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RHADINOPYGA DUFFELSI, A NEW CICADA SPECIES FROM NEW GUINEA (HEMIPTERA: CICADOMORPHA: CICADIDAE)

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A new member of the Oriental genus *Rhadinopyga* Duffels, *Rhadinopyga duffelsi* sp. n. is described from New Guinea. It is placed in the genus based on the structure of the male genitalia. The type location, Hollandia (=Jayapura), represents an eastern range extension for members of the *Rhadinopyga* which had previously been described from the 'Vogelkop' (Jazirah Doberai) of New Guinea and islands to the west.
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The genus *Diceropyga* was erected by Stål (1870) for a subgroup of Oriental cicadas whose last abdominal segment in the male is sharply pointed at both sides. Duffels (1970, 1977, 1988) revised the genus creating two new genera and four species groups in the process. Duffels (1985) erected the genus *Rhadinopyga* for what he had called the *recedens* group of the genus *Diceropyga* in his revision (Duffels 1977). These animals were separated into the new genus primarily by the structure of the male genitalia.

The nine *Rhadinopyga* species previously identified (four described and five undescribed) are distributed from the western Vogelkop Peninsula (=Jazirah Doberai) of New Guinea, and the islands of Waigeo, Salawati (Salawatty), Misoöl and Bacan (Batjan) to the west (Duffels 1977, 1985). The specimens described here were found among unidentified material in the K. C. Emerson Entomology Museum, Oklahoma State University, Stillwater, Oklahoma, USA (OSEC) and were collected more than 1000 km east of the other *Rhadinopyga* species near the border of Papua (Irian Jaya) and Papua New Guinea. The terminology used to describe the species follows Duffels (1977) to facilitate comparisons to known species.

Fig. 1. *Rhadinopyga duffelsi*, holotype male and paratype female. Bar = 2 cm.

Rhadinopyga duffelsi sp. n.

Type material. – Holotype ♂: INDONESIA: 'Hollandia [Jayapura] Dutch new Guinea, 25-30.ix.1944/ Collected by W.T. Nailon, 9/25-30/44' (OSEC). – Paratypes: INDONESIA: Dutch New Guinea [Papua], Hollandia [Jayapura], 25-30.ix.1944, 1♂ (OSEC), same data but 21.xi.1944, 1♀ (OSEC), same data but 3.x.1944, 1♀ (OSEC), same data but 6.xii.1944, 1♀ (AFS collection), same data but 12.ii.1945, 1♀ (AFS collection).

Etymology

The species is named for Hans Duffels on the occasions of his retirement and 65th birthday. A small token for his major contributions to the study of cicadas and this genus.

Description

Coloration. – Ground color of head, thorax and abdomen ochraceous to brownish ochraceous (figs. 1, 2).

Head (fig. 2). – Each ocellus is surrounded separately by a black ring which fuse centrally forming a trilobate spot. The spot around the central ocellus may extend anteriorly to the fronto-clypeal suture. Lateral to the paired ocelli is a pair of dark-brown spots, which may or may not be connected to the rings around the lateral ocelli. There is a pair of brown spots on the vertex lobes which extend onto the upper surfaces of the supra-antennal plates where they become dark brown. There is a narrow black marking along the medial margin of the eye dorsally which produces the black tongue-shaped spot in the middle of the mark found in the members of the *recedens* group. Postclypeus with two series of transverse lines between the transverse ridges, the anterior 6-7 transverse lines are connected medially by an arcuate line. The lateral ends of the transverse furrows with short ridges. On the ventral surface the postclypeus has a short median line half-way down. Anteclypeus with a pair of parallel dark-brown spots connected by a transverse medial band. The rostrum reaches just past the hind borders of the coxae of the hind legs. Mandibular plate narrowly black along the suture with the anteclypeus, expanding to form a spot lateral to the anteclypeus. Genae with a transverse brown line about in the middle which nearly extends to the postclypeus and inner margin of the eye in some paratypes.

Thorax (fig. 2). – The very narrow, black-brown central fasciae on the pronotum slightly diverge anteriorly. They are continuous in about half the specimens, there is a central gap in the others. Each fascia strongly widens at the anterior margin of the pronotum and are connected medially by a transverse line. The end of each central fascia in front of the pronotal collar expands to form a spot which connects medially to the other central fascia. The oblique fissures are ochraceous, with the exception of the somewhat darker anterior end of the posterior oblique fissure. There is a pair of small, oblique narrow dark lines close anterior to the posterior half of the anterior oblique fissure. Lateral part of the ambient fissure brown along the medial side. A light-brown triangle is attached to the ambient fissure, posteriorly of the posterior oblique fissure. The anterior edge of the pronotal collar edged in brown between the eye and the tooth. There is a light brown spot on the lateroproximal angle of the pronotal collar.

Mesonotum with a black median fascia extending from the anterior margin to the cruciform elevation. The median fascia is narrow from the anterior margin to about the middle of the mesonotal disk where it suddenly widens to twice its anterior width, but more hindwards it narrows again to the width of the anterior part and continues on to the cruciform elevation where it terminates in a small black triangle. The paramedian fasciae curve somewhat mediad to about the middle of the mesonotum and widen distally. A pair of round black spots is situated in front of the cruciform elevation and these extend onto the ends of the anterior arms. The lateral fasciae are broken up in a fairly large, oblong spot on the posterior half and anteriorly three spots, of which two are against the anterior margin of the mesonotum. Cruciform elevation also edged with a thin transverse line crossing the posterior.

Legs. – Ochraceous. Coxae edged distally with brown. Trochanters of middle and hind legs with a medial brown spot. Fore femora with two dark-brown proximal spines and a small, ochraceous distal spine along the under ridge, a longitudinal brown line on the anterior side, bifurcated at its base, a longitudinal line on the posterior side and three longitudinal lines running parallel on the upper side. Middle and hind femora on the anterior side with brownish spots at the base and the apex and a faint longitudinal brown line connecting the spots; posterior side with a brown streak close to the apex. Tibiae with a narrow proximal dark ring (which may be incomplete in the fore and middle legs) and near the base with a broad, subapical brownish annulation. Hind tibiae also narrowly brownish at the apex and spines. Metatarsus ochraceous. Mesotarsus of fore leg light brown, of middle legs light brown distally, and of hindlegs ochraceous. Pretarsus dark brown except in the hindleg where it is light brown. Claws of all legs brown, apically dark-brown.

Tegmina and wings (fig. 1). – Hyaline. Basal venation of tegmina and wings ochraceous to light-brownish, turning brownish apically. Basal veins of first, second, third, fifth and seventh apical areas infuscated, apices of the longitudinal veins with smaller brown spots.

Operculum. – Male operculum slender, light-brownish , reaching to the anterior margin or the middle of abdominal segment V (fig. 6). The operculum is less than twice as long as broad; the apical two-thirds gradually tapering to the somewhat acuminate apex. The lateral margin is weakly undulate, dark-brown at the base. The medial margin is convex, edged with dark-brown. Anterior margin of the operculum with a large dark-brown spot laterally of the meracanthus, which is dark-brown basally.

Female operculum triangular, ochraceous, and narrowly margined with black (fig. 9). The lateral edge is nearly straight. The sinuate posterior margin nearly reaches the hind border of abdominal segment II.

Abdomen. – Male abdomen light-brownish above (figs. 1, 5). Light markings variable on the dorsal

surface which may include an anteromedian spot on segments II-IV, and lateral spots on segments III-VI. Adbomen ventrally light-brown with a dusting of white, pruinose wax.

Female abdomen brownish becoming darker towards the apex on both sides (figs. 2, 8, 10). Markings variable, anteromedian spot on segments II and III. The subgenital plate of segment VII is darker medially, has a pair of lateral dark spots, and a single notch posteriorly (fig. 7). Abdominal segment IX dark brown along the ventral edges, lighter along the lateral surfaces. Caudodorsal beak is dark.

Male genitalia. – Pygofer with the short lateral processes which are curved apically and which do not project beyond the apices of the anal valves which is typical in the members of the *recedens* group (figs. 3, 4). The lateral uncus lobes are large, they extend with parallel lateral edges and bend back to form a rougly triangular shape that expands medially to surround the aedeagus. The aedeagus bears two pairs of appendages.

Measurements (in mm). – Males (n=3), range given for available specimens. Length of body: 22.5-23.1; length of fore wing: 29.1-32.1; width of fore wing: 9.2-10.0; length of head: 3.2-3.4; width of head including eyes: 7.7-8.6; width of pronotum including suprahumeral plates: 7.7-8.8; width of mesonotum: 7.0-7.7.

Females (n=3), range given for available specimens. Length of body: 18.8-21.0; length of fore wing: 31.1-32.0; width of fore wing: 9.2-10.0; length of head: 3.3-3.7; width of head including eyes: 8.5-8.8; width of pronotum including suprahumeral plates: 8.0-8.7; width of mesonotum: 7.6-8.6.

Discussion

The short lateral processes of the pygofer place *R. duffelsi* in the genus *Rhadinopyga*. In the generic key to *Diceropyga* produced by Duffels (1977), *R. duffelsi* keys out within the *recedens* group to *R. acuminata* Duffels based on the relationship between the lateral processes of the pygofer and the anal valve and the infuscation pattern of the tegmina. However, *R. duffelsi* differs in the structure of the genitalia and body markings identified in the key for *R. acuminata*.

The collection site for the type series is identified as Hollandia, Dutch New Guinea on the labels attached to each specimen and is thus the type location for the species. Hollandia is now named Jayapura (previously also called Sukarnapura) and is located at approximate coordinates of 2°37'S-140°39'E as listed in Duffels (1977) in what is now Papua (=Irian Jaya), Indonesia. This species significantly extends the range of the genus *Rhadinopyga* to the east. The other species in the group are found on the Vogelkop Peninsula (=Jazirah Doberai) of New Guinea and islands to the west (Duffels 1977, 1985). The locations of the unidentified specimens of the group given by Duffels (1977, 1985) are also west of the distribution of *R. duffelsi*.

The type location of *R. duffelsi* represents a significant eastward extension to the biogeography of the genus. Duffels (1985) related the distributions of *Diceropyga* and *Rhadinopyga* to the geologic history of the region. The separate geological history of the two regions of New Guinea and the Melanesian Arcs suggested that *Rhadinopyga* evolved in isolation from its sister genus *Diceropyga* (Duffels 1985). The type location for *R. duffelsi* brings this hypothesis into question. However, the specimens were collected in an active theatre during the Second World War and there is the possibility that the specimens were incorrectly labeled. Further collecting will hopefully provide a greater number of specimens so that these questions can be answered definitively.

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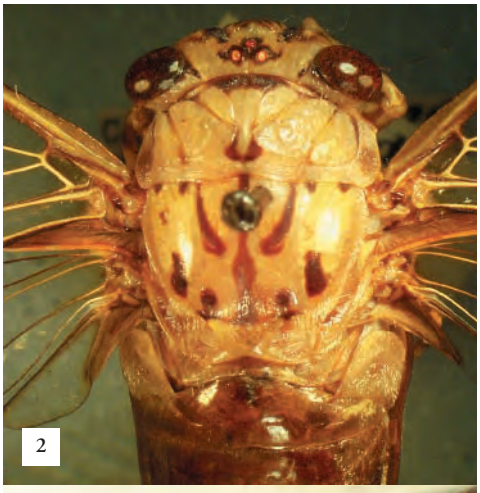

Figs. 2-6. *Rhadinopyga duffelsi,* holotype male. – 2, Dorsal view of head and thorax to illustrate markings; 3, lateral view of the male genitalia; 4, posterior view of male genitalia; 5, dorsal opening to the timbal and timbal cover; 6, male operculum.

Figs. 7-10. *Rhadinopyga duffelsi,* paratype female. – 7, Ventral view of the female genitalia; 8, lateral view of the female genitalia; 9, female operculum; 10, dorsal region of the thorax and abdomen.