

DIURNAL BUTTERFLIES (LEPIDOPTERA: ROPHALOCERA) FROM CORREGIMIENTO SANTA INÉS, YUMBO-COLOMBIA

Mariposas Diurnas (Lepidoptera: Rophalocera) del Corregimiento Santa Inés, Yumbo-Colombia

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Recibido: 7 de Agosto de 2013

Aceptado: 11 de Noviembre de 2013

Resumen

Las mariposas se han estudiado en diferentes partes del mundo y se han sido sugeridas como una herramienta eficaz para el monitoreo de las condiciones ambientales en bosques, debido a su idoneidad como indicadores de entornos regulares. Con el objetivo de aumentar los conocimientos sobre la diversidad de especies de mariposas en los bosques del corregimiento de Santa Inés-Yumbo, se realizó un esfuerzo de muestreo en junio de 2010 con el propósito de establecer la riqueza de especies de mariposas asociadas a tres localidades; El Chocho, Telecom y Santa Inés. Se recolectaron especímenes de 6 familias (17 subfamilias) y 65 especies. Esta es la primera lista taxonómica de mariposas diurnas para esta zona y se pretende que se convierta en un elemento de consulta para el desarrollo de estudios ecológicos y preservación de esta región.

Palabras claves: Listado de especies, Inventario de mariposas, Riqueza de especies.

Abstract

Butterflies have been studied in different parts of the world and have been suggested for environmental monitoring of forests, due to their suitability as indicators of regular environments. Aiming to add to knowledge concerning the diversity of butterfly species from the forests of Corregimiento Santa Inés-Yumbo, we carried out a study in June of 2010 to determine butterfly species in its three villages; El Chocho, Telecom and Santa Inés, collecting specimens belonging to 6 families (17 subfamilies) and 65 species. This is the first taxonomic list of butterflies for this area, therefore this list will serve to advance other ecological studies and assist in the preservation of these areas.

Keywords: List of species, Butterflies inventory, Richness of species.

INTRODUCTION

Inventories are necessary to evaluate the state of the ecosystem. Butterflies are showy elements in the ecosystem, easy to identify and manage in the field. They feed on plants in larval stages and have big stratification in gradients of light, wind, humidity and elevation (Brown 1991). These parameters except for elevation are usually affected by habitat perturbation (Sparrow *et al.* 1994). Moreover other ecological factors directly determine the presence of butterflies in a habitat, such as the abundance and distribution of their host plants (when they are caterpillars), nectar resources for adults, the distance from the origin of colonization, predation and parasitism among others (Holl 1995).

Some environmental problems in the tropics are produced by degradation and loss of native forests as a consequence of human perturbation. These problems include the deterioration of soil productivity due to inappropriate agricultural practices (Parrotta *et al.* 1997), adding to the urbanization and water erosion on mountain slopes (Kocher & Williams 2000). This is also the case in Corregimiento Santa Inés, municipality of Yumbo, Valle del Cauca, which has around 2000 permanent residents and a floating population, additionally people frequently visit the place to camp or to enjoy nature. Currently that tendency is increasing the number of residents coming to this place each year, which is becoming a problem because there are fewer habitats for butterflies, allowing a decline in their population (Miller 1994).

Inventories of butterflies species for Corregimiento Santa Inés are important, because its natural forests cover are disappearing. In this study we report species richness of butterflies to this locality, hoping this information serve for future studies and the preservation of this area and other rural areas around the municipality of Yumbo, Valle del Cauca.

MATERIALS AND METHODS

Study site

The Corregimiento Santa Inés is divided into three sectors: El Chocho, Telecom and Santa Inés. and all its 3 villages present premontane dry forests and pastures with similar characteristics in elevation between 1500m and 1900m above sea level, low humidity and temperatures above 24 °C. This site is located on the eastern side of the western branch of the Andes, in the Valle del Cauca, Colombia, South America, and it is part of a 1340-hectares system of forest patches of

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which 700 hectares correspond to a water reserve forest that is important for municipal Yumbo, because from there comes a large part of the water resource that supplies the city. Santa Inés is crossed by a main road connecting the municipalities of Yumbo and La Cumbre. Currently this region is overpopulated as a result of urbanization, livestock production and agriculture, which are detrimental to wildlife.

Data collection

The Corregimiento Santa Inés was surveyed in June 2010 to assess the butterfly species. Specimens were collected by three researchers during free walking transects in the forests starting from each of the three villages (Chocho, Telecom, and Santa Inés). Subsequently the butterfly specimens were collected with a collecting net and killed by careful pinching, which consists of pressing the thorax under the wings between the thumb and index finger. After immobilizing the butterflies, they were placed with the upperside of the wings closed back to back into triangular paper envelopes. The sampling was carried out in both human-inhabited and uninhabited areas for seven days (two days for each village and one day in a riparian forest of Santa Inés village). The observations were carried out throughout the day from 09:00h to 15:00h. The butterflies were identified in the laboratory using Valencia *et al.* (2005) taxonomic key and deposited in the "Museo Entomológico de la Universidad del Valle".

RESULTS AND DISCUSSION

A total of 65 species of butterflies were recorded during field work, representing six families. The most abundant family was Nymphalidae with 43 species (66.15%), followed by Pieridae (14 species, 21.53%), Lycaenidae (5 species, 7.69%), Hesperidae (1 species, 1.53%), Riodinidae (1 species, 1.53%) and Papilionidae (1 species, 1.53%).

The richness of butterfly species is determined primarily by the availability of microhabitats and resources as hosts for larvae, and fruit or flowers for adults (Ramirez *et al.* 2007). The three villages of Corregimiento Santa Inés present different grades of perturbation including secondary forest, shrubs, crops and pasture for livestock. These habitat perturbations permit the establishment of grassland and a forest edge that might benefit the number of Satyrinae species, because these habitats are optimal for this group, which usually parasitizes grasses and plant families such as Poaceae (Chacón & Montero 2007).

Eurema species were very abundant in grasslands and crops,

which is in concordance with Tobar *et al.* (2002) who report these species in open areas, in vegetation at the roadside and farms, feeding of small-bush flowers, decomposed fruits and feces. In contrast, species with complex requirements of habitat as *Morpho melenaus* exclusive was recorded in the secondary forest. The presence of this butterfly and others species in the secondary forest in Santa Inés suggests an effective natural recovery processes in this locality.

In the past the Corregimiento Santa Inés suffered an intensive process of deforestation in all three villages. The original biological richness of this area before perturbation will never be known, however the present list makes a contribution, being the first taxonomic list of the zone. The present information could contribute to assess the ecological status of the area. Concrete actions such as the conservation of secondary forest and reduction of fragmentation are suggested to promote the improvement of the ecosystem.

ACKNOWLEDGEMENTS

We thank Roberto Granobles, Ferruccio Escarria and Alberto Acosta, for their help during the field work and Humberto Calero for help during the identification of collected material.

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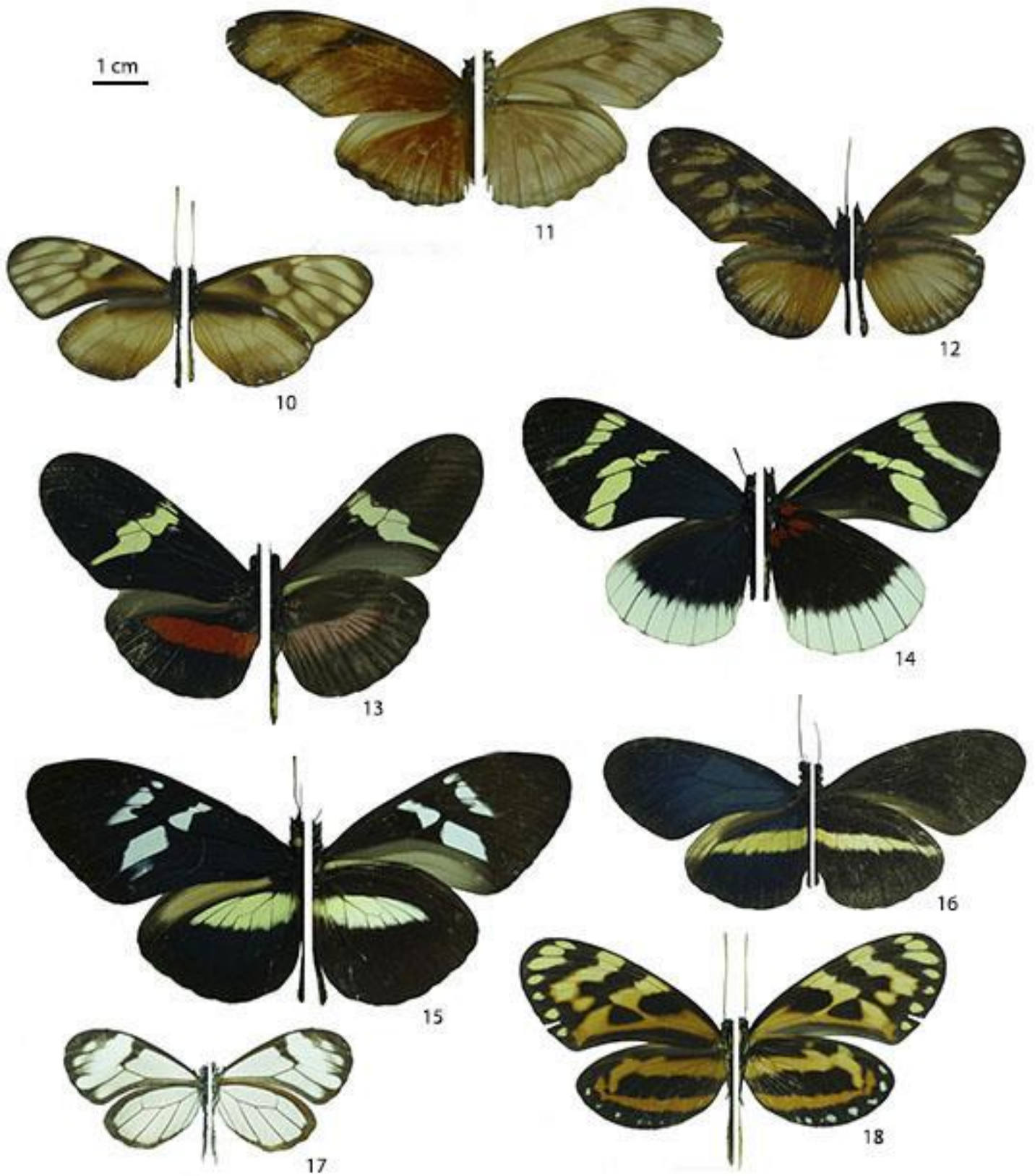
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LIST OF BUTTERFLIES (LEPIDOPTERA: ROPHALOCERA) FROM THE CORREGIMIENTO SANTA INÉS, YUMBO, DEPARTAMENTO OF VALLE DEL CAUCA, COLOMBIA

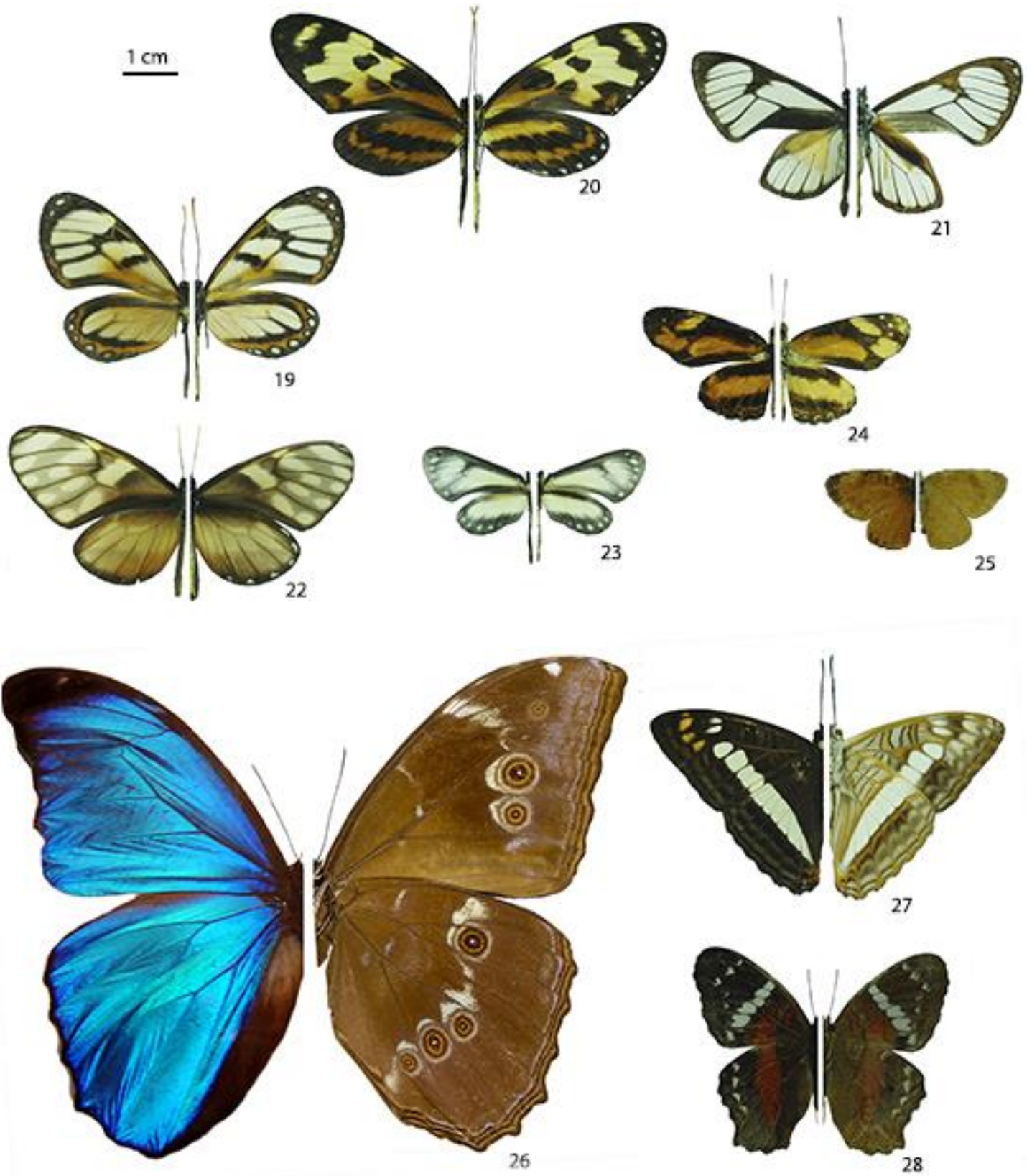
FAMILY Subfamily	Scientific name	FAMILY Subfamily	Scientific name
NYMPHALIDAE		Satyrinae	37 <i>Junonia evarete</i> (Cramer 1782)
Acraeinae	1 <i>Actinote equatoria</i> (Godart 1824)		38 <i>Magneuptychia alcinoe</i> (Felder & Felder 1867)
	2 <i>Actinote ozomene</i> (Godart 1824)		39 <i>Oressinoma typhla</i> (Westwood 1851)
Biblidinae	3 <i>Biblis hyperia</i> (Cramer 1779)		40 <i>Pareuptychia metaleuca</i> (Boisduval 1870)
	4 <i>Catonephele numilia esite</i> (Felder 1869)		41 <i>Pedaliodes perperna</i> (Hewitson 1862)
	5 <i>Diaethria neglecta</i> (Salvin 1879)		42 <i>Pronophila brennus</i> (Thieme 1907)
Danainae	6 <i>Athesis clearista colombiensis</i> (Kaye 1918)	PIERIDAE	43 <i>Pseudohaetera hypaesia</i> (Hewitson 1854)
	7 <i>Danaus gilippus gilippus</i> (Cramer 1776)	Coliadinae	44 <i>Eurema albula</i> (Cramer 1777)
Heliconiinae	8 <i>Altinote ozomene</i> (Godart 1819)		45 <i>Eurema albula marginella</i> (Felder & Felder 1861)
	9 <i>Dione juno</i> (Cramer 1779)		46 <i>Eurema arbela gratiosa</i> (Doubleday & Hewitson 1847)
	10 <i>Dircenna jemima jemima</i> (Geyer 1837)		47 <i>Eurema दौरا lydia</i> (Felder & Felder 1861)
	11 <i>Dryas iulia</i> (Fabricius 1775)		48 <i>Eurema mexicana citrella</i> (Winhard Le Crom & Constantino 2004)
	12 <i>Eueides procula edias</i> (Hewitson 1861)		49 <i>Eurema phiale columbia</i> (Felder & Felder 1861)
	13 <i>Heliconius clysonimus</i> (Latreille 1817)		50 <i>Eurema proterpia</i> (Fabricius 1775)
	14 <i>Heliconius cydno cydnides</i> (Staudinger 1885)		51 <i>Eurema xantochlora xantochlora</i> (Kollar 1850)
	15 <i>Heliconius cydno cydnides x weymeri</i> (Natural Hibridation) Endemic		52 <i>Phoebis philea</i> (Linnaeus 1763)
	16 <i>Heliconius erato chestertonii</i> (Hewitson 1872)		53 <i>Phoebis rurina</i> (Felder 1861)
Ithomiinae	17 <i>Greta andromica</i> (Hewitson 1854)		54 <i>Phoebis sennae</i> (Cramer 1777)
	18 <i>Hypothyris lycaste</i> (Haensch 1905)	Dismorphiinae	55 <i>Dismorphia crisia foedora</i> (Lucas 1852)
	19 <i>Ithomia alienassa</i> (Haensch 1905)		56 <i>Dismorphia zathoe othoe</i> (Hewitson 1857)
	20 <i>Mechanitis polymnia</i> (Haensch 1909)		57 <i>Pseudopieris viridula</i> (Felder & Felder 1861)
	21 <i>Oleria fumata</i> (Haensch 1905)	LYCAENIDAE	
	22 <i>Pteronymia aletta</i> (Hewitson 1854)	Polyommatae	
	23 <i>Scada zibia</i> (Hewitson 1856)		58 <i>Leptotes cassius</i> (Cromer 1777)
Melitaeinae	24 <i>Castilia eranites</i> (Hewitson 1852)		59 <i>Zizula cyna</i> (Edwards 1881)
	25 <i>Tegosa anieta</i> (Hewitson 1864)	Riodininae	60 <i>Hades noctula</i> (Westwood 1851)
Morphinae	26 <i>Morpho melenaus</i> (Linnaeus 1758)		61 <i>Leucochimona icare</i> (Stichel 1910)
Nymphalinae	27 <i>Adelpha alala</i> (Felder & Felder 1862)	Theclinae	62 <i>Tmolus echion</i> (Linnaeus 1767)
	28 <i>Anartia amatheia</i> (Linnaeus 1758)	HESPERIDAE	
	29 <i>Colobura dirce</i> (Linnaeus 1764)	Pyrginae	63 <i>Pyrgus oileus orcus</i> (Linnaeus 1970)
	30 <i>Hamadryas amphinome fumosa</i> (Frushstorfer 1916)	RIODINIDAE	
	31 <i>Marpesia corinna</i> (Latreille 1813)	Riodininae	64 <i>Rhetus dysonii</i> (Sounders 1849)
	32 <i>Pyrrhogyra edocla edocla</i> (Doubleday 1848)	PAPILIONIDAE	
	33 <i>Siproeta epaphus</i> (Latreille 1811)	Papilioninae	65 <i>Papilio polyxenes americanus</i> (Kollar 1850)
	34 <i>Siproeta stelenes</i> (Linnaeus 1758)		
Satyrinae	35 <i>Euptychia hermes</i> (Fabricius 1775)		
	36 <i>Euptychoides saturnus</i> (Butler 1866)		





Left side: dorsal view

Right side: ventral view



Left side: dorsal view

Right side: ventral view

1 cm



29



30



31



32



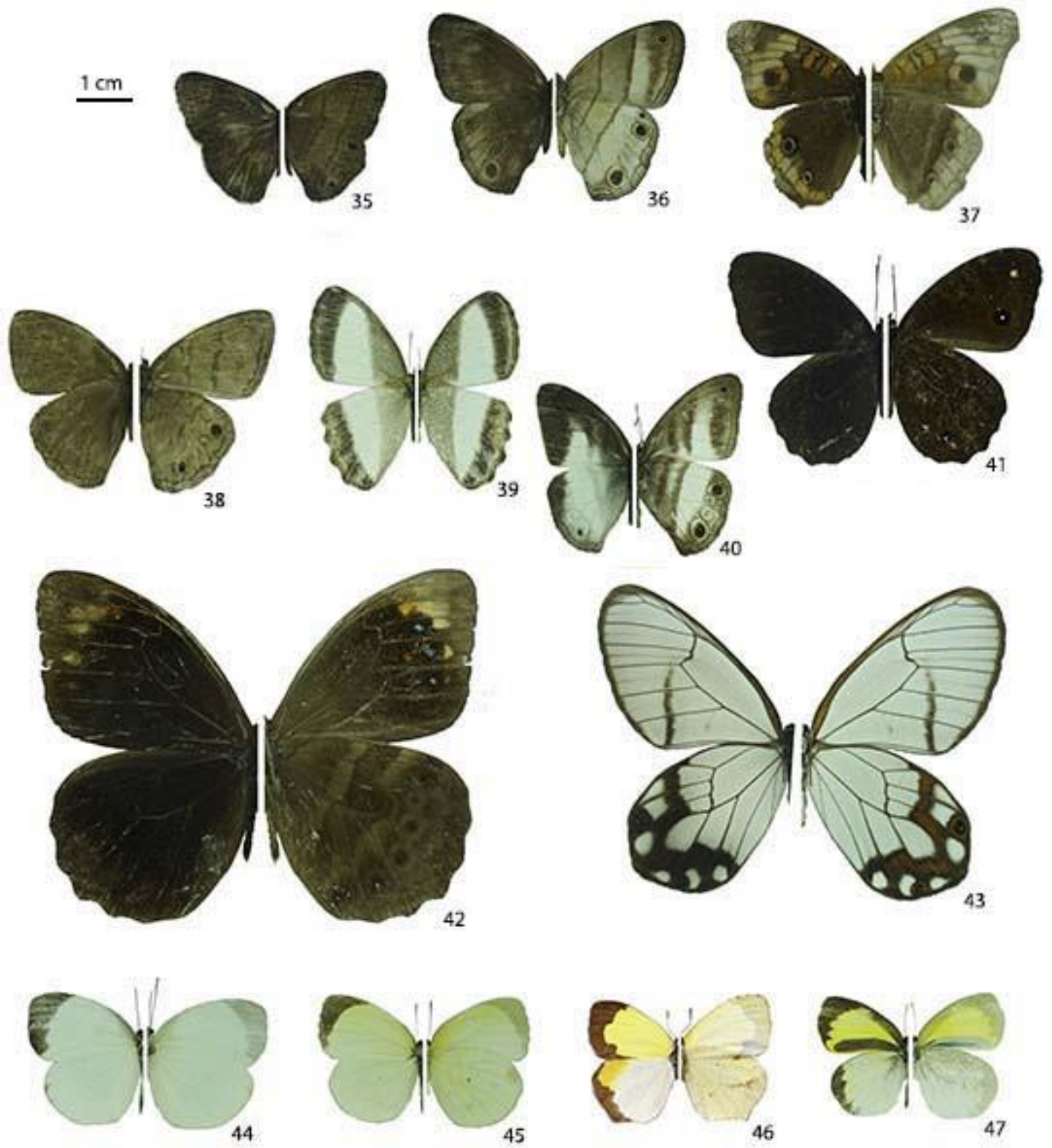
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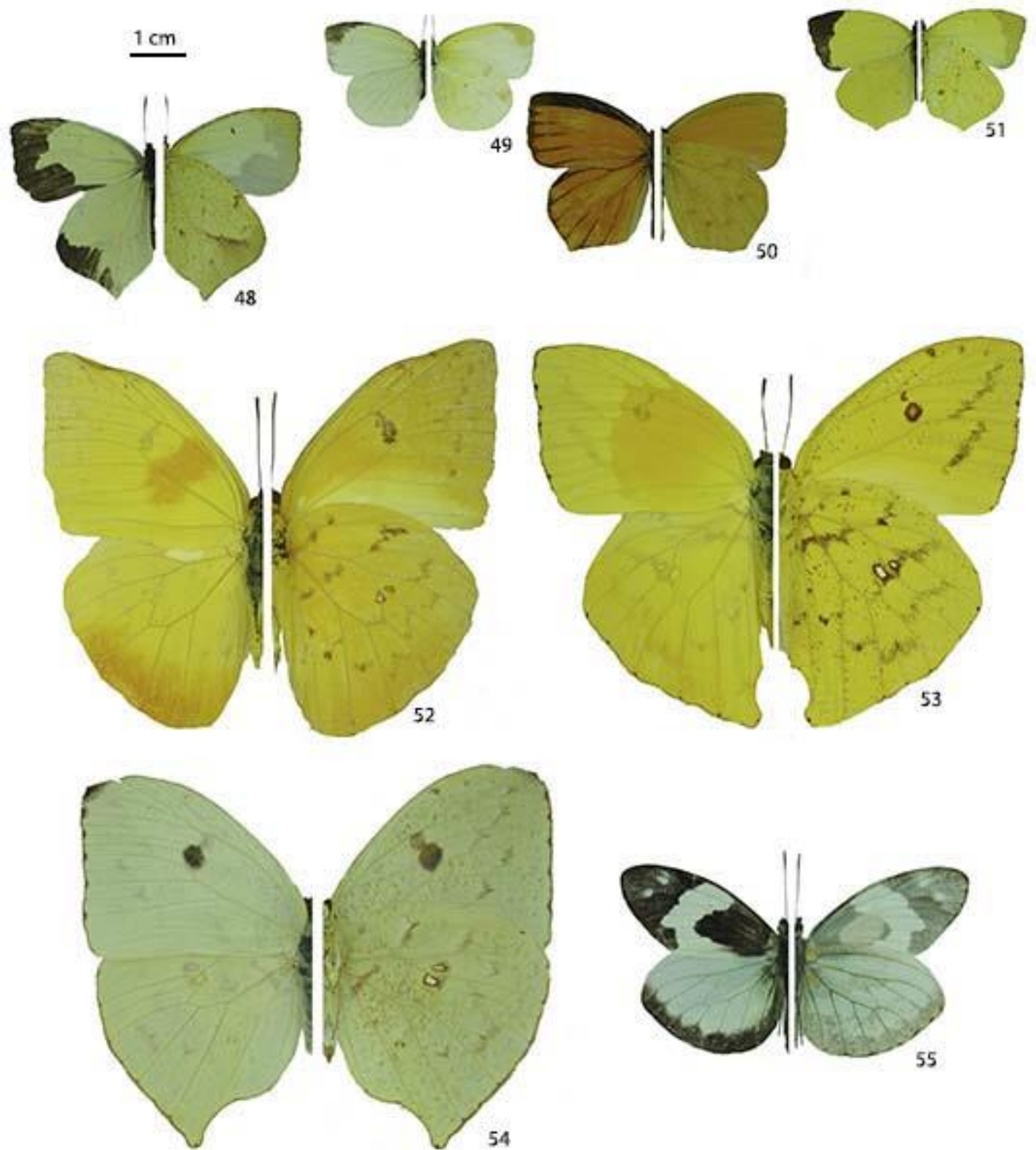
Left side: dorsal view

Right side: ventral view



Left side: dorsal view

Right side: ventral view



Left side: dorsal view

Right side: ventral view

