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Giant butterfly moths of the Instituto de Ciencias Naturales, Universidad Nacional de Colombia, Bogotá, Colombia (Lepidoptera: Castniidae)

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Abstract

The Institute of Natural Sciences of Colombia's National University, Bogotá is a repository of objects and organisms that are part of the general and natural history of this megadiverse South American country. During a recent curation of moths deposited in the entomology collection of the museum we came across a small group of giant butterfly-moths (Castniidae). These included eleven taxa in three genera, according to a recent taxonomy of this Neotropical family. Most specimens have detailed collecting information, and with some exceptions, they are in good shape and have been well maintained. We provide herein some historical background about the museum as well as general comments on the Castniid taxa under the museum's care.
KEY WORDS: Lepidoptera, Castniidae, biodiversity, faunistics, Neotropical, Colombia.

Cástnidos del Instituto de Ciencias Naturales, Universidad Nacional de Colombia, Bogotá, Colombia (Lepidoptera: Castniidae)

Resumen

El Instituto de Ciencias Naturales de la Universidad Nacional de Colombia, Bogotá, es un importante depósito de objetos y organismos que forman parte de la historia general y natural de este diverso y gran país Sudamericano. Durante la reciente conservación de polillas depositadas en la colección entomológica del museo, encontramos un pequeño grupo de polillas de taladradores gigantes (Castniidae). Estos incluyen once taxones pertenecientes a tres géneros, de acuerdo a estudios recientes sobre la taxonomía de esta familia Neotropical. La mayoría de los ejemplares presentan información detallada de captura y, salvo algunas excepciones, están en muy buen estado de conservación. En este trabajo presentamos algunos de los fondos históricos y comentarios generales sobre los taxones de Castniidae conservados en este museo.
PALABRAS CLAVE: Lepidoptera, Castniidae, biodiversidad, faunística, Neotropical, Colombia.

Introduction

The Institute of Natural Sciences (Instituto de Ciencias Naturales, ICN) of the National University of Colombia is the main research center dealing with Flora and Fauna, as well as conservation of natural resources in Colombia. The institution trained researchers who has been generating knowledge about the country's biodiversity and it holds some of the most important scientific collections in Latin-America.

The ICN's collections hold objects, artifacts and specimens; some are up to 16,000 years old and

many are relevant in understanding Colombia's biodiversity and human-environment relationships. Based on their collections, the ICN plans and designs new exploration, as well as research, and allows interaction with investigators worldwide in order to generate publications, scientific and otherwise.

In 1826, General Francisco de Paula Santander (1792-1840), vice-president of Great Colombia (which included what is now Colombia, Ecuador and Venezuela), created the National Academy of Colombia with the aim of developing the country's arts and sciences and collaborating with other institutions (DÍAZ-PIEDRAHITA & VÉLEZ, 1991). By the mid-19th century, after a Central University reform, the Institute of Natural, Physical and Mathematical Sciences was created to include the astronomy observatory, the national chemistry laboratory and the Museum of Natural History of Bogota (ANDRADE-C., 1996).

By 1904, Brother Apolinar María (1867-1949) had arrived in Colombia, becoming one of the most influential naturalists in the country (GONZÁLEZ *et al*., 2013c; SALAZAR, 1999b). Even though the collection he built was lost in the April 1948 fire of Bogotá, his work had already stimulated the study of Lepidoptera and other insect groups in the country during the first half of the 20th century (ANDRADE-C., 1996; GONZÁLEZ *et al*., 2013c).

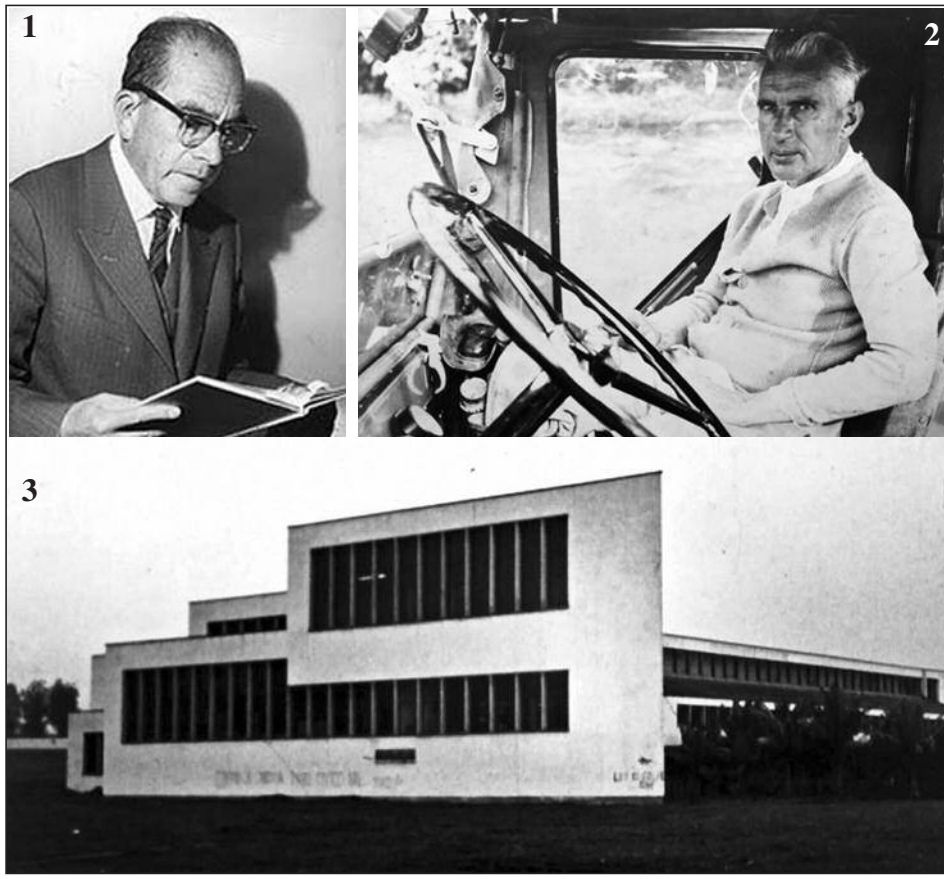
In 1928, Luis María Murillo Quinche (1896-1974) (Fig. 1), one of the pioneers of the study of Colombian insects, was hired as an entomologist by the National Department of Agriculture (ANDRADE-C., 1996). Together with the phytopathologist Ramón Mejía Franco he created a crop health unit which was to become an important department (and later a complex institution) within the National University, formed by both the Institute of Biology of the Economy Ministry and the Institute of Natural Sciences (MURILLO, 1957). These eventually became one single unit thanks to the decisive input of Father Enrique Pérez Arbeláez (1896-1972), the "father of Colombian ecology", and by 1936 the Department of Botany was created, to be later transformed into the Institute of Natural Sciences (ICN) (ANDRADE-C., 1996). The Institute, its collections and personnel were then removed from the building that was holding them which was destined to hold a new college. By 1938, the Natural History Museum was assigned to the ICN, which by 1939 had changed its name to the Botanical Institute. When the German entomologist Leopoldo Richter (1896-1984) (Fig. 2) arrived in Colombia in 1935 after working in Venezuela and Brazil, he immediately became involved with what was to eventually become the entomology section of the ICN in 1939 (RESTREPO-MEJIA, 1985; SALAZAR, 1999b). Richter would become a well-recognized expert in Membracidae (Hemiptera) but also worked with other insect groups (SALAZAR, 1999b). By 1940, the Institute of Natural Sciences (Fig. 3) was re-organized to contain three sections: botany, ornithology and entomology (ANDRADE-C., 1996).

Today, the ICN holds an arthropod collection of over 150,000 insects and some 20,000 arachnids. It is one of the most important museums in the country, not only for the large number of specimens, but also for the wider geographic representation and its historical and scientific value. Among the many lepidopterans contained in this museum, we found a small but interesting collection of giant butterfly moths (Castniidae) collected at several Colombian locations.

Castniidae is a mainly diurnal or crepuscular group of Neotropical moths, containing 88 species (MORAES & DUARTE, 2014). As far as we know 25 species and at least 45 taxa have been reported from Colombia (APOLINAR, 1915, 1945; CONSTANTINO, 1998; GONZÁLEZ *et al*., 2013c; GONZÁLEZ & SALAZAR 2003; HERNÁNDEZ-BAZ *et al*., 2012; LAMAS, 1995; MILLER, 1986, 1995; SALAZAR, 1999a; SALAZAR *et al*., 2013a, 2013b).

The aim of this note is to present the Colombian Castniidae currently under the custody of the ICN. Even though the number of specimens of these moths contained in the ICN is quite small, it is certainly interesting that most have detailed data, thus adding value to their historical importance. In naming the species, we generally follow MILLER (1995) and LAMAS (1995), and for genera we mostly follow MORAES & DUARTE (2014). We have listed the genera phylogenetically after MILLER (1995) and LAMAS (1995), but the species are arranged alphabetically. The name of every species is followed by the information on the labels of the studied specimens. We also include some natural history comments or historical background on the species or some of the specimens

examined. All data found on the labels is presented maintaining the collectors'/curators' writing style. The data is complemented by information added by the authors, which is included within square brackets.



Figs. 1-3.– 1. Luis María Murillo Quinche (1896-1974), known as Colombia's "initiator of Entomology." He created the Crop Health Unit, a precursor of the Institute of Natural Sciences of Colombia's (ICN) National University in Bogotá, Colombia. **2.** Leopoldo Richter (1896-1984), artist and entomologist, he worked at the Institute of Natural Sciences, Bogota, from 1939 on, becoming an expert in Membracidae (Hemiptera) and a respected figure in Colombian entomology. **3.** Façade of the Institute of Natural Sciences of Colombia's National University, Bogotá, Colombia, in 1936. (Photos provided by M. Gonzalo Andrade-C.).

Annotated list of species and label information of the examined specimens

CASTNIINAE
CASTNIINI

Amauta cacica angusta (H. Druce, 1907) (Fig. 4)

Material examined: 1 ♂, Dep[artamen]to de Risaralda, M[unici]pio de Pueblo Rico, Vereda La

Marquina, Alrededores Río Negro, 1770 m.s.n.m. 4-III-[19]92. JAA 1096, ICN-MHN-L 10210, ICN 053808.

Comments: This subspecies was originally described (as *Castnia angusta*) from Ecuador (DRUCE, 1907; LAMAS, 1995; MILLER, 1995), but it has been also reported from Colombia (GONZÁLEZ & SALAZAR, 2003). Information about the biology of the species and its subspecies is scarce, but we at least know that their larvae bore the rhizomes of *Heliconia* (Heliconiaceae) and *Musa* (Musaceae) in neighboring Ecuador causing some economic harm (SUÁREZ-CAPELLO *et al*., 2002; MILLER & SOURAKOV, 2009; GONZÁLEZ *et al*., 2013a).

Telchin atymnius (Dalman, 1824)

Material examined: 1 ♂, Tolima, 1800 m, VIII-1946, L. Ritcher; 1 ♂, Risaralde, Mpio. Pueblo rico, Corregimiento Santa Cecília, camino Sta. Cecilia-Pital, 550 m, 21-IX-1991, [col.?]; 1 ♂, Risaralda, Mistrató, Puerto de oro, 30-VI-1992, 1100 m., Col. Gonzalo Andrade-C.; 1 ♂, Valle [del Cauca], Buenaventura, Río Yurumangui Guandal, 28-I-1998, col. F. Riascos; 1 ♂, Santander, Bucaramanga, VII-1969, Col. O Torres; 1 ♀, Nariño, Barbacoas, Altaquer, W. Rio Guiza, 870 m, 1-III-1995, Col. Gonzalo Andrade-C.; 1 ♀, Choco, IV-1998, [Col.?]; 1 ♀, La Esperanza, Cundinamarca, 6-VII-1965, [Col.?].

Comments: This subspecies is found from Colombia to southeastern Brazil along the Orinoco and Amazon River Basins (GONZÁLEZ & SALAZAR, 2003; GONZÁLEZ *et al*., 2010, 2013b) and as with other conspecific subspecies it is known as a pest of *Heliconia* spp. (Heliconiaceae) and most especially of bananas (*Musa* spp.: Musaceae) (GALLEGO, 1946, 1955, 1963; GONZÁLEZ & STÜNING, 2007). The species has been also reported attacking sugarcane (*Saccharum officinarum* L., Poaceae) but this is doubtful (GONZÁLEZ & STÜNING, 2007). Even though *Telchin atymnius* and *T. licus* are clearly two different species (MORAES & DUARTE, 2009) they have been frequently confused. The latter is certainly a known pest of sugarcane (GONZÁLEZ & FERNÁNDEZ-YÉPEZ, 1993; SILVA-BRANDÃO *et al*., 2013) and the species are sympatric in several regions of Central and South America (GONZÁLEZ & COCK, 2004; GONZÁLEZ & STÜNING, 2007). Since *T. atymnius* is somewhat similar to *T. licus*, some authors have misidentified specimens helping to create and spread this error (GONZÁLEZ & COCK, 2004; GONZÁLEZ & STÜNING, 2007).

Telchin atymnius newmanni (Houlbert, 1917) (Fig. 5)

Material examined: 1 ♀, Boyacá, Muzo, II-1952, 800 m, *Castnia athymus* [sic], Col. L. Ritcher; 1 ♀, Bucaramanga, Santander, VIII-1951, Col. R. Richter; 1 ♀, Muzo, Boyaca, 5-IV-2006, Col. W. Hass.

Comments: This subspecies was originally described from Panama but can be also found in Colombia, Venezuela and Trinidad where it has been reported as a pest of bananas (*Musa* spp., Musaceae) (GONZÁLEZ & COCK, 2004; GONZÁLEZ & FERNÁNDEZ-YÉPEZ, 1993; GONZÁLEZ *et al*., 2010, 2013b; SANDOVAL *et al*., 2007). Even though it might be confused by some authors with the sympatric and polymorphic *T. licus*, they are easy to separate by the ground color of the wings (dark brown, almost black in most *licus* spp.; brown, with a slight "reddish" hue, in *atymnius newmanni*) and by the clearly defined sub marginal spots in *licus*, which are either lacking or very faint in *atymnius newmanni* (GONZÁLEZ & COCK, 2004; GONZÁLEZ & STÜNING, 2007; MILLER, 1986).

Telchin diva tricolor (R. Felder, 1874) (Fig. 6)

Material examined: 2 ♂♂, Muzo, Boyacá, 5-IV-2006, W. Hass. ICN MHN L 30350, ICN 079332.

Comments: The species, perhaps one of the most beautiful Castniidae, is distributed from Mexico right through Central America down to Colombia and Ecuador (GONZÁLEZ *et al*., 2010, 2013a, 2013b; LAMAS, 1995; MILLER, 1995; SALAZAR, 1999a; VINCIGUERRA, 2010). According to LAMAS (1995) four ssp. are known and it seems they are all found in various regions

of Colombia (GONZÁLEZ *et al*., 2010; SALAZAR, 1999a; MILLER, 1995). The specimen at ICN is the spp. *T. diva tricolor*. Even though not much is known about the species and its four sspp., collecting records appear to indicate that they are crepuscular and bivoltine, having flight periods during December-January and July-August (GONZÁLEZ *et al*., 2013a; MILLER, 1986).

Telchin evalthe (Fabricius, 1775) (Fig. 10)

Material examined: 1 ♂, Colombia, Meta, Restrepo, Camino Salinas, 800 m, 29-III-1996, ICN MHN L 30352, ICN 079334; 1 ♀, [Colombia], Boyacá, La Carbonera, Santa María, X-2005, [coll.?].

Comments: This species is widely distributed in South America north of the Amazon River, and has been previously reported from Colombia (GONZÁLEZ & SALAZAR, 2003; GONZÁLEZ *et al.*, 2010). Bromeliads (*Bromelia* spp., Bromeliaceae) and Heliconias (*Heliconia* spp.; Heliconiaceae) appear to be their hosts (GONZÁLEZ *et al*., 2010; HOULBERT, 1918; MILLER, 1986; MOSS, 1945).

Telchin licus (Drury, 1773) (Fig. 7)

Material examined: 1 ♂, Colombia, Vaupes, camino a Mina la Libertad, rastrojo en parte más baja de la mina, camino a Marulanda, 290 m, 11-VIII-1993, col. G. Fagua; 1 ♂, Putumayo, Municipio, Puerto Leguizamo, Río Caucayá, IX-1944, Col. L. Ritcher; 1 ♀, Colombia, Cundinamarca, Camino de herradura a la Mesa negra, 450-600 m, 9-VIII-1980, Col. C. Bohorquez & L. Cruz; 1 ♀, Colombia, Vaupés, camino a la mina la Libertad, 2 PM, 290 m, 27-VIII-1993, Col. F. Fagua.

Comments: This is a highly variable but certainly one of the most common species of Castniidae found in collections worldwide mainly because of its status as a pest of Sugarcane (*Saccharum officinarum* L., Poaceae) (GONZÁLEZ & COCK, 2004; GONZÁLEZ & FERNÁNDEZ-YÉPEZ, 1993; GONZÁLEZ & STÜNING, 2007; GONZÁLEZ *et al*., 2010; MILLER, 1986; MORAES & DUARTE, 2009; SANDOVAL *et al*., 2007). However, it is also known to attack Bananas (*Musa* spp., Musaceae) and Heliconias (*Heliconia* spp.; Heliconiaceae) (GONZÁLEZ & COCK, 2004; GONZÁLEZ & FERNÁNDEZ-YÉPEZ, 1993; GONZÁLEZ & STÜNING, 2007; GONZÁLEZ *et al*., 2010, 2013a, 2013b; MORAES & DUARTE, 2009; SALAZAR, 1999a; SALAZAR *et al*., 2013a; SILVA-BRANDÃO *et al*., 2013). Several "morphs" exist of *T. licus* creating a complex of more than a few cryptic entities requiring more morphological studies to determine the taxonomy of the group (GONZÁLEZ & COCK, 2004; GONZÁLEZ & STÜNING, 2007; SILVA-BRANDÃO *et al*., 2013). SILVA-BRANDÃO *et al*., (2013) have made a first attempt to molecularly distinguish some of the Brazilian subspecies of *licus*; a similar study is certainly needed for the supposed taxa of this species not only in Colombia, but in other regions of Central and South America.

Telchin licus magdalena (Joicey & Talbot, 1925)

Material examined: 1 ♂, Meta, Acacias, IX-1995, 940 m; 1 ♂, Meta, Acacias, IX-1995, 1100 m; 1 ♂, Meta, Acacias, X-1995, 940 m; Colombia, 13 km West of Villavicencio, [Meta], 18-I-1999, Col. G. Nielsen; 1 ♂, Meta, Villavicencio, Camous: Instituto Roberto Franco, 20-IX-1977, Col. O. V. Castaño; 1 ♂, Caquetá, Araracuara, VIII-1951, Col. R. Ritcher.

Comments: This subspecies was originally described by JOICEY & TALBOT (1925) based on a large series (males and females) collected in Villavicencio and Muzo, Colombia. The subspecies seems to be a very well-defined one and it has a wide distribution in the country, however not much is known about its biology, except that like the nominal species it attacks sugarcane (GONZÁLEZ & SALAZAR, 2003; GONZÁLEZ *et al*., 2013a).

CASTNIINAE
GAZERINI

Prometheus ecuadoria truxilla (Westwood, 1877)

Material examined: 1 ♂, Colombia: Boyacá: Santa María, camino la Almenara, 12-X-2005, 800 m., coll. G. Andrade-C.

Comments: Originally described as *Castnia truxilla*, this is a common ssp. found in the mid-Magdalena region together with other similar taxa (MILLER, 1986; SALAZAR, 1999a; WESTWOOD, 1877). This ssp. is just one of several taxa in a group with large variation in wing patterns and a paucity of specimens for study, further complicating the taxonomy of the group (MILLER, 1986).

Prometheus polymorpha (Miller, 2008) (Fig. 9)

Material examined: 1 ♂, Santander, Girón, Finca La Hondureña, 06 42' 20.6" N - 73 06' 34.2" W, 645 m.s.n.m., 25-IX-2007, Col: G. Torres, ICN MHN L 30348, ICN 079330

Comments: This is a beautiful species which is not only multivoltine but highly polymorphic, it seems to be part of a mimetic ring that includes species in the genera *Heliconius* (Nymphalidae), *Lycorea* (Danaidae), *Dysschema* and *Pericopis* (Erebidae) (MILLER, 2008). MILLER (2008) lists a large type series with several phenotypes. A melanic specimen collected in the mid-Magdalena region in the eastern cordillera has been also seen by the authors.

Prometheus simulans (Boisduval, [1875]) (Fig. 8)

Material examined: 1 ♂, Alto Río Opon, Santander, 800 m, I-[19]49, [Col.?], ICN MHN L 29418, ICN 053795; 1 ♂,. Colombia. Amazonas. Resguardo Indígena Nocuya de Villa Azul. Comunidad de Peña Roja. Medio Río Caquetá. 150 m. Jameo. 9 am soleado. 19-VIII-1999. Col. R. Gómez & F. Moreno.

Comments: Described (as *Gazera simulans*) by BOISDUVAL (1875) from a female collected in Colombia. The species is also distributed in neighboring Venezuela (GONZÁLEZ, 1997). This is a highly variable species and several subspecies have been reported in the country (GONZÁLEZ, 1997; SALAZAR, 1999a; SALAZAR *et al*., 2013b). They all resemble butterflies in the genus *Melinaea* Hübner (Nymphalidae) which are also phenotypically variable (HERNÁNDEZ-BAZ *et al*., 2012).

Prometheus zagraea (R. Felder, 1874)

Material examined: 1 ♂, Río Sanza, III-[19]56, L. Richter.

Comments: This is another species common in the mid-Magdalena region but also present in other areas of Colombia, as well as Panama and Costa Rica (GONZÁLEZ *et al*., 2010; SALAZAR *et al*., 2013b; VÉLEZ & SALAZAR, 1991). However, not much is known about the species, although an association with *Aechmea magdalenae* (André) André ex Baker (Bromeliaceae) has been suggested and it is possibly a member of a mimetic ring that might include several *Heliconius* spp. (Nymphalidae), as well as *Lycorea halia* (Hübner, [1816]) (Danainae), as models (GONZÁLEZ *et al*., 2010; MILLER, 1986).

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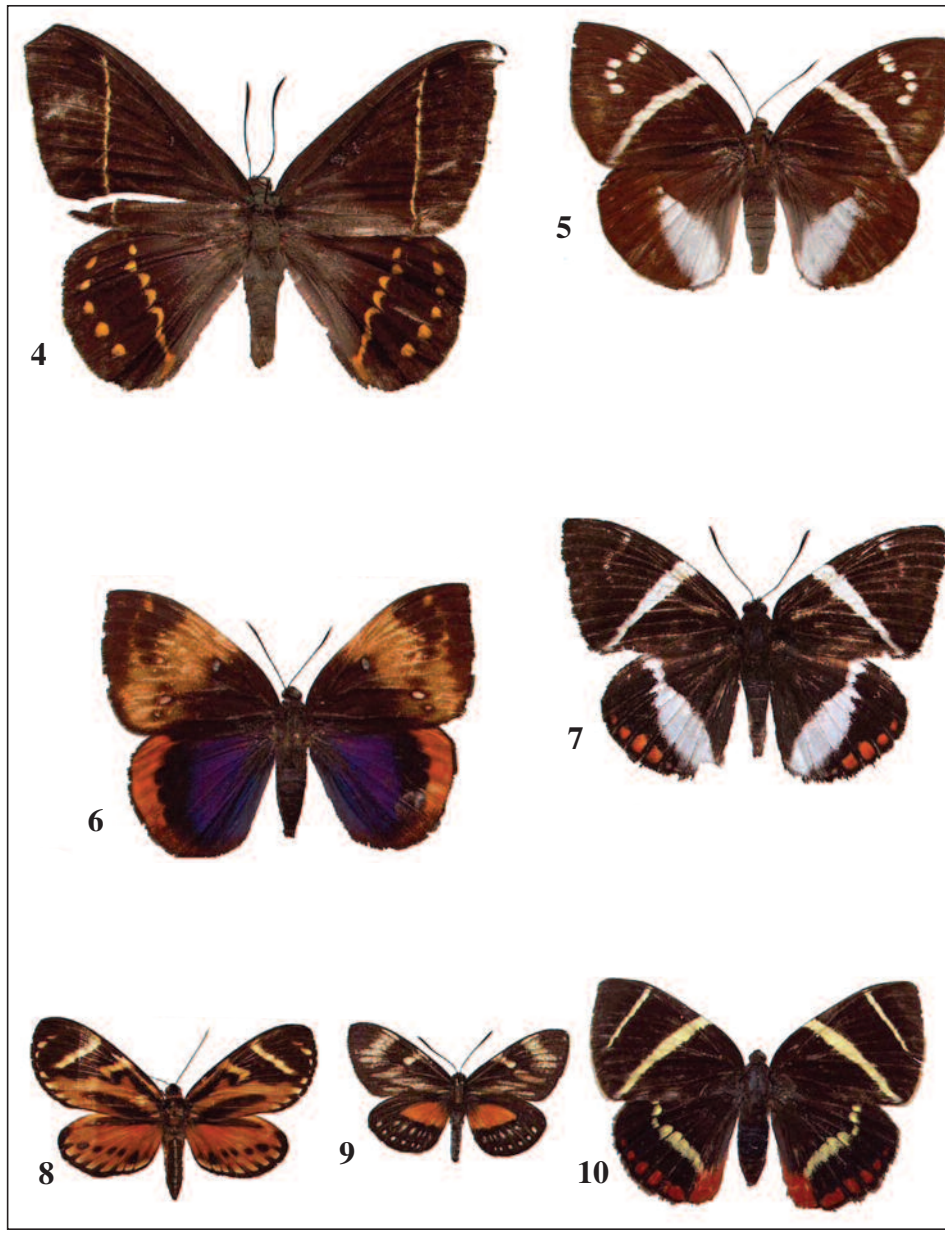

Figures 4-10: Selected Colombian Castniidae from the insect collection at the Institute of Natural Sciences of Colombia's National University, Bogotá, Colombia. **4.** *Amauta cacica angusta*, nr. Río Negro, Risaralda; **5.** *Telchin atymnius newmanni*, Boyacá, Muzo; **6.** *Telchin diva tricolor*, Boyacá, Muzo; **7.** *Telchin licus*, nr. La Libertad, Vaupés; **8.** *Prometheus simulans*, Río Opon, Santander; **9.** *Prometheus polymorpha*, Girón, Santander; **10.** *Telchin evalthe*, Restrepo, Meta. (Photos: F. Hernández-Baz).