ON COQUILLETTIDIA CRASSIPES, A NEW RECORD FOR MACAU,
WITH A KEY TO ADULTS OF THE SUBGENERA AND SPECIES
GROUPS OF THE GENUS

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ABSTRACT. Coquillettidia (Coquillettidia) crassipes is recorded for the 1st time in the Territory of Macau,
southern China. The systematics of the genus is examined, new species groups are proposed, and a key to
subgenera and species groups of Coquillettidia is provided.

KEY WORDS Coquillettidia crassipes, new record, Macau, systematics

INTRODUCTION

Several Coquillettidia (Coquillettidia) crassipes
(Van der Wulp) males and females were captured
in the Territory of Macau, southern China, during
September and October 1997. This is the 1st record
of this genus and species from the territory, which
was not listed in the last revision of the local mos-
quito fauna (Ramos et al. 1997), although the spe-
cies was already known from Hong Kong (Chau
1982).

In the present account, we follow the taxonomic
treatment of the tribe Mansoniini adopted by
Knight and Stone (1977), recognizing the generic
status of Coquillettidia Dyar, with subgenera Aus-
tromansonia Belkin, Coquillettidia s.s., and Rhyn-
chotaenia Brthes. New species groups within the
subgenus Coquillettidia are proposed and a key to
all subgenera and species groups of the genus is
provided. The morphologic terminology used fol-
lows that of Harbach and Knight (1980).

COQUILLETTIDIA (COQUILLETTIDIA)
CRASSIPES
(VAN DER WULP, 1881)

Collection data. Municipal Sanitary Services,
Coloane Island: 7 females, September 18, 1997;
Parque Siac Pai Van, Coloane Island: 67 females
and 9 males, September 18–24, 1997; Taoist Cem-
etry, Taipa Island: 1 male, September 18, 1997.
All specimens were captured by light trap with
CO2, except 1 male and 1 female landing on human
bait.

Distribution. Coquillettidia crassipes is known
from Pakistan, India, Sri Lanka, Burma, Thailand,
southern China, including Hong Kong and Macau,
Malaysia, Philippines, Indonesia, Ryukyu-Retto Is-
lands, Mariana Islands, New Guinea, Australia, and
Bismark Archipelago. Figure 1 shows the approx-
imate distribution of the species.

Notes on morphology. The following notes are
intended to complete the short known descriptions,
namely those of Barraud (1934) and Delfinado
(1966), because more precise and complete descrip-
tions of different local Cq. crassipes populations
may contribute to clarifying the taxonomy of the vari-
ous forms reported as "crassipes" from numerous
localities in the Oriental, Indomalayan, and Austral-
ian regions (Belkin 1962).

FEMALE. Head: With 6 well-developed ocular
setae on each side; vertex with narrow, yellow up-
right forked scales behind and yellow decumbent
scales anteriorly. Ocular line with broad whitish
scales. Antenna, maxillary palpus, clypeus, and
proboscis brown with violet sheen. Pedicel yellow,
with a few light brown scales. Palpus 0.2–0.25
length of proboscis. Thorax: Scutum yellowish,
with sparse covering of narrow golden scales;
acrostical, dorsocentral, and dorsolateral setae
brownish; antepronotum with a row of well-devel-
oped setae on the upper part; postpronotum with
about 6 well-developed setae curved over anterior
spiracle. Mesepimeron with a strong seta at about
0.6 of mesomeron. No postspiracular setae. A patch
of silvery flat scales on upper part of mesepimeron,
another on mesokatepisternum near mesopleural
suture. Without scales on the prealar knob. Integ-
ument of pleura yellowish brown, with some well-
defined darker areas. Scutellum without scales, with
the usual 3 groups of strong setae. Thorax: Scales
narrow and dark, with pronounced purple reflec-
tions, without setae at base of subcosta ventrally.
Alula and calypter fringed. Legs: Femora yellowish
at base, purplish on apical 0.5–0.6; hindfemur with
a median stripe of silvery scales at middle of outer
surface. Tibiae long and slender, with dark, smooth
sculpting. Tarsi all dark, with purple sheen. Abdomen:
Terga I–IV dark, mainly covered with purple scales,
with basolateral yellow patches; terga V–VIII
Fig. 1. *Coquillettidia (Coquillettidia) crassipes*. Approximate area of distribution.

mainly yellow scaled. Sternae II-VI yellow scaled at bases, VII and VIII mainly purple.

MALE. General morphology as in female. Maxillary palpus: Maxillary palpus longer than proboscis by slightly less than length of last palpmere, which is about 0.5 length of penultimate palpmere and turned downward, both moderately setose. Genitalia (Fig. 2): Tergum VIII rounded distally, with many setae; sternum VIII with a distinct median lobe at the posterior margin bearing about 12 strong appressed setae; tergum IX with wide interlobar space, lobes prominent, with a few weak setae. Gonocoxite with numerous long, strong setae on outer aspect and a dense setose area of fine, moderately long setae on inner aspect at apex. Basal mesal lobe with a long, strongly sclerotized, blunt-tipped rodlke basal mesal seta reaching near apex of gonocoxite. Gonostylus rather narrow basally, strongly curved, moderately enlarged distally, with a spiniform seta on inner margin, at about 0.33, and 2 moderatley long, slender setae near base of gonostylar claw. Gonostylar claw short, pointed, well sclerotized. Aedeagus as figured, strongly sclerotized, rounded distally, constricted at about 0.33. Paramere and basal piece well developed. Paraproct with 2 strong teeth and a few small denticles at apex, with 5 or 6 cercal setae.

**Systematics.** The genus *Coquillettidia* was treated by Edwards (1932) as a subgenus of *Mansonina* Blanchard, a decision adopted by most subsequent authors. Belkin (1962) recognized 2 strikingly different sections within the tribe *Mansoniini* (*Mansonia* and *Mansonioides*, on one side, and *Coquillettidia* and *Rhynchotaenia*, on the other), considering that “it may be advisable to recognize a separate genus for each.” In 1963, Ronderos and Bachmann elevated *Coquillettidia* to generic status. This was the taxonomic arrangement adopted in the catalog of Knight and Stone (1977), with 2 genera within the tribe *Mansoniini*: *Mansonia*, with subgenera *Mansonia* s.s. and *Mansonioides* Theobald, and *Coquillettidia*, with *Coquillettidia* s.s., *Rhynchotaenia* Brèthes, and *Austromansonia*, a monotypic subgenus described by Belkin (1968) for his
Tenuipalpis Group. This also represents our view, although some earlier authors disagree with it, namely Mattingly (1971), Chau (1982), Danilov (1983), and Service (1990).

The subgenus Coquillettidia differs markedly from the other 2 subgenera and is, in turn, highly heterogenous, as shown by the recognition of 2 species groups of Coquillettidia s.s. by Belkin (1962) in the South Pacific: the endemic Australasian Ira- cunda Group and the Oriental and Australasian Crassipes Group. As defined by Belkin, the Crassipes Group may be characterized, in the adult stage, as follows: upright forked scales on vertex long and narrow; absence of postspiracular scales; mesokatepisternal scales largely restricted to lower area; presence of mesepimeral scales; wing with plume scales narrow, without a setal patch at base of subcosta ventrally (sometimes with 1 or 2 small setae); hindtibia long and slender, with smooth scaling, as usual; maxillary palpus of male slightly longer than proboscis and moderately curved downward, 5th palpomere shorter than 4th.

Coquillettidia specimens from Macau exhibit all the characters of the Crassipes Group. Within the group, the shape of the gonostylus and other male genitalic characters (Fig. 2) permitted a definite identification of the specimens as Cq. crassipes.

Another contribution to the systematics of subgenus Coquillettidia was given by Marks (1974), who distinguished 2 species groups in the Oriental Region, both lacking postspiracular and subcostal patch of setae but differing in pleural scaling and length and scaling of hindtibia. Six of these species were included by her in the Crassipes Group of Belkin. Marks (1974) formed a new group, the Ochracea Group, with other 4 species, which is mainly characterized by the absence of mesepimeral scales and the rather short and stout hindtibia with roughened scaling.

In Africa south of the Sahara, as pointed out by Marks (1974), Cq. metallicca is also strikingly different from any other species of Coquillettidia in the region, having dark legs and wings, and lacking setae at the base of the subcosta ventrally (Edwards 1941, Gillett 1946, Ramos and Ribeiro 1975, Danilov 1983, Service 1990, Ribeiro and Ramos 1995). Thus, it seems advisable to consider this species as belonging to a new monotypical Metallicca Group, endemic to the Afrotropical Region. As to the remaining Afrotropical species, they seem to belong to a widely distributed group apparently also including the Nearctic Cq. perturbans (Walker), and the Palaearctic Cq. richiardii (Ficalbi) and Cq. buxtoni (Edwards), here named the Pertubans Group, after the 1st described species of the group.

According to the preceding notes, our view is that the following 5 species groups are to be recognized within the subgenus Coquillettidia: the Crassipes Group of Belkin, Oriental and Australasian; the monotypical Iraçunda Group of Belkin, endemic to New Zealand; the Ochracea Group of Marks, also with an Oriental and Australasian dis-
KEY TO SUBGENERAE AND SPECIES GROUPS OF GENUS COQUILLETTIDIA DYAR (ADULTS)

<table>
<thead>
<tr>
<th>Key</th>
<th>Description</th>
<th>Subgenus</th>
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<tbody>
<tr>
<td>1</td>
<td>With postspiracular setae (Neotropical)</td>
<td>Rhynchotaenia</td>
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<tr>
<td>2.1</td>
<td>Mesepimeron without scales</td>
<td>Coquillettidia</td>
</tr>
<tr>
<td>3(2)</td>
<td>Scales of mesokatepisternum largely confined to lower area</td>
<td>Coquillettidia</td>
</tr>
<tr>
<td>4(3)</td>
<td>Wing plume scales narrow; at most 1 or 2 small setae present at base of subcosta ventrally</td>
<td>Crassipes</td>
</tr>
<tr>
<td>5(3)</td>
<td>Ventral side of subcosta with a large patch of setae at base</td>
<td>Coquillettidia</td>
</tr>
<tr>
<td>6(2)</td>
<td>Wing entirely dark; plume scales narrow; tibiae and tarsi dark; hindtibia long and slender, smoothly scaled, as usual (Afrtropical)</td>
<td>Metallica</td>
</tr>
<tr>
<td>7</td>
<td>Wing, tibiae, and tarsi not entirely dark; plume scales broadish; hindtibia rather short and stout, with roughened scaling (Oriental and Australasian)</td>
<td>Ochracea</td>
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