Pacific Insects 15 (3-4): 363-378 20 December 1973

A SYNOPSIS OF THE NEW GUINEAN *ITOPLECTIS* AND *COCCYGOMIMUS* (Hymenoptera: Ichneumonidae)

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Recent advances in research of the insect fauna of New Guinea and the adjacent islands under the light of modern taxonomy have provided much useful though still rough and incomplete information in regard to the faunal relationships between Asia, Australia and southwestern Pacific islands. In spite of its long history, with abundant local vigorous evolution, there are found various kinds of survivals of ancient elements on and around this large island with a rich environment.

In so far as my studies on certain groups of Ichneumonidae on the island are concerned, one of the most impressive facts is the finding of certain genera, species of which are predominant in the Holarctic Region but have hitherto been not or scarcely recorded in the Indo-Australian area to the south of the northern Oriental Region. This appearance of residual distribution pattern may mostly be due to the lack of enough knowledge of the fauna of the intermediate areas, especially of the Malayan and Wallacean areas. Nevertheless, in certain cases structural peculiarities that are found in New Guinean populations likely suggest their long history of segregation. Furthermore, such a residual distribution often seemingly relates to the abundance of different insects with almost the same ecological needs and modern evolution which makes them better adapted for life in the tropics. Indeed, there are certain groups of Ichneumonidae of which the species are predominant in the tropical Pacific, and their center of distribution and dispersal is presumably in the Malayan or nearby areas, such as the Greater Sunda Islands.

In this paper are treated the New Guinean species of the genera *Itoplectis* and *Coccygomimus*, both of which belong to the tribe Ephialtini of the subfamily Ephialtinae. These two genera are both predominant in the Holarctic Region but scarce in the Indo-Australian area and are considered to be one of the examples of ancient elements surviving on the island.

The tribe Ephialtini includes many well known species parasitic on lepidopterous pests of various plants and is one of the rather well studied groups. Our understanding of the tribe and of the Holarctic and Indo-Australian species have become rather extensive through certain recent works. The tribe is composed of two phylogenetic stocks. One is represented by *Lissopimpla*, *Echthromorpha* and *Xanthopimpla* of Old World Tropics or Pantropics, their species being most numerous in the southern Pacific. Another is represented by *Ephialtes*, *Itoplectis*, *Coccygomimus* and *Strongylopsis*. They are widespread and abundant elsewhere at least in the Holarctic Region, except for *Strongylopsis* which is limited to central Asia and southeastern Europe. In the Indo-Australian area they have

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a more or less residual distributional pattern. *Ephialtes* has been known only from mountainous districts of Formosa and of N. India by a few species. No further record of this genus has not yet been made from south of the northern Oriental Region. *Itoplectis* is known from Formosa, N. India and N. Philippines in each area represented by two species, and from New Guinea by nine species. Available records and specimens show that most of the species are mountain inhabitants in this tropical area. *Coccygomimus* seems to have a much wider distribution, having been scatteringly recorded east to the Society islands. Members of this genus are rather abundant in Formosa, N. India and the northern part of Southeast Asia but scarce to the south and east of the Malayan peninsula. Our definite records from there comprise only two species from mountainous districts of N. Philippines, one from highlands of Celebes, one from Tahiti, and five from the moutains of New Guinea. There are no records of *Ephialtes*, *Itoplectis* and *Coccygomimus* from Australia and New Zealand, where representatives of another stock of the tribe, as mentioned above are not scarce.

There are no biological records on the New Guinean species treated in this paper. However, from observations on the Holarctic species it can be said that the *Itoplectis* and *Coccygomimus* are both, like other members of the tribe, internal solitary parasites of lepidopterous insects in the pupal, or rarely the prepupal, stage. Certain species of *Itoplectis* are often occasional secondary parasites, usually upon mature larvae of other ephialtines. The *Itoplectis* most often prefer somewhat sunshiny places like shrubby hedges and forest edges. They are common among low bushes and herbaceous and grassy plants. It seems that the *Coccygomimus* mostly prefer darker and moister places and are common in and around woods, below and among undergrowth.

This study is based largely on the collection of B. P. Bishop Museum. I am greatly indebted to Dr J. L. Gressitt and Dr C. Yoshimoto for the loan of material under their care. My thanks are due to Dr H. Townes who read the manuscript and saved me from many errors.

Genus **Itoplectis**

Itoplectis Foerster, 1868. *Verh. Naturh. Ver. Rheinlande* **25**: 164.
Type-species. *Ichneumon maculator* Fabricius.
Alophopimpla Momoi, 1966. *Pacif. Ins.* **8**: 160. **New synonym.**
Type-species. *Alophopimpla polia* Momoi.

There are two other generic synonyms, viz., *Nesopimpla* Ashmead, 1906, and *Exeristoides* Uchida, 1928.

Alophopimpla was erected for a New Guinea species which is quite aberrant in comparison with typical *Itoplectis*. During the course of the present study, however, I have been able to study a series of species from the same island having degrees of variations that makes it warranted to synonymize *Alophopimpla* with *Itoplectis*, as an aberrant species group.

In the New Guinea species treated below the dorsomedian carinae on tergite 1 and on the propodeum are both almost entirely absent, the hairs on the wings tend to be either much more dense or sparser than usual, and the hind tibia has no pale subbasal ring but is entirely unicolorous or only apically darkened. Only two among the nine species have a basal tooth on the front tarsal claw of the female. In certain species

the occipital carina, rarely also the prepectal carina, is absent or vestigial.

The nine New Guinea species can be arranged into three species groups, viz., the *australis*, *melanthes* and *polia* species groups. The *australis* group is rather typical and similar in general conformation to the *alternans* species group; the other two are quite atypical.

Key to the New Guinean species of the genus Itoplectis

1. Fore tarsal claw of ♀ with a small basal tooth. Ovipositor tip more or less compressed. Median tergites very densely punctate, with more or less distinct prominent eminences and depressions 2
   Fore tarsal claw of ♀ with no basal tooth. Ovipositor tip more or less depressed. Median tergites mostly unsculptured or sparsely punctate, rarely moderate densely punctate, with weak eminences and depressions 3
2. Hind leg entirely blackish brown to black. Tergites 1 and 2 black, broadly margined with white ..... **australis** Momoi
   Hind leg black and white, its trochanters, base of its tibia and bases of its basal tarsal segments white. Tergites 1 and 2 entirely white ..... **spilopus**, n. sp.
3. Occipital carina absent or broadly interrupted above. Wings unusually long (fore wing about 1.8–2.0 as long as abdomen), with very dense hairs 4
   Occipital carina complete. Wings normal in length (fore wing about 1.2–1.5 as long as abdomen), with sparse hairs 6
4. Prepectal carina absent. Tergites virtually unsculptured ..... **polia** Momoi
   Prepectal carina present. Tergites distinctly punctate 5
5. Tergites 1 and 2 entirely white. Hind tibia white basally, black apically. Tergites 3 and 4 with strong and rather evenly dense punctures. Malar space about 0.3 as long as basal width of mandible ..... **oreius**, n. sp.
   Tergites 1 and 2 black, broadly white on lateral margin. Hind tibia black, with one or two white spots subbasally. Tergites 3 and 4 with fine and unevenly spaced punctures. Malar space about 0.2 as long as basal width of mandible ..... **virga**, n. sp.
6. Tergites 1 and 2 and hind femur entirely yellowish white 7
   Tergites 1 and 2 black, partly stained with red. Hind femur entirely black or red 8
7. Hind tibia entirely yellowish white. Median swelling on mesopleurum strong, more or less pointed. Tergites 3–5 virtually unsculptured ..... **melanthes**, n. sp.
   Hind tibia basally white, apically black. Median swelling on mesopleuron less strong, obtuse. Tergites 3–5 with strong rather evenly dense punctures ..... **ocris**, n. sp.
8. Hind femur entirely red. Hind tibia dark reddish brown ..... **lissos**, n. sp.
   Hind femur and tibia entirely black ..... **malanopus**, n. sp.

The *australis* species-group.

Flagellum with subapical segments slightly longer than wide. Hairs on body short and dense as usual for an *Itoplectis*. Eye slightly less strongly concave opposite antenna than usual. Occipital carina complete. Scutellum weakly convex. Mesopleurum with no unusual median swelling. Propodeum with no dorsomedian carinae, with hairs on lateral face and on basolateral portion of dorsal face, its spiracle subcircular. Tergite 1 raised at middle as usual, with no dorsomedian carinae. Tergites 2–6 with more or less distinct eminences and depressions which are successively weaker on hind tergites, densely punctate. Ovipositor compressed apically, dorsal face of its tip with no transverse ridges. Areolet normal in size, distinctly narrowed distally. Nervulus opposite basal vein. Hind tarsal segment 5 slightly longer than segment 2. Fore

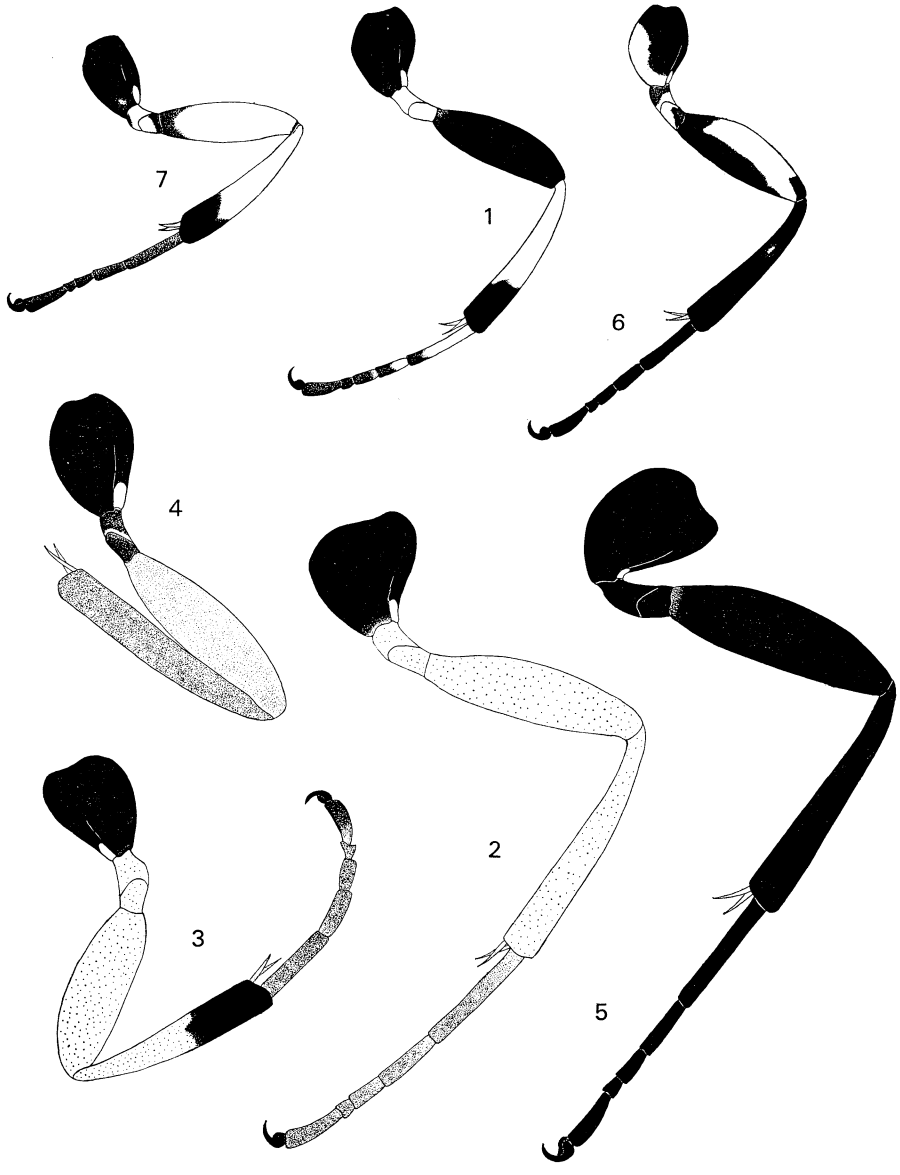

Fig. 1-7. Hind leg of *Itoplectis* (♀): 1, *spilopus*; 2, *melanthes*; 3, *ocris*; 4, *lissus*; 5, *melanopus*; 6, *virga*; 7, *oreius*.

tarsal claw of ♀ with a small basal tooth. Wings of normal length, with hairs tending to be a little sparser than usual.

In general conformation this group is similar to the *alternans* species group. It includes *australis* Momoi, 1966, and ***spilopus***, new species, from New Guinea, and *leucobasis* Momoi, 1971, from N. Philippines.

Itoplectis australis Momoi

Itoplectis australis Momoi, 1966, *Pacif. Ins.* **8**: 159.

♀. Temple in dorsal view convex posteriorly. Face about 0.8 as long as wide, with dense punctures. Malar space about 0.4 as long as basal width of mandible. Mesopleurum with fine sparse punctures and short sparse hairs. Metapleurum unsculptured, with somewhat elongate hairs on upper and hind margins, often also on posteromedian portion. Tergite 1 densely punctate posteromedially, becoming smooth laterally. Tergites 2-5 strongly and densely punctate. Tergite 6 slightly more finely punctate than preceding tergites. Tergite 2 and following tergites densely hairy. Ovipositor sheath about 1.0 as long as hind tibia. Hind femur rather evenly densely hairy on outer face. Hind tarsal segment 5 about 1.1 as long as segment 2. Nervellus broken at upper 0.2. Hairs on wings denser than usual, mostly distant from one another by about or less than their length. Fore wing 5.0-5.4 mm long.

Black. Palpi light brown. Tegulae white. Humeral angle of pronotum stained narrowly with brown. Tergites 1-3 white, each with a large black band or spot. Tergite 4 and following tergites at apices narrowly white to brown, hind tergites largely dark reddish brown to blackish brown. Fore and mid legs yellowish white, their coxae and 1st trochanters black, their femora and tibiae brownish above, and their tarsi brown, with segment 5 blackish brown. Hind leg blackish brown to black. Wings weakly brownish. Veins and stigma blackish brown.

♂. Essentially similar to ♀. Fore wing 3.8-4.9 mm long.

Specimens. ♂, S. Highlands: Dimifa, SE of Mt Giluwe, 2200 m, SE New Guinea, 9.X.1958, ♂, Mt Giluwe, N. Side, Malgi, 2500 m, SE New Guinea, 25-30.V.1961; ♀, Tomba, 5'43S, 143'57E, 2700 m, NE New Guinea, 5.VI.1966, J. L. Gressitt. ♀, 11 km S of Laiagam, 2400-2500 m, NE New Guinea, 21.VI.1963, M. Sedlacek. ♀? (lacking abdomen), Okapa, 1800 m, 64 km S of Kainantu, NE New Guinea, 29.IX.1959, ♂, Moife, 2100 m, 15 km NW of Okapa, NE New Guinea, 11-13.X.1959, T. C. Maa. ♀, Daulo Pass area, 2500 m, NE New Guinea, 4.VII.1957; ♂, Vogelkop, Irai River area, N of Lake Anggi Giji, 1850 m, NW New Guinea, 31.VII.1957, D. E. Hardy. ♀, Vogelkop, Sururai, SW of Lake Anggi Giji, 2000-2100 m, NW New Guinea, 4-5.III.1963, R. Straatman. 8 ♀, ♂, holo- and paratypes, NE New Guinea.

It seems that this species is common and widespread on New Guinea.

Itoplectis spilopus Momoi, new species Fig. 1, 8.

♀. Temple convex medially in dorsal view. Face about 0.9 as long as wide, with dense punctures. Malar space about 0.3-0.4 as long as basal width of mandible. Mesopleurum with fine sparse punctures and somewhat elongate sparse hairs, hairs on the central portion mostly distant from one another by about their length. Metapleurum unsculptured, with hairs only along upper margin and on hind portion. Tergite 1 densely punctate posteromedially, becoming smooth laterally. Tergites 2-5 evenly densely punctate and evenly densely hairy. Tergite 6 more finely punctate than preceding tergites, densely hairy. Ovipositor sheath about 1.1 as long as hind tibia. Hind femur with elongate sparse hairs on lower 1/3 of outer face. Hind tarsal segment 5 about 1.2 as long as segment 2. Nevellus broken at upper 0.35. Hairs on wings unusually sparse, mostly distant from one another by much more than their length. Fore wing 7.0-7.5 mm long.

Black. Palpi basally white, apically brown. Tegulae, tergites 1-3 and legs white. Tergite 3 and following tergites at apices tinged with brown. Coxae, hind femur, apical 0.3 of hind tibia, apex of hind tarsal segment 1, apical half of segment 2 and greater part of segments 3-5

black. Mid tarsus colored like hind tarsus but infuscation slightly less strong. Fore tarsus brown, its apical segment blackish. Wings weakly brownish. Stigma and veins blackish brown.

♂. Essentially similar to ♀. Fore wing 5.5 mm long.

Holotype ♀ (BISHOP 9930), Lake Aunde, 3400 m, NE New Guinea, 4.VII.1963, J. Sedlacek.

Paratypes, 2 ♀♀, same data as the type. ♂, Mt Wilhelm, Lake Aunde, 3600 m, NE New Guinea, 2.VII.1955, J. L. Gressitt.

The *melanthes* species group.

Flagellum with subapical segments slightly longer than wide. Hairs on body mostly much longer and a little less dense than usual. Eye more broadly and deeply concave opposite antenna than usual. Occipital carina complete. Scutellum strongly convex. Mesopleurum more or less strongly swollen medially (as in *Echthromorpha agrestoria conopleura*). Propodeum with no dorsomedian carinae, with hairs on lateral face and on basolateral portion of dorsal face, its spiracle oval. Tergite 1 less strongly convex than usual, with no dorsomedian carinae. Tergites 2-6 with weak eminences and depressions which are weaker successively on hind tergites, unsculptured or sparsely punctate. Ovipositor more or less depressed at apex, dorsal face of the tip with weak transverse ridges. Areolet larger than usual, weakly narrowed distally. Nervulus slightly distad of basal vein. Hind tarsal segment 5 about 1.0 as long as segment 2. Fore tarsal claw of ♀ with no basal tooth. Wings normal in size, with hairs unusually sparse. Body slightly larger than usual.

It seems that this group is unique and is limited to New Guinea. It includes the following four new species: *melanthes*, *ocris*, *lissus* and *melanopus*, all from New Guinea.

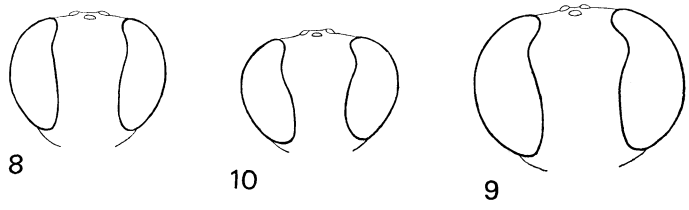

Fig. 8-10. Head in frontal view of *Itoplectis*; 8, *spilopus*; 9, *ocris*; 10, *virga*.

Itoplectis melanthes Momoi, new species Fig. 2.

♀. Temple almost flat in dorsal view. Face about 1.0 as long as wide, with medium sized punctures, those on each side of the central portion denser, being distant from one another by about their diameter, those on lateral portion much sparser. Median swelling on mesopleurum strong, more or less pointed, the top almost the same level as mesopleural pit. Mesopleurum with fine punctures that are mostly distant from one another by about 2-3 times their diameter. Metapleurum unsculptured on lower front half. Tergites virtually unsculptured, with somewhat elongate widely scattered and irregularly spaced hairs. Ovipositor sheath about 1.0 as long as hind tibia. Fore wing 9.0-9.7 mm long.

Black. Palpi, tegula, tergites and legs yellowish white to yellow. Tergites 3-6 with a broad transverse black band of variable extent, the band on basal tergites rather definite and reduced

in size, progressively slightly more indefinite and extensive on hind tergites. Coxae black, with a yellowish spot at apex on lower site. Hind tarsus blackish brown, at extreme base yellow. Wings slightly yellowish. Stigma and veins black.

Holotype ♀ (BISHOP 9931), Mt Giluwe, 2550 m, NE New Guinea, 27.V-6.VI.1963, Malaise trap, J. Sedlacek.

Paratype ♀, same data as the type.

Besides the above noted specimens there is another specimen which could be assigned to this species, but as the specimen lacks head, fore and mid legs and abdomen, it is not included in the type series. 1 ex Tomba, 5'39S, 143'57E, 2700 m, NE New Guinea, 5.VI.1966, Malaise trap, J. L. & M. Gressitt.

Itoplectis ocris Momoi, new species Fig. 3, 9.

♀. Temple convex posteriorly in dorsal view. Face about 0.83 as long as wide, with rather fine punctures, those on each side of central portion distant from one another by about their diameter and those on lateral portion much sparser. Median swelling on mesopleurum less strong, blunt. Mesopleurum with rather fine to medium sized punctures that are mostly distant from one another by 2-3 times their diameter. Metapleurum hairless and unsculptured on lower front half. Tergite 1 smooth, with a few irregularly distributed short hairs. Tergite 2 with large shallow somewhat irregularly spaced punctures that are mostly distant from one another by about their diameter. Tergites 3-5 with large strong moderately dense punctures. Tergites 6 and 7 more finely and sparsely punctate than preceding tergites, and progressively more finely and sparsely punctate towards apex on each tergite. Tergite 2 and following tergites with short dense hairs. Ovipositor sheath about 0.9 as long as hind tibia. Fore wing 7.5-8.5 mm long.

Black. Palpi, spiracular sclerite, tegula, tergites 1 and 2, and legs yellow to yellowish white. Tergites 3-5 at apex and lateral margin, and following tergites more extensively especially laterally, reddish brown, dorsal face of tergites 6-8 more or less darkened. All coxae black. Apical 0.4 of hind tibia black. All tarsi and mid tibia except basally, more or less brownish, last segment of hind tarsus blackish brown apically. Wings brownish. Stigma and veins blackish brown.

Holotype ♀ (BISHOP 9932), Tomba, slopes of Mt Hagen, 2450 m, NE New Guinea, 23.V.1963, M. Sedlacek.

Paratype ♀, Mt Giluwe, 2550 m, SE New Guinea, 27.V-6.VI.1963, Malaise trap, J. Sedlacek.

Itoplectis lissus Momoi, new species Fig. 4.

♀. Temple convex medially in dorsal view. Face about 1.0 as long as wide, with rather fine punctures, those on each side of central portion distant mostly from one another by about their diameter and those on lateral portion much sparser. Median swelling on mesopleurum strong, more or less pointed, the top being below level of mesopleural pit. Mesopleurum with rather fine to medium sized punctures that are mostly distant from one another by about 2-3 times their diameter. Metapleurum hairless and unsculptured on front lower half. Tergite 1 smooth, with a few somewhat elongate irregularly distributed hairs. Tergites 2-5 with shallow very sparse irregularly spaced punctures, on basal tergites the punctures coarser and more irregularly spaced. Tergite 2 and following tergites with short very sparse hairs that are mostly distant from one another by much more than their length. Ovipositor sheath about 1.1 as

long as hind tibia. Fore wing 8.6 mm long.

Black. Basal segments of palpi and last segment of labial palpus blackish brown, other segments yellowish brown. Apex of tergite 1 and apices and lateral corners of following tergites reddish brown, the brown colored portion progressively more extensive on hind tergites. Fore and mid legs yellowish white, their coxae and base of mid lst trochanter black. Apex of hind lst trochanter white. Hind femur reddish brown. Hind tibia dark reddish brown. Hind tibial spurs white. Wings slightly brownish. Veins and stigma blackish brown.

Holotype ♀ (BISHOP 9933), Vogelkop, Lake Anggi Giji, 2000-2100 m, along mountain stream, NE New Guinea, 1-3.III.1963, R. Straatman.

Itoplectis melanopus Momoi, new species Fig. 5.

♀. Temple convex posteriorly in dorsal view. Face about 0.86 as long as wide, with medium sized punctures, those on each side of central portion mostly distant from one another by slightly more than their diameter and those on lateral portion much sparser. Median swelling on mesopleurum strong, blunt, the top being at same level of mesopleural pit. Mesopleurum with fine to medium sized punctures that are mostly distant from one another by about 2-3 times their diameter. Metapleurum unsculptured and hairless on front lower half. Tergite 1 smooth, with a few somewhat elongate irregularly spaced hairs. Tergites 2-6 with large shallow dense punctures, the punctures coarser and more irregularly spaced on basal tergites. Tergite 2 and following tergites with somewhat elongate and rather evenly spaced hairs that are mostly distant from one another by about or less than their length. Ovipositor sheath about 1.0 as long as hind tibia. Fore wing 9.7 mm long.

Black. Palpi blackish brown. Tergite 1 at apex medially and following tergites at apex distinctly reddish. Fore and mid legs yellow, their coxae and base of mid lst trochanter black, their tarsal segments 2-5 blackish brown to black. Hind tibial spurs yellowish. Wings weakly brownish. Stigma and veins black.

Holotype ♀ (BISHOP 9934), Tomba, 5'39S, 143'57E, 2700 m, NE New Guinea, Malaise trap, 5.VI.1966, J. L. & M. Gressitt.

The *polia* species group.

Flagellum with subapical segments longer than wide. Hairs on body mostly longer and a little less dense than usual. Eye slightly less strongly concave opposite antenna than usual. Occipital carina incomplete above, or entirely absent. Scutellum weakly convex. Mesopleurum with no peculiar swelling. Propodeum with no dorsomedian carinae, with hairs on lateral face and on basolateral portion of dorsal face, its spiracle circular. Tergite 1 raised at middle as usual, with no dorsomedian carinae. Tergites 2-6 with weak eminences and depressions which are progressively weaker on hind tergites, virtually unsculptured to more or less distinctly punctate. Ovipositor more or less depressed apically, dorsal face of the tip with no transverse ridges. Wings unusually long (about 1.8-2.0 as long as abdomen), with hairs unusually dense. Areolet larger than usual, only slightly narrowed distally. Nervulus opposite basal vein. Hind tarsal segment 5 slightly longer than segment 2. Fore tarsal claw of ♀ with no basal tooth.

It seems that this group is very unique and is limited on New Guinea. It includes the following three species : *virga*, new species, *oreius*, new species and *polia* (Momoi), from New Guinea.

Itoplectis virga Momoi, new species Fig. 6, 10.

♀. Temple convex posteriorly in dorsal view, about 0.4 as long as eye in lateral view. Face about 1.1 as long as wide, with fine dense punctures and somewhat elongate dense hairs. Malar space about 0.2 as long as basal width of mandible. Occipital carina close to occipital foramen, incomplete above. Pronotum smooth, polished, with hairs only along upper margin. Mesoscutum with dense somewhat elongate hairs. Mesopleurum with fine evenly sparse punctures and elongate moderately dense hairs that are mostly distant from one another by much less than their length. Prepectal carina present. Metapleurum with fine sparse punctures and elongate dense hairs, on extreme front side and on lower side hairless and unsculptured. Propodeum with dense fine punctures and elongate dense hairs on lateral face and on basolateral portion of dorsal face, otherwise smooth and hairless. Tergites 1 and 2 with rather evenly dense short hairs, and tergite 3 and following tergites successively more sparsely and unevenly haired. Tergites polished, with fine sparse punctures, on tergites 1 and 2 punctures finer and rather evenly spaced and on tergites 3 and 4 somewhat coarser and irregularly spaced. Ovipositor sheath about 1.1 as long as hind tibia. Hind femur with elongate widely scattered and irregularly spaced hairs on lower 1/3 of outer face. Hind tarsal segment 5 about 1.1 as long as segment 2. Nervellus broken at upper 0.35. Fore wing 5.4-6.5 mm long.

Black. Palpi, tegula, lateral and apical margins of tergites, fore and mid coxae except for dorsal face of mid coxa, their trochanters except for a stripe on dorsal face of their 1st trochanters, apical half of lower face of hind coxa, apex of hind 1st trochanters, lower face of hind 2nd trochanter, 2 stripes on fore and mid femora, a broad stripe on hind femur, 2 stripes on fore tibia, a subbasal spot on mid and hind tibiae and tibial spurs white. Wings slightly brownish, fore wing apically slightly more strongly clouded. Veins and stigma blackish brown.

Holotype ♀ (BISHOP 9935), Swart Valley, Karubaka, 1400-1600 m, NW New Guinea, XI.1958, J. L. Gressitt.

Paratype ♀, 6 km W of Wau, Nami Creek, 1700 m, NE New Guinea, 15.VI.1962, Malaise trap, J. Sedlacek.

Itoplectis oreius Momoi, new species Fig. 7.

♀. Temple convex medially in dorsal view, about 0.65 as long as eye in lateral view. Malar space about 0.35 as long as width of mandible. Face about 0.9 as long as wide, with fine dense punctures and somewhat elongate dense hairs. Occipital carina week, present only ventrad. Pronotum with hairs only along upper and hind margins. Mesoscutum with short evenly dense hairs. Mesopleurum with fine scattered punctures and moderately elongate sparse hairs that are mostly distant from one another on central portion by about or slightly less than their length. Metapleurum unsculptured, haired only along upper and hind margins. Propodeum punctate and haired on lateral face and on basolateral portion of dorsal face, the hairs moderately elongate and somewhat sparser than usual. Tergite 1 with a few widely scattered punctures and short scattered hairs. Tergites 2-5 polished, with strong dense punctures, on tergite 2 punctures irregularly spaced and generally sparser, becoming more evenly spaced and denser on hind tergites. Tergite 6 with fine evenly scattered punctures. Ovipositor sheath about 0.9 as long as hind tibia. Hind femur with a few widely scattered hairs on lower 2/3 of outer face. Hind tarsal segment 5 about 1.2 as long as segment 2. Nervellus broken at upper 0.2. Fore wing 6.5 mm long.

Black. Palpi, tegula, humeral corner of pronotum narrowly, tergites 1 and 2, lateral portion and apical margin of following tergites, and legs white, white portion on apical tergites becoming progressively more extensive on hind tergites. Hind coxa black, somewhat whitish at

apex, with an obscure apical whitish spot. A spot on hind 1st trochanter, apex of hind 2nd trochanter, base of hind femur, apical 0.3 of hind tibia, hind tarsus, a stripe on mid femur, base and apical 0.4 of mid tibia and mid tarsus blackish brown. Fore tibia and tarsus brownish. Wings strongly brownish. Veins and stigma blackish brown.

Holotype ♀ (BISHOP 9936), Mt Giluwe, 2550 m, SE New Guinea, 27.V-6.VI.1963, Malaise trap, J. Sedlacek.

Itoplectis polia (Momoi), new combination

Alophopimpla polia Momoi, 1966, *Pacif. Ins.* **8**: 161.

This species is characterized in having the occipital and prepectal carina completely absent, the areolet unusually large, the malar space long and the tergites virtually unsculptured with scattered short hairs. In coloration it is similar to *oreius*, new species. The ovipositor sheath is about 0.8 as long as the hind tibia.

SPECIMEN. ♀, holotype, Mt Otto, 2200 m, NE New Guinea, 22.VI.1955, J. L. Gressitt.

Genus **Coccygomimus** Saussure

Coccygomimus Saussure, 1890. In Grandidier, Histoire Phys. Nat. Polit. Madagascar 20: pl. XIV, fig. 12.
Type-species. *Coccygomimus madeccassus* Saussure.
Pimpla of authors, not of the type-species.

There are many other generic synonyms. A complete synonymic list is in certain recent revisional or cataloguing works, such as Townes (1969).

Not a single species of the genus has been recorded from New Guinea. In this paper five species are recorded. In these species the sculpture on the body, especially on the tergites, is more or less reduced, the propodeum tends to be more strongly shortened, the dorsomedian carinae on the propodeum and on the tergite 1 are almost entirely absent, the hairs on the wings tend to be sparse, and the hind tibia has no subbasal pale ring but is entirely unicolorous or darkened only apically.

The New Guinean species can be arranged into two species groups, viz., the *latistigma* and *rasilis* species groups.

KEY TO THE NEW GUINEAN SPECIES OP THE GENUS COCCYGOMIMUS

1. Epipleura 2-5 moderately wide. Stigma wide (about 0.5 as wide as long). Nervellus weakly reclivous. Clypeus with no median excision at apex. 2
   Epipleura 2-5 narrow. Stigma normally narrow (about or less than 0.3 as wide as long). Nervellus strongly reclivous as usual. Clypeus with a median excision at apex. 3
2. Discoidella absent. Fore and mid coxae white ..... **parvus**, n. sp.
   Discoidella present. Fore and mid coxae blackish brown to black ..... **latistigma**, n. sp.
3. Fore wing with two clouds. Hind leg bicolored, red and blackish. Mesopleurum with a few widely scattered punctures. Tergites 2-5 with dense punctures on microsculptured ground. Propodeum red, with a pair of large white spots. ..... **spilopteris**, n. sp.
   Fore wing with no cloud. Hind leg almost entirely blackish brown to black. Mesopleurum with dense punctures that are mostly distant from one another by slightly more

than their diameter. Tergites 2-5 with only a few scattered punctures on virtually unsculptured ground 4

4. Scutellum white. Propodeum black, with a pair of large white spots. Tergites black, broadly margined with white at apex..... **rasilis**, n. sp.

Scutellum and propodeum red, with no white spots. Tergites red, partly dark reddish brown ..... **curtus**, n. sp.

The *latistigma* species-group.

Head moderately narrowed behind eyes. Temple convex. Clypeus flattened, its apex straight medially. Scutellum weakly convex. Propodeum strongly shortened, with no dorsomedian carinae, hairless dorsoapically, its spiracle subcircular. Tergite 1 with no tubercles on summit of dorsal elevation. Epipleura 2-5 moderately wide throughout. Ovipositor more or less compressed at apex, its tip with faint traces of transverse ridges on upper face. Nervulus opposite basal vein. Stigma very wide, about 0.5 as wide as long. Nervellus less strongly reclivous. Flagellum of ♂ with no tyloides. Fore tarsal segment 4 of ♀ less strongly excised at apex.

This group is related to the *sodalis*, the *cameroni* and the *aequalis* species-group, but seems certainly to be different. It is represented by the following two new species : *latistigma* and *parvus*, from New Guinea. Furthermore, it is probable that the Tahitian *Pimpla sordidella* Holmgren, 1868, belongs to this group.

Coccygomimus latistigma Momoi, new species Fig. 11.

♀. Temple convex in dorsal view, about 0.6-0.7 as long as eye in lateral view. Malar space about 0.8-1.0 as long as basal width of mandible. Frons extensively hairy, smooth and hairless medially. Face rather evenly convex, with fine punctures that are mostly distant from one another by about 2-3 times their diameter. Temple and face with somewhat elongate and moderately dense hairs. Pronotum virtually smooth, densely hairy along upper margin. Mesoscutum polished, with fine punctures and short evenly dense hairs. Scutellum convex, hairy. Mesopleurum with fine sparse punctures and somewhat elongate and rather sparse to moderately dense hairs. Metapleurum smooth, with elongate dense hairs along upper margin and on hind portion. Propodeum short, polished, with shallow dense punctures and elongate dense hairs on lateral face and on basolateral portion of dorsal face. Tergite 1 about 0.8 as long as wide, with shallow dense punctures and short sparse hairs. Tergites 2-5 densely punctate and densely hairy, their apices almost smooth and hairless. Tergite 6 with punctures that are mostly finer and sparser than those on preceding tergites. Ovipositor sheath about as long as tergites 1-5 combined, about 1.2 as long as hind tibia. Fore tarsal segment 4 weakly excised at apex, about half as long as wide. Nervulus opposite basal vein. Nervellus broken at upper 0.35-0.4, weakly reclivous, with distinct discoidella. Fore wing 5.4-6.1 mm long.

Black. Antenna blackish brown. Palpi brown. Clypeus and mandible somewhat brownish. Tegula and a spot at humeral angle of pronotum yellow, the spot on pronotum tending to extend forward. Tergites extensively dark reddish brown; tergite 1 at apex, tergites 2-5 at apices and at lateral margins broadly, and following tergites almost entirely dark reddish brown. Legs reddish brown with fore and mid legs paler. Fore coxa almost entirely and fore femur extensively dark reddish brown to blackish brown. Fore trochanters yellowish white. Mid and hind coxae black. Mid trochanters yellowish white to light reddish brown, with a blackish blotch basally on upper face. Hind 1st trochanter largely black. Mid femur somewhat blackish. Wings slightly brownish. Stigma and veins dark brown, the stigma pale at base and apex. Hairs on body whitish.

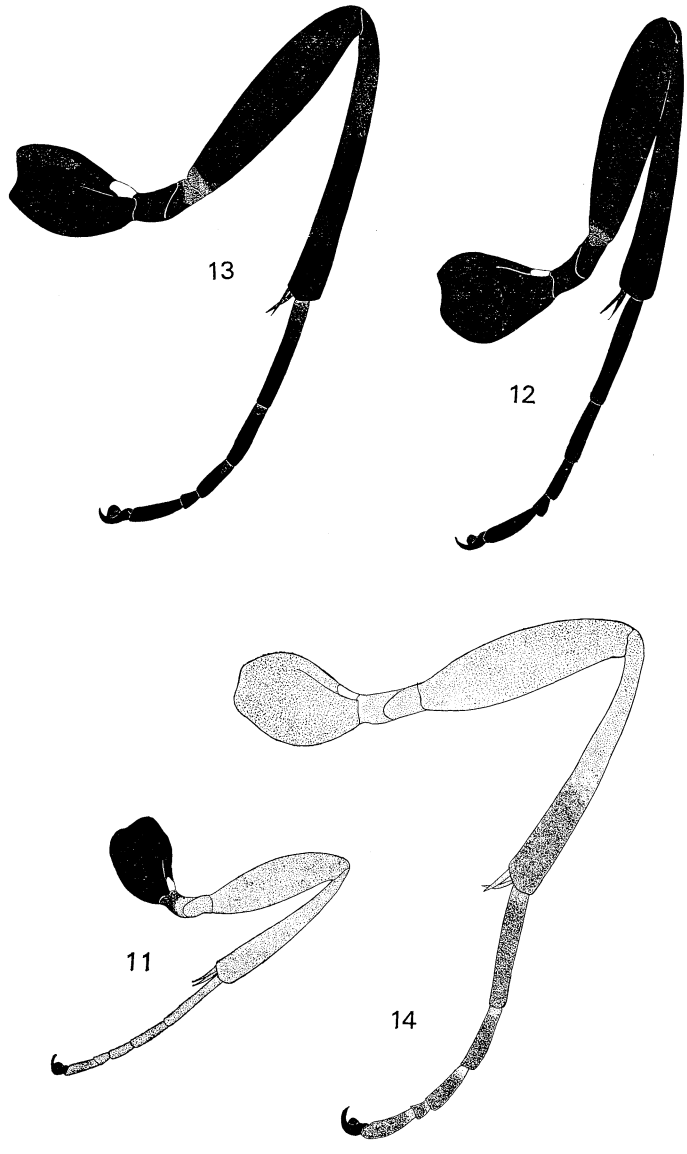

Fig. 11-14. Hind leg of *Coccygomimus* (♀): 11, *latistigma*; 12, *rasilis*; 13, *curtus*; 14, *spilopteris*.

♂. Face slightly more densely sculptured. Malar space about 0.7 as long as basal width of mandible. Tergites 6 and 7 finely and sparsely punctate. Tergite 1 about 1.0 as long as wide. Tergite 3 about 0.6 as long as wide. Otherwise virtually similar to ♀. Fore wing 4.6-5.4 mm long.

Holotype ♀ (BISHOP 9937), Mt Giluwe, 3300-3550 m, SE New Guinea, 2-4.VI.1963, J. Sedlacek.

Paratypes: ♀, ♂, Mt Wilhelm, Lake Aunde, 3600 m, NE New Guinea, 1.VII.1955, 2 ♀♀, same locality, 2.VII.1955, ♂, Goroka, 1650 m, NE New Guinea, Malaise trap, 14. V.1966, J. L. & M. Gressitt. ♀, Lake Aunde, 3400-3500 m, NE New Guinea, 4.VII. 1963, J. Sedlacek.

Coccygomimus parvus Momoi, new species

This species is very similar to *latistigma*, being distinguishable therefrom by the following points.

♀. Mesoscutum somewhat mat. Nervellus broken at upper 0.3, with no discoidella. Fore wing 3.8 mm long.

Black. Antenna blackish brown. Palpi, a spot at humeral angle of pronotum and tegula yellow, the spot on pronotum tending to extend forward. Tergites dark reddish brown, tergites 2-5 each with a blackish transverse band that is much reduced on hind tergites and often missing. Fore and mid legs brown, their coxae and trochanters yellowish white their femora indefinitely but extensively blackish or dark brownish and with a yellowish line on front side. Hind leg red, with coxa and 1st trochanter black, and tibia and tarsus blackish brown. Wings slightly brownish. Stigma and veins dark brown to blackish brown, the stigma pale at base and apex.

Holotype ♀ (BISHOP 9938), Tomba, 5'39S, 143'57E, 2700 m, Malaise trap, 5.VI.1966, J. L. & M. Gressitt.

Paratype ♀, same data as the type.

The *rasilis* species-group.

Head strongly narrowed behind eyes. Clypeus basally convex, its apex strongly excised at middle. Scutellum strongly convex. Propodeum strongly shortened, with no dorsomedian carinae, hairless dorsoapically, its spiracle oval. Tergite 1 with a pair of tubercles on summit of its median elevation. Epipleura 2-5 narrow throughout. Ovipositor more or less depressed at apex, its tip with transverse ridges on upper face. Nervulus strongly distad of basal vein. Stigma narrow as usual. Nervellus strongly reclivous as usual. Flagellum of ♂ with no tyloides. Fore tarsal segment 4 of ♀ less strongly excised at apex.

This species group is closely related to the *turionellae* group and would probably be included within the latter in the future when the Oriental species are much better understood. Its typical members are the following three new species: *rasilis*, *crutus* and *spilopteris*, from New Guinea, and *distinctus* Momoi, 1971, from N. Philippines. In the northern Oriental Region there are certain species which might be better placed in this species group rather than the *turionellae* group, such as *amamiensis* Momoi, 1970, from the Ryukyus.

Coccygomimus rasilis Momoi, new species Fig. 12.

Temple flat in dorsal view, about 0.3 as long as eye in lateral view. Frons smooth, with hairs along lateral and upper margins. Face with medium sized dense punctures, with somewhat elongate dense hairs, top of its median tumidity smooth and hairless. Clypeus punctate at base. Malar space about 0.6-0.7 as long as basal width of mandible. Pronotum unsculptured, with hairs only along upper margin. Mesoscutum with short dense hairs. Scutellum pulvinate,

finely punctate and densely hairy. Mesopleurum swollen medially (as in *Echthromorpha agrestoria conopleura* but much less strongly), with medium sized punctures that are mostly distant from one another by nearly twice their diameter, with dense elongate hairs, with no conspicuous unsculptured area. Metapleurum with shallow dense punctures and elongate dense hairs on its upper half, its lower half smooth and hairless. Propodeum short, almost unsculptured and hairless. Tergites unsculptured, hairless, on hind tergites partly with very short scattered hairs. Tergite 1 with a pair of tubercles on its dorsal tumidity. Ovipositor sheath about 1.0 as long as hind tibia, slightly shorter than tergites 1-3 combined. Nervulus strongly distad of basal vein. Fore tarsal segment 4 not excised at apex, about as long as wide. Fore wing 11-12 mm long.

Black. Yellow are: Palpi, scape at apex beneath, a spot on face next to antenna, upper margin of pronotum broadly, lower margin of pronotum narrowly, margin of mesoscutum on each side just before tegula, scutellum, postscutellum, subtegular ridge, tegula, mesepimeron, apicolateral spot on propodeum, lateral and apical margins of tergite 1 broadly, apical margin of tergites 2-6 broadly, and fore leg. Clypeus and mandible somewhat brownish. Apices of tergites 7 and 8 narrowly yellow or brown. Fore femur and tibia above, and fore tarsus brownish black. Mid femur at apex with a yellow spot. Wings hyaline. Stigma and veins blackish.

♂. Malar space about 0.5 as long as basal width of mandible. Propodeum on lateral face and on dorsal face basolaterally hairy, Tergites extensively but not densely hairy. Yellow margins on propodeum and tergites extensive. Propodeum almost entirely yellow except on dorsal face basally. Tergite 1 almost entirely yellow. Fore femur and tibia almost entirely yellow. Fore wing 7.0-10.8 mm long.

Holotype ♀ (BISHOP 9939), Mt Giluwe, 2550 m, SE New Guinea, 27.V-6.VI.1963, J. Sedlacek.

Paratypes: ♂, same data as the type. ♀, ♂, Mt Giluwe, N. side, Malgi, 2550 m, SE New Guinea, 25-30.V.1961, J. L. Gressitt.

Coccygomimus curtus Momoi, new species Fig. 13.

♀. Face with very short hairs. Mesopleurum less strongly swollen medially, polished, with medium sized punctures that are mostly distant from one another by about to slightly more than their diameter, with rather short moderately dense hairs, its upper hind corner unsculptured and hairless. Upper half of metapleurum shallowly and densely punctate, more or less striate, and with dense hairs. Propodeum with rather short irregularly spaced hairs on lateral face and on basolateral portion of dorsal face, trans-striate on dorsal face just before petiolar area, its lateral face often also covered with fine transverse striae. Tergites largely unsculptured and hairless, in part, with very short widely scattered hairs. Tergites 2-4 on each side of dorsal face and the successive tergites more extensively, more or less microsculptured and faintly mat. Ovipositor sheath about as long as tergites 1-3 combined, about 0.8 as long as hind tibia. Fore wing 6.5-10.8 mm long.

Black. Palpi, a spot on face next to antenna, a spot on apex of scape, upper margin of pronotum broadly, lower margin of pronotum narrowly, tegula, subtegular ridge, and fore trochanters, femur and tibia yellow. Pronotum, mesoscutum on each side, scutellum, postscutellum, mesopleurum dorsad extensively, propodeum and adjacent part of metapleurum, and tergites in variable extent extensively, dark reddish brown. Clypeus brownish. Fore tibia above, and its tarsus entirely infuscated. Fore coxa dark reddish brown to blackish brown, often with a yellow spot at base. Mid and hind legs often stained partly or largely with dark reddish brown. Wings hyaline. Stigma and veins blackish brown, the stigma pale at apex.

Holotype: ♀ (BISHOP 9940), Owen Stanley Range: Goilala: Bome, 1950 m, New Guinea, 16-30.IV.1958, W. Brandt.

Paratypes: ♀, same data as the type. ♀, Lake Iviva (Sirunki), 2800-2900 m, NE New Guinea, 15.VI.1963, ♀, Mt Giluwe, 2250 m, SE New Guinea, 27.V-6.VI.1963, J. Sedlacek. 2 ♀♀, Mt Giluwe, N. side, Malgi, 2500 m, SE New Guinea, 25-30.V.1961, J. L. Gressitt.

Coccygomimus spilopteris Momoi, new species Fig. 14.

♀. Face with very short hairs. Mesopleurum with no distinct median swelling, with a few widely scattered punctures and hairs. Metapleurum virtually unsculptured, with dense hairs only along upper margin and on hind portion. Propodeum faintly mat on lateral face, polished on dorsal face, with coarse transverse striae on dorsal face basally, with short scattered hairs except dorsoapically. Tergites faintly mat, with medium sized to large shallow and irregularly spaced punctures on basal five tergites, punctures denser on each side of median portion of tergites 2-4, and finer, sparser and more evenly spaced on tergite 5. Ovipositor sheath about as long as tergites 1/3 combined, about 0.8 as long as hind tibia. Fore wing 5.4-9.1 mm long.

Reddish brown. Head, pronotum, mesoscutum, scutellum, wing cavity, front upper corner of mesopleurum and ovipositor sheath black. Palpi, lower margin of pronotum, subtegular ridge, scutellum and postscutellum white. Scape at apex and face next to antenna usually with a white spot. Hind tibia apically and hind and mid tarsi fuscous brown. Fore tarsus more or less infuscated. Wings hyaline, with two large clouds, one across median cell and the other at apex. Stigma and veins blackish brown, the stigma pale at apex.

Holotype ♀ (BISHOP 9941), 22 km SE of Okapa, 2100 m, NE New Guinea, 28.VIII. 1964, J. & M. Sedlacek.

Paratypes: ♀, same data as the type. ♀, Wau, Morobe District, 1200 m, NE New Guinea, 1.VII.1661, Malaise trap, ♀, Wisselmeren, Enarotadi, 1850 m, NW New Guinea, 12.VII-4.VIII.1962, Malaise trap, J. Sedlacek. ♀, Miramar-Gobayabe, Asaro, Valley, 2000 m, NE New Guinea, 29.VI.1955, J. L. Gressitt. ♀, Wau, Morobe District, Mt Missim, 1600 m, NE New Guinea, 25.IV.1966, O. R. Wilkes. ♀, Eliptamin Valley, 1200-1350 m, NE New Guinea, 16-30.VIII.1959, W. W. Brandt. ♀, Wau, 1200 m, NE New Guinea, XI. Malaise trap, P. Shanahan.

SUMMARY

So far as the present study is concerned, the New Guinean *Itoplectis* and *Coccygomimus* are all endemic to the island. The 14 species are arranged into 5 characteristic species-groups, viz., the *australis*, *melanthes* and *polia* groups of *Itoplectis* and the *latistigma* and *rasilis* groups of *Coccygomimus*. All of the groups are considered from their structural peculiarity representatives of certain elements more or less different from the main phylogenetic stocks of these genera known up to the present from Eurasia and the adjacent areas. Considering this peculiarity of the New Guinean populations together with the residual distributional pattern of these two genera in the Indo-Australian area, it would be possible to say that the New Guinean *Itoplectis* and *Coccygomimus* are not recent immigrants but survivals of ancient elements which were once widely distributed in the Oriental Region. Furthermore, the discovery of the typical member of the

groups *australis* and *rasilis* in both New Guinea and N. Philippines may suggest small but definite historical relationships between New Guinea and Philippine faunae.

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