

## ***Arguda sandrae* n. sp., a new lasiocampid moth (Lepidoptera: Lasiocampidae) from Palawan, Philippines**

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**Abstract:** The new Lasiocampidae species *Arguda sandrae* n. sp. from Palawan, Philippines, is described (holotype from Palawan: Irawan). The only known male of the new taxon, the male genitalia and – for comparison – those of *Arguda rectilinea* HAMPSON, 1892 are illustrated and a general description of the male genitalia in the genus *Arguda* is given. *A. sandrae* differs from all other *Arguda* spp. in the presence of a large spine at the base of the cubile of the male genitalia.

### ***Arguda sandrae* n. sp., eine neue Lasiocampide (Lepidoptera: Lasiocampidae) von Palawan (Philippinen)**

**Zusammenfassung:** Die Beschreibung von *Arguda sandrae* n. sp. basiert auf dem einzigen bisher bekannten männlichen Exemplar (Holotypus: Philippinen, Palawan, Irawan [Stadtrand von Puerto Princessa City], 15. III. 1996, leg. A. ZWICK), das am Rande eines Regenwaldrelikts im Flachland an einer Quecksilberdampflampe gefangen wurde. *Arguda sandrae* n. sp. ist im Habitus nicht sicher von *Arguda dodongi* ZOLOTUHIN, WITT & TREADAWAY, 1998 (Neubeschreibung in diesem Heft) zu unterscheiden und ähnelt sehr *Arguda rectilinea* HAMPSON, 1892: Die Vorderflügel sind gleichmäßig braun, mit zwei dunklen transversalen Linien und einer ungleichmäßigen, dunklen submarginalen Linie. Der Apex des Vorderflügels ist spitz, und die Außenkante ist konkav. Sowohl die dunkle submarginale Linie als auch die Vorderflügelform unterscheiden *A. sandrae* von *A. rectilinea* (keine von der Grundfarbe abgesetzte Linie, Apex des Vorderflügels gerundet und Außenkante gerade). Die männlichen Genitalien haben die für *Arguda* typische Struktur (Cubile ausgeprägt und zweiarmig, größerer Arm mit apikalem Fortsatz; Vinculum mit ventralen Fortsätzen; Aedoeagus mit zentralem, ventralem Fortsatz; Vesica mit sklerotisierten Strukturen), zeigen aber auch die für *sandrae* diagnostisch wichtigsten Merkmale: Am Ansatz der beiden Cubilearme befindet sich ein einzigartiger, großer, dorsocaudal weisender Dorn, der *A. sandrae* von allen bisher bekannten *Arguda*-Arten eindeutig unterscheidet. Der Fortsatz des größeren Cubilearms weist dorsocaudal. Die beiden ventralen Fortsätze des Vinculums sind sehr lang und doppelwandig. Die ventrale Seite des Aedoeagus ist sehr schmal und formt regelrecht eine Kante, zu der der massive

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ventrale Fortsatz parallel verläuft. Auf dieser Kante und auf dem Ansatz des ventralen Fortsatzes befindet sich jeweils ein spitzer Zahn. Die Vesica ist asymmetrisch und hat lateral je eine längeres Band kleiner sklerotisierter „Schuppen“ und Cornuti, zentral ein kürzeres Band sehr kleiner Cornuti; am linken lateralen Band befindet sich eine einzelne Seta.

## Introduction

The genus *Arguda* MOORE, 1879 (type species *Arguda decurtata* MOORE, 1879) is distributed in tropical Asia and appears to be most diverse in Sundaland and the Philippines. It was revised by DE LAJONQUIÈRE (1977, 7 species stated) and comprises at present the following 11 species (see MATSUMURA 1927, DE LAJONQUIÈRE 1979, HOLLOWAY 1987, HOLLOWAY & BENDER 1990, KISHIDA 1992):

*Arguda vinata* MOORE, 1865; *A. decurtata* MOORE, 1879; *A. rectilinea* HAMPSON, [1893]; *A. bipartita* LEECH, 1899; *A. horishana* (MATSUMURA, 1927); *A. vietti* DE LAJONQUIÈRE, 1977; *A. insulindiana* DE LAJONQUIÈRE, 1977; *A. albiscutulata* DE LAJONQUIÈRE, 1979; *A. rosemariae* HOLLOWAY, 1987; *A. sumatran* HOLLOWAY & BENDER, 1990; *A. nepalina* KISHIDA, 1992.

A further species is described in the present volume: *Arguda dodongi* ZLOTUHIN, TREADAWAY & WITT, 1998. In addition, *Arguda sandrae* n. sp. is described in the present paper.

### *Arguda sandrae* n. sp.

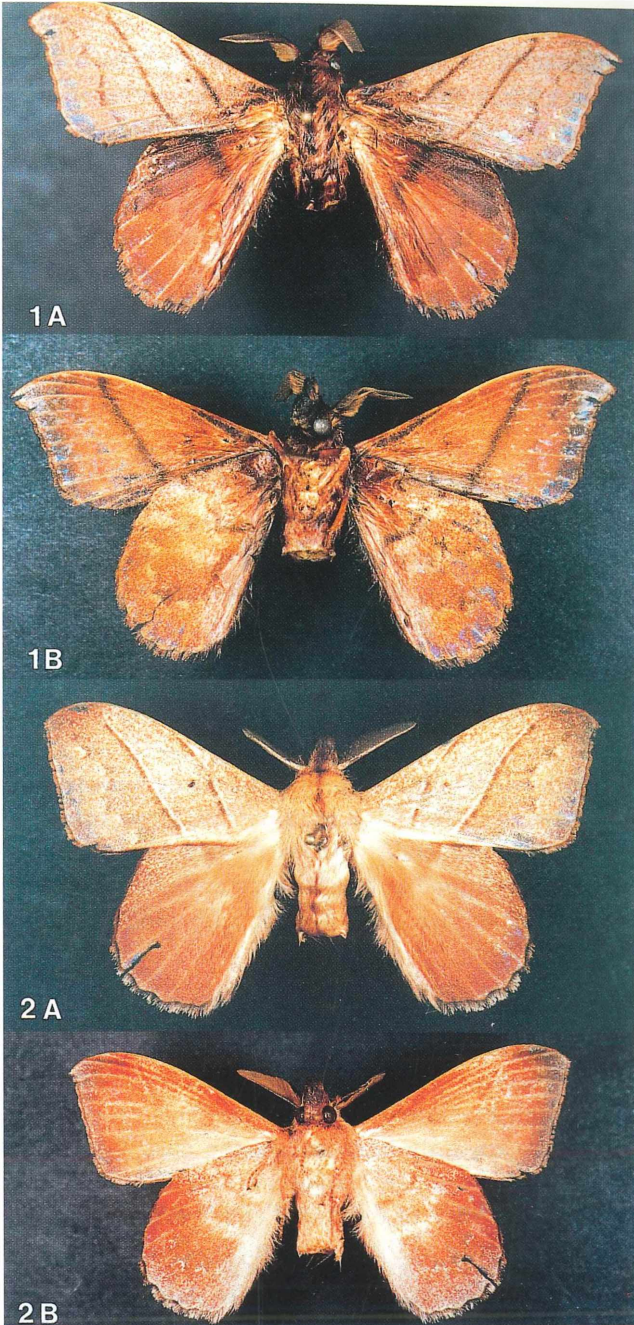
Holotype: Philippines, Palawan, Irawan (outskirt of Puerto Princesa City), 15. III. 1996, leg. A. ZWICK. Specimen No. "Lasi00004", genitalia stored in glycerol in a microvial on the specimen pin.

At present, the specimen is deposited in the collection of the author, but it will later be transferred to a public museum.

The holotype and only known specimen of the new species was caught at light (MV-lamp) at the edge of a primary rainforest relict (lowland, approximately 70 m above sea level), mainly surrounded by agricultural clearings. This singleton is such outstanding in its genitalia morphology (especially in the huge spine at the base of the cubile) that a description appears fully justified although no more specimens are known.

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**Figs. 1a, 1b:** *Arguda sandrae* n. sp., holotype, Palawan, "Lasi00004"; a) upperside, b) underside. **Figs. 2a, 2b:** *Arguda rectilinea* HAMPSON, 1892, Palawan, "Lasi00002"; a) upperside, b) underside.



## Diagnosis

*Arguda sandrae* n. sp. is characterised by evenly brown forewings with two straight dark lines and a sinuous dark submarginal line. The male genitalia have a unique large spine at the base of the cubile, the long ventral processes of the vinculum are hollow, and the apical cubile process points dorsocaudad. The ventral half of the aedeagus is narrow and the aedeagus has two teeth, one on the ventral edge and on the ventral spine each. The vesica is asymmetric and has two larger lateral bands of scales and tiny cornuti, one short dorsal band of very tiny cornuti and a single seta at the left lateral band of cornuti.

## Description

Length of forewing 21.5 mm (base to tip). Colour of body, antennae, palpi, legs and hindwings dark brown, forewings evenly brown (Fig. 1a).

Termin of forewing concave, forming a pointed tip. Forewing upper side with small dark discal dot, two dark lines and a sinuous dark submarginal line. Antemedial line close to discal dot, postmedial line more distal. Both lines straight and slightly convergent towards costa.

Hindwing narrow and elongated. Hindwing upper side with a broader, inconspicuous dark line, forming a common line with the postmedial line of the forewing.

Underside of both wings (Fig. 1b) brown, forewing with large darker area at costa and hindwing with small darker patches along tornus and a larger distal one. Forewing underside with weak dark lunate discal dot and a vague straight dark postmedial line with its ends bent towards the body. Hindwing underside with irregular dark line, forming a common line with line of forewing.

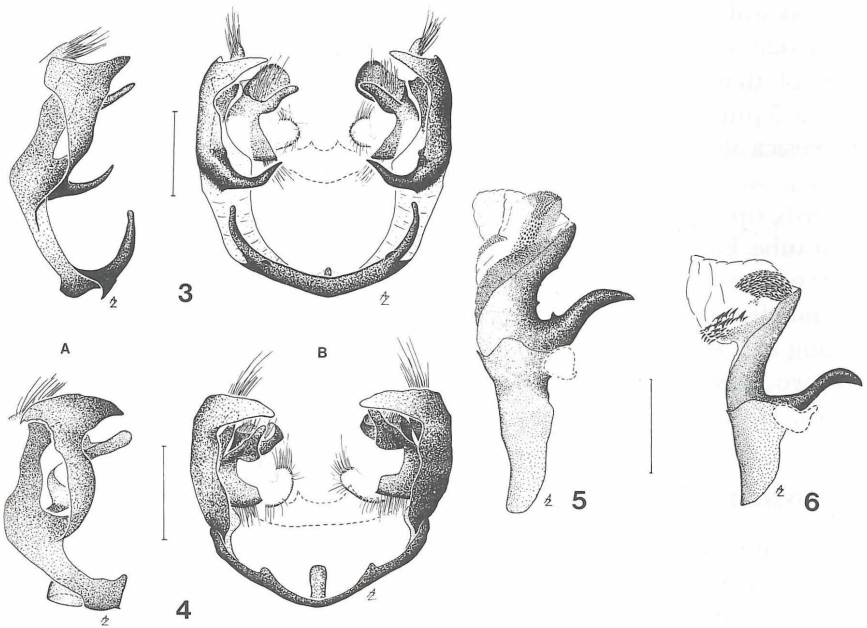
The antenna is slender and has a pointed tip.

The male genitalia<sup>2</sup> (Figs. 3, 5) show the typical complex structure of the genus: tegumen missing (socii present), vinculum dorsolateral forming the cubile and often extending ventrally into two processes. The cubile consists of a broad, inwardly bent and at the base twisted arm with an apical process, covering a smaller straight arm. The abdominal membrane inserts along the basal edge of the broad cubile arm and along the vinculum. At the ventral centre of the vinculum, a sclerotized pocket stretches

<sup>2</sup> Nomenclature of genitalia after Klores (1970).

cephalad, which might be a derivate of the saccus. The valvae form complex structures, consisting of a plate with setae, a process covered with microsetae, a weaker sclerotized field with setae at the ventral edge and next to it a thin, sclerotized, lunate band with setae. The aedeagus has a central ventral spur and a vesica with sclerotized fields and cornuti.

In *A. sandrae*, a huge, slightly twisted and curved spine at the base of the cubile is most characteristic, pointing towards the tip of the abdomen. The two ventral processes of the vinculum are very long, point dorsad and are hollow, consisting of a double wall instead of being the extension of a single wall. The caudal edge of the broad cubile arm is rather straight than rounded and the apical cubile process points dorsocaudad. The valvae have a flattened side, facing ventrally. The juxta is fused with the



Figs. 3a, 3b: *Arguda sandrae* n. sp., holotype, Palawan, "Lasi00004"; a) genitalia, lateral view; b) genitalia, "ventral" view. Figs. 4a, 4b: *Arguda rectilinea* HAMPSON, 1892, Palawan, "Lasi-00002"; a) genitalia, lateral view, b) genitalia, "ventral" view. Aedeagus removed, position of juxta hatched. Scale 1 mm.

Fig. 5: *Arguda sandrae* n. sp., holotype, Palawan, "Lasi00004"; aedeagus lateral view, left side. Fig. 6: *Arguda rectilinea* HAMPSON, 1892, Palawan, "Lasi00002"; aedeagus lateral view, left side. Position of juxta hatched. Scale 1 mm.

aedeagus and only connected with the ventral end of the sclerotized lunate band, not with the cubile.

The aedeagus has a massive, sinuous ventral spine, which extends parallel to the apical edge of the aedeagus. The spine has a thorn-like tip after being apically wider than high (dorsal view: apex shaped like a leaf). At the base of the spine's distal edge and opposite to it at the aedeagus' ventral edge is a tooth-shaped process. It is very characteristic that the ventral half of the aedeagus from the ventral spine onwards to its apex is very narrow, forming a ridge not wider than the spine itself.

The vesica is asymmetric and has two membraneous short lateral tubes, the right one being more distinct than the left one. Along the left apical edge of the aedeagus, the vesica has a band of dots and scale-like sclerotizations. A band of tiny spines (cornuti) begins at the middle of that scale band as scales and runs across the left tube, forming spines at the tip and inner side of the tube, all spines pointing away from the tube. The ventral edge of that spine band consists of sclerotized dots and a single seta (about 5 µm in diameter) is located in its lower half. At the right side of the vesica along the apical edge of the aedeagus is the same kind of scale band as on the left side. A band of cornuti (same size as left side, pointing towards tip of right tube) stretches from dorsal towards the tip of the right tube, but does not reach it. There is no seta on the right side. At the right half of the dorsal side of the vesica, a short band of very tiny cornuti extends from above the aedeagus edge towards the centre of the vesica, ending in a field of very tiny sclerotized dots, which reaches the edge of the two lateral spine bands and is more dense at the right half of the vesica. The cornuti point towards the centre of the vesica.

## Discussion

The habitus of *A. sandrae* n. sp. resembles most closely *Arguda dodongi* and also *A. rectilinea* (see Figs. 2, 4, 6). *A. sandrae* occurs together with *A. rectilinea* and *A. rosemariae* in Palawan, but as *A. rectilinea* is the only similar species occurring in Palawan, this is mainly compared.

In its habitus, *A. sandrae* is practically identical with *Arguda dodongi* known from various Philippine islands (not from Palawan). The only vague differences seem to be in the pointed tip of the forewing (as opposed to slightly rounded) and in the wider angle between termen and inner margin of the forewing in *A. sandrae*, which might not be significant.

*A. sandrae* can easily be distinguished from *A. rosemariae* by its distinct dark lines on the forewing (opposed to obscure lines).

*A. sandrae* differs from *A. rectilinea* from Palawan in being darker and lacking the pale line parallel to the dark medial lines on the forewing. The colour on both sides of the dark submarginal line is the same, while in *A. rectilinea* the proximal area is darker than the distal one and no separate dark submarginal line is visible. In *A. sandrae*, the tip of the forewing is pointed and the termen is concave, while in *A. rectilinea* the tip is broader and the termen is straight. The line on the hindwing is weaker in *A. rectilinea*. The antenna of *A. sandrae* is longer, more slender and has a pointed tip, opposed to the rounded tip in *A. rectilinea*.

Most of the genitalic characters of *A. sandrae* stated in the description above are most readily recognized, if the genitalia are examined in alcohol and not slide-mounted. However, the following differences are always obvious and reliable: The unique, huge spine at the base of the cubile distinguishes *A. sandrae* clearly from all *Arguda* spp. mentioned in the introduction. The direction and angle of the apical process of the cubile seem to be rather constant in *Arguda* and is different in *A. sandrae* from *A. rectilinea* (Figs. 4a, 4b), where it points towards the centre of the genitalia. The ventral process of the vinculum consist of two walls, while in *A. rectilinea* it is a simple extension of the vinculum. Also, this process is definitely longer in *A. sandrae* than in all other *Arguda* spp. mentioned, but the length and angle varies in *Arguda* and therefore most likely may vary in *A. sandrae*, too; the holotype might be an extreme specimen. The aedeagus of *A. rectilinea* (Fig. 6) has no teeth, the ventral edge is very broad, and the ventral spine diverges from the apical edge of the aedeagus. The vesica of *A. rectilinea* has three bands of very large cornuti, the left lateral one shaped like a half egg (spines point towards ventral edge of aedeagus), the right lateral one like a band and the dorsal band (with the largest cornuti) stretches parallel to the apical edge of the aedeagus on the left side; there are no setae present at the vesica. The whole genitalia armature of *A. sandrae* is about 10% larger than and not as stout as in *A. rectilinea*.

## Etymology

The species is dedicated to my girlfriend Sandra VERDEPRADO, who patiently accompanied me on my field trips in Palawan.

## Acknowledgement

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