

# Three new species of genus *Gonaepa* Walker, 1866 from the Philippines (Lepidoptera: Gelechioidea, Lecithoceridae)

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## Abstract

Three species of genus *Gonaepa* Walker, 1866 belonging to Lecithoceridae Crocanthinae: *G. nagaensis* Park, sp. n., *G. ochrorhytisma* Park, sp. n., and *G. cordata* Park, sp. n., are described from the Philippines. The Crocanthinae comprises more than 80 species which are mostly known from the Australian and Oceanian region, with few exceptions. Images of adults, genitalia, and venation are provided.

KEY WORDS: Lepidoptera, Gelechioidea, Lecithoceridae, new species, Philippines.

## Tres nuevas especies del género *Gonaepa* Walker, 1866 para las Filipinas (Lepidoptera: Gelechioidea, Lecithoceridae)

## Resumen

Se describen tres especies del género *Gonaepa* Walker, 1866 pertenecientes a Lecithoceridae Crocanthinae: *G. nagaensis* Park, sp. n., *G. ochrorhytisma* Park, sp. n. y *G. cordata* Park, sp. n., de Filipinas. Los Crocanthinae comprenden más de 80 especies las cuales son en su mayoría conocidas de las regiones de Australia y Oceanía, con pocas excepciones. Se presentan imágenes de los adultos, genitalia y venación.

PALABRAS CLAVE: Lepidoptera, Gelechioidea, Lecithoceridae, nuevas especies, Filipinas.

## Introduction

The subfamily Crocanthinae was erected by PARK (2015), based on the genus *Crocantes* Meyrick, 1886 and its related genera including *Pacificulla* Park, 2013, *Lamprista* Park, 2013, *Hannara* Park, 2013 and *Gonaepa* Walker, 1866. Moths belonging to this subfamily are defined by the brightly colored forewing with longer antenna than forewing and the hindwing often with similar markings to those of the forewing; the gnathos is absent or remarkably reduced in the male genitalia. They are geographically restricted to the Australian and Oceanian regions, comprising more than 80 species, with few exceptions of only two species reported from the eastern Pacific islands of Indonesia to date.

Genus *Gonaepa* Walker, 1866 was established, based on *G. josianella* Walker, 1866. The genus is poorly known and one of the most infrequently encountered groups, and no attempt had been made to place it in any previously known subfamilies in Lecithoceridae, until the subfamily Crocanthinae was proposed by PARK (2015). MEYRICK (1925) noted that the genus is correlated with *Crocantes*, but the antenna is not longer than the forewing. The male genitalia of the types are not known, but DIAKONOFF (1954) illustrated first the male genitalia of *G. dysthyma* Diakonoff, 1954 for the genus. Detailed diagnosis of the genital characters of the genus is not well defined. Even though the three new species described in this study have longer antenna, somewhat differing from that of the type species, the author

places them as member of the genus, due to the combination of characters for the genus with colorful wings and the male genitalia with gnathos reduced and blunt without apical process.

A total of six species belonging to the genus, which all they are only known in Papua of Indonesia and Papua New Guinea, have been reported (PARK, 2015), since the type species, *G. josianella* Walker, 1866 was described.

## Material and methods

Materials for this study are based on specimens loaned from the Museum für Naturkunde, Humboldt-Universität, Berlin (MfN), collected by W. Mey and his colleagues in Luzon, Samar and Leyte in 1997 and 2001. The colour standard for the description of adults followed KOENERUP & WANSCHER (1978). The type specimens are deposited in the above museum (MfN).

## Systematic accounts

Genus *Gonaepa* Walker, 1866

*Gonaepa* Walker, 1866: 1840. Type species: *G. josianella* Walker, 1866: 1840.

Type locality: New Guinea (The detailed locality is unknown).

### *Gonaepa ochrorhytisma* Park, sp. n. (Figs. 1, 2, 3, 4, 6a-b, 5)

Holotype: ♂, Philippines, Samar, Cocord, Cadac-an, 22~24-IV-1997, 150 m, leg. Mey & Speidel, gen. slide no. 6550/Park. Paratypes: 1 ♂, Philippines, Leyte, Lake Dano, 650 m, 14~17-IV-1997, leg. Mey & Speidel. 1 ♂, 1 ♀, same locality as the holotype, slide no. CIS-5025, 6548 (♀).

Diagnosis: The new species is distinguished from the previously known species by the color pattern of wings and the markings, and also differ from the following two new species by the hindwing which does not have the palm-shaped, large, light yellow patch, and a single, large signum in the female genitalia.

Description: Male and female. Adult (Fig. 1). Wingspan 13.0-15.0 mm. Head with light yellow, shiny appressed scales anteriorly and dorsally, with some brown, shiny scales posteriorly. Basal segment of antenna elongate, yellowish brown dorsally, yellowish white ventrally; flagellum yellowish brown with darker annulations in basal third, then yellowish white with obscure annulations. Second segment of labial palpus (Fig. 3) thickened, upturned, more than twice the diameter of compound eye, orange gray, darker toward apex; 3<sup>rd</sup> segment yellowish brown, slender, shorter than second segment, with acute apex. Tegula covered with yellowish brown scales anteriorly. Thorax yellowish brown dorsally. Mid tibia pale yellow, with yellowish brown band apically; tarsi pale yellow. Hind tibia with short, setae above; tarsi pale yellow. Forewing densely covered with yellowish brown scales throughout, with large, more or less trapezoidal, light yellow patch near end of cell, and broadly occupied with light yellow zone beyond subterminal line; subterminal line gently concave inwardly; costa slightly arched near base then nearly straight to before apex, three large yellowish brown spots along termen, first one ovate, second one trapezoidal, third one smallest, subtriangular; venation (Fig. 2) with R<sub>1</sub> arising from near middle; R<sub>2</sub> arising from near upper corner of cell; R<sub>3</sub> and R<sub>4</sub> stalked before middle; R<sub>4</sub> to costa; R<sub>5</sub> absent; M<sub>2</sub> absent; M<sub>3</sub> stalked with CuA<sub>1</sub>+CuA<sub>2</sub> at basal 1/5; CuA<sub>1</sub> stalked with CuA<sub>2</sub> at basal 1/8; cell closed; apex obtuse; termen oblique, not sinuate; fringe grayish yellow in basal half and yellowish brown beyond. Hindwing yellowish brown, pale yellow streak extended from base to before middle, costa nearly straight to apex; apex sharply produced; fringe concolorous, with narrow pale grayish yellow basal line; venation with R<sub>s</sub> and M<sub>1</sub> stalked near 3/5 cross of wing; M<sub>2</sub> weakly developed, arising from about 2/5 cross of wing; M<sub>3</sub> and CuA<sub>1</sub> stalked beyond middle; cell short, less than half of wing.

Male genitalia (Figs. 4, 4a): Uncus with heavily sclerotized apical part, acute apically. Gnathos broad, narrowed apically, setose, slightly exceeds apex of uncus. Tegumen with broad lateral wall plate beyond half. Valva elongate, longer than tegumen+uncus, dense setose; costa gradually expanded to 2/5, then slightly concave; outer margin rounded. Juxta with vertical ridge centrally, with long setae at upper

lateral corner; caudal margin slightly concave. Aedeagus stout, about 2/3 length of valva, uniquely concave beyond 3/4 on dorsal margin, forming a loop. Abdominal tergites with spinous zones dorsally.

Female genitalia (Fig. 4c): Abdominal tergites with spinous zones; abdominal sternite VII deeply emarginated medially, densely setose. Apophyses anteriores about 2/3 length of apophyses posteriores. Ostium deeply emarginated anteriorly, heart-shaped, opened apically. Ductus bursae narrow in distal third, then broadened to anterior 1/4, about twice length of corpus bursae; ductus seminalis arising from about distal 1/3 of ductus bursae. Corpus bursae ovate, with a transversally elongate, heavily sclerotized, bar-shaped signum, as wide as 2/3 of widest part of corpus bursae.

Distribution: Philippines (Leyte, Samar)

Etymology: The species name is derived from Greek, *οξηρος* (*ochros* = pale yellow) and *-ρηψισμα* (*rhytisma* = patch), referring to the yellowish patch on the forewing

***Gonaepa nagaensis* Park, sp. n.** (Figs. 6, 7, 7a)

Holotype: 1 ♀, Philippines, Luzon, Naga, Mt. Isalog, 22~23-III-2000, leg. Mey & Ebert, gen. slide no. 6546/Park. Paratypes, 1 ♀, same data as the holotype; 1 ♀, Philippines, Luzon, Mt. Makiling, 400 m, 14~16-III-2000, leg. W. Mey & K. Ebert.

Diagnosis: This new species is superficially similar to the preceding new species, with similar light yellow median patch on the forewing, but can be distinguished by the following characters: the light yellow median patch divided into three areas and the yellowish apical zone with three blackish conical spots along termen on the forewing; hindwing with broadly developed, palm-shaped light yellow median zone and a large, dark brown spot in the light yellow apical zone apically.

Description: Female. Adult (Fig. 6). Wingspan 11.0-13.0 mm. Head with light orange, shiny appressed scales dorsally. Basal segment of antenna elongate, yellowish brown dorsally, light orange ventrally; flagellum light orange with yellowish brown annulations. Second segment of labial palpus thickened, upturned, about twice diameter of compound eye, light orange in basal half, then yellowish orange beyond; 3<sup>rd</sup> segment slender, yellowish brown, strongly upturned, longer than 2<sup>nd</sup> segment, with acute apex. Tegula covered with yellowish brown scales. Thorax yellowish brown dorsally. Mid tibia right orange, with yellowish brown band preapically, apex light orange. Hind tibia with dense setae dorsally and ventrally, with yellowish band apically; tarsi light orange throughout. Forewing densely covered with yellowish brown scales throughout; median light orange patch divided into three areas, upper one smallest and bottom one largest; apical light orange zone beyond subterminal line occupied by three large, conic spots along termen: first one conic, largest, and bottom one smallest; costa slightly arched before 3/5 then slightly concave; fringe light orange in basal half from subterminal line on costa to tornus; venation similar to that of the preceding species. Hindwing with large, palm-like light orange median zone occupying about 1/4 and apical light orange zone and large dark brown apical spot; venation also similar to that of the preceding species.

Female genitalia (Fig. 7): Abdominal tergites with spinous zones, with pocket-like membranous sacs in 5<sup>th</sup> segment laterally (Fig. 7a); abdominal sternite VII deeply emarginated medially, with dense setae. Apophyses anteriores slightly shorter than half of apophyses posteriores. Ostium heart-shaped. Ductus bursae broadened medially, as long as corpus bursae; ductus seminalis arising from about distal 1/5 of ductus bursae. Corpus bursae ovate, with a pair of signum transversally elongated; distal one larger, half-moon-shaped, as wide as 1/3 of widest part of corpus bursae, smaller one in middle with strong central ridge, about 1/2 width of distal one.

Distribution: Philippines (Luzon)

Etymology: The species name is derived from the collecting locality.

***Gonaepa cordata* Park, sp. n.** (Figs. 8, 9, 9a)

Holotype: ♀, Philippines, Leyte, Vaybay, Visca 13-IV-1997, leg. Mey & Speidel, gen. slide no. 6547/Park. Paratype. 1 ♀, same locality and date as the holotype.

Diagnosis: The new species is hardly distinguishable from *G. nagaensis* sp. nov. in the forewing

pattern, except only for the smaller size of the dark brown spots in apical light orange zone, but it can be easily distinguished by the female genital characters: ductus bursae narrow, about twice larger than corpus bursae, coiled twice medially and ductus seminalis arising from near middle of ductus bursae, signum in middle of corpus bursae about 2/3 the width of distal one, whereas in *G. nagaensis*, ductus bursae is broad medially, less than 1.5 times the corpus bursae, not coiled, median signum about 1/2 width of distal one.

Description: Female. Adult (Fig. 8). Wingspan 12.0 mm. Superficial characters, including head parts and wing markings in both wings are very similar to the preceding species, *G. nagaensis* Park, sp. n. Forewing with smaller, rounded dark brown spots in the light yellow apical zone, whereas it shows more or less elongated spots in *G. nagaensis* and the hindwing with similar markings to those of the latter.

Female genitalia (Fig. 9): Abdominal tergites with spinous zones, with pocket-like membranous sacs in 5<sup>th</sup> segment laterally (Fig. 9a); abdominal sternite VII deeply emarginated medially. Apophyses anteriores much shorter than half of apophyses posteriores. Ostium heart-shaped. Ductus bursae narrow, wrinkled, coiled twice medially, about twice length of corpus bursae; ductus seminalis arising from near middle of ductus bursae. Corpus bursae ovate, with a pair of signa; distal one large, transversally elongate, narrowed toward both ends, nearly as wide as corpus bursae; median one crescent shaped, with dense short spines on surface, as wide as 2/3 width of distal one.

Distribution: Philippines (Leyte)

Etymology: The species name is derived from Latin, *cordis* (= heart), referring to the heart-shaped ostium in the female genitalia.

### Acknowledgements

My thanks to Dr. W. Mey, the Museum für Naturkunde, Humboldt-Universität, Berlin, Germany (MfN), for the loan of specimens collected in the Philippines for this study. I am also grateful to Mr. Solmoon Lee, Division of Life Sciences, Incheon National University, Incheon, Korea for his assistance in preparing plates of figures.

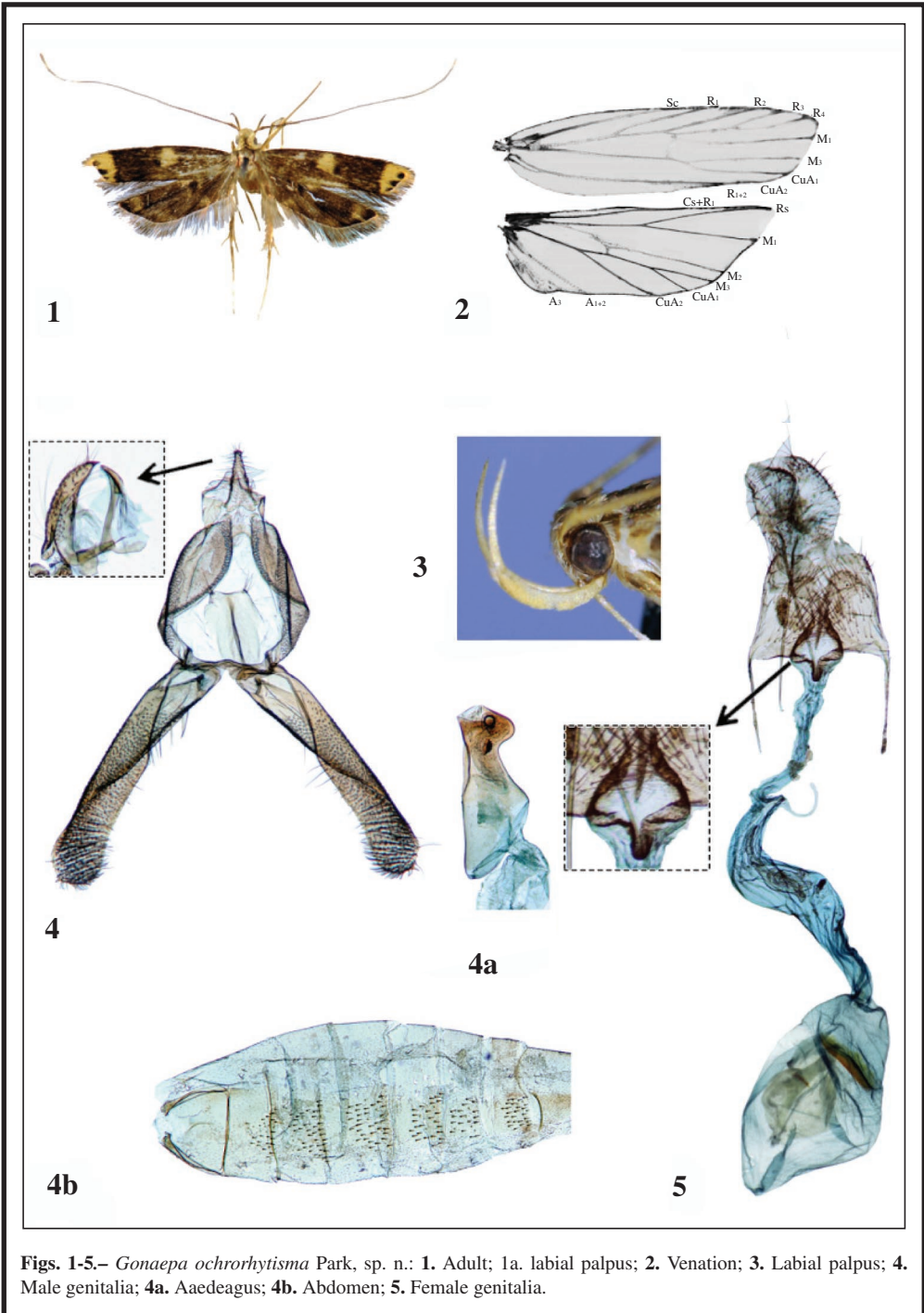
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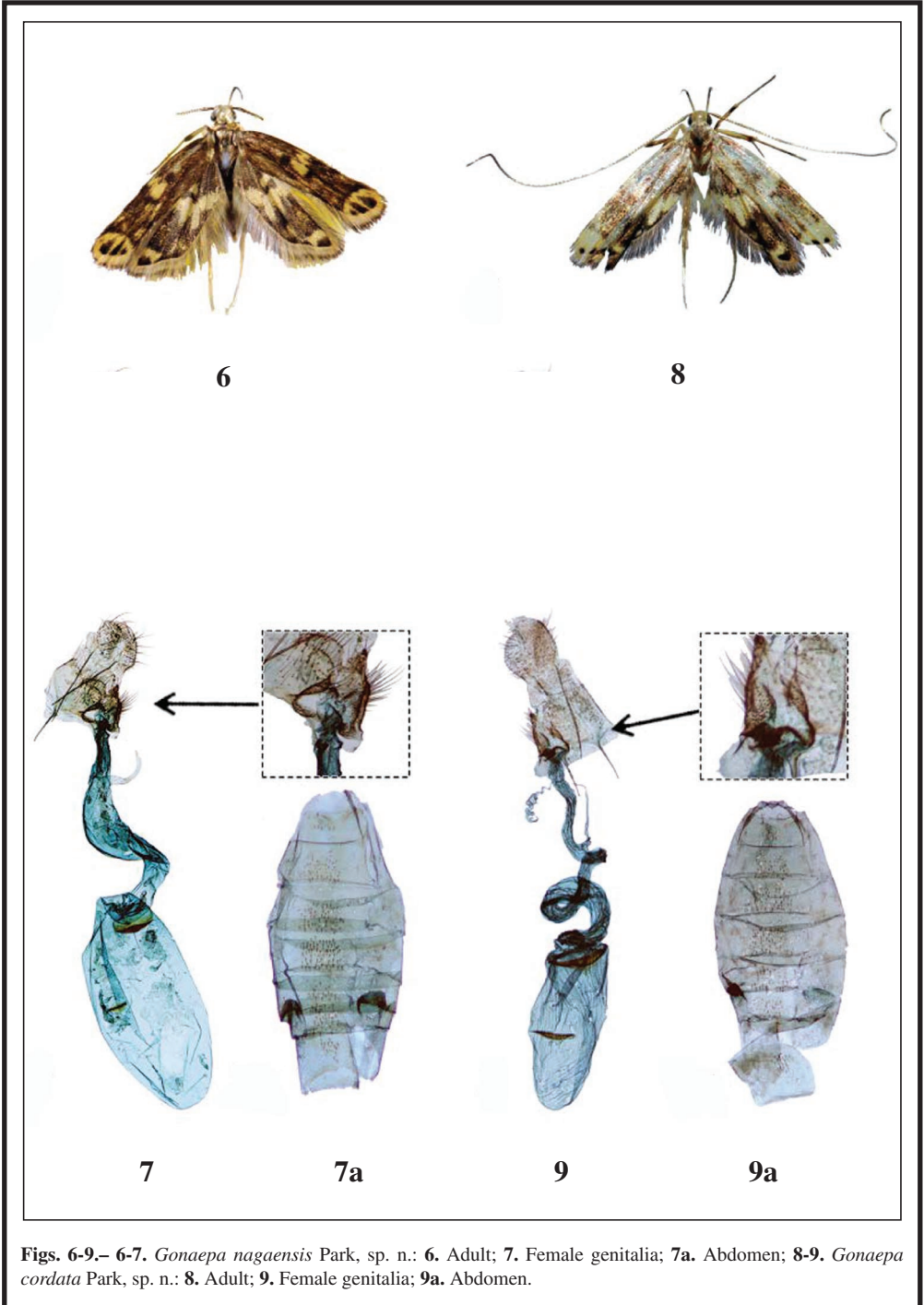
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(Recibido para publicación / Received for publication 15-I-2016)  
(Revisado y aceptado / Revised and accepted 1-IV-2016)  
(Publicado / Published 30-XII-2016)



**Figs. 1-5.**– *Gonaepa ochrorhytisma* Park, sp. n.: **1.** Adult; **1a.** labial palpus; **2.** Venation; **3.** Labial palpus; **4.** Male genitalia; **4a.** Aedeagus; **4b.** Abdomen; **5.** Female genitalia.



**Figs. 6-9.**— 6-7. *Gonaepa nagaensis* Park, sp. n.: 6. Adult; 7. Female genitalia; 7a. Abdomen; 8-9. *Gonaepa cordata* Park, sp. n.: 8. Adult; 9. Female genitalia; 9a. Abdomen.