

A NEW SPECIES OF *SYNTERATA* FROM THE TROBRIAND ISLANDS (LEPIDOPTERA: SATURNIIDAE)

RICHARD S. PEIGLER

Department of Zoology, Denver Museum of Natural History
2001 Colorado Blvd., Denver, CO 80205-5798, USA

ABSTRACT— A new species of *Syntherata* is described and figured. It is a large species, known only from the tiny Trobriand Islands off the eastern end of New Guinea. Information on ecology, hostplants, taxonomy, and zoogeography of the genus is presented.

KEY WORDS: *Actias*, Anacardiaceae, *Antheraea*, *Arhopala*, *Attacus*, *Aurivillius*, Australia, biogeography, camouflage, Casuarinaceae, Ceram, Combretaceae, *Copaxa*, Danainae, *Eacles*, Euphorbiaceae, *Euploea*, Indonesia, island biogeography, hostplants, *Lemaireia*, *Loepa*, Lycaenidae, Myrsinaceae, Myrtaceae, New Britain, New Guinea, Nymphalidae, Oleaceae, Oriental, Papuan, Podocarpaceae, Proteaceae, Rhizophoraceae, Rubiaceae, Rutaceae, *Saturnia*, Southeast Asia, *Syntherata naessigi* n. sp., *Tagoropsis*.

The genus *Syntherata* Maassen is a Papuan group of large saturniid moths that generally have yellow wings marked with brown and purple. The transparent eyespots are present, one in the center of each wing, but very reduced. A summary of what was known about the genus was given by Seitz (1926:508-509), and Bouvier (1936:188) provided a key to the named taxa, but no modern revisionary work has been done with the group. Nässig and Holloway (1988) removed those species occurring on mainland Southeast Asia and the Greater Sunda Islands (Indonesia) from *Syntherata*, after demonstrating that they were not congeneric with the Papuan group. The type-species is *Syntherata weymeri* Maassen by monotypy (Fletcher and Nye, 1982), now considered to be a synonym of *S. janetta* (White), which occurs widely on New Guinea and in Australia down to central New South Wales (Common, 1990).

This paper describes and names a new species of *Syntherata* from specimens from the Trobriand Islands that have been in my collection since they were sent to me in 1975 directly by their collector, the late Raymond B. Straatman (see Pasternak, 1987). Study of type material and original descriptions of other names, genitalia, and comparison to specimens of other species have enabled me to determine that this Trobriand taxon is an unnamed species. For comparison, I have at hand a series of 29 specimens (probably representing at least 3 species, including *S. janetta*) from several localities all over the island of New Guinea, Ceram (Indonesia), and *S. godeffroyi* Butler from New Britain (formerly New Pomerania). The latter is larger (male forewing length 74 mm) than any specimens from Australia or New Guinea, but specimens of the new species from the Trobriand Islands are almost as large. The smallest *Syntherata* I have seen are two males of an unidentified species from Wau, Morobe District, New Guinea, having forewing lengths of 40-44mm. This trend in wingspan represents the phenomenon called island gigantism, i.e. the largest specimens tend to come from the smallest islands and

the smallest specimens from large islands or mainland localities, in general. Peigler (1989) noted the same for saturniids of the genus *Attacus*.

In recognition of his past and continuing contributions to the knowledge of the Saturniidae of the Palearctic and Indo-Australian regions, I am pleased to dedicate this new species to my German friend and colleague Wolfgang A. Nässig.

Syntherata naessigi Peigler, new sp.

DIAGNOSIS— The combination of antemedian and postmedian lines converging widely apart on the anal margin of the forewing, broken submarginal lines, large size, and dense velvety scaling should distinguish this species from all others in the genus.

DESCRIPTION— Forewing length: 63-75mm.

MALE: Head dark yellow; labial palps prominent; antennae stramineous, 15mm long, 5mm wide; thorax, legs, and abdomen dark yellow; prothorax with whitish collar, extending onto costal margin; length of forewing 63-75mm; ground color shades of purplish brown on dark yellow; antemedian area yellow with purplish brown shading, a tiny purplish dash visible on vein M+Cu; antemedian line very wavy, resembling moose antlers, drawn in distally below vein M₁; median area purplish brown; eyespot 2-3 mm in diameter, with transparent center; postmedian line scalloped, with yellow extending distally on each vein; postmedian area dark yellow, with dark gray patch in apex, broken brown dashes, one per cell (=broken submarginal line); hindwing 44-51 mm long, with less purplish brown than in forewing; median area very large, solid yellow; antemedian line undulating, pinkish toward subcostal margin, darker toward anal margin; median area solid yellow or shaded with purplish brown; eyespot tiny, 1-2mm in diameter, no transparent component; antemedian line sharply undulating, purplish brown proximally, yellow distally; postmedian area yellow with shading and dashes as in forewing; underside with all markings less pronounced, solidly brown in median area, antemedian line obsolete. Genitalia with



Figs. 1-6. *Syntherata naessigi* Peigler: 1. Holotype ♂, upperside; 2. Holotype, underside; 3. Paratype ♂, yellow form; 4. Paratype ♂, dark form; 5. Allotype ♀. Fig. 6. *Syntherata janetta* (White): ♂, Wewak, New Guinea.



Fig. 7. *Syntherata godeffroyi* Butler: Syntype ♂, New Britain.

uncus wide, pyriform, concave, bifid; aedeagus wide, spoon-shaped, valve with a zone of minute teeth below the apical point.

FEMALE: Antennae 17-18mm long, 1.5mm wide. Length of forewing 75-83mm. Wings more rounded than in males, pattern and coloration same as in males, but overall ground color orangish brown; eyespots much larger, 4-6mm in diameter in forewing, 3-4mm in hindwing; postmedian line much broader with purplish components.

DISTRIBUTION.— The new species is known only from the Trobriand Islands, off the eastern end of New Guinea, also called the Kiriwina Islands. There are four main islands in the Trobriand group, and several smaller ones. The main island is very flat, less than 30m in elevation at its highest point, 48km long, and largely covered by swamps. Straatman did not indicate on which island(s) he collected these specimens, so I am unable to specify the type-locality beyond simply "Trobriand Islands".

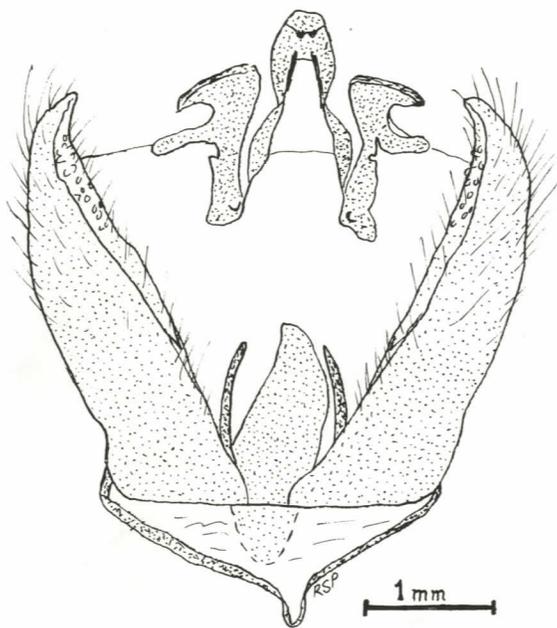


Fig. 8. *Syntherata naessigi*: ♂ genitalia. Paratype.

TYPES: *Holotype* ♂ (Figs. 1-2): Trobriand Islands, emerged from wild-collected cocoon 26 Jun 1972, collected by R. B. Straatman. *Allotype* ♀ (Fig. 5): Same data as holotype, but emerged 12 Jul 1972. The holotype and allotype are deposited in the Denver Museum of Natural History.

Paratypes (2♂, 2♀): Same data as holotype, 2♂, 1♀ (Figs. 3-4) emerged 19 Jun 1972, 1♀ emerged 20 Jun 1972. The paratypes are in the collection of W. A. Nässig (Frankfurt-am-Main, Germany).

REMARKS.— Although all species in the genus appear to be variable in pattern and coloration, the new species differs from all other material in the following ways. In the forewing, the antemedian and postmedian lines contact the anal margin much further apart. Interestingly, this character separates females of the two European species *Saturnia spini* (Denis & Schiffmüller) and *S. pavonia* (Linnaeus). The broken submarginal line is only shared by the tiny males from Wau mentioned above, but in no other material seen from New Guinea, New Britain, or Ceram. In *S. godeffroyi*, both the syntype (Fig. 7) (Butler, 1882:227) and a male in the Denver Museum of Natural History (*ex coll.* W. Nässig), these lines converge closely, and the purplish dash at the base of the antemedian area is significant, but not entirely diagnostic as believed by Weymer (1898); it occurs faintly in some *S. naessigi* and a male sent to me by R. Straatman from the Owen Stanley Mountain Range, New Guinea. The shape of the valve and uncus in the male genitalia of *S. naessigi* differs from all others examined (Ceram; New Britain; three from Owen Stanley Range, New Guinea), and the teeth on the inner edge of the valve are possibly diagnostic. The new species has a denser velvety covering of scales on the wings compared to all other material I have seen. *Syntherata dahli* Weymer (1898) *syn. n.*, described from a female from New Britain, is a synonym of *S. godeffroyi* Butler, based on the locality and description; W. A. Nässig concurs (*pers. comm.*). I cannot determine the taxonomic status of the name *Synthera[ta] brunnea* Eckerlein (1935), described from Wareo, New Guinea, from a single female specimen, but it is probably not a synonym of *S. janetta*. The status of most of these names must await a taxonomic revision of the entire genus.

The key by Bouvier (1936:188) is of no value here. He lumped all proposed names under *S. janetta* including *S. godeffroyi* and his subspecies *S. apicalis*, but cited as a separate species the one (*S. loepoides* Butler) that was transferred to a distantly related genus, *Lemaireia* from southeastern Asia (Nässig and Holloway, 1988).

Species of *Syntherata* are not easily defined by single characters, but instead by unique sets of characters. The complex wing pattern in *Syntherata* is a permutation of every possible combination. Except for the above, each wing pattern character noted to be consistent in the type series of the new species can be found in at least one of the many specimens from several other localities, yet all other populations have specimens that appear to be quite different species. I believe that a generic revision where hundreds of specimens are examined from throughout the range of the genus will result in the description of several new species. The genitalia appear to be as variable as the wing pattern.

BIOLOGICAL DATA FOR *SYNTHERATA*

Very few life-history data have been published on this genus. It is clearly a tropical group, occurring in both coastal and montane ecosystems. Froggatt (1907:259) said that the larva of *S. janetta*, the only Australian species, forms a hard cocoon on the trunks of the she-oak. This is presumably a hostplant, although sometimes saturniids are known to feed on one host and move to another plant species on which to form cocoons. Unfortunately, she-oak is an ambiguous name commonly applied to two unrelated timber trees, *Casuarina* (Casuarinaceae) and *Grevillea* (Proteaceae) (Lawrence, 1951:443). Common (1990) cited 14 more hostplants for *S. janetta*, and gave a color photograph of the mature larva. This larva is lime green, with setae and red scoli superficially resembling many larvae in the genera *Actias* and *Copaxa*. Larvae feed on *Euodia elleryana*, *Geijera salicifolia* (both Rutaceae), *Glochidion ferdinandi*, *Petalostigma quadriloculare* (both Euphorbiaceae), *Aegiceras* (Myrsinaceae), *Ceriops* (Rhizophoraceae), *Terminalia* (Combretaceae), *Timonius rumphii* (Rubiaceae), *Podocarpus spinulosus* (Podocarpaceae), plus non-native cultivated plants including *Citrus* (Rutaceae), olive (*Olea*, Oleaceae), guava (*Psidium guajava*, Myrtaceae), and peppertree (*Schinus molle*, Anacardiaceae). In the highlands of New Guinea, Common also reported that *Eucalyptus deglupta* (Myrtaceae) is a hostplant. Many of these trees are copious producers of resin or have aromatic oils, like leaves of the familiar citrus and eucalypts.

Within the genus, I have only seen the cocoon of *S. janetta* (?) from the Owen Stanley Range in northern New Guinea, of which R. Straatman sent to me three empty ones. They are the size, shape, and density of the familiar Nearctic saturniid *Antheraea polyphemus* (Cramer), viz ovoid, ca. 4cm X 2.5cm, and without a pre-formed exit valve. The silk is dark brown with a gold gloss. There are a few small perforations like are found in cocoons of certain other saturniids (e.g., *Actias maenas* Doubleday, *Saturnia pyretorum* Westwood).

The yellow and purple, or yellow and brown, coloration is a common combination that obviously confers a very effective crypsis. It occurs in Geometridae, Anthelidae, Eupterotidae, and other moth families. Other saturniids that have the same general pattern and coloration occur in America (*Copaxa*, *Eacles*), Africa (*Aurivillius*, *Tagoropsis*), and Asia (*Loepa*, *Lemaireia*, *Actias*). Some of these, particularly *Syntherata* and *Eacles*, have a color polymorphism in populations in which individuals can be almost pure yellow, pure brownish purple, or various degrees of these colors in combination. Such polymorphism is believed to be effective in preventing predators from forming search images. This variation in the amount of yellow and purple is very evident in the small sample of *S. naessigi*.

Zoogeographically, the genus is Papuan, ranging from the Trobriands and New Britain across New Guinea to Ceram in eastern Indonesia and into Australia. Apparently, some butterflies are also endemic to the area containing the Trobriands. Around Milne Bay are the Trobriands to the north, Woodlark Island to the east, and D'Entrecasteaux Islands to the southwest, all sharing certain endemic fauna such as *Arhopala kiriwini* Bethune-Baker (Lycaenidae) and *Euploea batesii trobriandensis* Carpenter

(Nymphalidae: Danainae) (D'Abrera, 1971). Therefore, perhaps *Syntherata naessigi* will also be found on these other islands.

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