

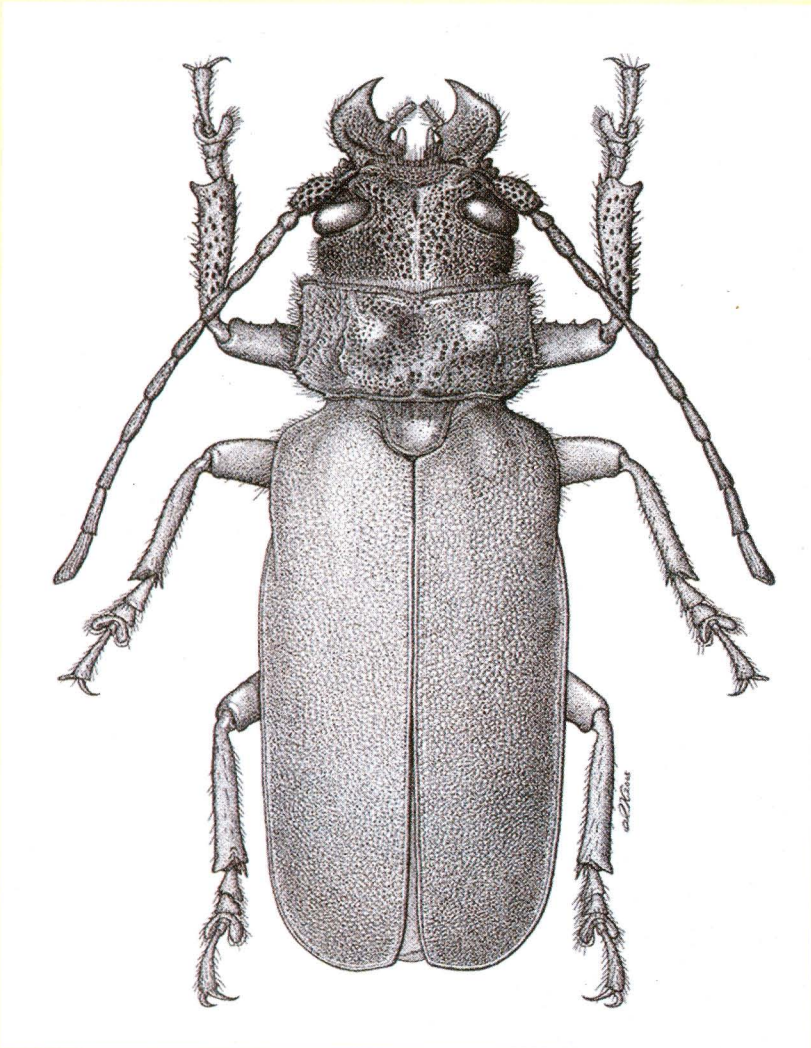
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ZIRO KOMIYA & ULF NYLANDER

A TAXONOMIC REVISION OF THE GENUS *GNATHONYX*



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A TAXONOMIC REVISION OF THE GENUS *GNATHONYX* GAHAN (Coleoptera, Cerambycidae, Prioninae)

Ziro KOMIYA * and Ulf NYLANDER **

* Shimouma, 3-2-12, Setagaya-ku, Tokyo 154-0002, Japan

** Äsvägen 15-SE 81833 Valbo, Sweden

Abstract. The genus *Gnathonyx* of New Guinea is revised. Four new species and a new subspecies of this genus are described. The emended characteristics of this genus are given. A key to known species of this genus is given.

Key words: Coleoptera, Cerambycidae, Prioninae, *Gnathonyx*, Papua New Guinea, Irian Jaya, Indonesia, new species.

Introduction.

The genus *Gnathonyx* was described by Gahan (1894) based on a male from New Guinea and little knowledge has been added to this genus after the original description. Recently, we have been able to examine a fairly good series of the members of this genus and the results are going to be given in this paper. Through the way of investigation, we found that the male of this genus show two forms, one of which is a form with long mandibles (telodonte form) and another is that with short mandible and the difference between these two forms in each species is often more distinct than specific diversity. In this paper, we will give emended characteristics of this genus and describe *Gnathonyx piceipennis longiscapis* subsp. nov. *G. orientalis* sp. nov., *G. inermis* sp. nov., *G. amplatarsalis* sp. nov. and *G. heteromandibularis* sp. nov. The long- mandibular form of male is so far found in *G. piceipennis*, *G. piceipennis longiscapis*, subsp. nov. and *G. orientalis* sp. nov. and short-mandibular form is found in every species except *G. inermis* which is known only by a female.

Abbreviations

BMNH The Natural History Museum, London
 IRSNB Institut Royal des Sciences Naturelles de Belgique
 NSMT Natural Science Museum (NAT. Hist.), Tokyo
 ZSMC Zoologische Staatssammlung, München
 ADC collection of Alain DRUMONT
 KFC collection of Koich FUJISHIRO
 UNC collection of Ulf NYLANDER
 ZKC collection of Ziro KOMIYA

Before going further, we would like to express our gratitude to Ms. Sharon SHUTE of BMNH for her help in studying the holotype. We owe to Mr. Alain DRUMONT of IRSNB, Keiichi FUJISHIRO and Karl WERNER for their kind helps to this study.

Genus *Gnathonyx* Gahan, 1894

Gnathonyx Gahan, 1894, *Annl. Nat. Hist.* 6/8: 290.

LAMEERE, 1903, *Mem. Soc. ent. Belg.* 11: 18. GRESSITT, 1959, *Pacif. Ins.* 1: 69.

Type species: *Gnathonyx piceipennis* Gahan, 1894, *Annl. Nat. Hist.* 6/8: 290.

Long-mandibular male (telodonte form) (Figs. 1, 2, 5, 6, 9, 10, 15, 24, 25, 26).
 Length 30mm~67mm, body cylindrical and elongated, usually dark brown and

blackish on head, pronotum and legs; head and pronotum sparsely provided with red bristles which are sometimes so sparse that they are looking glabrous; elytra glabrous and underside sparsely covered with red bristles.

Head robust, well convex and rugosely granulate in vertex, front concave at middle, antennal tubercle large; eyes large but not so bulging, distinctly separated; mandible long and arched, usually slightly longer than head, thick at base and conically narrowed toward acutely pointed apex, furnished with a bifid and obtuse dent very close to base and apical fifth smoothly arched without any dent, covered with sparse punctures and setae in basal half. Antennae 11 segmented, slender, as long as or slightly longer than a half length of body, scape rugosely punctuate and the remainders sparsely punctuate on upper side and mat or reticulate on underside, segments 3 and 4 each often furnished with a longitudinal foveae in apical underside, segments 5-11 furnished with a carina running along external side of segments.

Pronotum almost rectangular, about two thirds as long as wide, basal angles projected and apical angles usually less distinctly pointed; lateral margins usually narrowed at middle, furnished with many small dents which are sometimes obtuse or indistinct, latero-posterior margins between basal angles and basal line furnished with several dents; disc ruggedly granulate or punctuate and furnished with irregularly V-formed patch of shiny and elevated part just after middle. Scutellum lingulate.

Elytra hemi-cylindrical and becoming flatter in apical half, slender, almost parallel-sided, devoid of distinct costa, deeply and densely punctuate and punctures become confluent towards apices, sutural tooth usually absent.

Legs short; external side of pro-tibia and underside of pro- and meso-femur usually provided with many distinct spines, and meso- and meta-tibia often provided with sparse spines; third tarsal segment widened, claw rather stout and as long as united length of basal three segments.

Underside covered with red hairs which are becoming thinner in abdomen, sparsely punctuate except gula and prosterna which are usually rugosely punctuate and often vermiculate; abdominal segments 1-4 furnished with a distinct fovea on their each side which usually thickly haired inside, segment 5 sometimes also furnished with two small foveae or thickly haired parts at apical half.

Short-mandibular male (Figs. 3, 7, 11, 16, 18, 20, 27, 31). Length 24-39mm. Color and sculpture mostly similar to those of long-mandibular male but conspicuously different in the form of head, pronotum and mandibles and body feature in general also fairly different. Mandible each shorter than head, internal side depressed, keenly bladed and furnished with two distinct dents, one of which is usually placed around middle but sometimes very close to the apex, and another is located close to base. Head much smaller than pronotum, not strongly convex and less rugosely granulate, carina of antenna indistinct. Pronotum rather densely furnished with red bristles and slightly narrowed anteriorly. Elytra widened in the posterior half. Foveae on abdominal segments more distinct than those of long-mandibular male.

Female (Figs. 4, 8, 12, 13, 23). Length 25-50mm. Similar to short-mandibular male but head smaller, eyes more closely placed, mandibles shorter, antennae as long as or slightly longer than male, pronotum distinctly narrowed anteriorly, bristles on head and pronotum thicker and elytra wider. Abdominal segments more thickly haired, segments 1-4 furnished less distinct foveae which often quite missing.

***Gnathonyx piceipennis* Gahan, 1894** (Figs. 1-4, 14, 15, 24, 28)

Gnathonyx piceipennis Gahan, 1894, *Ann. Mag. Nat. Hist.* (5) 8: 291.

Male. This time, we examined 11 males of this species and 10 of which including holotype belonged to the long-mandibular form. Body length: long-mandibular male 39-67mm, short-mandibular male 30mm. Body generally dark brown, almost black in head, mandibles, antennae, pronotum, legs and basal parts of elytra. Head large, eyes separated. In long-mandibular male, the dent on mandible large, bifid at top, longer than a half of the diameter of mandible shaft under it, placed at about basal

sixth (Fig. 24). Antennae slightly shorter than a half of body, scape shorter than one and a half times of its own width. Scutellum shiny and without punctures in the middle. Elytra long and almost parallel-sided, much longer than twice of their width. Abdominal segments 1~4 furnished with distinct foveae filled with sparse hairs. Legs short.

Female. As compared with male, antennae longer with the scapes slenderer, legs longer and slenderer, pronotum distinctly narrowed anteriorly and elytra wider. Body length 40~41mm.

Specimens examined. Holotype ♂, (Fig. 15), Doreh, New Guinea, preserved in BMNH; (in ZKC): 2 ♂♂, Mt. Arfak, Irian Jaya, 25-III-1993, T. Mizunuma leg., 1 ♀, same locality, 20-XII-1977, 1 ♂, III-1998, 1 ♂, V-1999, 2 ♂♂, I-2004, (in UNC): 1 ♀, same locality, IV-2002, (in ZKC): Iranmeba, Irian Jaya, 1500m, A. Riedel leg. 1 ♂, Irian Jaya, 10-XII-1992, 1 ♂, no date, (in KFC): 1 ♂, Parapi, Manokawari, IX-1999, 1 ♂, Fak Fak, I-2002, Alain Chaminade leg.

Distribution. Northeastern parts of Doberai peninsula (Mt. Arfak, Doreh, Manokwari) and Onin Peninsula (Fak Fak) of Irian Jaya, Indonesia.

***Gnathonyx piceipennis longiscapis* subsp. nov.** (Figs. 5~8, 17, 25, 27, 29)

Gnathonyx piceipennis Gressitt, 1959, *Pacif. Ins.* 1: 69.

This new subspecies is close to nominotypical form in body size and coloration but distinctive in having long scapes of antennae. We examined 10 males and 9 of them were long-mandibular form.

Long-mandibular male. Length 40~68mm. Head robust, jugular process long, acutely pointed and unevenly bifid, mandibles slender, each furnished with a large bifid dent close to base. Mandibles long and slender, each shortly emarginate on lateral side very close to base (Fig. 25). Antennae slightly longer than a half of body, scape longer than 2.5 times of its own width. Foveae of abdomen large and their internal margin not clear, thinly haired inside. Middle and hind legs longer and slenderer as compared with other congeners, middle tibiae furnished with several distinct spines.

Short-mandibular male. Length 39mm, width 15mm. Head about a half as long as wide; mandibles depressed, keenly bladed, each furnished with a distinct dent at about basal third and another smaller one close to base. Elytra 2.1 times as long as wide. Foveae of abdomen clearly margined all around. (This example may not be typical short-mandibular form because it has the first dents of mandibles placed at about basal third and in this respect, it may be a transit form between two forms. (see Fig. 27)).

Female. Length 41~51mm. Antennae and legs slender and long; elytra widened after humeri and lateral margins rounded; foveae of abdomen well recognized though not clearly margined, hairs in foveae not limited inside but vaguely covering around.

Type series. Holotype, ♂, Tembagapura, south of Sudirman Mountains, Irian Jaya, III-2000, preserved in NSMT; paratypes, (in ZKC): 1 ♂, 1 ♀, same data as holotype, 1 ♂, Timika, III-1998, (in FKC): 1 ♂, 1 ♀, same locality, VI-2001, (in UNC): 1 ♂, same locality, IV-2002, (in ZKC): 2 ♂, 2 ♀, Mapia, VI~VIII, 2004, (in col. Karl Werner): 1 ♂, same data, (in FKC): 1 ♂, same locality, III-1993, (in ZKC): 1 ♂, Wamena, V-1999, 1 ♀, Enaratori, I-1989, (in ZSMC): 1 ♀, Paniai prov., Sinak, 2000-2200m, 14~17-XII-1995, A. Riedel leg., 1 ♀, Ilugwa prov., Melangama, 1800m, 9~12-IX-1990, A. Riedel leg.

Distribution. Southern Irian Jaya (south of Sudirman Mountains, Koboere Mountains and western part of Jayawijaya Mountains).

Notes. This subspecies is easily distinguished from *piceipennis* by longer scapes of antennae which are longer than 2.5 times of the own width. It is also different in having longer and slenderer legs and wider foveae which are not clearly margined at inner sides (see Figs 17 as compared with 14).

***Gnathonyx orientalis* sp. nov.** (Figs. 9~13, 16, 26, 30, 31)

This species is close to *G. piceipennis* but much smaller. We examined 13 males of this species and 12 of them were the long-mandibular form.

Male. Body length of long-mandibular form 31~47mm, and short-mandibular form 26mm. Head and pronotum provided with rather thick hairs which are paler and thinner than other congeners. In the long-mandibular form, mandibles less widened near base and basal bifid dents smaller than those of other congeners (Fig. 26); each dent visible in dorsal view only when mandibles are extremely opened and shorter than a third of the diameter of the shaft of mandible under it. Pronotum less shiny, dents on lateral margins weak and usually only three or four obtuse dents placed near anterior and posterior angles. Underside thickly haired, foveae on abdominal segments 1~4 distinct and filled with thick yellow hairs. Penis shorter than *G. piceipennis* and lateral lobe shorter and less haired at apical part (see Figs. 28~30).

Female. Body length 29~31mm, almost uniformly brown. Head and pronotum covered with paler, thinner and thicker bristles. Width of elytra variable, ratio of length to width 1.7~2.0. Underside more thickly covered with yellow hairs; abdominal segments 1~4 provided with foveae which are not vividly margined as in male but fairly distinct and also filled with sparse hairs.

Type series. Holotype. ♂, Kaindi, Wau, Papua New Guinea, IX-1996, in coll. NSMT; paratypes, (in ZKC): 2 ♂♂, 1 ♀ same data as holotype, (in UNC): 2 ♂♂, same data as holotype, 1 ♂, Camp Bulolo, Morobe Prov., 1 ♂, Kapiro Vill. Wau, 11-I-2000, (in ZKC): 2 ♂♂, Tifalmin, V-1969, 1 ♂, 4 ♀♀, Morobe, Wau, 7-I-1997, (in ADC): 1 ♂, same locality, (in ZKC): 1 ♀, Okapa, Kume Vill., 6-XII-1999, 1 ♂, same locality, III-2000, 1 ♂, PNG, 4-X-1974, (some of paratypes will be deposited to BMNH, IRSNB and NSMT).

Distribution. Eastern Highland province and Morobe Province of Papua New Guinea.

Notes. This species is close to *G. piceipennis*. In the male, it is easily distinguished by smaller dents of mandibles which placed more close to base. In the female, it is different in pale brown head and pronotum which are more thickly haired. In both sexes, this species is usually distinguished from *G. piceipennis* in the smaller size (most examples of this species are 32~35mm while in *piceipennis* 39~55mm), paler color, thicker and less stout bristles on body, shorter scape of antenna and punctuate middle part of scutellum.

***Gnathonyx inermis* sp. nov.** (Figs. 22, 23)

This species is known by single female. General feature is similar to short-mandibular male of *G. piceipennis longiscapis*.

Body brown throughout, head, pronotum and mandibles darker but not black, dorsum entirely glabrous, underside thinly covered with yellow pubescence which become thinner on abdomen. Body length 40mm.

Head about one-thirds as long as wide, eyes bulging, jugular processes obtuse and antennal tubercles transversely elongated. Antennae slightly longer than a half of body length, scape not rugosely but rather finely punctured.

Pronotum vermicularly punctuate; rectangular, basal line straight; disc furnished with irregular shiny part in middle. Scutellum without shiny and without punctures.

Elytra 2.3 times as long as wide, widened just after humeri and ovally rounded to apices, deeply and regularly punctuate in basal half and irregularly granulate in apical half, furnished with very small sutural teeth.

Gula roughly granulate; prosterna smooth and sparsely punctuate; abdomen

furnished with fairly distinct eight foveae; inside of foveae quite glabrous and sparsely punctuate.

Legs without dents, protibia finely punctured and other parts smooth.

Holotype. ♀, Kainantu, Eastern Highlands Province, XII-1979, in ZKC.

Notes. This new species is close to *G. piceipennis* and *G. orientalis* sp. nov. but very distinctive by having for-tibiae without any spikes, head and prothorax wider and without covering bristles, shiny pronotum and complete foveae of abdomen without inside hairs.

***Gnathonyx amplitarsalis* sp. nov.** (Figs. 20, 21)

This species is known by a male of short-mandibular form.

Body brown, slightly darker in anterior half of body, sparsely covered with brownish yellow bristles on head and prothorax. Body length 34mm. Head 0.6 times as long as wide, rugosely punctuate, furnished with distinct median groove on vertex, antennal tubercles round and strongly raised, jugular processes bullet-formed and not bifid; mandible each 0.7 times as long as head, external margin rounded, basal two-thirds thickened, rugosely granulate and furnished with bristles, apical third depressed and depressed portions extend basad along internal margin which is keenly bladed, acutely pointed at apex, furnished with distinct two internal dents, one at middle and another at basal fifth; eyes bulging, interspace between eyes as long as each lobe; antennae as long as a half of body.

Pronotum 0.7 times as long as wide, apical margin 0.85 times as long as basal margin, lateral margins slightly expanding at basal third, both apical and basal angles each furnished with a distinct spine and other parts devoid of distinct spine though partly uneven, disc well convex, rugosely punctuate, furnished with a vague V-shaped part and deeply concave at middle. Scutellum linguiform, rough in basal half and shiny in apical half.

Elytra 2.6 times as long as wide, irregularly punctuate in basal two-thirds and punctures mingled with irregular granules in apical half, furnished with small but distinct sutural teeth.

Legs smooth, pro-tibiae, pro- and meso-femur very sparsely furnished with spines.

Gula rugosely granulate; prosterna roughly punctuate and furnished with red bristles; metasterna and metepisterna covered with thin yellow hairs; abdomen almost glabrous, furnished with distinct eight foveae which are very deep, dark colored, clearly margined and thickly haired inside

Holotype, ♂, Fak Fak, western Irian Jaya, III-2003, in ZKC.

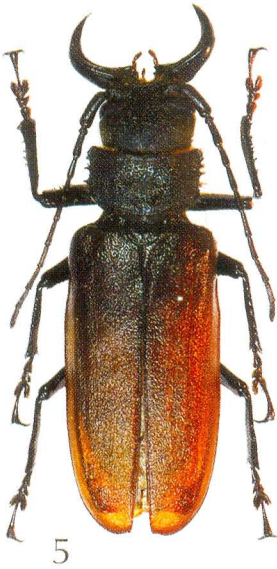
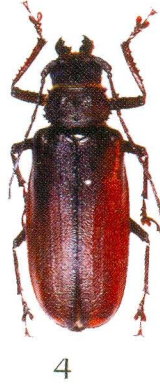
Notes. This species is close to short-mandibular form of *G. piceipennis* but quite different in having pronotum narrowed forward as in female, jugular process not bifid, having a spine on each corner of prothorax and each sutural ends of elytra.

***Gnathonyx heteromandiblaris* sp. nov.** (Figs. 18, 19)

Very conspicuous in small body and peculiar shape of mandibles. Known by single male of short-mandibular form.

Body black throughout, thickly covered with red hairs on head and mandibles, and sparsely on prothorax; underside covered with long and yellow pubescence except abdomen which is covered with short yellow bristles. Body length 24mm.

Head 0.6 times as long as wide, vertex coarsely granulate, frons deeply punctuate, antennal tubercles small, jugular processes bullet-formed, eyes bulging and transverse in dorsal view, labrum furnished with red, long and thick hairs. Each mandibles





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steeply arched at about basal third and rather straight in apical half, basal three-fourths thick, bristled and rugosely granulate, furnished with several dents on external margins between basal and apical thirds; apex acutely pointed and a distinct internal dent situated at apical third, and between apex and the first dent emarginated and keenly bladed, basal two thirds of internal margin not bladed, a tubercle-like second dent placed close to base. Antennae about a half as long as body.

Pronotum 0.56 times as long as wide, slightly convergent anteriorly, lateral margins almost straight and partly weakly serrated, latero-posterior margins serrated; disc furnished with a distinct V-shaped shiny patch, other portions deeply and rather finely punctuate.

Elytra deeply punctuate throughout, about twice as long as wide, apices of suture weakly pointed.

Pro- and metasterna and metepisterna covered with sparse but thick pubescence; abdomen sparsely punctuate, segments 1~4 furnished with distinct foveae filled with thick hairs, segment 5 furnished with long hairs in apical third and also with a pair of small foveae.

Legs sparsely punctuate and almost smooth except pro-tibia which is furnished with two small dents.

Male genital organs close to those of *G. piceipennis longiscapis* subsp. nov.

Holotype ♂, Nabire, Irian Jaya, XII-2002, in ZKC.

Notes. This new species is close to *G. amplatarsalis* sp. nov. but it is quite different in having peculiar mandible which has the first dent very close to the apex and several external dents close to the base.

Discussions on mandibular forms as generic character

This genus have been described as having mandibles not toothed previously, though distinct ones well observed (see Figs. 24~27). We guess such misunderstanding might have took place because in a long-mandibular male of this genus, such as the holotype of *G. piceipennis* (Fig. 15), dents are always placed very close to base so that they are easily hidden under labium and visible only when mandibles are widely opened.

Key to the species of the genus *Gnathonyx*

Long-mandibular male

1. Antenna longer than a half of body with the scape much longer than twice of the own width, legs long and slender, foveae of abdomen wide and thinly haired inside (see Fig. 17); (southern parts of Maoke Mountains, Irian Jaya).....
..... *G. piceipennis longiscapis* subsp. nov.

-- Antennae shorter than a half of body with the scape shorter than 1.5 times of the own width, legs short and robust, foveae of abdomen narrow and thickly haired inside (see Fig. 14).....2.

2. Dent of mandible shorter than a third of the width of mandibular shaft (see Fig. 26), scutellum punctuate in the middle, body usually shorter than 32mm; (Eastern Highland Prov. and Morobe Prov. of Papua New Guinea)..... *G. orientalis* sp. nov.

-- Dent of mandibles about a half as long as the width of mandibular shaft (see Fig. 24), scutellum smooth in the middle, body usually longer than 35mm; (eastern mountains of Doberai peninsula and Onin peninsula of Irian Jaya).....
..... *G. piceipennis piceipennis*.

Short-mandibular male

Pronotum narrowed forward, protibia furnished with two or three short spines externally, first segment of meta-tarsi as long as wide.....2.

-- Pronotum almost parallel-sided, protibia furnished with 5~10 distinct spines externally, first segment of meta-tarsi much longer than wide3.

2. Mandible provided with several external dents, body black; (Nabire, Irian Jaya) *G. heteromandibularis* sp. nov.

-- Mandible smoothly rounded externally, body brown; (Fak Fak, Irian Jaya) *G. amplitarsalis* sp. nov.

3. Body longer than 30mm, dark brown, scutellum not punctuate, apices of lateral lobe of genital organ long4

-- Body 26mm, brown, scutellum punctuate, apices of lateral lobe of genital organ short..... *G. orientalis* sp. nov.

4. Scape of antennae longer than 2.3 times of the own width, foveae of abdomen thinly haired inside *G. piceipennis longiscapis* subsp. nov.

-- Scape of antennae shorter than 1.5 times of the own width, foveae of abdomen thickly haired inside *G. piceipennis piceipennis*.

Female

-- Dorsal side of head and pronotum glabrous, foveae of abdomen clearly margined as in male but inside punctuate and glabrous, external side of protibia without any spine; (Eastern Highland prov. of Papua New Guinea)..... *G. inermis* sp. nov.

-- Dorsal side of head and pronotum more or less covered with bristles, foveae of abdomen not clearly margined and often quite absent, external side of protibia furnished with several distinct spines2.

2. Head and pronotum brown, covered with thick bristles, scutellum punctuate in middle, mesotibia always without any spines, body shorter than 37mm.....

..... *G. orientalis* sp. nov.

-- Head and pronotum dark brown, scutellum not punctuate in the middle, mesotibia furnished with distinct 2~5 spines, body longer than 39mm3.

3. Antennae and legs long and slender, scapes usually longer than 2.5 times of the width, meso-tibia usually furnished spines, third segment of meta-tarsi as long as wide

..... *G. piceipennis longiscapis* subsp. nov.

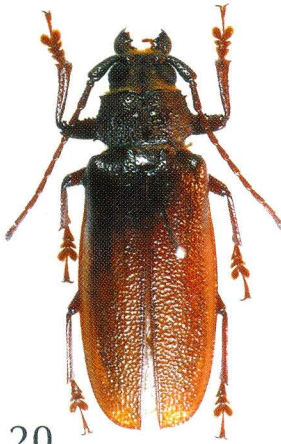
-- Antennae and legs short and robust, scapes usually shorter than twice of the width, meso-tibia usually missing spines, third segment of meta-tarsi obviously wider than long *G. piceipennis piceipennis*.

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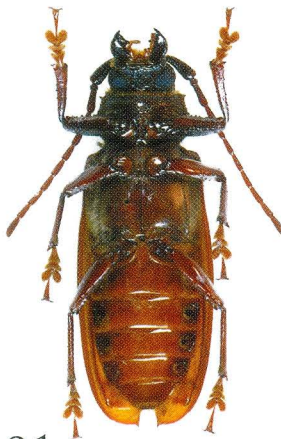
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Explanation of Figs.

Figs. 1~8, Habitus of *Gnathonyx piceipennis* ssp.

1~4, *Gnathonyx piceipennis piceipennis*, 1~2, long-mandibular male, 3, short-mandibular male, 4, female.

5~8, *G. piceipennis longiscapis* subsp. nov., 5~6, long-mandibular male, 7, short-mandibular, male, 8, female.(cf. figs. 1~17 are indicated in same scale)

Figs. 9~17, Habitus and abdomen of *Gnathonyx* spp.

15, Habitus of *Gnathonyx piceipennis* holotype and labels of BMNH, 9~13, Habitus of dorsal side of *G. orientalis* sp. nov.

9~10, long-mandibular male, 11, short-mandibular male, 12~13, female, 14, abdomen of *G. piceipennis piceipennis*, 16, abdomen of *G. orientalis* sp. nov., 17. abdomen of *G. piceipennis longiscapis* subsp. nov.

Figs. 18~23, Habitus of *Gnathonyx* spp. (18, 20, 22, dorsal side, 19, 21, 23, abdominal side).

18,19, *G. heteromandibularis* sp. nov., 20,21, *G. amplitarsalis*, sp. nov. 22, 23, *G. inermis* sp. nov.

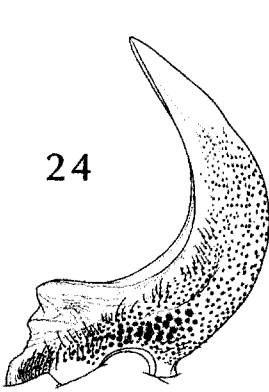
Figs. 24~27, Male right mandible of *Gnathonyx* spp., 24, *G. piceipennis piceipennis*, 25, 27, *G. piceipennis longiscapis* subsp. nov., 25, long-mandibular form, 27, short-mandibular form. 26, *G. orientalis* sp. nov.

Figs. 28~30, Male genital organs of *Gnathonyx* spp., 28, *G. piceipennis piceipennis*, 29, *G. piceipennis longiscapis* subsp. nov., 30, *G. orientalis* sp. nov.

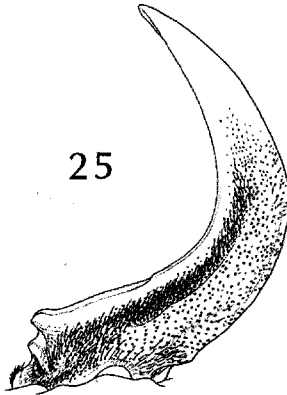
Fig. 31, Habitus of *Gnathonyx orientalis* sp. nov. short-mandibular male.

Fig. 32, Distributional map of *Gnathonyx* spp. in New Guinea

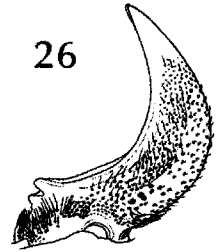
p. *G. piceipennis piceipennis*, l. *G. piceipennis longiscapis* subsp. nov., *G. orientalis* sp. nov., a. *G. amplitarsalis* sp. nov. h. *G. heteromandibularis* sp. nov., i. *G. inermis* sp. nov.



24



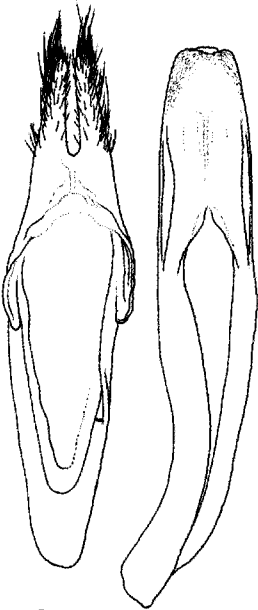
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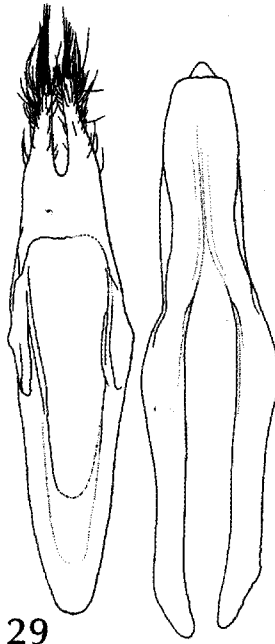
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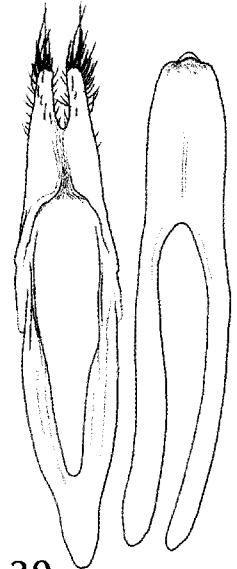
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28

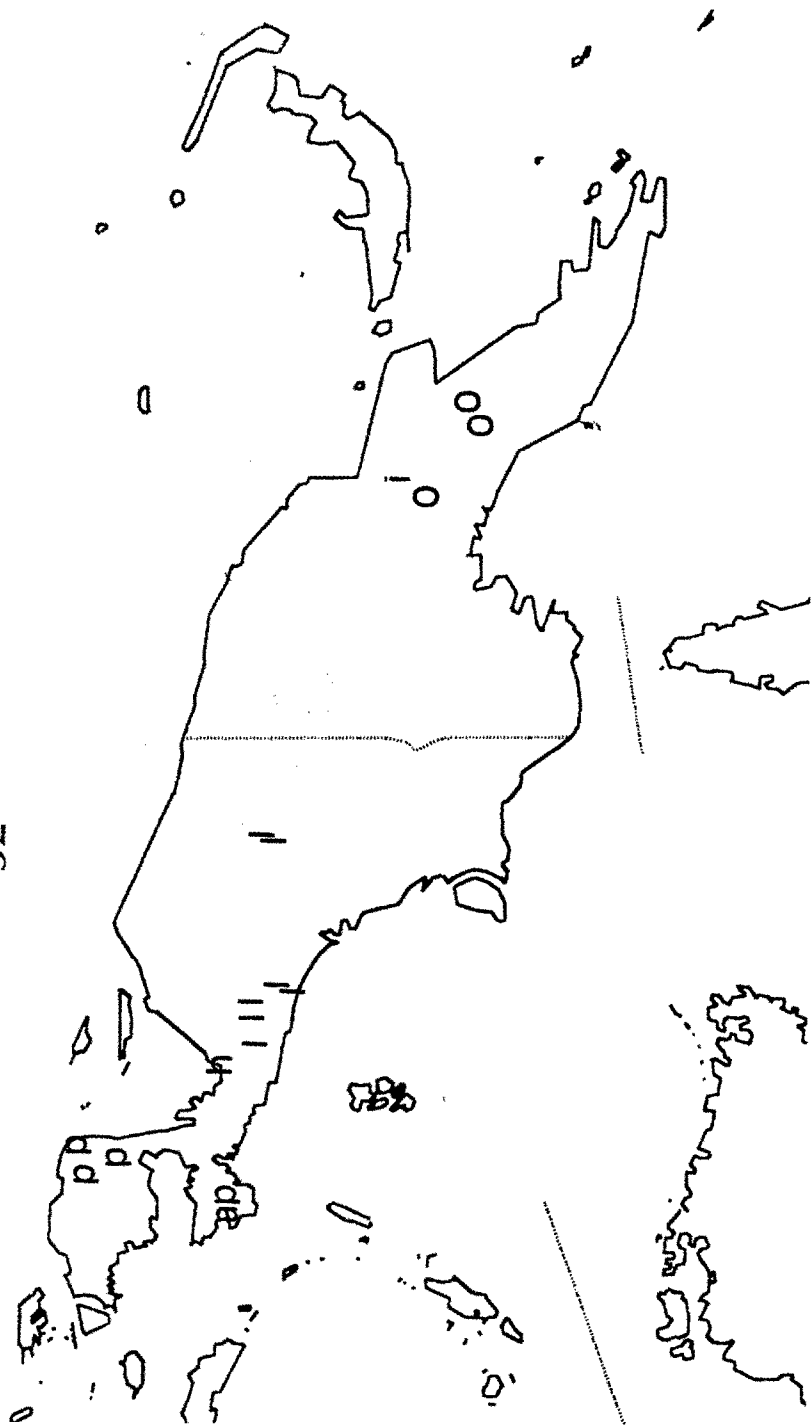


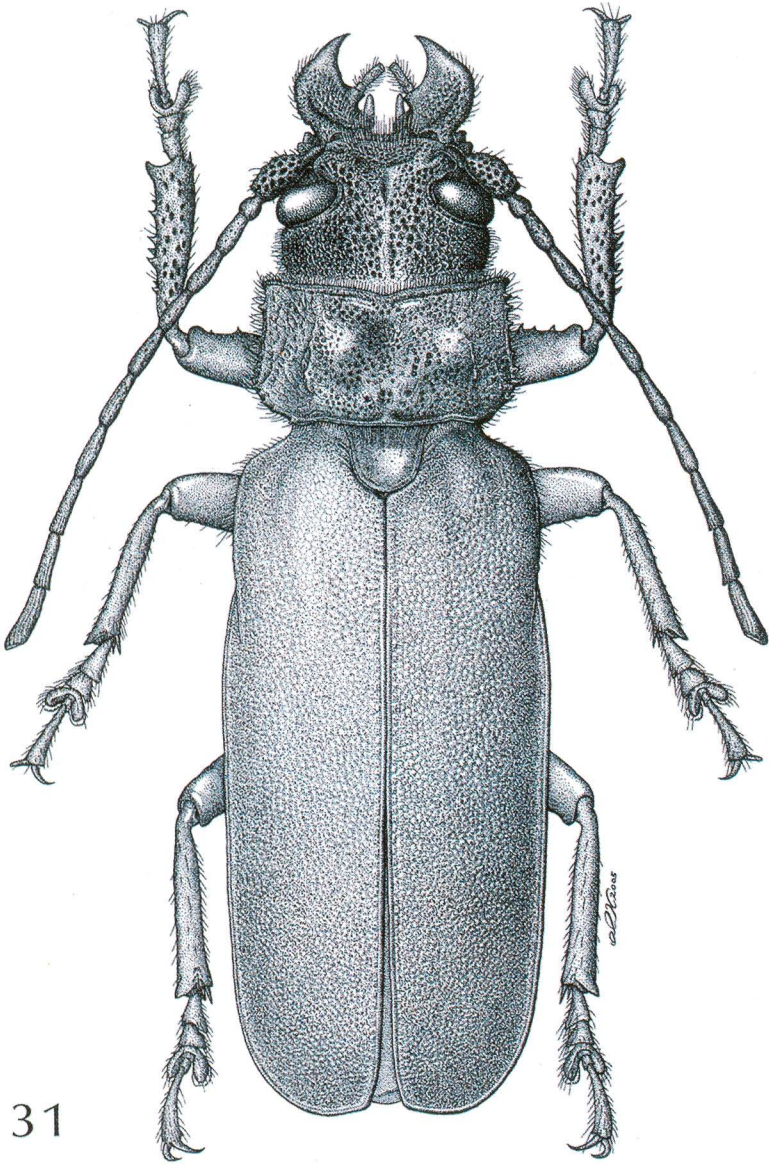
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31