (Hewitson, 1867)
	<i>Entheus priassus priassus</i> (Linnaeus, 1758) **
	<i>Hyalothyryx infernalis</i> (Möschler, 1877) *
	<i>Hyalothyryx leucomelas</i> (Geyer, 1832)
	<i>Hyalothyryx neleus neleus</i> (Linnaeus, 1758)
	<i>Phanus marshalli</i> (W. F. Kirby, 1880)
	<i>Phanus vitreus</i> (Stoll, 1781)
	<i>Tarsoctenus corytus corba</i> Evans, 1952 **
	<i>Tarsoctenus praecia plutia</i> (Hewitson, 1857) **
	<i>Udranomia kikkawai</i> (Weeks, 1906) **
Eudamini (51)	<i>Astraptes enotrus</i> (Stoll, 1781) **
	<i>Autochton bipunctatus</i> (Gmelin, [1790]) **
	<i>Autochton neis</i> (Geyer, 1832) **
	<i>Aguna asander asander</i> (Hewitson, 1867)
	<i>Aguna squamalba</i> Austin & O. Mielke, 1998
	<i>Cephise maculatus</i> Austin & Mielke, 2000 **
	<i>Cecropterus</i> sp. **
	<i>Cecropterus zarez</i> (Hübner, 1818)
	<i>Cecropterus albimargo</i> (Mabille, 1875) *
	<i>Cecropterus doryssus doryssus</i> (Swainson, 1831)
	<i>Cecropterus reductus</i> (Riley, 1919) **
	<i>Cecropterus dorantes dorantes</i> (Stoll, 1790) **
	<i>Cecropterus virescens</i> (Mabille, 1877)
	<i>Ectomis auginus</i> (Hewitson, 1867)
	<i>Ectomis caunus</i> (Herrich-Schäffer, 1869)
	<i>Ectomis labriaris</i> (Butler, 1877) **
	<i>Ectomis metallescens</i> (Mabille, 1888) **
	<i>Ectomis octomaculata</i> (Sepp, [1844]) **
	<i>Ectomis orpheus</i> (Plötz, 1881)
	<i>Ectomis otriades</i> (Hewitson, 1867)
	<i>Ectomis perniciosus</i> (Herrich-Schäffer, 1869) **

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	<i>Ectomis pervivax</i> (Hübner, [1819]) **
	<i>Ectomis teutas</i> (Hewitson, 1876) *
	<i>Epargyreus clavicornis clavicornis</i> (Herrich-Schäffer, 1869)
	<i>Epargyreus exadeus</i> (Cramer, 1779)
	<i>Narcosius narcosius</i> (Stoll, 1790)
	<i>Polygonus leo pallida</i> Röber, 1925 **
	<i>Proteides mercurius mercurius</i> (Fabricius, 1787) **
	<i>Spicauda cindra</i> (Evans, 1952)
	<i>Spicauda simplicius</i> (Stoll, 1790)
	<i>Spicauda tanna</i> (Evans, 1952) **
	<i>Spicauda teleus</i> (Hübner, 1821)
	<i>Spicauda</i> sp.
	<i>Telegonus alector hopfferi</i> (Plötz, 1881)
	<i>Telegonus anaphus anaphus</i> (Cramer, 1777)
	<i>Telegonus cretatus cretatus</i> Hayward, 1939
	<i>Telegonus apastus apaustus</i> (Cramer, 1777) **
	<i>Telegonus chalco</i> (Hübner, 1823) *
	<i>Telegonus fulgerator</i> (Walch, 1775)
	<i>Telegonus talus</i> (Cramer, 1777)
	<i>Telemiades amphion</i> (Geyer, 1832)
	<i>Telemiades antiope</i> (Plötz, 1882) **
	<i>Telemiades avitus</i> (Stoll, 1781)
	<i>Telemiades delalande</i> (Latreille, [1824])
	<i>Telemiades epicalus</i> Hübner, [1819]
	<i>Telemiades penidas</i> (Hewitson, 1867)
	<i>Urbanus esma</i> Evans, 1952 **
	<i>Urbanus esmeraldus</i> (Butler, 1877)
	<i>Urbanus pronta</i> Evans, 1952
	<i>Urbanus proteus proteus</i> (Linnaeus, 1758)
	<i>Urbanus velinus</i> (Plötz, 1880)
Oileidini (6)	<i>Cogia calchas</i> (Herrich-Schäffer, 1869) **
	<i>Cogia crameri</i> (McHenry, 1960) **
	<i>Cogia galbula</i> (Plötz, 1880) **
	<i>Cogia undulatus</i> (Hewitson, 1867) **
	<i>Marela tamyris</i> Mabille, 1903 **
	<i>Marela tamyroides</i> (C. Felder & R. Felder, 1867) *
Phocidini (17)	<i>Aurina azines</i> (Hewitson, 1867)
	<i>Bungalotis astylos</i> (Cramer, 1780) **
	<i>Bungalotis midas</i> (Cramer, 1775)
	<i>Dyscophellus porcius porcius</i> (C. Felder & R. Felder, 1862) **

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	<i>Dyscophellus ramusis ramusis</i> (Stoll, 1781)
	<i>Dyscophellus sebaldis</i> (Stoll, 1781) **
	<i>Euriphellus euribates</i> (Stoll, 1782)
	<i>Nascus broteas</i> (Cramer, 1780)
	<i>Nascus paullinae</i> (Sepp, [1842]) **
	<i>Nascus phocus</i> (Cramer, 1777)
	<i>Nascus solon solon</i> (Plötz, 1882) *
	<i>Nicephellus nicephorus</i> (Hewitson, 1876)
	<i>Phareas coeleste</i> Westwood, 1852
	<i>Phocides pigmalion pigmalion</i> (Cramer, 1779)
	<i>Porphyrogenes sororcula</i> (Mabille & Boulet, 1912)
	<i>Salatis salatis</i> (Stoll, 1872) **
	<i>Sarmientoia</i> sp. **
Pyrginae (65)	
Achlyodini (21)	<i>Achlyodes busirus busirus</i> (Cramer, 1779)
	<i>Aethilla echina echina</i> Hewitson, 1870
	<i>Cabirus procas procas</i> (Cramer, 1777)
	<i>Charidia lucaria</i> ssp. **
	<i>Eantis thraso</i> (Hübner, [1807])
	<i>Grais stigmaticus stigmaticus</i> (Mabille, 1883)
	<i>Livida assecla</i> (Mabille, 1883) **
	<i>Milanion</i> sp.
	<i>Morvina morvus cyclopa</i> Evans, 1953
	<i>Myrinia catua</i> O. Mielke, 1968 **
	<i>Ouleus friderichus friderichus</i> (Geyer, 1832) **
	<i>Ouleus juxta damp</i> Evans, 1953 **
	<i>Pseudodrephalys sohni</i> Burns, 1999 **
	<i>Pythonides homer</i> Evans, 1953
	<i>Pythonides jovianus crameri</i> (Mabille & Boulet, 1917)
	<i>Pythonides lerina</i> (Hewitson, 1868)
	<i>Quadrus cerialis</i> (Stoll, 1782)
	<i>Quadrus contubernalis contubernalis</i> (Mabille, 1883) **
	<i>Quadrus fanda</i> Evans, 1953
	<i>Quadrus</i> sp.
	<i>Spioniades artemides</i> (Stoll, 1782) *
Carcharodini (10)	<i>Conognathus platon</i> C. Felder & R. Felder, 1862 **
	<i>Cornuphallow oronibo</i> (Möschler, 1883)
	<i>Cyclosemia</i> sp. **
	<i>Nisoniades brunneata</i> (Williams & Bell, 1939) **

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	<i>Nisoniades macarius</i> (Herrich-Schäffer, 1870) **
	<i>Nisoniades mimas</i> (Cramer, 1775)
	<i>Pachyneuria</i> sp. **
	<i>Pellicia</i> sp.
	<i>Polycator polycator polycator</i> (Prittwitz, 1868)
	<i>Sophista aristoteles</i> (Westwood, 1852) **
Erynnini (24)	<i>Anastrus neaeris narva</i> Evans, 1953
	<i>Anastrus virens virens</i> Austin, 1999 *
	<i>Anaxas petius petius</i> (Möschler, 1877)
	<i>Camptopleura auxo</i> (Möschler, 1879)
	<i>Camptopleura impressus</i> (Mabille, 1889) *
	<i>Chiomara mithrax</i> (Möschler, 1879) **
	<i>Cycloglypha</i> sp. **
	<i>Cycloglypha thrasibulus thrasibulus</i> (Fabricius, 1793)
	<i>Cycloglypha tisia</i> (Godman & Salvin, 1896)
	<i>Ebrietas anacreon anacreon</i> (Staudinger, 1876)
	<i>Ebrietas elaudia livius</i> Mabille, 1898
	<i>Ebrietas infanda</i> (Butler, 1877)
	<i>Echelatus sempiternus simplicior</i> (Möschler, 1877) **
	<i>Festivia festiva</i> (Erichson, [1849])
	<i>Gorgythion begga pyralina</i> (Möschler, 1877)
	<i>Gorgythion plautia</i> (Möschler, 1877)
	<i>Helias phalaenoides palpalis</i> (Latreille, [1824])
	<i>Hoodus exstincta</i> (Mabille & Boulet, 1917) **
	<i>Hoodus pelopidas</i> (Fabricius, 1793)
	<i>Hoodus simplex</i> (Austin, 2000) **
	<i>Mylon maimon</i> (Fabricius, 1775)
	<i>Sostrata bifasciata bifasciata</i> (Ménétriés, 1829) **
	<i>Sostrata pusilla pusilla</i> Godman & Salvin, 1895
	<i>Tolius tolimus robigus</i> (Plötz, 1884)
Pyrgini (10)	<i>Burnsius orcus</i> (Stoll, 1780)
	<i>Carrhenes chaeremon</i> (Mabille, 1891)
	<i>Heliopetes arsalte</i> (Linnaeus, 1758)
	<i>Heliopetes orbiger</i> (Mabille, 1888) **
	<i>Heliopetes petrus</i> (Hübner, [1819])
	<i>Paches exosa</i> (Butler, 1877) **
	<i>Paches liborius liborius</i> Plötz, 1884 **
	<i>Plumbago plumbago</i> (Plötz, 1884) *
	<i>Santa santes</i> (Bell, 1940) **
	<i>Xenophanes tryxus</i> (Stoll, 1780)

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Pyrrhopyginae (22)	
Passovini (5)	<i>Agara assaricus assaricus</i> (Cramer, 1779)
	<i>Aspitha agenoria agenoria</i> (Hewitson, 1876) **
	<i>Myscelus nobilis</i> (Cramer, 1777) **
	<i>Passova glacia</i> Evans, 1951 **
	<i>Passova passova passova</i> (Hewitson, 1866)
Pyrrhopygini (17)	<i>Croniades pieria pieria</i> (Hewitson, 1857)
	<i>Gunayan rubricollis</i> (Sepp, [1841]) *
	<i>Jemadia hospita hospita</i> (Butler, 1877) **
	<i>Jemadia hewitsonii hewitsonii</i> (Mabille, 1878)
	<i>Jemadia gnetus gnetus</i> (Fabricius, 1781) **
	<i>Jemadia</i> sp. **
	<i>Microceris azeta azeta</i> (Hewitson, 1866) **
	<i>Microceris blanda</i> (Evans, 1951) **
	<i>Microceris rondonia</i> (Mielke, 1995)
	<i>Microceris intersecta intersecta</i> (Herrich-Schäffer, 1869)
	<i>Mimoniades fallax fida</i> (Evans, 1951) **
	<i>Mysoria sejanus stollii</i> O. Mielke, 2002
	<i>Parelbella</i> sp. **
	<i>Pyrrhopyge sergius semana</i> Evans, 1951
	<i>Pyrrhopyge</i> sp.1 **
	<i>Pyrrhopyge</i> sp.2 **
	<i>Yanguna thelersa</i> (Hewitson, 1866) **
Tagiadinae (3)	
Celaenorrhinini (3)	<i>Celaenorrhinus astrigera</i> (Butler, 1877)
	<i>Celaenorrhinus autochton</i> Steinhauser & Austin, 1996
	<i>Celaenorrhinus jao</i> (Mabille, 1889)
Hesperiinae (135)	
Hesperiini (130)	<i>Adlerodea mineira</i> O. Mielke, 1968
	<i>Adlerodea</i> sp.
	<i>Aides aegita</i> (Hewitson, 1866)
	<i>Aides brino</i> (Stoll, 1781) **
	<i>Aides duma duma</i> Evans, 1955
	<i>Anthoptus epictetus</i> (Fabricius, 1793)
	<i>Anthoptus insignis</i> (Plötz, 1882)
	<i>Artines bamba</i> Medeiros & O. Mielke, 2019
	<i>Callimormus alsimo</i> (Möschler, 1883)
	<i>Callimormus corades</i> (C. Felder, [1863]) **
	<i>Callimormus saturnus</i> (Herrich-Schäffer, 1869) **

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<i>Calpodes antoninus</i> (Latreille, [1824])
<i>Calpodes esperi esperi</i> (Evans, 1955)
<i>Calpodes ethlius</i> (Stoll, 1782) **
<i>Calpodes longirostris</i> (Sepp, [1840])
<i>Calpodes nigel</i> (Evans, 1955) **
<i>Calpodes salius</i> (Cramer, 1775)
<i>Calvetta calvina</i> (Hewitson, 1866)
<i>Cantha calva</i> Evans, 1955
<i>Carystoides basoches</i> (Latreille, [1824]) **
<i>Carystoides cathaea</i> (Hewitson, 1866)
<i>Carystoides noseda</i> (Hewitson, 1866) **
<i>Carystoides yenna</i> Evans, 1955 **
<i>Carystus hocus</i> Evans, 1955
<i>Carystus lota</i> (Hewitson, 1877) **
<i>Carystus moeros</i> (Möschler, 1877) **
<i>Chloeria psittacina</i> (C. Felder & R. Felder, 1867) **
<i>Cobalopsis nero</i> (Herrich-Schäffer, 1869) **
<i>Cobalopsis valerius</i> (Möschler, 1879)
<i>Cobalus virbius virbius</i> (Cramer, 1777)
<i>Conga chydaea</i> (Butler, 1877)
<i>Cyclosma altama</i> (Schaus, 1902) **
<i>Cymaenes alumna</i> (Butler, 1877)
<i>Cynea popla</i> Evans, 1955
<i>Damas clavus</i> (Herrich-Schäffer, 1869)
<i>Decinea</i> sp. **
<i>Dion uza</i> (Hewitson, 1877) **
<i>Dubia dubia</i> (Bell, 1932)
<i>Dubiella dubius</i> (Stoll, 1781)
<i>Ebusus ebusus ebusus</i> (Cramer, 1780) *
<i>Eprius veleda veleda</i> (Godman, 1901) **
<i>Eutocus vetulus vinda</i> Evans, 1955
<i>Eutus mubevensis</i> (Bell, 1932)
<i>Evansiella cordela</i> (Plötz, 1882) **
<i>Flaccilla aecas</i> (Stoll, 1781)
<i>Gallio seriatus</i> (Mabille, 1891)
<i>Justinia justinianus justinianus</i> (Latreille, [1824]) **
<i>Justinia maculata</i> (Bell, 1930)
<i>Lento apta</i> Evans, 1955
<i>Lento lento</i> (Mabille, 1878)
<i>Lento lora</i> Evans, 1955

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Lento ludo Evans, 1955 **
Lerema geisa geisa (Möschler, 1879)
Lindra sp.
Lychnuchus demon (Evans, 1955)
Methionopsis ina (Plötz, 1882)
Metrocles cotundo (Nicolay, 1980)
Metrocles sp. **
Metron chrysogastra chrysogastra (Butler, 1870)
Misius misius (Mabille, 1891) **
Mnasicles hicetaon Godman, 1901
Mnasicles sp.
Mnasitheus forma Evans, 1955
Mnasitheus sp.
Naevolus orius (Mabille, 1883) **
Neoxeniades cincia (Hewitson, 1867) **
Niconiades peri (Evans, 1955) **
Niconiades yoka Evans, 1955
Nyctelius nyctelius nyctelius (Latreille, [1824]) **
Onophas columbaria columbaria (Herrich-Schäffer, 1870) **
Orthos orthos minka Evans, 1955
Oxyntes corusca (Herrich-Schäffer, 1869) **
Panca trogon (Evans, 1955)
Panoquina fusina viola Evans, 1955
Panoquina hecebolus (Scudder, 1872)
Panoquina lucas lucas (Fabricius, 1793)
Panoquina pauper grapte (H. Druce, 1908) **
Paracarystus menestries rona (Hewitson, 1866)
Pares pares (Bell, 1959)
Parphorus decora (Herrich-Schäffer, 1869)
Parphorus sp.
Peba verames (Schaus, 1902)
Phanes almoda (Hewitson, 1866)
Phemiades pohli pohli (Bell, 1932) **
Pheraeus honta Evans, 1955
Pheraeus maria Steinhauser, 1991
Pheraeus sp.
Phlebodes buriti O. Mielke, 1968
Phlebodes fuldai (Bell, 1930) **
Pompeius pompeius (Latreille, [1824])

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Propapias sipariana (Kaye, 1925)
Psoralis arva (Evans, 1955)
Psoralis visendus (Bell, 1942) **
Pyrrhopygopsis socrates crates Mabille & Boulet, 1912 **
Quasimellana angra (Evans, 1955)
Quasimellana eulogius (Plötz, 1882) **
Saturnus reticulata meton (Mabille, 1891)
Saturnus saturnus saturnus (Fabricius, 1787)
Sodalina sodalis (Butler, 1877)
Synapte malitiosa pericles (Möschler, 1879)
Synapte silius (Latreille, [1824])
Talides sp. **
Thargella caura caura (Plötz, 1882)
Thargella volasus (Godman, 1901)
Thespieus dalman (Latreille, [1824])
Thoon modius (Mabille, 1889)
Thracides cleantes telmela (Hewitson, 1866)
Thracides phidon (Cramer, 1779) **
Thracides thrasea (Hewitson, 1866)
Tirynthoides lotana (Butler, 1870) **
Tirynthoides virilis (Riley, 1929) **
Tisias sp. 1 **
Tisias sp. 2
Tricrista taxes (Godman, 1900)
Troyus marcus (Fabricius, 1787)
Turesis basta Evans, 1955
Turesis complanula (Herrich-Schäffer, 1869)
Vacerra evansi Hayward, 1938
Vehilius inca (Scudder, 1872)
Vehilius stictomenes stictomenes (Butler, 1877)
Vehilius vetula (Mabille, 1878)
Venas caeruleans (Mabille, 1878) **
Vertica verticalis grandipuncta (Mabille, 1883)
Vettius lafrenaye pica (Herrich-Schäffer, 1869) **
Vettius phylus phylus (Cramer, 1777)
Vettius triangularis (Hübner, [1831])
Vinius exilis phellus (Mabille, 1883)
Xeniades orchamus (Cramer, 1777) **
Xeniades putumayo (Constantino & Salazar, 2013) **

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	<i>Zenis minos</i> (Latreille, [1824])
Pericharini (5)	<i>Orphe gerasa</i> (Hewitson, 1867) *
	<i>Orphe vatinius</i> Godman, 1901 **
	<i>Orses cynisca</i> (Swainson, 1821) **
	<i>Perichares adela</i> (Hewitson, 1867)
	<i>Perichares butus</i> (Möschler, 1877) **

The total richness of butterflies in the region was estimated to be from 1038 to 1204 species when the number of recorded Nymphalidae was used as a predictor, and from 652 to 698 species when the group used was Ithomiini.

Discussion

This study is one of the few to provide an extensive list of the butterflies of a Brazilian Amazon Forest locality, and the first in Brazil to surpass 1000 species. This results from the combined efforts of many researchers and citizen scientists, over more than two decades, to document the butterfly fauna of a diverse region. The 1010 recorded species and the estimates for the total number of species present in the area (see below) represent between one quarter and one third of the 3522 butterfly species (including 23 Hedyliidae) known to occur in Brazil (Casagrande 2022), a proportion similar to that of the well-known avifauna of the region (Lees et al. 2013). The species recorded also surpass the total diversity of butterflies of the State of Mato Grosso in the thorough assessment by Queiroz-Santos et al. (2016), which found a total of 901 species recorded in the State, and confirms their suggestion of the need for intensive inventories of its northernmost, Amazonian portion. For two families, Hesperidae and Lycaenidae, we recorded more species than were represented in the previous list from the whole of Mato Grosso, with a remarkable 314 species at Cristalino compared with 148 species from Mato Grosso for Hesperidae, and 123 versus 77 for Lycaenidae. These two families were precisely the ones that Queiroz-Santos et al. (2016) expected to be the most underrepresented in their study. A quick and conservative look through their database, considering unknown subspecies or other ambiguities in both lists as representing the same taxa, reveals that the Cristalino Lodge list adds more than 360 species to the previously reported State total. As expected, the present list is responsible for an important extension in the known distribution of several species (examples in Figure 3).

Amazonian butterfly communities are known to have high turnover rates and a high proportion of species that are rare and hard to detect; therefore, high sampling effort and long-term sampling, spanning several years, are required to produce representative inventories (Brown & Hutchings 1997, Mielke et al. 2010, Lamas et al. 2021). Considering that the sampling effort at Cristalino Lodge has been relatively high and includes not only collected specimens but also images made through more than fifteen years by several citizen scientists, covering different trails, vegetation types and in both dry and wet seasons, this list can be regarded as relatively complete for an Amazonian butterfly fauna. However, for the reasons already mentioned, we still expect many future additions to the list, especially among the Hesperidae, Riodinidae and Lycaenidae, and that is supported by the fact that

several new photographic species records have been made after the first assessment through the iNaturalist project, mostly of rare, small riodinids and lycaenids. Also, in Neotropical forests, the family Hesperidae is typically found to be the richest at every site with nearly complete lists, while the Nymphalidae is usually the richest in sites with less complete lists because the latter are easier to collect and identify (Brown & Freitas 2002, Francini et al. 2011). In our study, these two families have a rather equivalent richness, which indicates that there are still likely a number of Hesperidae species in the region that have gone undetected, probably mostly among the fast-flying canopy species. Future collecting in the region should therefore focus on Hesperidae and the use of the Ahrenholz method.

The total species richness estimates were substantially different according to the taxonomic group used as a predictor. The number of recorded Nymphalidae suggested that there are from 1038 to 1204 butterfly species at Cristalino Lodge, and that we should still expect something between 30 to 200 additional species. However, using the number of Ithomiini, the total species richness would be from 652 to 698 species, which is considerably lower than the actual number of species already recorded. This result does not seem to be linked to undersampling of this group, which is well-known for being locally abundant and easy to detect, collect and photograph. As an example, with a lower sampling effort, Mielke et al. (2010) found 35 Ithomiini species at Chandless State Park, Acre, Brazil and KSB and AVLF recorded more than 70 species of Ithomiini in a two day census in a locality in the upper Juruá river, Acre, Brazil (unpublished data). Instead, the Cristalino fauna seems to be particularly poor in its proportion of ithomiines, with only 30 species known, a mere 3% of the total recorded butterfly richness. This is in accordance with Brown & Freitas (2000), who indicated that the proportion of Ithomiini presents a great variance, ranging from 2% to 6% of the total butterfly species richness in the Atlantic Forest, and reaching a maximum of 8% in the east Andean slopes. This result suggests that the tribe Ithomiini is not necessarily a good surrogate of butterfly species richness in neotropical forests, and calls attention to the importance of considering the characteristics of each region's fauna in terms of using a taxon or guild for this kind of estimate. Since the Ithomiini is a tribe of Nymphalidae it is possible that other nymphalid groups are under-represented in comparison with other regions, but it seems clear that using Nymphalidae to estimate overall diversity is likely to be more precise. It may thus be assumed that we have recorded at least 80% of the butterfly species of Cristalino. Although this estimate should be used carefully, we believe it is safe to consider this list as a good illustration of the diversity and distribution patterns of this region (the small representation of Ithomiini being an example), and to compare it to other areas.

Relative to the other tropical forest biome in Brazil, the Atlantic Forest, Cristalino Lodge presents a higher number of species than the richest localities (Brown & Freitas 2000, Dolibaina et al. 2010, Francini et al. 2011). As for the Amazon Forest, it is not as rich as areas in western Amazonia, such as Tambopata and Pakitza in Peru or Cacaúlândia and Marechal Thaumaturgo in the Brazilian states of Rondônia and Acre (Lamas 1985, Robbins et al. 1996, Brown & Freitas 2002, respectively, see also Brown 2005 for other equally rich localities in western Amazonia). Therefore, although the present butterfly inventory is currently the richest for a locality in Brazil, it is expected that it will be surpassed when lists of sufficiently sampled

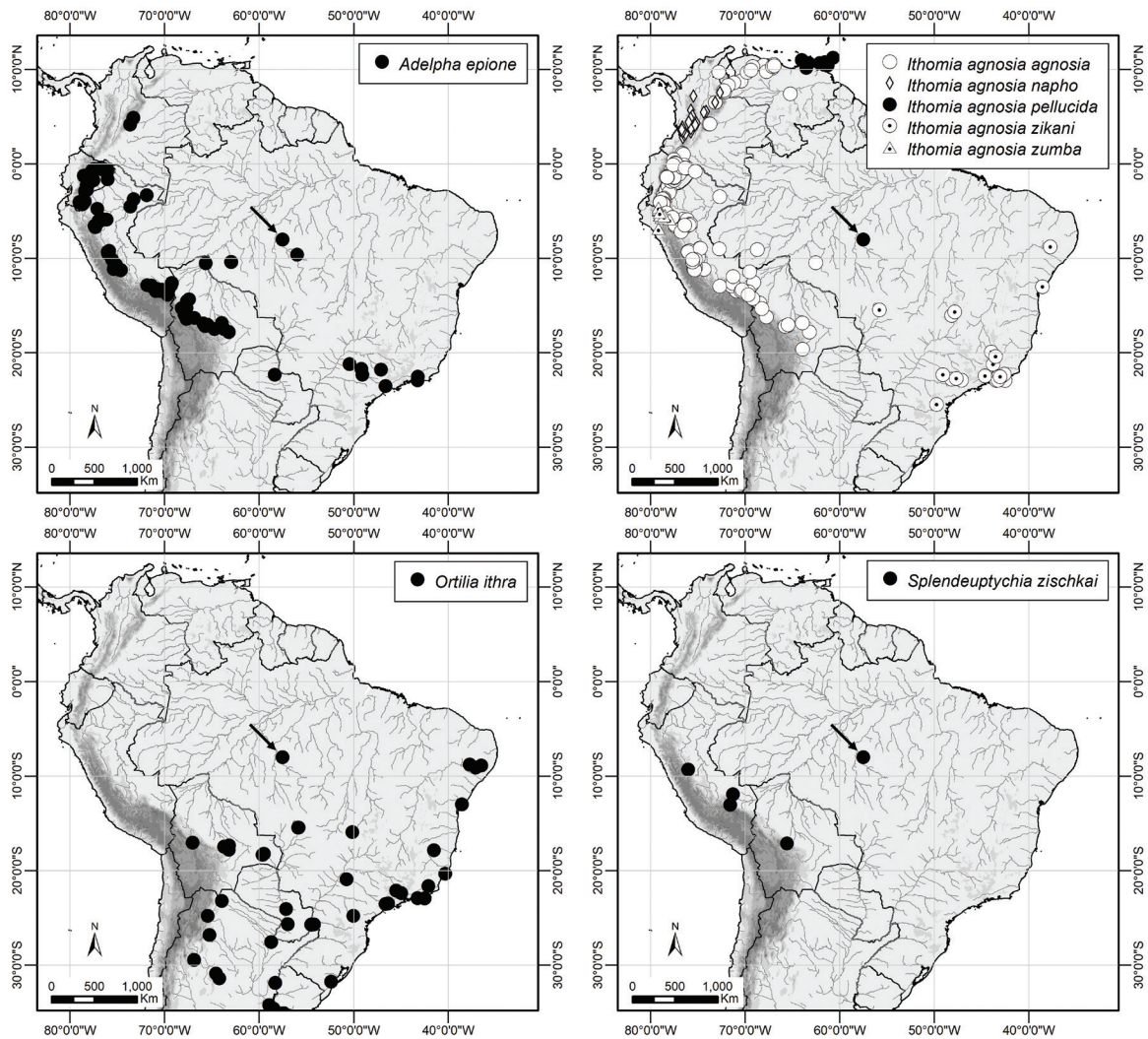


Figure 3. Distribution map for some butterfly species with notable range extensions documented at Cristalino Lodge (arrows).

regions in the Brazilian western Amazonia are published. At the same time, the region of Manaus, in central Amazonia, is known to be less rich, with about 800 estimated species (Brown 1984). Factors such as soil richness, proximity to the Andes and environmental heterogeneity have been proposed as important to determine the butterfly richness of Amazonian localities (Brown 1984). The Cristalino region has poorer soils than rich areas in Acre and Rondônia, and is much more distant to the Andes than Tambopata and even the aforementioned Brazilian states, thus being less under the influence of the diverse Andean fauna. The latter factor could be especially important for the Ithomiini, since the Andes is the area where this tribe is the richest and many of its groups originated and diversified (Chazot et al. 2016, 2018). Such an influence, however, is not completely absent: interestingly, the Andean *Morpho zephyritis* A. Butler, 1873, cited by Brown (1984) as an occasional visitor in Jaru, Rondônia, has also been recorded at Cristalino. At the same time, the great environmental heterogeneity and different vegetation types found in Cristalino could explain in part why it is a richer site than Manaus for butterflies.

The butterfly fauna found in Cristalino is mostly composed of species widely distributed in the lowland Amazon Forest, with some

notable absences: for example, the widespread Amazonian genera *Asterope* Hübner, [1819], *Panacea* Godman & Salvin, 1883 and *Batesia* C. Felder & R. Felder, 1862 (Nymphalidae) have never been observed in the region. Conversely, the Cristalino region also harbors several species that are typical of southern biomes such as the Cerrado and the Atlantic Forest. That is the case with *Arawacus tarania* (Hewitson, 1868) (Lycaenidae), a species of open Cerrado vegetation, and of the newly described *Splendeuptychia tupinamba* Freitas, Huertas & Rosa, 2021 (Nymphalidae), found primarily in the Cerrado but also in the Atlantic Forest and some localities in southwest Amazonia (Rosa et al. 2021). Another good example is the presence of *Ortilia ithra* (W. F. Kirby, 1900) (Nymphalidae); this species is widespread through the Atlantic Forest and in riparian forest in the Cerrado domain and the present record is the northernmost and the first in the Amazon Forest (Figure 3). In addition, the HesperIIDae *Pythonides homer* Evans, 1953 and *Leno apta* Evans, 1955 were both considered endemics of the Cerrado, usually found in riparian forests (Mielke et al. 2008). However, it is unknown if these elements from the southern biomes are part of an original mixed fauna or recent invaders following the open areas created with the advance of agriculture and cattle ranching. It is likely that the presence of these

species is due to the region being relatively close to the southern border of Amazonia and having patches of deciduous and semi-deciduous vegetation with influence from the Cerrado flora (Zappi et al. 2011). Several other butterflies from open vegetation are widely distributed species, such as *Junonia* sp. and *Euptoieta hegesia* (Cramer, 1779), both found in the deciduous forest fragments, while many common Neotropical pierids follow the river margins, where they puddle (figure 1c). The bamboo forests have an important community of Euptychiina associated with them, probably due the use of bamboo as hostplants by many species (See et al. 2018, Freitas et al. 2019). The Ithomiini and their mimics reveal that the region is heavily influenced by the Tapajós center of endemism and a little by the Rondônia center, with some undescribed subspecies (Brown 1979, 1982). The list presents two cases of species with more than one recorded subspecies, the nymphalids *Heliconius numata* and *Memphis acidalia*. The first is a polymorphic species that participates in several mimicry rings and is known to have as many as seven forms in a single locality (Brown & Benson 1974). Therefore, even though the forms found at Cristalino Lodge are currently treated as subspecies, they represent the expected polymorphism found in *H. numata*. In contrast, the reason why two subspecies of *M. acidalia* have been recorded is not known, but it is possible, for instance, that the region is close to the distribution limits between them.

None of the butterflies recorded at the site is listed as endangered, which is unsurprising since the only butterfly species in the Brazilian Amazon Forest considered to be threatened is *Parides klagesi* (Ehrmann, 1904), which is found in a small area very distant to Cristalino (Freitas et al. 2018). However, it is important to emphasize that, as noted by Freitas & Marini-Filho (2011), the low numbers of Amazonian butterfly species regarded as threatened could partly result from poor knowledge about the distribution of Amazonian species. In particular, the degree to which rarer species, such as *Splendeuptychia tupinamba*, occupy sites within their extent of occurrence, is critical for estimating global range and population size and threat status. In addition, Silva et al. (2005) showed that habitat loss is not homogeneous among terrestrial vertebrate centers of endemism, which somewhat correspond to those of butterflies (Brown 1979, Tyler et al. 1994, Hall & Harvey 2002). This fact, combined with the large total area of long-term degraded forests (Matricardi et al. 2020), the recent increase in deforestation of the Amazon Forest in Brazil (INPE, 2020), and the perspective of future savannization of forest areas if certain temperature and deforestation “tipping-points” are achieved (Nobre et al. 2016, Sales et al. 2020), means that Amazonian butterfly species and subspecies could already be or become endangered in the future. This is especially true if there are any butterflies endemic to the region of the arch of deforestation, which encompasses the southern Amazon border. It is clear that more inventories and distribution data on the Amazonian butterfly fauna are needed not only to better understand its diversity patterns and the factors that determine them, but also how it is responding and will respond to anthropogenic changes in the region.

Images of live butterflies available on the internet contributed an impressive proportion of the present species list (virtually one third), and were especially important for a representative inventory of HesperIIDae and LycaenIDae. Photographic records include rare and undescribed taxa, which reinforces the value of photographic data for tropical butterflies (Mesaglio et al. 2021). It is important to note that the use of photographic records for butterfly species lists has

limitations, since not all species can be identified based on images only, and, even for those that can, a precise identification depends also on the image quality and aspects such as the butterfly’s position. Such limitations and the necessities for the identification of each taxon are often unknown to the general public, which is probably the reason behind the presence of a great number of images labeled with wrong or uncertain identifications on the internet. It also seems possible that the identification of some key pictures (i.e., shared in many sources or in a few relevant ones) is frequently copied for records of similar looking specimens, leading to a cascade of misidentified images that could be confusing for citizen scientists. However, as noticed by Mesaglio et al. (2021), the iNaturalist platform is used by many knowledgeable, professional and amateur taxonomists, who contribute with hundreds or even thousands of identifications on their groups of interest. Therefore, identifications of images available on this platform are often corrected, justified, discussed, or have comments regarding their uncertainty. For these reasons, it is extremely important that the use of photographic records for butterfly inventories, as well as other areas of research, is made with caution and the aid of specialists (which might include the ones that use iNaturalist), and that the identification methods are made clear to readers. The source of the images used should also be explicit, so identifications can be disputed or corrected in the future, in the same way as with collected specimens deposited in collections. Overall, our study shows that images can be invaluable for butterfly species lists, and, even if many of them are not identified to species-level, they at least give an idea of the characteristics of the fauna found in a certain region, and even serve as a guideline for what researchers should look for in further visits to the location. Future studies should help clarify the extent to which live-specimen images are informative for different taxonomic groups and localities.

Although ecotourists not focusing on butterfly watching generated hundreds of pictures of butterflies at Cristalino, providing important data that can be used in future studies in fields such as ecology and behavior, this huge amount of information contributed few new records (not present among the collected specimens) of butterfly species for the region. One possible reason is that tourists typically focus on big, colorful, and easy-to-photograph specimens, thus tending to record the same common or flashy species. We found that the majority of new records come from expert butterfly watchers and tour guides, who together contributed more than 300 species for the total list. This is similar to what was found by Mesaglio et al. (2021), and many of the iNaturalist users (including both photographers and identifiers) cited there also participated in the project “Butterflies of Cristalino Lodge” in this platform. Butterfly watchers and tour guides: a) are interested in high numbers of records, with an emphasis on the new and rare species; b) are familiar with specific scientific knowledge, searching for information about behavior and taxonomy in the literature, and often (but not necessarily) having a degree in environment-related areas; c) are enthusiastic about sharing their records and knowledge, including in online platforms, and communicating with researchers and other interested people; and d) accumulate thousands of hours of field experience in either one or several localities. We believe that there is huge potential for greater communication between scientists and taxon-oriented ecotourists (such as butterfly watchers) and tour guides, with their knowledge and experience being both backed up by and supporting research in creative ways. In particular, photographers

are able to visit and document butterflies in many areas that are not open to researchers wishing to collect specimens because of the time or complexities in obtaining the necessary research permits, and potentially the expense to access field sites. Fortunately, butterfly taxonomy is sufficiently advanced in most groups for many images to be identified, and photographic contributions have extended even to the discovery of new species (e.g., Willmott et al. 2020).

Finally, this study lists the butterflies known from the private reserves associated with an ecolodge and an environmental foundation. Without the existence of these institutions, it is unlikely that the butterfly fauna of this region would have been the subject of so many photographers and visiting researchers. Ecotourism facilities thus can provide access to and infrastructure in areas that would be otherwise remote, giving support for citizen scientists (and, in cases such as that presented here, formal scientific researchers) to reach these areas. Responsible ecotourism initiatives therefore can link themes such as environmental education, conservation, and science, and become a basis for unusually complete and long-term occurrence data, especially for charismatic groups such as butterflies.

Supplementary Material

The following online material is available for this article:

Table S1 - Butterflies and moth-butterflies (Papilionoidea) of Cristalino Lodge recorded only through pictures. Indicates the photographers, picture sources (including links, when available), and species identifiers.

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Conflicts of Interest

The authors declare that they have no conflict of interest related to the publication of this manuscript.

Ethics

This study did not involve human beings and/or clinical trials that should be approved by one Institutional Committee.

Data Availability

A MS Excel file containing information on the species recorded only through pictures including each species' photographers, picture sources and links is available at: <https://doi.org/10.48331/scielodata.SDBURK>.

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