

RESEARCH PAPER

Revision of the genera of Picrotini (Coleoptera: Cryptophagidae: Cryptophaginae)

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Abstract. The genera of the Gondwanan tribe Picrotini are redefined, resulting in the recognition of 22 genera. Thirteen new genera and 10 new species are described: *Austroscelis* gen. nov. (type species: *Cryptophagus gibbipennis* Blackburn, 1892), *Bellascelis* gen. nov. (type species: *Bellascelis pecki* sp. nov.), *Chileothortus* gen. nov. (type species: *Chileothortus infuscatus* sp. nov.), *Chimaerocryptus* gen. nov. (type species: *Chimaerocryptus johnsoni* sp. nov.), *Connatocryptus* gen. nov. (type species: *Connatocryptus utiku* sp. nov.), *Cordosomatula* gen. nov. (type species: *Cordosomatula magnabagishae* sp. nov.), *Foveocryptus* gen. nov. (type species: *Foveocryptus chenyardongi* sp. nov.), *Humerocryptus* gen. nov. (type species: *Cryptophagus tumidus* Broun, 1893), *Notocryptus* gen. nov. (type species: *Cryptophagus australis* Redtenbacher, 1868), *Odontosomatula* gen. nov. (type species: *Odontosomatula carltoni* sp. nov.), *Orthoscelis* gen. nov. (type species: *Orthoscelis transversus* sp. nov.), *Papuacryptus* gen. nov. (type species: *Papuacryptus striatopunctatus* sp. nov.), *Paragnetaria* gen. nov. (type species: *Paragnetaria slipinskii* sp. nov.). *Brounina* Bruce, 1943, syn. nov., is recognized as a new junior synonym of *Chiliotis* Reitter, 1875. Fourteen new combinations are established. The genus *Micrambina* Reitter, 1878 and its type species, *Micrambina amitta* Reitter, 1878, are excluded from Cryptophagidae and transferred to the Toramini (Erotylidae: Cryptophilinae) as *genus et species inquirenda*. *Cryptophagus hispidulus* Broun, 1880, syn. nov., and *Cryptophagus obscurus* Broun, 1893, syn. nov., are proposed as new junior synonyms of *Notocryptus australis* (Redtenbacher, 1868), comb. nov. A lectotype is designated for *Mycetaea pilosella* Blackburn, 1891. A key is provided for the genera of Picrotini along with a habitus image gallery of putative species. The morphology of the Cryptophagidae is discussed, with an emphasis on the aedeagus and the bipartite penis as potential support for monophyletic groups within the currently heterogeneous Cucujoidea.

Key words. Coleoptera, Cucujoidea, Cryptophagidae, Cryptophaginae, Picrotini, taxonomy, morphology, new genera, new species, Australia, Chile, Gondwana, New Zealand, Southern Hemisphere

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Introduction

The tribe Picrotini, formerly known as the Cryptosomatulini (see BOUCHARD et al. 2011), are a poorly known taxonomic group of Southern Hemisphere Cryptophaginae (Cryptophagidae) containing 11 valid genera and 38 species. Several species have long been known to be incorrectly placed in the mainly Holarctic genus *Cryptophagus* Herbst, 1792 (LESCHEN & GIMMEL 2012).

Members are found in Australasia and South America, and in the Juan Fernandez Islands, and, for the most part, feed on fungal spores and plant pollen, with at least one genus specialized on fern spores (LESCHEN & LAWRENCE 1991, LESCHEN 2010, LESCHEN & GIMMEL 2012). Although Cryptophagidae received a modern genus-level treatment (LESCHEN 1996), the Picrotini were largely omitted from detailed study because of the large number of undescribed



species and lack of an established generic classification. It was obvious that more time was required to examine morphology among species to inform generic limits and make identifications possible for a group of beetles that on cursory examination appeared difficult to partition into distinct groups.

We have examined about 80 species contained in several collections, more than double the number of currently described species. Meanwhile, new generic-level taxa continue to be discovered, including a new generic form from New Zealand first collected in Northland during 2011 and again during 2020 from the Waikato. This study is the second installment of our collaborative study on cryptophagids where we provide the first genus-level classification of Picrotini based on adult morphology. We describe 13 new genera and 10 new species. An image gallery of most of the putative species we have examined and a key to the genera will help facilitate identification and provide the necessary background for future revisionary studies.

Material and methods

During this study, we discovered that well over half of the species of Picrotini were undescribed. We examined as many forms as feasible, mostly those represented by enough material for dissections of males and females, though four genera are described from singletons or doubletons and one is known only from females. Specimens from the following collections, including type material for all previously described members of Picrotini, were examined (collection abbreviations are according to EVENHUIS (2020)): Australian National Insect Collection, CSIRO, Canberra (ANIC; John Lawrence, Adam Slipinski); California Academy of Sciences, San Francisco (CAS; David Kavanaugh, Roberta Brett); Canadian Museum of Nature, Ottawa (CMN; Bob Anderson); Field Museum of Natural History, Chicago (FMNH; Al Newton, Margaret Thayer); Tasmanian Museum and Art Gallery, Hobart (TMAG; Simon Grove); Museo Nacional de Historia Natural, Santiago (MNHC; Mario Elgueta); Museum of Victoria, Abbotsford (MVMA; Ken Walker); Muséum National d'Histoire Naturelle, Paris (MNHN; Nicole Berti, Azadeh Taghavian); Museum of New Zealand, Wellington (MONZ; Ricardo Palma, Phil Sirvid); Museum of Zoology Pontifical Catholic University of Ecuador, Quito (QCAZ; Álvaro Barragán); Natural History Museum, London (NHMUK; Roger Booth, Maxwell Barclay, Sharon Shute, Malcolm Kerley); Naturhistorisches Museum, Vienna (NHMW; Harald Schillhammer); Naturhistoriska Riksmuseet, Stockholm (NHRS; Bert Viklund); New Zealand Arthropod Collection, Auckland (NZAC); Queensland Museum, Brisbane (QM; Geoff Monteith); Senckenberg Deutsches Entomologisches Institut, München (SDEI; Lothar Zerche); Snow Entomological Museum, University of Kansas, Lawrence (SEMC; Zack Falin) and Staatliches Museum für Naturkunde, Stuttgart (SMNS; Wolfgang Schawaller). Label data were transcribed verbatim for primary type material; information is placed within double quotes (“ ”), with individual labels

separated by a double slash (/). Our notes and additions are included within square brackets ([]). Label data for paratypes and other material examined were standardized for order of information and date format (Day Month Year) for ease of readability.

The total number of putative species seen by us for each genus is included in the “Included species” section. In parentheses, the first number represents the number of described species, while the second represents the number of known, undescribed species. Seventy-six putative species of Picrotini are included in a habitus image gallery (Figs 1–76) that we hope will be helpful in sorting undetermined material. For undescribed species, we have indicated known country-level distributions (and states/territories for Australia: ACT = Australian Capital Territory; NSW = New South Wales; Qld = Queensland; Tas = Tasmania; WA = Western Australia; Vic = Victoria) in parentheses within the figure captions.

Habitus photographs were taken using Nikon DS-R1 on top of a Leica stereo microscope and photo stacking was done manually. Micro-images (Figs 77–94) were taken with a Canon EOS RP camera via a 20× Mitutoyo lens, and stacked with Zerene Stacker; images in glycerol (Figs 95–97) were taken using a Zeiss SteREO Discovery V20 with planapochromatic lenses and a 2.5× objective with 10× oculars, and stacked with Helicon Focus. All images were post-edited in Photoshop. Glycerin dissections and slide mounts were made following standard procedures. Specimens were cleared in KOH and slide mounted or maintained in glycerin (see methods in LESCHEN 2003) and observed with an Olympus BX50 fitted with Nomarski Differential Contrast.

Measurements. Total length was calculated by the summation of two separate measurements: the greatest longitudinal extent of the pronotum in dorsal view and the greatest longitudinal extent of the elytra in dorsal view. For new species descriptions, pronotal length/width, elytral length/width, pronotal length/elytral length and pronotal width/elytral width ratios were calculated. Pronotal width was measured at the greatest width of the pronotum and elytral width was measured at the greatest width of the elytra together.

Terminology. Morphological terms are based on LESCHEN et al. (2005), LESCHEN (2010), LAWRENCE et al. (2010, 2011), and LAWRENCE & ŚLIPIŃSKI (2013). Many characters referred to in the descriptions are best observed in slide mounts under transmitted light; we originally recorded such characters using a compound scope. These include the interfacetal setae of the eye, subapical serrations of the mandible, gular suture extent, level of fusion of the prothoracic hypomeron to the prosternum, anterolateral notch of the procoxal cavity, crenulations and microsetae at the apex of the prosternal process, characters of the mesanepisternal pit, discrimen length, posterior notch of the metaventricle, spiracular characters, and several characters of the abdominal ventrites: calli (medial and lateral; see LESCHEN 2003), intersegmental crenulations, medio-basal thickenings, and ventrite 5 crenulations.

The ninth antennomere may be reduced in some taxa, including *Picrotus* Sharp, 1886, some *Neopicrotus* Leschen, 1996, and some *Thortus* Broun, 1893, which LESCHEN (1996) interpreted as having antennal clubs composed of two antennomeres. We argue that among these three taxa, only species of *Picrotus* truly have a club with only two antennomeres since antennomere 9 is glabrous and also lacks the subapical rim present in a true club, though the rim, too, may be reduced in some species.

Unusual structural details of the pronotum referred to in this work include: 1) lateral glabrous space; 2) paralateral plicae; and 3) paramedial carinae. The lateral glabrous space, present in multiple taxa but exceptionally wide and distinct in members of *Chiliotis* Reitter, 1875 (Fig. 85: lgs), is a longitudinal, concave glabrous strip dorsomedial to the lateral pronotal bead. This often appears coextensive with the pronotal bead under incident light; diffuse light is necessary to properly visualize this structure. The paralateral plicae (Fig. 78: pp) are short, oblique folds present along the base of the pronotum just medial to the hind angles, in which the cuticle lateral to the fold is slightly elevated relative to the cuticle medial to the fold. These structures are present in some *Notocryptus* gen. nov., *Odontosomatula* gen. nov., *Orthoscelis* gen. nov., and some *Ostreacryptus* Leschen, 2001. Paramedial carinae of the pronotum (Fig. 71: pc) are paired parentheses-shaped structures present only in some members of *Picrotus* and *Thortus*, and are located near the pronotal base on either side of the scutellar lobe.

The elytra are commonly shallowly, transversely impressed in two locations: just behind the scutellar region (“subbasal impression”) and in the apical fourth of the elytra (“subapical impression”). Many species possess a subbasal impression but lack a subapical impression. At least one species (*Ostreacryptus insignis* (Reitter, 1880)) exhibits a medial elytral impression, lying between the subbasal and subapical impressions positionally.

The lengths of the tarsomeres vary, as do the size and shape, especially of tarsomeres 3 and 4, which may have setae present ventrally, or lack setae, particularly when reduced in size. We have observed this character in dissections under high magnification for most taxa. Tarsal formulas are often quite difficult to observe under incident light, particularly in the smallest and most setose taxa; these were confirmed for most taxa in slide mounts with transmitted light.

Historically, aedeagal terminology has been inconsistent among Coleoptera workers because homologies of the structures remain problematic, and nomenclature is often idiosyncratic among specialists of certain groups. We follow those recently published studies mentioned above and have not attempted to align terminology with WANAT (2007), as has been done in cleroids (BARTLETT 2021); for example, we do not refer to the parameres as parameroids.

Cryptophagid taxonomists have followed terminologies of SNODGRASS (1935) (e.g., COOMBS & WOODROFFE 1955 and EVANS 1961); however, a more detailed study of the structures is necessary to appreciate the variation of the male genitalia. The cryptophagid aedeagus typifies that

for Cucujoidea, whereby the phallobase (basal piece) of the tegmen forms a ring around the penis (e.g., LAWRENCE & ŚLIPINŃSKI 2013), thought to be derived from the cucujiform aedeagus as described by CROWSON (1955) which has the penis encased by the phallobase and the parameres dorsal. The cryptophagid aedeagus, however, is inverted within the abdomen as described by EVANS (1961) for *Atomaria* (*Anchicera*) *testacea* Stephens, 1830 (as *Atomaria ruficornis* (Marsham, 1802); Atomariinae) and present in other groups of cucujoids (e.g., Passandridae, Nitidulidae, Laemophloeidae, Priasilphidae, Silvanidae (Brontinae), Cucujidae, and Cavognathidae; LAWRENCE & ŚLIPINŃSKI 2013). An inverted aedeagus in these cucujoids has the ring of the tegmen dorsal and the parameres, if present, lying ventral to the penis.

It is unclear if the inversion is correlated with copulation since mating behavior has not been recorded for the vast majority of cryptophagids. In *A. testacea*, the male mounts the female dorsally, then the male swivels backwards during mounting and, while remaining in copula, the mating pair are back-to-back, as in other cucujoids that have an inverted aedeagus (e.g., Silvanidae; see THOMAS 1984). Males of the pictotine *Notocryptus distinctus* (Broun, 1893) and the cryptophagine *Cryptophagus acutangulus* Gyllenhal, 1827 (HINTON & STEPHENS 1941) mount females dorsally, but have not been observed to change position.

Inversion of the aedeagus may be easily confused with the orientation of an aedeagus that normally sits in the abdomen at 90° on its side, as it does in most Cryptophagini (WILSON 1930, LESCHEN 1996). While most Atomariinae and Pictotini have the aedeagus horizontal (LESCHEN 1996), EVANS (1961) noted that the orientation of the aedeagus varied among specimens of *A. ruficornis*; therefore, coding this character requires the dissection of multiple specimens and the scoring of orientation in LESCHEN (1996) requires verification. We have not recorded orientation in the generic entries below, though future study may reveal that the shape of the aedeagus in cryptophagids may correlate with orientation (WILSON 1930, EVANS 1961), as it does in Boganiidae and Erotylidae (LESCHEN 2003, LAWRENCE & ŚLIPINŃSKI 2013; “Cucujoidea-1” in MCKENNA et al. 2019 and now referred to as Erotyloidea; see CAI et al. 2022).

The anterior arms of the tegmen are generally fused at the midline (Fig. 101) and may form a tegminal strut (= apodeme or process) or a weak anterior extension (Fig. 100: aet), may have a distinct suture (Fig. 98) or may be slightly separated and joined by a membrane. The parameres are usually separate and articulated to the phallobase (Fig. 99) but are rarely reduced and completely or partly fused to one another and to the phallobase (*Humerocryptus* gen. nov.; Fig. 101). They are generally articulated with the phallobase in an oblique plane in lateral view, with the apex of the phallobase ventrally exceeding the base of the parameres (visible in Fig. 97, lateral view). The length, shape, and setation of the parameres vary. The apices often bear macrosetae, making them appear bisetose or unisetose at low magnification, since the smaller setae are difficult to observe. In some genera with well-separated parameres, each may have the inner surface concave (Fig. 99).

The width of the attachment point of the parameres to the phallobase is more or less equal to the combined basal widths of the parameres (though it is narrower and strongly constricted in *Neopicrotus*) and weakly constricted in *Orthoscelis* gen. nov. In some species there is an interparameral process subtending the insertions of the parameres (e.g., *Bellascelis* gen. nov. and *Orthoscelis* gen. nov., Figs 99 and 103: ip).

A bipartite penis (= median lobe or genital tube) is present in Cryptophagidae, a feature that may be unique to cucujoids, and which is also present in Monotomidae, Cavognathidae, Priasilphidae, Cucujidae, Agapythidae, and Silvanidae (LESCHEN et al. 2005, LAWRENCE et al. 2011), and potentially Passandridae, Hobartiidae, and other groups. The penis of *Neochlamisus* Karren, 1972 (Chrysomelidae: Cryptocephalinae) was coded as bipartite by LAWRENCE et al. (2011), but this form of the penis may be a different kind of modification associated with the strengthening of the penis (see images in SHIN et al. 2012). The presence of the bipartite aedeagus may support the lineage named as “Cucujoidea-3” in MCKENNA et al. (2019), though it would be homoplasious, as it occurs in “Cucujoidea-2” (Monotomidae); these lineages are now referred to, respectively, as Cucujoidea and Nitiduloidea (see CAI et al. 2022). In picrotines, the sections of the penis are clearly differentiated (Fig. 97: bp, dp), with the anterior section forming a broad, hyaline, flattened strut that may have a weak median carina. It is attached to the more heavily sclerotized and pigmented posterior part which is much shorter than the anterior part, and which is tubular and not flattened in cross-section. This structure was referred to by EVANS (1961) as the “anterior apodeme of the penis” in *Atomaria*. In the illustration of SHARP & MUIR (1912) of the cryptophagine *Antherophagus* Dejean, 1821, the anterior part was referred to as the strut and the posterior part referred to as the median lobe, the latter of which EVANS (1961) named the “posterior sclerite of the penis”. In this paper we use the terms basipenis and distipenis for the anterior and posterior parts of the penis, respectively. Note that these may also be homologous to the temo (aedeagal apodemes) and pedon in weevils (see WANAT 2007), and the basipenis may be homologous to the anterior or penile struts present in cucujiforms (LAWRENCE et al. 2011).

The distipenis, to which the internal sac (= endophallus) is secured, is a complex feature. We recommend staining the aedeagus with chlorazol black and carefully separating the tegmen from the penis to closely examine the complex posterior section. Despite these preparations, the tiny or thin sclerites contained within the internal sac are often difficult to observe, especially due to the folding of the membranes of the sac. Here we simplify these features as follows and, no doubt, detailed study within the more diverse genera will reveal new characters and alternative hypotheses about homologies.

The distipenis forms a capsule which is unsclerotized at the middle (Fig. 101). In Picrotini, this outer capsule encloses two inner lateral folds (Fig. 99: lf) which form a sinus that opens dorsally. The outer rims of the distipenis may bear apical serrations (Fig. 101: as) that may extend

posteriorly to about midlength of the sclerite (Fig. 99). The lateral folds are usually symmetrical (asymmetrical in *Antarcticotectus rutilus* (Broun, 1880)). The internal sac is attached to the lateral folds which form the ostium (= endophallic orifice, see COOMBS & WOODROFFE 1955), the point of reversal of the internal sac when the sac is fully extruded into the female during copulation (e.g., EVANS 1961) (Fig. 99: os). The width of the ostium varies from narrow to wide among and within (e.g., *Orthoscelis*) genera as indicated by the degree of separation of the lateral folds (compare Figs 99 and 101). The identity of the structure referred to as the “preputial sac” in *Cryptophagus* by COOMBS & WOODROFFE (1955) could be the entire ostial complex as interpreted by LESCHEN & LAWRENCE (1991).

The internal sac may be complex and have a series of asperities on its surface that may be regionalized to some degree. LESCHEN & LAWRENCE (1991) referred to these as regions 1–3 for the genus *Cryptothelypterus* Leschen & Lawrence, 1991. There is a basal kink (Fig. 101: bk) in the internal sac of cryptophagines which is present at a level just anterior to or at the anterior extent of the tegmen that corresponds to a different microsculpture present on the internal surface of the internal sac. The kink may mark the anterior limit of region 1 (*sensu* LESCHEN & LAWRENCE 1991). The kink is absent in atomariines (Y. Chen, pers. comm.). The internal sac lacks a flagellum in Cryptophaginae (present in atomariines; see EVANS 1961), though a pair of endophallites (*sensu* GÉNIER 2019) is often present and positioned proximally in the internal sac, which mark the primary gonopore (Fig. 101: ep, pg). The endophallites are of varying lengths and shapes, though they are usually hooked (Fig. 102) and are divergent anteriorly, or may appear fused.

At the outset of our work, we scored characters for almost all species in a data matrix for cladistic analysis; however, the resultant trees made little sense, and we decided that the best way forward is through a traditional approach based on key features for purposes of identification of species and genera, so that the morphological diversity can be described for further revisionary work. Importantly, we are also accumulating DNA-grade material and hope a future combined data approach will help clarify our first attempt at a generic classification and provide a framework for evolutionary studies.

Picrotini Crowson, 1980

Picrotini Crowson, 1980: 282–283. Type genus: *Picrotus* Sharp, 1886.
Cryptosomatulini Crowson, 1980: 284. Type genus: *Cryptosomatula* Bruce, 1953. [*nomen nudum*; see BOUCHARD et al. (2011)]

Redescription. Length 1.05–3.10 mm. Body more or less parallel-sided in most taxa (*Picrotus* are ovoid), strongly convex to strongly flattened. Dorsal surfaces relatively smooth and even or with shallow impressions on the pronotum and/or the elytra. Vestiture of setae present or reduced and cuticle usually shining. Well-developed glandular ducts (present in many other cryptophagid taxa) generally absent from various locations of the body, but microductules present, especially at the anterior angle of the prothorax, which may have a platform or callosity; pits may be present

on the prosternum, mesepimeron and metaventrite; pores may be present in males on the prosternum and hypomeron.

Head slightly wider than long to (rarely) longer than wide, rarely more transverse. Not or barely declined at base. Usually not abruptly constricted posteriorly to form a neck; temples present with variable lengths, or absent; transverse occipital ridge present (absent in *Picrotus thoracicus* Sharp, 1886); temporal depression immediately anterior to ridge present or absent and reticulate sculpture on anterior edge absent or present; stridulatory files absent; posterior edge dorsally with pair of incisions just above occipital foramen (these may be weakly present or absent). Compound eyes well developed; subcircular, prominent or not, moderately coarsely faceted to finely faceted, with or without interfacetal setae, setae sometimes sparse, long, and restricted to posterior portion of eye; contacting antennal cavity or not. Frontoclypeal suture absent; clypeus extending well in front of antennal insertions; sides of clypeus without lateral emarginations or tubercles; frontoclypeus anterior to eye usually not projecting laterally and a transverse ridge above antennal insertions sometimes present. Antennal insertions exposed from above and widely separated, cavities may be broad in many genera (e.g., *Picrotus* and *Thortus*); subantennal grooves present or absent. Antenna with 11 antennomeres, with a club composed of 2 or 3 antennomeres; width and length of antennomere 9 variable. Genal spines blunt, subacute or acute. Mandible with apex bi- or tridentate, cutting edge simple, subapical serrations usually present and in the form of cusp-like denticles; mola and protheca well developed and setose; small pores absent. Maxilla with palpomere 4 subequal to or distinctly longer than 3, palpomere 4 wide to subulate. Mentum strongly transverse to narrowed or small and quadrate; ligula undivided or finely cleft. Gular sutures never reaching occipital foramen, usually incomplete or absent. Cervical sclerites present.

Shape of pronotum variable, 0.40–1.15 times as long as wide with sides more or less straight or moderately to strongly curved; widest at middle, at base or anteriorly; base rarely as wide as elytral bases, slightly to distinctly narrower; anterior angles extending anterior to cervical foramen of prothorax or not, lateral carina usually complete with raised bead present and usually narrow (sometimes wider than antennal funicle), a marginal glabrous space may be present, causing bead to appear doubled, bead usually simple but may be finely serrate or rarely dentate or with setigerous tubercles, or an anterior pronotal tumidity or flat evaporative area may be present (the flat surface may be in the lateral bead or supra-lateral); anterior angles present; posterior angles obtuse or right-angled; disc usually smooth and unimpressed or with transverse or paired impressions, base of pronotum sometimes with a pair of small posterolateral pits or paralateral plicae, sometimes with shallow basal impression that may be laterally flanked by short longitudinal carinae. Prosternum long or short in front of coxae, hypomeron separated by notosternal suture or completely fused to prosternum; lacking paired lines anteriorly, but well-developed lateral carinae converge posteriorly to a point in some species; anterior margin usually on same

plane as prosternal disc; prosternal process with or without a marginal bead, with or without a median longitudinal carina or groove, slightly to completely overlapping or inserting into mesoventrite; prosternal process expanded apically, parallel-sided, gradually expanded or narrowed and then expanded, or gradually expanded and then narrowed (narrowed apically in, e.g., *Picrotus*); with apex narrowly or broadly rounded or truncate, apically simple or crenulate, with or without minute setae along margin. Procoxal cavities slightly transverse or circular; anterior notch present or absent, with or without short concealed lateral extension, or with long, concealed extensions; external closure broad; postcoxal projection, if present, almost always short; internally closed by a slender bar. Scutellar shield clearly visible, transverse, or largely hidden by pronotal lobe and triangular. Elytra 1.05–2.55 times as long as wide and 1.48–3.60 times as long as pronotum; sometimes apex of terminal tergite exposed; humeral tooth distinct, absent, or barely indicated; punctation usually confused, rarely striate (*Papuacryptus* gen. nov.); vestiture variable, with or without erect setae and in apical third directed posteriorly or posteriolaterally; subbasal and subapical impressions present or absent; elytra with or without subapical gape. Hind wings absent or present with reduced wing venation (lacking MP_4+CuA_1 , MP_3 , and CuA_{3+4}). Mesoventrite with procoxal rests present, horizontal, or slightly to strongly oblique; median prosternal rest or mesoventral cavity shallow or deep and bowl-like, flanked by sharp carinae or not. Mesocoxal cavities subovate to ovate, narrowly to widely separated; meso-metaventral junction simple or dicondylic, with a double metaventral knob fitting into cavity at the apex of the mesoventral process. Mesanepisterna usually with a pit at the anteromedial corner that may be setose or asetose. Metaventrite with discrimen absent or present with variable lengths; posteromedial notch within embayment present or absent. Metendosternite with anterior tendons of metendosternite narrowly or widely separated or absent. Metacoxae transverse, contiguous or narrowly to widely separated. Hind wings relatively long and narrow or reduced or absent. Legs with tibial apices not strongly widened, strongly widened, club-shaped, or widest at or near apex; tibial spurs paired; tarsi 5-5-5 in female and 5-4-4 or 5-5-5 in male; pro- and mesotarsomere 4 with or without ventral setae, usually smaller in size than remaining tarsomeres; mesotarsomere 3 unlobed ventrally, with only a few setae or with a dense pad of setae; lengths of tarsomeres 1–3 variable, tarsomere 5 about as wide as or wider than preceding tarsomeres in lateral view. Abdominal ventrite 1 with postcoxal lines absent or present and either acute or scalloped; lateral and medial calli present or absent; abdominal intercoxal process narrowly or broadly rounded; ventrites usually free, 1–2 sometimes connate (*Bellascalis*, *Paragnetaria* gen. nov., *Orthoscelis*, *Ostreacryptus helmsi*, *Papuacryptus*), rarely ventrites 1–3 (*Picrotus* undescribed species) or 1–5 (*Connatocryptus* gen. nov.) connate; intersegmental crenulations present or absent and medio-basal thickening of ventrites 3–5 usually absent (present in *Bellascalis pecki* sp. nov.); apex of ventrite 5 with or without crenulations and in one undescribed

species of *Notocryptus* from New Zealand a midlateral lobe is present in the male. Abdominal spiracles present on segment VII, with or without cuticular opening (functional or not), texture smooth, granulate or annulate; size larger in diameter than spiracle VI or not, with atrium rounded and saclike or elongate and tubular. Sternite IX in male with anterior strut (spiculum gastrale) broad. Aedeagus of the inverted type with the ring side dorsal and parameral side ventral, with orientation of aedeagus in abdomen generally horizontal but sometimes somewhat vertical; anterior arms of the tegmen typically fused at the midline, sometimes separate; tegminal strut absent (present in *Neopicrotus*), suture absent or present; parameres separate or completely or partly fused together, partially fused or articulated to phallobase, inner surface concave or not, lengths variable (typically 2× longer than their combined basal widths), apices unisetose, bisetose or multisetose, attachment point between parameres and basal piece rarely constricted (*Neopicrotus*); interparameral process present (*Bellascelis* and *Orthoscelis*) or not; penis bipartite, basipenis generally 2–3× longer than distipenis (but can be more in some genera), with or without median carina; distipenis about as long as wide or more elongate (generally 2× longer than wide), outer rims serrate to smooth, lateral folds typically symmetrical, relatively wide and narrowly separated to slender and widely separated (*Humerocryptus*); internal sac lacking a flagellum, with endophallites of variable lengths, separate or fused with a split or hook-like apex, rarely composed of an arrow-shaped plate.

Comments. The monophyly of Picrotini is supported by the aedeagus resting horizontally in the abdomen, absence of wing veins MP_4+CuA_1 , MP_3 , and CuA_{3+4} , presence of microtubular glandular ducts in the body (mainly in the thorax), and star-shaped glandular ducts present on the prosternum (LESCHEN 1996). These characters, however, are quite variable, and the glandular ducts need further study. Another character that may support the monophyly is the absence of a well-developed basal strut on the tegmen, the presence of which we have only observed in *Neopicrotus peckorum* Leschen, 1996 (see LESCHEN 1996: fig. 111). At most, some picrotines possess a short anterior extension, as shown in Fig. 100: aet.

With this revision, we recognize 22 genera containing 44 valid species in Picrotini (see full list in Appendix).

Key to genera of Picrotini

- 1 Elytra with punctures arranged into distinct rows (Fig. 66); New Guinea. ... ***Papuacryptus* gen. nov.**
- Elytral punctation confused; not in New Guinea. 2
- 2(1) Pronotal lateral bead about as wide as antennal club; New Zealand. ***Picrotus* Sharp, 1886**
- Pronotal lateral bead normal, not nearly as wide as antennal club. 3
- 3(2) All abdominal ventrites connate; New Zealand. ... ***Connatocryptus* gen. nov.**
- Abdominal ventrites 1 and 2 connate (Fig. 96), or all ventrites free (Fig. 95). 4
- 4(3) Abdominal ventrites 1 and 2 connate (Fig. 96);

- without knob-like structures at the anterior pronotal angles; Australia. 5
- No abdominal ventrites connate (Fig. 95), or if ventrites 1 and 2 connate (*Ostreacryptus helmsi*), with prominent knob-like structures at the anterior pronotal angles (Figs 58, 87). 7
- 5(4) Antennal club of 2 antennomeres (Fig. 80); gena with broad antennal groove. ***Paragnetaria* gen. nov.**
- Antennal club of 3 antennomeres; gena without antennal groove. 6
- 6(5) Anterior angles of pronotum sharp, right-angled (Figs 9–11); elytra patterned (Figs 9–11). ***Bellascelis* gen. nov.**
- Anterior angles of pronotum more rounded, obtuse (Figs 52–55); elytra not patterned (Figs 52–55). .. ***Orthoscelis* gen. nov.**
- 7(4) Antennal club clearly composed of 2 antennomeres (Fig. 1); Australia. ***Agnetaria* Bruce, 1953**
- Antennal club of 3 antennomeres (antennomere 9 may be narrower than 10 (e.g., Fig. 71), but distinctly wider than 8). 8
- 8(7) Pronotal platform present at or near anterior angle of pronotum, with or without a distinct dorsal rim (Figs 82–84, 88, 89). 9
- Pronotal platform absent (Figs 85, 86). 10
- 9(8) Superior elytral epipleural carina terminating anteriorly in a sharp spine at humeral angle of elytra (Fig. 79); vertex with deep transverse impression, frons with a transverse swelling (Fig. 89); New Zealand. ***Humerocryptus* gen. nov.**
- No sharp spine at humeral angle of elytra; vertex without deep impression or swelling (Figs 82–84); New Zealand and Australia. ***Antarcticotectus* Brookes, 1951**
- 10(8) Body mostly shining, with setae very inconspicuous, punctures of pronotum separated by more than their diameter over most of dorsal surface (Figs 12, 29–32, 70–76); antenna inserted into deep concavity, raised portion of frons between antennal insertions constricted, narrower than width of antennal club; eye reduced. 11
- Body usually dull, densely setose OR if setae inconspicuous, antenna not inserted into deep concavity, frons wide and not constricted between antennal insertions, usually much wider than antennal club; eye not reduced. 13
- 11(10) Postcoxal lines present on ventrite 1 (absent in one undescribed species of *Thortus*). 12
- Postcoxal lines absent from ventrite 1; Chile and Australia. ***Neopicrotus* Leschen, 1996**
- 12(11) Eyes conical in dorsal view; frons with weakly carinate elevation between antennal insertions; decumbent setae of elytra undulate; bicolored (Fig. 12); Chile. ***Chileothortus* gen. nov.**
- Eyes flat or rounded in dorsal view; frons without carinate elevation between antennal insertions; decumbent setae of elytra uniformly directed posteriorly; unicolored (Figs 70–76); New

- Zealand. *Thortus* Broun, 1893
- 13(10) Anterior angle of pronotum sharp, acute to right-angled (Figs 6–8); Australia.
..... *Austroscelis* gen. nov.
- Anterior angle of pronotum rounded, obtuse. ... 14
- 14(13) Lateral carina of pronotum with posteriorly pointed teeth, teeth asetose (Fig. 78); Ecuador and New Zealand. *Odontosomatula* gen. nov.
- Lateral carina of pronotum without posteriorly pointed teeth (but may have setigerous tubercles).
..... 15
- 15(14) Anterior corners of pronotum protruding laterally, forming weak to strong knob-like structures (Figs 56–65, 87); Australia, New Zealand, Chile.
..... *Ostreacryptus* Leschen, 2001
- Anterior corners of pronotum not protruding laterally. 16
- 16(15) Lateral bead of pronotum with glabrous space, appearing doubled from certain angles (Fig. 85); Chile. *Chiliotis* Reitter, 1875
- Lateral bead of pronotum without obvious glabrous space, not appearing doubled (Fig. 86); Australia, New Zealand, Juan Fernandez Islands. 17
- 17(16) Pronotum evenly convex, without distinct pits or basal impressions (Figs 21–25); tempora absent; Juan Fernandez Islands. 18
- Pronotum (and often elytra) with either basal pits or impression(s), or both; tempora usually present; not in Juan Fernandez Islands. 19
- 18(17) Eyes finely faceted; discrimen at least half length of metaventrite; pronotum narrower than elytra (Fig. 21); elytra with distinct punctures; Alexander Selkirk Island. *Cryptosomatula* Bruce, 1940
- Eyes coarsely faceted (Fig. 81); discrimen less than half length of metaventrite; pronotum as wide or nearly as wide as elytra (Figs 22–25); elytra with punctures very light, nearly effaced; Robinson Crusoe Island.
..... *Cryptothelypteris* Leschen & Lawrence, 1991
- 19(17) Discrimen absent; pronotum highly constricted basally (Fig. 20); elytra with two pairs of silvery patches of setae (Fig. 20); Australia.
..... *Cordosomatula* gen. nov.
- Discrimen present; pronotum not or weakly constricted at base; Australia, New Zealand. ... 20
- 20(19) Metaventrite with divergent postcoxal lines (Fig. 91); with deep circular impression in center of pronotum (Fig. 26); New Zealand.
..... *Foveocryptus* gen. nov.
- Metaventrite without postcoxal lines (Fig. 92); without deep circular impression in center of pronotum. 21
- 21(20) Pronotum asymmetrically crenulate (Fig. 77); prosternal process with fine median carina; Chile.
..... *Chimaerocryptus* gen. nov.
- Pronotum not asymmetrically crenulate; prosternal process lacking carina (Fig. 90); Australia and New Zealand. *Notocryptus* gen. nov.

Generic descriptions

Agnataria Bruce, 1953

(Fig. 1)

Agnataria Bruce, 1953: 790. Type species: *Agnataria cryptophagoides* Bruce, 1953, by monotypy.

Type material examined. Label data for the holotype/lectotype are as follows: “Type [red-bordered circle] // Typus [red label] // Port Lincoln, / S. Australia. / (Blackburn) // Port Lincoln / Blackburn [handwritten] // Sharp Coll / 1905-313. // *Agnataria cryp- / tophagoides* n.sp. [handwritten] / N. BRUCE det. // HOLOTYPE / *Agnataria cryptophagoides* / Bruce / det. Gimmel & Leschen [red label] // LECTOTYPE / *Mycetaea pilosella* / Blackburn / des. Gimmel & Leschen [red label]” (deposited in NHMUK).

Diagnosis. This genus may be recognized among Picrotini by the free abdominal ventrites, lack of pronotal platforms or tumidities (although the pronotum is slightly expanded in the anterior 1/3), smooth lateral pronotal carina, densely setose dorsal surface and antennal club clearly consisting of only two antennomeres. The only other genera of Picrotini with such an antennal club are *Paragnataria* (Fig. 80) and *Picrotus*, but in these either abdominal ventrites 2–3 are connate or the body surface is mostly glabrous (with few or no setae), or both. Additional diagnostic characters for *Agnataria* include the short discrimen, less than half the length of metaventrite, and lack of postcoxal lines on abdominal ventrite 1 (as in Fig. 94).

Redescription. Length 1.20–1.39 mm. Body form (Fig. 1) stout, somewhat shining dorsally, with dense decumbent setae and long, sparse, erect setae on head and elytra; cuticle unicolorous. Head with tempora inconspicuous, length less than 1/4 length of eye; vertex with very weak temporal depression immediately anterior to ridge; band of reticulate sculpture absent. Frontoclypeus not projecting laterally; raised portion of frons between antennal insertions constricted, about as narrow as width of antennal club. Transverse ridge above antennal insertions absent. Eye medium-sized, not reduced, conical, contacting antennal cavity; interfacetal setae present. Antennal club consisting of 2 antennomeres; antenna inserted into small cavity; antennomere 9 subequal in width to antennomere 8. Mandible with apex bifid, subapical serrations present. Maxillary palpomere 4 distinctly longer than 3; palpomere 4 not subulate. Gena with weakly indicated antennal groove ventral to eye; genal spines acute. Gular sutures incomplete, not reaching occipital foramen. Pronotum moderately explanate, narrower than elytra and not constricted at base, and widest anteriorly; anterior angles obtuse, slightly projecting anteriorly (extending anterior to cervical foramen of prothorax), without a distinct flat surface, platform or tumidity, but pronotal edges slightly projecting laterally about 1/3 from apex; lateral carina complete, smooth, lacking teeth, crenulations, or setigerous tubercles, with lateral glabrous space narrow, width of lateral bead wider than discal puncture and narrower than antennal funicle; disc with transverse basal impression; paramedial carinae and paralateral plicae absent; posterolateral angles about right angled. Prothoracic hypomeron fused to prosternum. Prosternum with anterior margin on same plane as disc; prosternal process with lateral marginal beads parallel,

with central longitudinal carina, slightly expanded apically, broadly rounded and crenulate with minute setae; procoxal cavity with anterolateral notch. Scutellar shield clearly visible, transverse, truncate apically. Elytron without humeral tooth; subbasal and subapical impressions absent; subapical gape present; punctation confused and well impressed; vestiture dual with long, sparse, erect setae present, decumbent setae uniformly directed posteriorly. Hind wing well developed. Mesoventrite with mesoventritral cavity bowl-like and flanked by sharp carinae. Mesanepisternal pit present and lined with setae. Metaventricle with indistinct, scalloped postcoxal lines; discrimen less than 1/2 length of metaventricle, posterior notch of metaventricle absent. Metendosternite with anterior tendons approximate. Tarsi 5-5-5 in female, male condition unknown; tarsi moderately slender, tarsomere 5 as wide as preceding tarsomeres in lateral view; pro- and mesotarsomere 4 without ventral setae; mesotarsomere 3 unlobed; mesotarsomeres 1-4 of equal lengths, mesotarsomere 5 about as long as mesotarsomeres 3 and 4 combined. Abdominal ventrites free and lacking calli, intersegmental crenulations absent; ventrite 1 with intercoxal process broadly rounded, lacking postcoxal lines; medio-basal thickenings of ventrites 3-5 absent; apex of ventrite 5 lacking crenulations. Abdominal spiracles with opening on segment VII present and larger in diameter than spiracle VI, texture granulate and atrium rounded and saclike. Aedeagus not examined.

Remarks. Regrettably, LESCHEN & GIMMEL (2012) overlooked a BLACKBURN (1891: 122) species name which has priority over the BRUCE (1953: 790) species name. According to MATTHEWS (1992: 11), Nils Bruce unknowingly redescribed the unlabeled syntype series of *Mycetaea pilosella* Blackburn, 1891 (originally placed in Mycetophagidae) as *Aagnetaria cryptophagoides* Bruce, 1953. We here designate the lectotype of *M. pilosella* as the holotype of *A. cryptophagoides*, thus formalizing the objective synonymy: *Aagnetaria pilosella* (Blackburn, 1891) = *Aagnetaria cryptophagoides* Bruce, 1953, syn. nov. Male specimens of this species were not available for study. A habitus line drawing of *A. pilosella* was provided in MATTHEWS (1992: fig. 44).

Biology. The three specimens we examined were collected by Berlese funnel of mallee litter. The gut of one dissected specimen was packed with unidentifiable material, suggesting saprophagy.

Distribution. Australia.

Included species (1). *Aagnetaria pilosella* (Blackburn, 1891).

Antarcticotectus Brookes, 1951

(Figs 2-5, 82-84, 95, 97)

Antarcticotectus Brookes, 1951: 34. Type species: *Antarcticotectus aucklandicus* Brookes, 1951, by original designation.

Diagnosis. This genus may be recognized among Picrotini by the presence of a pair of flat glandular surfaces anterolaterally on the pronotum (which can take various forms; Figs 82-84) in combination with a lack of a humeral tooth on the elytron. Additional characters helpful in diagnosing the genus include the elongate, parallel-sided habitus,

densely setose dorsal surface, antennal club consisting of three antennomeres and free abdominal ventrites (Fig. 95).

Redescription. Length 1.50-2.40 mm. Body form (Figs 2-5) elongate, slender, somewhat shining dorsally, with dense decumbent setae and often with a few short, sparse, suberect setae dorsally; unicolorous (most) or distinctly bicolored (one undescribed species). Head with tempora inconspicuous to prominent, length from about 1/5 to 1/3 length of eye; vertex with temporal depression immediately anterior to ridge; band of reticulate sculpture present or absent. Frontoclypeus not projecting laterally; raised portion of frons between antennal insertions not constricted, about as wide or wider than antennal club. Transverse ridge above antennal insertions absent. Eye large, rounded, contacting antennal cavity; interfacetal setae present or absent. Antennal club consisting of 3 antennomeres; antenna inserted into small cavity; antennomere 9 subequal in width to antennomere 10. Mandible with apex bifid, subapical serrations present. Maxillary palpomere 4 distinctly longer than or subequal to 3; palpomere 4 not subulate. Gena without antennal groove; genal spines obtuse to acute. Gular sutures incomplete, not reaching occipital foramen. Pronotum not explanate, narrower than elytra and not constricted at base, widest at middle or anteriorly; anterior angles absent, not projecting anteriorly (not extending anterior to cervical foramen of prothorax), with a distinct flat glandular surface or platform, either at antero-lateral angles (most; Figs 82, 83) or positioned supra-laterally (*A. tasmanicus*; Fig. 84), with (Figs 82, 84) or without (Fig. 83) a distinct rim; lateral carina absent (one undescribed species), partially developed (Fig. 83), or complete (Figs 82, 84), smooth, lacking teeth, crenulations, or setigerous tubercles, with lateral glabrous space narrow, width of lateral bead wider than discal puncture and narrower than antennal funicle; disc with basal impressions present or absent, if present either transverse or paired; paramedial carinae and paralateral plicae absent; posterolateral angles about right angled. Prothoracic hypomeron fused to prosternum or separated by suture. Prosternum with anterior margin on same plane as disc; prosternal process with lateral marginal beads usually present, parallel, not connected around apex, or beads absent (*A. tasmanicus*), process slightly expanded apically, narrowly to broadly rounded and crenulate with minute setae; procoxal cavity with or without anterolateral notch. Scutellar shield clearly visible, transverse to obtusely triangular. Elytron without humeral tooth; subbasal and subapical impressions present or absent; subapical gape present; punctation confused, dense and well impressed; vestiture dual with a few long, sparse, erect setae present laterally, decumbent setae forming undulate pattern, with postscutellar and subapical setae usually directed laterally. Hind wing well developed. Mesoventrite with mesoventritral cavity shallow and not flanked by sharp carinae. Mesanepisternal pit present or absent, either lined with setae or glabrous. Metaventricle without postcoxal lines; discrimen more than 1/2 length of metaventricle, posterior notch of metaventricle present. Metendosternite with anterior tendons approximate. Tarsi 5-5-5 in female, 5-5-4 in male; tarsi moderately slender,

tarsomere 5 as wide as preceding tarsomeres in lateral view; pro- and mesotarsomere 4 with a few (*A. tasmanicus*) or without ventral setae; mesotarsomere 3 unlobed or weakly lobed ventrally, with few setae to moderately dense pad of setae; mesotarsomeres 1–4 of subequal lengths, with mesotarsomere 1 slightly longer and mesotarsomere 4 slightly shorter than 2 and 3 or 1–3 subequal with 4 reduced, mesotarsomere 5 about as long or slightly longer than mesotarsomeres 1–4 combined. Abdominal ventrites free (Fig. 95) and with medial calli, lateral calli present or absent, intersegmental crenulations present or absent; ventrite 1 with intercoxal process narrowly rounded, with or without acuminate postcoxal lines; medio-basal thickenings of ventrites 3–5 absent; apex of ventrite 5 lacking crenulations. Abdominal spiracles with opening on segment VII present and larger in diameter than spiracle VI, texture granulate and atrium rounded and saclike. Aedeagus (Fig. 97) with tegminal strut absent, tegminal arms separated at anterior end or fused and lacking a suture; parameres separate, partially fused or articulated (Fig. 97) to phallobase, inner surface concave or not, length about 2–3× longer than wide, apices unisetose (*A. rutilus*), bisetose (*A. silvanus*; Fig. 97), asetose (*A. tasmanicus*) or multisetose (undescribed species); attachment point to phallobase not constricted, interparameral process absent; basipenis 3× (*A. rutilus*) to about 5× longer (*A. tasmanicus*) than distipenis, with (*A. silvanus*) or without median carina; distipenis elongate (2× longer than wide), outer rims smooth, weakly crenulate or distinctly serrated (*A. silvanus*), lateral lobes not widely separated, symmetrical (*A. silvanus* and *A. tasmanicus*) or slightly asymmetrical (*A. rutilus*); internal sac with short endophallites lacking hooks (*A. rutilus*) or absent.

Remarks. We add three additional species to the genus, which share a similar elongate-parallel habitus and all possess raised platforms anterolaterally on the pronotum. The type species, *A. aucklandicus*, is likely a junior synonym of *A. silvanus*. Although superficially similar in habitus and easily keying as a group based on aedeagal and other characters, we suspect this genus may not be monophyletic as presently conceived.

Biology. New Zealand members of the genus have been collected commonly from the fronds of tree ferns, and one other has been collected from plants at high altitudes. The gut of a dissected specimen of *A. rutilus* contained fungal spores.

Distribution. Australia, New Zealand.

Included species (4+2). *Antarcticotectus aucklandicus* Brookes, 1951; *Antarcticotectus rutilus* (Broun, 1880) comb. nov. (from *Micrambina* Reitter, 1878); *Antarcticotectus silvanus* (Broun, 1880) comb. nov. (from *Micrambina*); *Antarcticotectus tasmanicus* (Blackburn, 1907) comb. nov. (from *Cryptophagus*); two undescribed species from New Zealand.

***Austroscelis* gen. nov.**

(Figs 6–8, 93, 98)

Type species. *Cryptophagus gibbipennis* Blackburn, 1892, by present designation.

Diagnosis. The combination of projecting, acute to right-angled anterior pronotal angles with all five abdominal ventrites free serves to separate this genus from other

Picrotini. The toothed-granular lateral pronotal carinae, antennal club consisting of three antennomeres, and lack of pronotal platforms further serve to distinguish this genus. **Description.** Length 1.60–2.30 mm. Body form (Figs 6–8) elongate, slender, somewhat shining dorsally, with dense decumbent setae and often with a few short, sparse, suberect setae dorsally; unicolorous. Head with tempora prominent, length about 1/5 length of eye; vertex with temporal depression immediately anterior to ridge; band of reticulate sculpture present. Frontoclypeus not projecting laterally; raised portion of frons between antennal insertions not constricted, about as wide or wider than antennal club. Transverse ridge above antennal insertions absent. Eye relatively large, rounded, contacting antennal cavity; interfacetal setae absent. Antennal club consisting of 3 antennomeres; antenna inserted into small cavity; antennomere 9 subequal in width to antennomere 10. Mandible with apex bifid, subapical serrations present. Maxillary palpomere 4 subequal to 3; palpomere 4 not subulate. Gena without antennal groove; genal spines acute to subacute. Gular sutures incomplete, not reaching occipital foramen. Pronotum not explanate, at base narrower than elytra and not constricted, widest at middle or to near anterior angles; anterior angles distinct, projecting as far as (*A. undescribed species* 1) or slightly beyond cervical foramen of prothorax, without a distinct flat glandular surface or platform; lateral carina complete, bearing setigerous tubercles, with lateral glabrous space absent, width of lateral bead wider than discal puncture and narrower than antennal funicle; disc with paired basal impressions present or absent; paramedial carinae and paralateral plicae absent; posterolateral angles right angled or slightly obtuse. Prothoracic hypomeron fused to prosternum. Prosternum with anterior margin on same or lower plane as disc; prosternal process with lateral beads present, weak, parallel, connected around apex, process expanded apically, narrowly to broadly rounded and crenulate with minute setae; procoxal cavity with anterolateral notch. Scutellar shield clearly visible, transverse to weakly triangular. Elytron without humeral tooth; subbasal and subapical impressions absent; subapical gape present; punctation confused, dense and well impressed; vestiture dual with a few long, sparse, erect setae present laterally, decumbent setae forming weak to moderately strong undulate pattern, with postscutellar and subapical setae usually directed posteriorly. Hind wing well developed. Mesoventrite with mesoventritral cavity shallow and flanked or not by sharp carinae. Mesanepisternal pit present and lined with setae. Metaventricle without postcoxal lines; discrimen less than 1/2 length of metaventricle, posterior notch of metaventricle present. Metendosternite with anterior tendons approximate. Tarsi 5-5-5 in female, 5-5-4 in male; tarsi moderately slender, tarsomere 5 as wide as preceding tarsomeres in lateral view; pro- and mesotarsomere 4 without ventral setae; mesotarsomere 3 unlobed, with few setae; mesotarsomeres 1–4 of subequal lengths, mesotarsomere 5 about as long as mesotarsomeres 1–4 combined. Abdominal ventrites free, with medial calli, lateral calli present or absent, intersegmental crenulations present or absent; ventrite 1 with intercoxal process narrowly rounded, with scalloped post-

coxal lines (Fig. 93); medio-basal thickenings of ventrites 3–5 absent; apex of ventrite 5 lacking crenulations. Abdominal spiracles on segment VII lacking opening, texture granulate and atrium elongate and tubular. Aedeagus (Fig. 98) with tegminal strut absent, tegminal arms separated at apex (*A. undescribed species 1*) or fused, with a suture (*A. gibbipennis*, *A. undescribed species 2*); parameres separate and articulated to phallobase, inner surface not concave, length about 2–3× (*A. undescribed species 1*, *A. undescribed species 2*) to over 5× (*A. gibbipennis*) longer than wide; apices bisetose (*A. gibbipennis*, *A. undescribed species 1*) or asetose (*A. undescribed species 2*); attachment point to phallobase not constricted, interparameral process absent; basipenis 4× (*A. undescribed species 1*) to about 5× longer (*A. undescribed species 2*) than distipenis, without median carina; distipenis relatively short (about 1.2–1.5× longer than wide), outer rims weakly crenulate to smooth, lateral lobes not widely separated, symmetrical; internal sac with short to long endophallites lacking hooks that are joined along their entire length (*A. gibbipennis*, *A. undescribed species 1*) or separated and joined only near the apex (*A. undescribed species 2*).

Remarks. In addition to the type species from eastern Australia (Fig. 6), we have examined two others, one species from the east (*A. undescribed species 1*; Fig. 7) and one from Western Australia (*A. undescribed species 2*; Fig. 8).

Etymology. The generic name is derived from a combination of the Latin “*austr*”, meaning southern, and “*-scelis*”, a common genus ending in Cryptophagidae. The gender is masculine.

Biology. Members of the genus have been collected commonly in leaf litter samples and flight intercept traps. Specimens had guts packed with single dark fungal spores or undifferentiated material and a few conidia.

Distribution. Australia.

Included species (1+2). *Austroscelis gibbipennis* (Blackburn, 1892) comb. nov. (from *Cryptophagus*); two undescribed species from Australia.

***Bellascelis* gen. nov.**

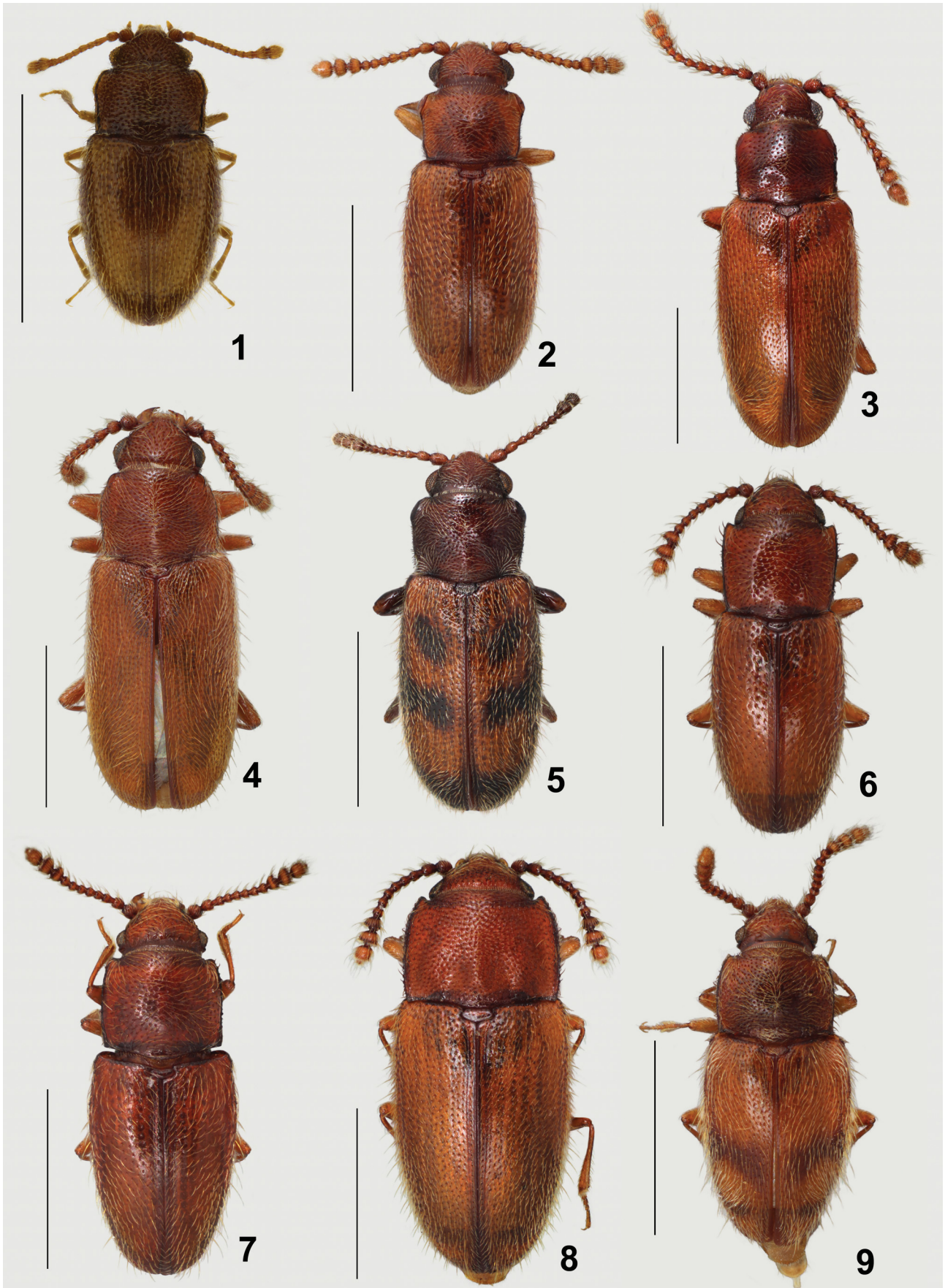
(Figs 9–11, 99)

Type species. *Bellascelis pecki* sp. nov., by present designation.

Diagnosis. This genus is easily recognized among Picrotini by having abdominal ventrites 1 and 2 connate, the antennal club consisting of three antennomeres, and by the pronotal anterior angles being sharply right-angled. Additionally, the known species have the elytra diffusely to distinctly maculate and with a long, decumbent setae in a strongly undulate pattern.

Description. Length 1.47–1.60 mm. Body form (Figs 9–11) elongate to subfusiform, somewhat shining dorsally, with long, dense, decumbent setae and with a few long erect setae dorsally; distinctly multicolored. Head with tempora absent or prominent, length when present about 1/5 length of eye; vertex with temporal depression immediately anterior to ridge; band of reticulate sculpture absent. Frontoclypeus not projecting laterally; raised portion of frons between antennal insertions not constricted, about as wide or wider than antennal club. Transverse ridge above

antennal insertions absent. Eye large, rounded, contacting antennal cavity; interfacetal setae present. Antennal club consisting of 3 antennomeres; antenna inserted into small cavity; antennomere 9 subequal in width to antennomere 10. Mandible with apex bifid, subapical serrations present. Maxillary palpomere 4 distinctly longer than 3; palpomere 4 not subulate. Gena without antennal groove; genal spines obtuse. Gular sutures incomplete, not reaching occipital foramen. Pronotum not explanate, narrower than elytra and not constricted at base, widest at middle or in basal 1/3; anterior angles present, extending anterior to cervical foramen of prothorax, without a distinct flat glandular surface or platform; lateral carina complete, smooth, lacking teeth, crenulations, or setigerous tubercles, with lateral glabrous space narrow, width of lateral bead wider than discal puncture and narrower than antennal funicle; disc with basal transverse impression present; paramedial carinae present, paralateral plicae absent; posterolateral angles about right angled or slightly obtuse. Prothoracic hypomeron fused to prosternum. Prosternum with anterior margin on same plane as disc; prosternal process with lateral beads weak, mostly parallel then converging to acute point apically, process slightly expanded apically, broadly rounded and crenulate with minute setae; procoxal cavity with anterolateral notch. Scutellar shield clearly visible, transverse. Elytron without humeral tooth; subbasal and subapical impressions absent; subapical gape present; punctation confused, dense and moderately to weakly impressed; vestiture dual with a long, sparse, erect setae present, decumbent setae forming undulate pattern, with postscutellar and subapical setae directed laterally. Hind wing well developed. Mesoventrite with mesoventritral cavity shallow and flanked by sharp carinae. Mesanepisternal pit present and glabrous. Metaventrite without postcoxal lines; discrien less than 1/2 length of metaventrite, posterior notch of metaventrite present. Metendosternite with anterior tendons approximate. Tarsi 5-5-5 in female, 5-5-4 in male; tarsi moderately slender, tarsomere 5 as wide as preceding tarsomeres in lateral view; pro- and mesotarsomere 4 with at least one seta; mesotarsomere 3 unlobed, with few setae; mesotarsomeres 1–4 of subequal lengths, mesotarsomere 5 about as long as mesotarsomeres 1–4 combined. Abdominal ventrites 1 and 2 connate without medial calli, lateral calli present, intersegmental crenulations absent; ventrite 1 with intercoxal process narrowly rounded, with scalloped postcoxal lines; medio-basal thickenings of ventrites 3–5 present; apex of ventrite 5 lacking crenulations. Abdominal spiracles on segment VII lacking opening, texture granulate and atrium rounded and saclike. Aedeagus (based on *B. pecki* only; Fig. 99) with tegminal strut absent, tegminal arms fused, with a suture; parameres separate and articulated to phallobase, inner surface concave, length about 2× longer than wide; apices multisetose; attachment point to phallobase not constricted, interparameral process present; basipenis 3× longer than distipenis, without median carina; distipenis relatively short (about 1.2× longer than wide), outer rims crenulate, lateral lobes not widely separated, symmetrical; internal sac lacking endophallites.



Figs 1–9. Habitus of species of Picrotini. 1 – *Aagnetaria pilosella* (Blackburn, 1891); 2 – *Antarcticotectus rutilus* (Broun, 1880); 3 – *Antarcticotectus silvanus* (Broun, 1880); 4 – *Antarcticotectus tasmanicus* (Blackburn, 1907); 5 – *Antarcticotectus* n. sp. 1 (New Zealand); 6 – *Austrosclis gibbipennis* (Blackburn, 1892); 7 – *Austrosclis* n. sp. 1 (Australia: NSW, Vic); 8 – *Austrosclis* n. sp. 2 (Australia: WA); 9 – *Bellascelis pecki* sp. nov. Scale bars = 1 mm.

Remarks. In addition to the type species described below (Fig. 9), we have seen three additional undescribed species from Australia, two of which (Figs 10, 11) are featured in the gallery of dorsal habitus images. Characters of these are incorporated into the generic description above.

Etymology. The generic name is derived from a combination of the Latin prefix “*bellus*”, meaning “pretty”, in reference to the attractive facies of the included species, and “*-scelis*”, a common genus ending in Cryptophagidae. The gender is masculine.

Biology. Members of the genus have been collected commonly in leaf litter samples and flight intercept traps. One species has been collected in alpine pitfall traps.

Distribution. Australia.

Included species (1+3). *Bellascelis pecki* sp. nov.; three undescribed species from Australia.

Bellascelis pecki sp. nov.

(Figs 9, 99)

Type material. HOLOTYPE: male (ANIC), labeled: “Mary Cairn Cross Pk, QLD 7kmSE Maleny C. 900m 18 June-15 Aug. 1982 SPB40 S. & J. Peck // flight intercept trap Rainforest // 3 [handwritten in orange fine tip marker by J. Lawrence]”. PARATYPES (21): AUSTRALIA: NEW SOUTH WALES: Brindle Creek, Border Range NP, 28°22'S 153°05'E, ex pan trap, 3–14 October 1984, I. Naumann & J. Cardale (1, ANIC); Dorrigo NP, 30°22'S 152°45'E, Malaise trap/ethanol, 2–15 October 1984, I. Naumann & J. Cardale (1, ANIC); The Glade Area/Wonga Track, Dorrigo NP, 30°22'S 152°43'E, forest litter Berlesate, 13–15 November 1990, T. Weir (1, ANIC); Tooloom Plateau, 14 km W Urbanville, 28°29'S 152°24'E, ex pan trap, 15–21 February 1984, I.D. Naumann (1, ANIC); Wiangaree State Forest, 33 km NE Wiangaree, c. 1000 m, *Nothofagus* litter, 24 August 1982, S. & J. Peck (1, ANIC); Sheepstation Creek, 16 km NE of Wiangaree, 600 m, 13 June – 24 August 1982, S. & J. Peck (1 male dissected in glycerin, ANIC). QUEENSLAND: 0.5 km N O'Reilly's, dry rainforest, flight intercept trap, 1–4 April 1993, C. Carlton (5 [1 male dissected in glycerin], NZAC); Bare Rock, 2 km N Mt. Cordeaux, 28°02'S 152°23'E, 1100 m, flight intercept trap, 20 February – 4 April 1994, G. Monteith (2, QM); Mary Cairncross Park, 7 km SE Maleny, c. 900 m, rainforest, flight intercept trap, 18 June – 15 August 1982, S. & J. Peck (2, ANIC); Mt. Superbus summit, 1300 m, rainforest, pitfall trap, 8 February – 12 March 1990, Monteith, Thompson & Janetski (1, QM); Springbrook Repeater, 28°15'S 153°16'E, 1000 m, intercept trap, 9 January – 19 February 1995, G. Monteith (4, QM).

Diagnosis. This species may be distinguished from the other three known (but undescribed) putative species of *Bellascelis* by the presence of tempora on the head (visible in dorsal view), the relatively elongate body, and the presence of long, erect setae laterally on the elytra (Fig. 9).

Description. Length 1.30–1.60 mm. Color of head and pronotum dark reddish-brown, pronotum slightly darker; antennae reddish-brown, club somewhat lighter; elytra predominantly light reddish-brown, each elytron with subapical maculation consisting of a yellowish-brown circular spot surrounded by dark reddish-brown coloration (Fig. 9); ventral surfaces dark brown to reddish-brown. Dorsal setae uniformly golden, vestiture converging to central point on pronotum, undulating on elytra, pronotum and elytra with long, sparse, erect setae along sides, elytra with erect setae on disc very sparse, about 2× as long as decumbent vestiture. Ventral surfaces with dense, recumbent setae; gula, genae, prosternum and hypomeron with coarse, dense punctation; prosternal process covered with dense, suberect setae; punctation of metaventricle as dense

as that of prosternum, fine medially and coarse laterally; abdominal ventrites with punctation fine, denser than that of metaventricle.

Head with moderately coarse, dense, shallow punctation on frons, with smooth and shiny interspaces. Antennomere 2 globular, slightly longer than wide, antennomere 3 narrower, slightly longer than 2, antennomere 4 equal in width to 3, shorter than 3 and similar in length to 2; antennomere 11 much longer than 10, slightly shorter than 9 and 10 combined. Pronotal length/width ratio ~0.83, widest near middle, wider across posterior angles than across anterior angles; lateral edges slightly sinuate, convergent in anterior half, anterior angles slightly projecting, posterior angles projecting posterolaterally; pronotum with pair of short but distinct paramedial carinae midway between lateral bead and midline, flanking a shallow medial basal impression, posterior margin weakly sinuate, with truncate scutellar lobe; pronotal punctation similar to that of frons, punctures separated by about one puncture diameter or less, with smooth and shiny interspaces, punctures on central part of disc larger. Elytra about 1.64× longer than combined width, about 1.23× wider than pronotum at greatest width, about 2.41× longer than pronotum at greatest length; punctation fine, sparse on disc, punctures separated by about two puncture diameters, denser near basal margin; sutural stria absent; disc not impressed. Aedeagus (Fig. 99) with tegminal strut absent, tegminal arms fused with a suture; parameres separate and articulated to phallobase, inner surface concave, length about 2× longer than wide; apices multisetose; attachment point to phallobase not constricted, interparameral process present; basipenis 3× longer than distipenis, without median carina; distipenis relatively short (about 1.2× longer than wide), outer rims crenulate, lateral lobes not widely separated, symmetrical; internal sac lacking sclerites.

Etymology. Patronymic for Stewart Peck, world renowned collector, biogeographer, and leiodid specialist.

Chileothortus gen. nov.

(Fig. 12)

Type species. *Chileothortus infuscatus* sp. nov., by present designation.

Diagnosis. This genus is quite similar to *Thortus* in its relatively glabrous appearance, antennae inserted within deep concavities with the frons very narrow between them, and presence of postcoxal lines on abdominal ventrite 1. Additionally, members of both genera lack pronotal platforms, and have an antennal club comprised of three antennomeres, and all abdominal ventrites are free. However, members of *Chileothortus* possess an undulating setal pattern on the elytra and have more conical eyes. Members of *Thortus* are restricted to New Zealand and its outer islands, while *Chileothortus* occurs only in Chile. Additionally, *Chileothortus* is the only genus of picrotine that has a weakly carinate elevation that arises between the antennal insertions.

Description. Length 1.46 mm. Body form (Fig. 12) relatively short, fusiform, with decumbent and erect to suberect setae dorsally, setae generally long, somewhat longer setae present at base of elytra and just below margins of pronotum

tal and epipleural carinae; reddish-brown with transverse dark band on the elytra, ventral surfaces paler, mouthparts, femora and tarsi yellow. Head with small, weakly carinate medial elevation extending from between the antennal articulations to level of middle of eye; tempora present; vertex with temporal depression immediately anterior to ridge; band of reticulate sculpture absent. Frontoclypeus projecting laterally anterior to antennal insertions; raised portion of frons between antennal insertions strongly constricted, narrower than antennal club. Transverse ridge above antennal insertions present. Eye well-developed, not contacting antennal cavity; interfacetal setae absent. Antenna inserted into large cavity on head; antennal club consisting of 3 antennomeres, but almost appearing to consist of 2 antennomeres since antennomere 9 is reduced, intermediate in width between antennomeres 8 and 10. Maxillary palpomere 4 longer than 3; palpomere 4 subulate. Gena without antennal groove; genal spines acute. Gular sutures present. Pronotum not explanate, not weakly constricted at base, slightly narrower than elytra, very lightly wider at anterior third; anterior angles not projecting anteriorly (not extending anterior to cervical foramen of prothorax), without a distinct flat glandular surface or platform; lateral carina present and complete, not bearing setigerous tubercles, without glabrous space, width of lateral bead narrower than discal puncture and significantly narrower than antennal funicle; disc with a distinct and relatively deep transverse basal impression, about half width of pronotum; paramedial carinae and paralateral plicae absent; posterolateral angles nearly right and distinct. Prothoracic hypomeron fused to prosternum, suture not evident, but complete groove present, without small rounded impression at posterior end. Prosternum with anterior margin on slightly lower plane as disc; prosternal process with lateral marginal beads present, parallel-sided and surface between them forming a point apically and connected across apex, process not expanded apically, apex subacute; procoxal cavity with anterolateral notch. Scutellar shield clearly visible and transverse. Elytron lacking humeral tooth and subbasal impression; subapical gape present; punctation confused and moderately to sparsely dense; vestiture uniform but apex forming undulate pattern, with postscutellar and subapical setae directed posteriorly. Hind wing vestigial. Mesoventrite with mesoventral cavity deep and flanked by sharp carinae. Mesanepisternal pit absent. Metaventrite without postcoxal lines; discrimen absent, posterior notch of metaventrite present. Tarsi 5-5-4 in male; tarsi not slender, tarsomere 5 wider than preceding tarsomeres in lateral view; pro- and mesotarsomere 4 with ventral setae; mesotarsomere 3 unlobed, with few setae; mesotarsomeres 1-4 of equal lengths, mesotarsomere 5 short, about as long as mesotarsomeres 1-3 combined. Abdominal ventrites free, intersegmental crenulations absent; ventrite 1 with intercoxal process acute, with postcoxal lines present, acuminate; medio-basal thickenings of ventrites 3-5 absent; apex of ventrite 5 without crenulations.

Remarks. This monotypic genus is known by one male specimen which remains undissected; therefore, the following characters were not observed: apex of the mandi-

ble, length of gular sutures, apex of the prosternal process, form of the metendosternite, presence and distribution of abdominal calli, form of the spiracles, and form of the aedeagus. The elytral cuticle is somewhat transparent and it appears that the hind wing is vestigial and the medial ridge on the frons may be a male character.

Etymology. The generic name is in reference to Chile, the country of origin of the genus, and the genus *Thortus*, with which it shares many characters. The gender is masculine.

Biology. The single species has been collected by Berlese extraction in coastal rain forest.

Distribution. Chile.

Included species (1). *Chileothortus infuscatus* sp. nov.

Chileothortus infuscatus sp. nov.

(Fig. 12)

Type material. HOLOTYPE: male (FMNH), labeled: "CHILE: Valdivia, Parque Oncol, cruce camino Curinauco, 20.02.2000, [39°41'56.93"S, 73°19'39.10"W], extracción Berlese, T. Cekalovic, T632".

Diagnosis. This is the only known member of the genus; therefore, it may be recognized by the characters given in the generic diagnosis above.

Description. Length 1.46 mm. Color of body (Fig. 12) reddish-brown, legs lighter; each elytron with subbasal maculation that broadens laterad. Dorsal setae uniformly golden, vestiture converging to central point on pronotum, undulating at apex of elytra, pronotum and elytra with long, decumbent to suberect and shorter erect setae, may appear longer and erect along sides and margins, especially the base of the elytra. Ventral surfaces with recumbent and erect setae, shorter in length compared with those on dorsum; densely punctate on most surfaces; prosternal process with sparse, suberect setae; punctation of metaventrite as dense as that of prosternum, uniform; abdominal ventrites 1 and 2 with punctures as dense as metaventrite, on ventrites 3 and 4 less dense, and on ventrite 5 denser and smaller towards apex, which bears a patch of posteriorly-directed setae.

Head rugose, glabrous on frons, with smooth and shiny interspaces. Antennomere 2 globular, as long as wide, antennomere 3 conical, as long and as wide as 2, antennomere 4 subequal in width to 3, shorter than 3 and similar in length to 5; antennomere 11 much longer than 10, slightly shorter than 9 and 10 combined. Pronotal length/width ratio ~0.80, widest at apical 1/3, wider across posterior angles than across anterior angles; lateral edges subparallel, very weakly widened at about anterior 1/3, then convergent, anterior angles not projecting, posterior angles not projecting posterolaterally and somewhat obtuse, posterior margin weakly sinuate, with truncate scutellar lobe; disc with a moderately deep medial basal impression; paralateral plicae absent; pronotal punctation not similar to that of frons but more regular over much of the disc, punctures separated by about one puncture diameter or less, with smooth and shiny interspaces, punctures larger and fusing at base and becoming rugose. Elytra about 1.53× longer than combined width, about 1.17× wider than pronotum at greatest width, about 2.11× longer than pronotum at greatest length; punctation moderately dense, punctures

separated by 2–5 puncture diameters, denser near basal margin, sparser on disc; sutural stria absent; disc lacking impressions.

Remarks. This species is known only from the male holotype. The full locality information for this specimen was determined with the help of Mario Elgueta.

Etymology. The specific epithet is taken from the Latin participle “*infuscatus*”, meaning “darkened” or “obscured”, in reference to the conspicuous subbasal dark maculation on the elytra.

Chiliotis Reitter, 1875

(Figs 13–17, 85)

Chiliotis Reitter, 1875: 82. Type species: *Chiliotis formosa* Reitter, 1875, by monotypy.

Brounina Bruce, 1943: 58 (as subgenus of *Cryptophagus*). Type species: *Cryptophagus (Brounina) fossulata* Bruce, 1943, by monotypy; **syn. nov.**

Diagnosis. Members of this genus are distinctive among Picrotini for being densely setose dorsally but possessing a wide glabrous space along the lateral pronotal bead (Fig. 85: lgs). Additionally, the pronotum possesses no platforms, teeth (small setose denticles present in one undescribed species, Fig. 14), or protrusions, and the anterior angles are rounded; the antennal club is composed of three antennomeres and all abdominal ventrites are free.

Redescription. Length 1.32–2.22 mm. Body form (Figs 13–17) elongate and parallel-sided to subfusiform, dull to somewhat shining dorsally, with dense decumbent setae and often with a few short to long, sparse, suberect to erect setae dorsally; unicolorous (most), distinctly bicolored or multicolored. Head with tempora present, length from about 1/4 to 1/3 length of eye; vertex with temporal depression immediately anterior to ridge; band of reticulate sculpture present. Frontoclypeus not projecting laterally; raised portion of frons between antennal insertions not constricted, slightly narrower to about as wide as or wider than antennal club. Transverse ridge above antennal insertions absent. Eye large, rounded, contacting antennal cavity; interfacetal setae present. Antennal club consisting of 3 antennomeres; antenna inserted into small cavity; antennomere 9 subequal in width to antennomere 10. Mandible with apex bifid, subapical serrations present. Maxillary palpomere 4 distinctly longer than or subequal to 3; palpomere 4 not subulate. Gena without antennal groove; genal spines acute. Gular sutures incomplete, not reaching occipital foramen. Pronotum not explanate or strongly constricted at base, usually narrower than elytra, sometimes markedly so, parallel-sided or widest at middle or at base; anterior angles absent, not projecting anteriorly (not extending anterior to cervical foramen of prothorax), without a distinct flat glandular surface or platform; lateral carina present and complete, smooth and lacking teeth, crenulations, or setigerous tubercles (setigerous tubercles present in one undescribed species), with well-developed and widened lateral glabrous space, width of lateral bead wider than discal puncture and narrower than antennal funicle (Fig. 85); disc with basal impressions usually present, taking various forms, often transverse, broad, and shallow, sometimes paired and either circular or oblique;

paramedial carinae and paralateral plicae absent; posterolateral angles about right angled or obtuse. Prothoracic hypomeron fused to prosternum. Prosternum with anterior margin on same plane as disc; prosternal process with lateral beads distinct, parallel for much of length, then converging apically to narrowly rounded point (broadly rounded in some), process slightly expanded apically, narrowly to broadly rounded and crenulate with minute setae; procoxal cavity with anterolateral notch. Scutellar shield clearly visible, transverse to obtusely triangular. Elytron without humeral tooth; subbasal impression present or absent, subapical impression absent; subapical gape present; punctation confused, dense and well or moderately impressed; vestiture dual with long, dense, erect to suberect setae present laterally or on disc, erect setae sometimes short and sparse, decumbent setae forming undulate pattern, with postscutellar and subapical setae usually directed laterally, or uniformly directed posteriorly. Hind wing well developed. Mesoventrite with mesoventral cavity shallow or bowl-like and sometimes flanked by sharp carinae. Mesanepisternal pit present, either lined with setae or glabrous. Metaventricle without postcoxal lines; discripen more or less than 1/2 length of metaventricle, posterior notch of metaventricle present or absent. Metendosternite with anterior tendons approximate. Tarsi 5-5-5 in female, 5-5-4 in male; tarsi moderately slender, tarsomere 5 as wide as preceding tarsomeres in lateral view; pro- and mesotarsomere 4 with few ventral setae to unisetose; mesotarsomere 3 not or weakly lobed, with few setae; mesotarsomeres 1–4 of subequal lengths, or mesotarsomere 1 slightly longer than 2, or mesotarsomere 4 slightly shorter than each of the preceding, mesotarsomere 5 about as long as or slightly shorter than mesotarsomeres 1–4 combined. Abdominal ventrites free and with medial and lateral calli present, intersegmental crenulations absent; ventrite 1 with intercoxal process narrowly to broadly rounded, without postcoxal lines; medio-basal thickenings of ventrites 3–5 absent; apex of ventrite 5 with crenulations. Abdominal spiracles on segment VII with openings present and larger in diameter than spiracle VI, texture granulate and atrium rounded and saclike. Aedeagus with tegminal strut absent, tegminal arms fused, with a suture; parameres separate or fused at their extreme bases and articulated to phallobase, inner surface not concave or slightly concave at the base, length about 2–2.5× longer than wide; apices asetose, or multisetose; attachment point to phallobase not constricted, interparameral process absent; basipenis 3–4× longer than distipenis, with or without median carina; distipenis relatively long (about 2.1× longer than wide), outer rims weakly to strongly crenulate, lateral lobes not widely separated, symmetrical; internal sac with a pair of short irregularly shaped endophallites or one elongate endophallite that is bifurcate anteriorly.

Remarks. The type species of *Brounina*, *B. fossulata* (Bruce, 1943) from Chile, falls within our concept of the genus *Chiliotis*. Consequently, we synonymize the two generic names. The other described species of *Brounina*, *B. distincta* (Broun, 1893), was found to fall within our new genus *Notocryptus*.



Figs 10–18. Habitus of species of Picrotini. 10 – *Bellascelis* n. sp. 1 (Australia: Qld); 11 – *Bellascelis* n. sp. 2 (Australia: NSW); 12 – *Chileothortus infuscatus* sp. nov.; 13 – *Chiliotis* sp. 1; 14 – *Chiliotis* sp. 2; 15 – *Chiliotis* sp. 3; 16 – *Chiliotis* sp. 4; 17 – *Chiliotis* sp. 5; 18 – *Chimaerocryptus johnsoni* sp. nov. Scale bars = 1 mm.

Based on the original description (REITTER 1876: 364) and that of GROUVELLE (1919b: 182, as *Micrambina analis*), we tentatively include *Telmatophilus analis* Reitter, 1876 in this genus. The type series has not been located (see LESCHEN & GIMMEL 2012).

Undescribed species of *Chiliotis* seem to exist, but the identities of the described species have yet to be fully elucidated. The most widespread and common form seems to be that represented in Fig. 16.

Biology. Members of this genus are collected in flight intercept traps, leaf litter, and by beating vegetation. One undetermined species was collected from galls on vines in Puyehue National Park, growing on *Nothofagus* Blume (Nothofagaceae) trees (LESCHEN 1996). A gut of a dissected specimen contained dark fungal spores.

Distribution. Argentina, Chile.

Included species (9). *Chiliotis analis* (Reitter, 1876) comb. nov. (from *Micrambina*), *Chiliotis exilis* Grouvelle, 1919; *Chiliotis formosus* Reitter, 1875; *Chiliotis fossulatus* (Bruce, 1943) comb. nov. (from *Brounina*); *Chiliotis germaini* Grouvelle, 1919; *Chiliotis gigas* Grouvelle, 1919; *Chiliotis gracilis* Grouvelle, 1919; *Chiliotis laticeps* Grouvelle, 1919; *Chiliotis longicornis* Grouvelle, 1919.

Chimaerocryptus gen. nov.

(Figs 18, 77)

Type species. *Chimaerocryptus johnsoni* sp. nov., by present designation.

Diagnosis. This Chilean genus is easily distinguished by the explanate pronotum with asymmetrical crenulations along the lateral carina (Fig. 77) and a carinate prosternal process. Additionally, the body is densely setose dorsally, the antennal club consists of three antennomeres, and the abdominal ventrites are free.

Description. Length 1.80–1.85 mm. Body form (Fig. 18) elongate and parallel-sided, somewhat shining dorsally, with dense decumbent setae and often with a few long, sparse, suberect to erect setae dorsally; unicolorous. Head with tempora, length about 1/3 length of eye; vertex with temporal depression immediately anterior to ridge; band of reticulate sculpture absent, and glabrous. Frontoclypeus not projecting laterally; raised portion of frons between antennal insertions not constricted, wider than antennal club. Transverse ridge above antennal insertions absent. Eye large, rounded, contacting antennal cavity; interfacetal setae present. Antennal club consisting of 3 antennomeres; antenna inserted into small cavity; antennomere 9 subequal in width to antennomere 10. Mandible with apex bifid, subapical serrations present. Maxillary palpomere 4 distinctly longer than 3; palpomere 4 not subulate. Gena without antennal groove; genal spines subacute. Gular sutures incomplete, not reaching occipital foramen. Pronotum (Fig. 77) explanate, not strongly constricted at base, narrower than elytra, almost parallel-sided, widest at middle; anterior angles absent, not projecting anteriorly (not extending anterior to cervical foramen of prothorax), without a distinct flat glandular surface or platform; lateral carina present and complete, smooth on right side and undulate in anterior 1/3 on left side, with well-developed

and widened lateral glabrous space within a depressed submarginal impression, width of lateral bead about as wide as discal puncture and narrower than antennal funicle; disc with broad basal impression present in basal 1/3; paramedial carinae and paralateral plicae absent; posterolateral angles sharp, strongly acute. Prothoracic hypomeron fused to prosternum. Prosternum with anterior margin on lower plane than disc; prosternal process carinate with medial longitudinal keel extending length of process, lateral beads absent, slightly expanded subapically behind coxae and apically acute; procoxal cavity with anterolateral notch. Scutellar shield clearly visible, transverse and narrow. Elytron without a distinct humeral tooth; subbasal impression present, subapical impression absent; subapical gape present; punctation confused, dense and moderately impressed; vestiture dual with a few long, sparse, erect setae present laterally or on disc, decumbent setae forming undulate pattern, with postscutellar and subapical setae directed posteriorly. Hind wing well developed. Mesoventrite with mesoventral cavity deep with distinct edges. Mesanepisternal pit present, glabrous. Metaventricle without postcoxal lines; discrimen less than 1/2 length of metaventricle, posterior notch of metaventricle present. Metendosternite with anterior tendons approximate. Tarsi 5-5-5 in female, 5-5-4 in male; tarsi slender, tarsomere 5 as wide as preceding tarsomeres in lateral view; pro- and mesotarsomere 4 with few ventral setae; mesotarsomere 3 weakly lobed, with few setae; mesotarsomeres 2–4 of subequal lengths, mesotarsomere 1 longer than 2, mesotarsomere 5 about as long as mesotarsomeres 1–3 combined. Abdominal ventrites free and with medial and lateral calli absent, intersegmental crenulations absent; ventrite 1 with intercoxal process broadly rounded, without postcoxal lines; medio-basal thickenings of ventrites 3–5 absent; apex of ventrite 5 without crenulations. Aedeagus with tegminal strut absent, tegminal arms fused; parameres separate and articulated to phallobase, inner surface not concave, length about 3× longer than wide; apices unisetose; attachment point to phallobase not constricted, interparameral process absent; basipenis 6× longer than distipenis, with median carina; distipenis relatively short, outer rims smooth, lateral lobes poorly developed and widely separated, symmetrical; internal sac with one elongate endophallite that is not bifurcate anteriorly.

Remarks. This monotypic genus is known by two specimens of a single species, a male and a female. In both specimens, the bizarrely asymmetrical pronotum has the same conformation, leading us to conclude that the condition is not teratological.

Etymology. The generic name is derived from a combination of the Greek “*Chimaera*”, a hybrid monster, in reference to the asymmetrical pronotum of the type species, and “*-cryptus*”, a common generic ending in Cryptophagidae. The gender is masculine.

Biology. The single species has been collected in a FIT set in *Nothofagus/Araucaria* forest.

Distribution. Chile.

Included species (1). *Chimaerocryptus johnsoni* sp. nov.

***Chimaerocryptus johnsoni* sp. nov.**

(Figs 18, 77)

Type material. HOLOTYPE: female (CMN), labeled: "CHILE: 40kmWAngol Nahuelbuta Nat. Pk. 9.XII.84-17.II.85 S&J. Peck, 1200-1500m FITS Nothofagus – Araucariafor". PARATYPE: CHILE: MALLECO PROVINCE: 40 km W Angol, Nahuelbuta NP, 1200–1500 m, *Nothofagus / Araucaria* forest, FIT, 9 December 1984 – 17 February 1985, S. & J. Peck (1 slide mounted, CMN).

Diagnosis. This is the only known member of the genus; therefore, it may be recognized by the characters given in the generic diagnosis above.

Description. Length 1.80–1.85 mm. Color of body (Fig. 18) light brown, legs and mouthparts lighter. Dorsal setae uniformly golden, vestiture converging to midline of pronotum, strongly undulating subbasally on elytra, weakly undulating subapically, pronotum and elytra with decumbent setae long, appearing longer on the pronotum and base of the elytra. Ventral surfaces with recumbent setae, prosternal meso- and metaventral setae about as long as those on the dorsum, abdominal setae shorter; densely punctate on most ventral surfaces, more diffuse laterally on prothorax and lateral sclerites; prosternal process with suberect setae with large punctures; punctation of metaventricle slightly less dense than that of prosternum, uniform; abdominal ventrites 1 and 2 with punctures as dense as metaventricle, ventrites 3 and 4 less dense, ventrite 5 densely micropunctate, bearing a patch of centrally-directed setae.

Head punctate with smooth and shiny interspaces. Antennomere 2 subconical with apex wider than base, longer than wide, antennomere 3 conical, longer than wide and as long as 2, antennomere 4 smaller and shorter than 3 and longer than 5; antennomere 11 longer than 10, distinctly shorter than 9 and 10 combined. Pronotal length/width ratio ~0.68 (Fig. 77), widest at middle (or at tips of posterior angles), wider across posterior angles than across anterior angles; lateral edges subparallel, convergent apically, anterior angles not projecting, posterior angles strongly projecting and right, posterior margin weakly bisinuate, with truncate scutellar lobe; disc with a deep transverse basal impression; paralateral plicae absent; pronotal punctation similar to that of frons but slightly larger and more regular over much of the disc, punctures separated by less than one puncture diameter, with smooth and shiny interspaces, punctures more or less uniform, weakening laterally. Elytra about 1.53× longer than combined width, about 1.50× wider than pronotum at greatest width, about 3.36× longer than pronotum at greatest length; punctation dense to moderately dense, punctures separated by 0.5 to 4 puncture diameters, denser near basal margin, sparser on disc; sutural stria present; disc with distinct transverse subbasal impression.

Etymology. Patronymic for the late Colin Johnson (1943–2021; Manchester Museum, England), world renowned microcoleopterist and cryptophagid worker extraordinaire (DENNIS 2022).

***Connatocryptus* gen. nov.**

(Fig. 19)

Type species. *Connatocryptus utiku* sp. nov., by present designation.

Diagnosis. This is the only genus of Cryptophagidae with completely connate abdominal ventrites. Additionally, the antennal club is comprised of three antennomeres, the pronotum lacks lateral crenulations or platforms, and the dorsal surface is distinctly setose.

Description. Length 2.67 mm. Body form (Fig. 19) elongate, fusiform, prothorax quadrate, distinctly narrower than elytra, shining dorsally, with moderately dense decumbent setae, devoid of suberect to erect setae dorsally. Frontoclypeus not projecting laterally; raised portion of frons between antennal insertions not constricted, wider than antennal club. Head with band of rugose sculpture present. Transverse ridge above antennal insertions absent. Eye large, rounded, contacting antennal cavity; interfacetal setae present. Antennal club consisting of 3 antennomeres; antenna inserted into small cavity; antennomere 9 subequal in width to antennomere 10. Maxillary palpomere 4 slightly longer than 3; palpomere 4 not subulate. Gena without antennal groove; genal spines sharply acute, prominent. Gular sutures present. Pronotum not explanate and not constricted at base, distinctly narrower than elytra, widest at middle; anterior angles not extending anterior to cervical foramen of prothorax, without a distinct flat glandular surface or platform; lateral carina present and complete, lacking teeth, crenulations or setigerous tubercles, lateral glabrous space absent, width of lateral bead narrower than antennal funicle; disc lacking transverse basal impression, paramedial carinae, and paralateral plicae; posterolateral angles right. Prothoracic hypomeron not clearly separated from prosternum by suture. Prosternum with anterior margin on slightly lower plane than disc; prosternal process carinate with medial longitudinal keel extending length of process, lateral beads absent, weakly expanded apically, broadly diamond-shaped; procoxal cavity with anterolateral notch. Scutellar shield clearly visible, transverse. Elytron without humeral tooth; subbasal impression absent, subapical impression absent; subapical gape present; punctation confused, sparse and weakly impressed; vestiture decumbent, forming undulate pattern with setae near midlength directed medially and subapical setae directed laterally. Hind wing well developed. Mesoventrite with mesoventral cavity deep, flanked by ridges. Mesanepisternal pit present. Metaventricle without postcoxal lines; discrimen present, about half length of metaventricle, posterior notch of metaventricle absent. Tarsi 5-5-5 in female; tarsi moderately slender, tarsomere 5 as wide as preceding tarsomeres in lateral view; pro- and mesotarsomere 4 with few ventral setae; mesotarsomere 3 unlobed; mesotarsomeres 1–4 of subequal lengths, mesotarsomere 5 about as long as mesotarsomeres 1–4 combined. Abdominal ventrites connate; intersegmental crenulations absent; ventrite 1 with intercoxal process subrounded, with acuminate postcoxal

lines; medio-basal thickenings of ventrites 3–5 absent; apex of ventrite 5 without crenulations.

Remarks. Roy Crowson had examined and labeled the single female specimen in the NZAC as “Cryptophagini sp. nov.”. It was somewhat damaged, caked with glue or film and was not dissected for this study. Consequently, the following morphological features were not observed: details of the vertex and postocular region of the head, apex of the mandible, length of gular sutures, apex of the prosternal process, internal details of the mesanepisternal pit, form of the metendosternite, presence and distribution of abdominal calli, form of the spiracles, and form of the aedeagus. The hind wing is visible through the elytral cuticle; it is fully developed and neatly folded, creating the impression that the elytra are bicolored.

Etymology. The generic name is in reference to the completely connate abdominal ventrites, and “-cryptus”, a common generic ending in Cryptophagidae. The gender is masculine.

Biology. Unknown.

Distribution. New Zealand.

Included species (1). *Connatocryptus utiku* sp. nov.

***Connatocryptus utiku* sp. nov.**

(Fig. 19)

Type material. HOLOTYPE: female (NZAC) [removed from original point card and repointed], labeled: “Utiku 30.6.17 [T. Broun’s hand] // T. Broun Collection // A. E. Brookes Collection // Crypto. No. 11 [C. Watt’s hand] // Cryptophagini sp. nov. [R. Crowson’s hand] det. R. A. Crowson”.

Diagnosis. This is the only known member of the genus; therefore, it may be recognized by the characters given in the generic diagnosis above.

Description. Length 2.67 mm. Color of body (Fig. 19) reddish-brown, elytra, legs and mouthparts lighter. Dorsal setae uniformly silver, vestiture converging to central point on pronotum, undulating on elytra with setae near midlength directed medially and subapical setae directed laterally. Ventral surfaces with recumbent setae with similar length to that of dorsum; densely punctate on most surfaces; prosternum with large, coarse punctures that weaken posterolaterally; prosternal process with decumbent setae; punctation of metaventrite less coarse than that of prosternum, uniform on disc, but weakening posteriorly; abdominal ventrites with punctures denser and smaller than those of metaventrite, especially ventrites 3–5 which are micropunctate, ventrite 5 bearing a patch of posteriorly-directed setae.

Head punctate with smooth interspaces. Antennomere 2 globular, about as long as is wide, antennomere 3 subconical with base slightly narrower than apex, about as long and as wide and slightly shorter than 2, antennomere 4 smaller in width and length than 3 and slightly shorter than 5; antennomere 11 not much longer than 10, distinctly shorter than 9 and 10 combined. Pronotal length/width ratio ~0.67, widest at middle, wider across posterior angles than across anterior angles; lateral edges evenly curved, anterior angles not projecting, posterior angles right, not projecting, posterior margin sinuate, with weak, truncate scutellar lobe; pronotum lacking deep medial basal impression; paralaral

plicae absent; pronotal punctation similar to that of frons but more regular over much of the disc, punctures separated by 1–2.5 puncture diameters, with smooth interspaces, punctures larger and fusing at the posterior margin of the base and becoming rugose. Elytra about 1.56× longer than combined width, about 1.17× wider than pronotum at greatest width, about 2.03× longer than pronotum at greatest length; punctation sparse and weakly impressed, punctures separated by about 5 puncture diameters, not markedly denser near basal margin than on disc; sutural stria present to midlength; disc lacking impressions.

Remarks. The bicolored appearance of the elytra is a result of the folded hind wings beneath the elytra.

Etymology. Named for the type locality, Utiku (RI), lying at approximately 39°43.906’S, 175°50.627’E in the North Island of New Zealand.

***Cordosomatula* gen. nov.**

(Figs 20, 94, 100)

Type species. *Cordosomatula magnabagishae* sp. nov., by present designation.

Diagnosis. This genus is easily distinguished from other Picrotini by the body form, being somewhat pedunculate with a cordiform pronotum (Fig. 20). In addition, it lacks a discrimen and has conspicuously undulate elytral vestiture. Other helpful characters include the long antennae with a club comprised of three antennomeres, conspicuously long tempora, lack of pronotal teeth or platforms, and free abdominal ventrites.

Description. Length 1.70–2.10 mm. Body form (Fig. 20) stout, pedunculate, shining dorsally, with relatively long and sparse decumbent setae and with numerous very long, erect setae dorsally; cuticle weakly bicolored. Head with tempora prominent, more than 1/3 length of eye; vertex with temporal depression immediately anterior to ridge; band of reticulate sculpture absent. Frontoclypeus not projecting laterally; raised portion of frons between antennal insertions not constricted, about as wide as antennal club. Transverse ridge above antennal insertions absent. Eye small, conical, contacting antennal cavity; interfacetal setae absent. Antennal club consisting of 3 antennomeres; antenna inserted into small cavity; antennomere 9 subequal in width to antennomere 10. Mandible with apex bifid, subapical serrations present. Maxillary palpomere 4 distinctly longer than or subequal to 3; palpomere 4 not subulate. Gena without antennal groove; genal spines acute. Gular sutures incomplete, not reaching occipital foramen. Pronotum not explanate, narrower than elytra, constricted at base, widest just anterior of middle; anterior angles absent, not projecting anteriorly (not extending anterior to cervical foramen of prothorax), without distinct glandular surface or platform; lateral carina complete, smooth, lacking teeth, crenulations, or setigerous tubercles, with lateral glabrous space narrow, width of lateral bead wider than discal puncture and narrower than antennal funicle; disc with distinct transverse basal impression; paramedial carinae and paralaral plicae absent; posterolateral angles obtuse. Prothoracic hypomeron fused to prosternum. Prosternum with anterior margin on same plane as disc; prosternal

process with lateral beads absent but with weak, paired, slightly convergent carinae near apex of process, grooved medially near apex, process slightly expanded apically, narrowly rounded and crenulate with minute setae; procoxal cavity with anterolateral notch. Scutellar shield clearly visible, transverse with small, obtuse apex. Elytron without humeral tooth; subbasal and subapical impressions absent; subapical gape present; punctation confused, dense and relatively weakly impressed; vestiture dual with numerous long, erect setae present on elytral disc, decumbent setae forming undulate pattern, with postscutellar and submedian setae directed laterally. Hind wing well developed. Mesoventrite with mesoventral cavity bowl-like and flanked by sharp carinae. Mesanepisternal pit present, lined with setae. Metaventrite without postcoxal lines; discrimen virtually absent, posterior notch of metaventrite absent. Metendosternite with anterior tendons approximate. Tarsi 5-5-5 in female, 5-5-4 in male; tarsi slender, tarsomere 5 as wide as preceding tarsomeres in lateral view; pro- and mesotarsomere 4 with few ventral setae; mesotarsomere 3 weakly lobed, with few setae; mesotarsomeres 1-4 of subequal lengths, mesotarsomere 5 about as long as mesotarsomeres 1-4 combined. Abdominal ventrites free and without medial calli, lateral calli present, intersegmental crenulations present; ventrite 1 with intercoxal process broadly rounded, without postcoxal lines (Fig. 94); medio-basal thickenings of ventrites 3-5 absent; apex of ventrite 5 lacking crenulations and midlateral lobe in male absent. Abdominal spiracles with opening on segment VII present and larger in diameter than spiracle VI, texture granulate and atrium rounded and saclike. Aedeagus (Fig. 100) with tegminal strut weakly present, tegminal arms fused, without a suture; parameres separate and articulated to phallobase, inner surface not concave, length about 2× longer than wide (length taken from the inner bases); apices multisetose, lacking macrosetae; attachment point to phallobase not constricted, interparameral process absent; basipennis 3.5× longer than distipennis, with median carina; distipennis relatively long (about 2× longer than wide), outer rims smooth, lateral lobes not widely separated, symmetrical; internal sac without endophallites.

Etymology. The generic name is derived from a combination of the Latin “*cordis*”, meaning heart, and Greek “*somatos*”, meaning “of the body,” in reference to the vaguely heart-shaped prothorax. The gender is feminine.

Biology. The single species has been collected most frequently by pyrethrum fogging, flight intercept and Malaise traps, and stick brushing in rainforest habitats. A large series was collected a leathery white polypore fungus.

Distribution. Australia.

Included species (1). *Cordosomatula magnabagishae* sp. nov.

Cordosomatula magnabagishae sp. nov.

(Figs 20, 94, 100)

Type material. HOLOTYPE: male (QM), labeled: “Mossman Bluff Track, 5–10 km W Mossman N. Qld 20 December 1989 – 15 January 1990, Monteith, Thompson&ANZSES Site 1, intercept, 250m”. PARATYPES (141): AUSTRALIA: NEW SOUTH WALES: Clyde Mountain, Pooh Corner, *E. moorei*, 20 February 1987, K. Hansen (1, ANIC); Comboyne,

J. Armstrong (8, ANIC); Dorrigo NP, 30°22'S 152°45'E, 13 February 1984, I.D. Naumann (1, ANIC); Megalong, J. Armstrong (8, ANIC); Mt. Glennie, 16 km E Woodenbong, 910 m, rainforest, flight intercept trap, 25 November 1982 – 3 February 1983 (1, QM); Mt. Irvine, J. Armstrong (12, ANIC); Mt. Keira Scout Camp, 34°24'S 150°50'E, c. 320 m, rainforest, leaf/log litter, 4–5 March 1981, Lawrence & Calder (1, ANIC); The Glade/Wonga Track, Dorrigo NP, 30°22'S 152°43'E, beating vegetation at night, A. Calder (1, ANIC); Toonambar SF, near Grevillia, 28°29'S 152°46'E, 770 m, Murray scrub, pyrethrum fogging old fungusy logs, 6 January 1987, A. Newton & M. Thayer (3, ANIC). QUEENSLAND: 11 km NW Mossman, nr Plane Crash, 1240 m, pyrethrum, 28 December 1989, QLD Museum & ANZSES (5, QM); 22 km SW Mareeba, 900 m, rainforest, pyrethrum knockdown, 4 November 1983, D.K. Yeates & G.I. Thompson (1, QM); Bellenden Ker Range, Cable Tower 3, 1054 m, rainforest, Malaise trap, 17 October – 5 November 1981, Earthwatch/QLD Museum (1, ANIC); Bellenden Ker summit, 17°16'S 145°52'E, flight intercept trap, 28 August – 8 October 1991, G. Monteith & H. Janetski (1, QM); Brookfield, 12 January 1928, H. Hacken (2, QM); Bunya Mountains, Paradise Top track, 26°53'S 151°35'E, pyrethrum logs and Bunya trunk, 24 October 1997, G. Thompson (1, QM); Bunya Mountains NP, near Westcott Plain, 26°52'S 151°34'E, ex ethanol, 6–7 October 1984, I. Naumann & J. Cardale (1, ANIC); Charmillin Creek crossing, Tully Falls Road, pitfall & intercept traps, 8 December 1989 – 5 January 1990, Monteith, Thompson & Janetski (4, QM); Hugh Nelson Range, GS3, 17°27'S 145°29'E, 1150 m, Malaise trap, 1 June – 3 July 1995, P. Zborowski (1, ANIC); same except 2 October – 1 November 1996, L. Umback (2, ANIC); Kenny Road, 17°28'S 145°32'E, 850 m, flight intercept trap, 25 November 1994 – 5 January 1995, Monteith & Hasenpusch (1, QM); Kirrama Range, Douglas Creek Road, 800 m, rainforest, flight intercept trap, 10 December 1986 – 11 January 1987, Monteith, Thompson & Hamlet (1, QM); Lake Barrine, Atherton Tableland, 19 April 1982, Darlington (1, ANIC); Lake Eacham, 750 m, pitfall & intercept, 9 December 1989 – 14 January 1990, Monteith, Thompson & Janetski (1, QM); Lamb Range, Emerald Creek, 950 m, rainforest, stick brushing, 11 October 1982, Monteith, Yeates & Thompson (1, QM); Lambs Head, 10 km W of Edmonton, 1200 m, logs and trees, pyrethrum, 10 December 1989, Monteith, Thompson & Janetski (9, QM); same except flight intercept trap, 4–13 December 1988, Monteith & Thompson (1, QM); Lamington NP, Binna Burra, under bark & in rotten wood, 25 March – 4 April 1985, J. & N. Lawrence (1, ANIC); Lamington NP, near O'Reilly's, 28°14'S 153°08'E, 25 & 28 October 1993, S.A. Slipinski & J.F. Lawrence (3, ANIC); Longlands Gap, BS1, 17°28'S 145°29'E, 1150 m, Malaise trap, 3–5 February 1996, L. Umback (1, ANIC); Main Range NP, Cunningham's Gap, 800 m, ex leathery white polypore, 6 April 1993, C. Carlton (28, NZAC); Massey Creek, BS3, 17°37'S 145°34'E, 1000 m, Malaise trap, 5 April – 3 May 1995, P. Zborowski (1, ANIC); same except flight intercept trap, 4 September – 3 October 1995, L. Umback (1, ANIC); McPherson NP, 3–4000 ft, 10 March 1982, Darlington (1, ANIC); Mossman Bluff Track, 10 km W Mossman, 1200 m, logs and trees, pyrethrum, 17 December 1988, Monteith, Thompson & Janetski (15, QM); Mt. Asplenium, 28°09'S 152°26'E, 1290 m, pyrethrum trees & logs, 30 January 1993, G.B. Monteith (1, QM); Mt. Chinghee, 12 km SE Rathdowney, 720 m, rainforest, Berlesate/stick brushing, 17 December 1982, Monteith, Yeates & Thompson (3, QM); same except pyrethrum (2, QM); same except stick brushing (2, QM); Mt. Edith, Lamb Range, rainforest, pyrethrum, 12 October 1982, Monteith, Yeates & Thompson (1, QM); Mt. Fisher, BS2, 17°33'S 145°32'E, 1150 m, flight intercept traps, 3 October – 2 November 1995, L. Umback (1, ANIC); Mt. Haig, GS1, 17°06'S 145°36'E, 1150 m, flight intercept trap, 6 April – 4 May 1995, P. Zborowski (1, ANIC); Mt. Lewis Road, 16 km from highway, 950 m, site 2, flight intercept trap, 18 December 1989 – 13 January 1990, Monteith, Thompson & ANZSES (2, QM); Mt. Misery summit, 850 m, site 3, flight intercept trap, 6 December 1990 – 17 January 1991, QLD Museum & ANZSES (1, QM); Mt. Spec, S2, 18°55'S 146°10'E, 880 m, Malaise trap, 10 January – 6 February 1995, M. Cemak (1, ANIC); Mt. Spec, S3, 18°55'S 146°09'E, 880 m, Malaise trap, 8 May – 5 June 1995, M. Cemak (1, ANIC); Mt. Superbus summit, 1300 m, rainforest, pyrethrum trees & logs, 8–9 February 1990, Monteith, Thompson & Janetski (1, QM); Mt. Superbus summit, 28°14'S 145°49'E [coordinates in error], 1350 m, rainforest, stick brushing, 24 October 1998, G.B. Monteith (1, QM); Mt. Tamborine NP, 700 m, sclerophyll *Eucalyptus*

forest, 3 March 1984, L. Masner (1, ANIC); Paluma Dam Road, 900 m, site 1, flight intercept trap, 8 December 1990 – 5 February 1991, Monteith & Seymour (1, QM); same except site 3 (1, QM); Samsonvale, N. Hacker (1, QM); Tamborine Mountain, Joalah NP, 24 October 1993, S.A. Slipinski & J.F. Lawrence (1, ANIC); Tamborine Mountain, The Knoll NP, 24 October 1993, S.A. Slipinski & J.F. Lawrence (1, ANIC); Tullawallal, Binna Burra, 28°12'S 153°12'E, 950 m, intercept traps, 3 December 1994 – 9 January 1995, G. Monteith & H. Janetski (2, QM); Windsor Tableland, site 9, flight intercept trap, 27 December 1988 – 8 January 1989, E. Schmidt & ANZSES (2, QM); Windsor Tableland, 1.2 km past Barracks, 16°15'S 145°02'E, rainforest, Berlesate/stick brushing, 24 November 1977, G.B. Monteith (2, QM).

Diagnosis. This is the only known member of the genus; therefore, it may be recognized by the characters given in the generic diagnosis above.

Description. Length 1.70–2.10 mm. Color variable, sometimes dorsal surface more or less uniformly reddish-brown, pronotum and head usually darker, elytra near humeri and subapically often diffusely pale reddish-brown (Fig. 20); antennae reddish-brown, club somewhat lighter; ventral surfaces reddish-brown, undersurfaces of head and prothorax often infuscated, legs and abdominal ventrites (Fig. 94) pale. Dorsal setae primarily golden, long, vestiture converging to central point on pronotum, undulating on elytra; tufts of silvery setae present along median line of pronotum posterior of central point, and in paired post-scutellar and submedian patches on elytra; elytra with long, sparse, erect setae along sides, with erect setae on disc sparse, arranged in four rows, 2–3× as long as decumbent vestiture. Ventral surfaces with dense, recumbent setae; gula, genae, prosternum and hypomeron medially with coarse, dense punctation; hypomeron sublaterally with wide impunctate strip, with small, dense punctures near lateral edge; prosternal process covered with dense, suberect setae; punctation of metaventrite as dense as that of prosternum, coarser laterally, impunctate in an elongate triangle medially; abdominal ventrites (Fig. 94) with punctures fine, denser than that of metaventrite.

Head with very coarse, dense punctation on frons, especially laterally, punctures separated by less than one puncture diameter, with smooth and shiny interspaces; small area at vertex impunctate. Antennomere 2 subovate, longer than wide, antennomere 3 slightly narrower, longer than 2, antennomere 4 equal in width to 3, shorter than 3 and similar in length to 2; antennomere 11 distinctly longer than 10, shorter than 9 and 10 combined. Pronotal length/width ratio ~0.82, widest in anterior third, width across posterior angles and across anterior angles approximately equal; lateral edges strongly sinuate, convergent in anterior fourth, anterior angles not at all projecting, posterior angles obtuse, not projecting, posterior margin sinuate, with weak, truncate scutellar lobe; pronotum with broad basal transverse impression, without carinae or paralateral plicae along base; pronotal punctation moderately dense, punctures separated by one puncture diameter or less, with smooth and shiny interspaces, punctures on central part of disc larger, punctures sparser along anterior portion of transverse basal impression. Elytra about 1.45× longer than combined width, about 1.49× wider than pronotum at greatest width, about 2.64× longer than pronotum at greatest length; punctation fine, sparse on disc, separated by about

two puncture diameters, denser near basal margin; sutural stria weakly indicated in posterior half of elytron; disc not impressed. Aedeagus (Fig. 100) with tegminal strut weakly present, tegminal arms fused, without a suture; parameres separate and articulated to phallobase, inner surface not concave, length about 2× longer than wide (length taken from the inner bases); apices multisetose, lacking macrosetae; attachment point to phallobase not constricted, interparameral process absent; basipenis 3.5× longer than distipenis, with median carina; distipenis relatively long (about 2× longer than wide), outer rims smooth, lateral lobes not widely separated, symmetrical; internal sac without endophallites.

Etymology. The specific epithet is in honor of the great (*magna*) Stephanie Bagish, fourth-grade teacher at Crane School (Santa Barbara, California, USA). Stephanie is beloved by all her pupils, especially Ian and Andrew She-shunoff, devoted visitors of the Santa Barbara Museum of Natural History.

Distribution. Widespread in eastern Australia from at least Mt. Windsor Tableland in northeast Queensland to as far south as Clyde Mountain, New South Wales, Australia.

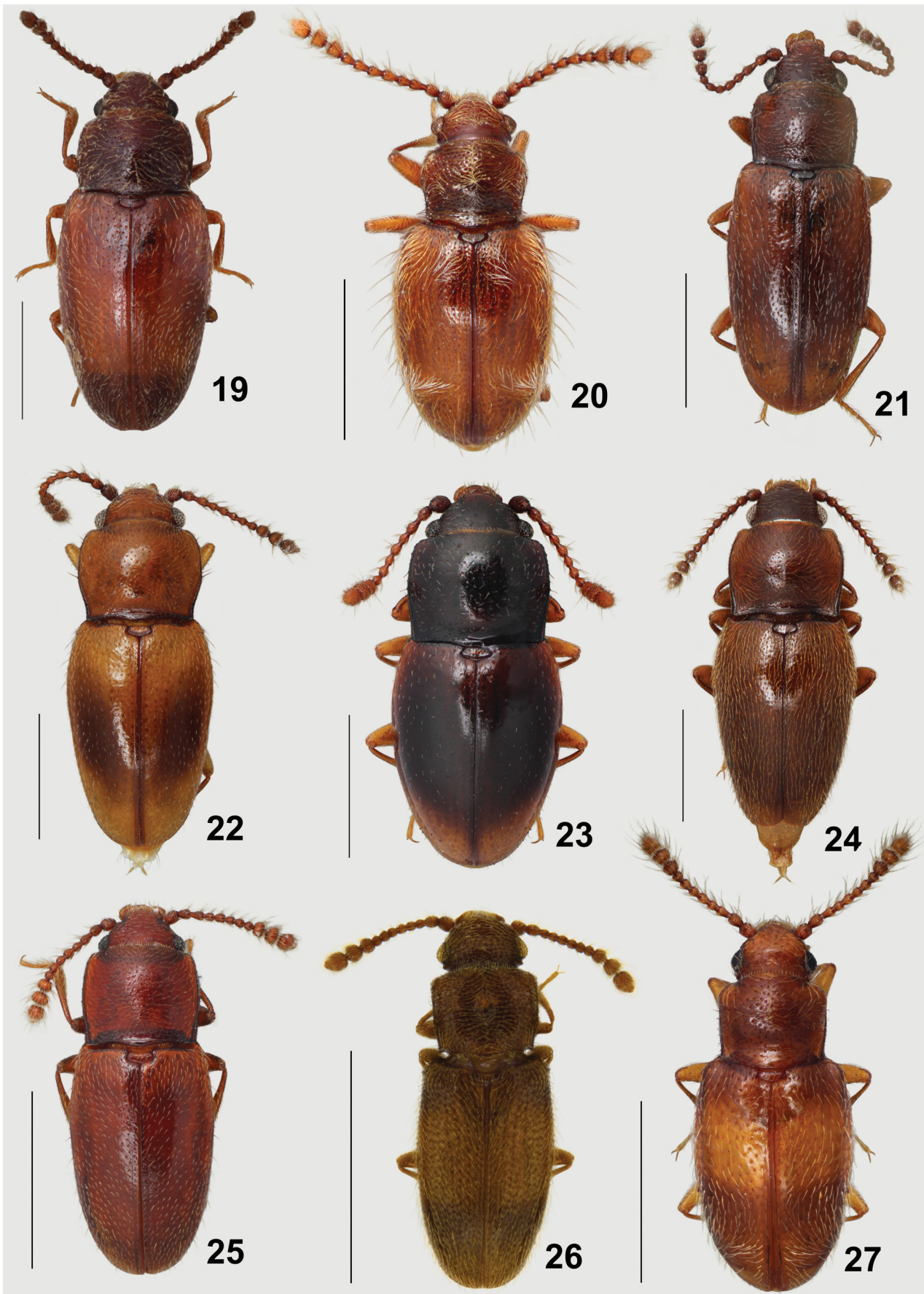
Cryptosomatula Bruce, 1940

(Fig. 21)

Cryptosomatula Bruce, 1940: 683. Type species: *Cryptosomatula longicornis* Bruce, 1940, by original monotypy.

Diagnosis. This genus may be distinguished by the antennal club comprised of three antennomeres, lack of tempora, evenly convex pronotum (without pits or impressions) with no teeth, platforms, or protruding anterior angles, the broad, flat prosternal process, and all five abdominal ventrites free. It appears to be closely related to *Cryptothelypterus*, from which it differs by the finely faceted eyes, long discrimen (longer than half length of metaventrite), narrow pronotum (narrower than elytra), and distinct elytral punctation.

Redescription. Length 2.20–2.43 mm. Body form (Fig. 21) elongate, parallel-sided, shining dorsally, with moderately dense decumbent setae; unicolorous. Head without tempora; vertex without temporal depression immediately anterior to ridge; band of reticulate sculpture present. Frontoclypeus not projecting laterally; raised portion of frons between antennal insertions not constricted, wider than antennal club. Transverse ridge above antennal insertions absent. Eye large, rounded, finely faceted, contacting antennal cavity; interfacetal setae present. Antennal club consisting of 3 antennomeres; antenna inserted into small cavity; antennomere 9 subequal in width to antennomere 10. Mandible with apex bifid, subapical serrations present. Maxillary palpomere 4 distinctly longer than 3; palpomere 4 not subulate. Gena without antennal groove; genal spines subacute. Gular sutures incomplete, not reaching occipital foramen. Pronotum not explanate and not strongly constricted at base, narrower than elytra, widest at middle; anterior angles absent, not projecting anteriorly (not extending anterior to cervical foramen of prothorax), without a distinct flat glandular surface or platform; lateral carina present and complete, bearing weakly developed setigerous tubercles, without glabrous space, width of



Figs 19–27. Habitus of species of Picrotini. 19 – *Connatocryptus utiku* sp. nov.; 20 – *Cordosomatula magnabagishae* sp. nov.; 21 – *Cryptosomatula longicornis* Bruce, 1940; 22 – *Cryptothelypteris atomarioides* (Grouvelle, 1919); 23 – *Cryptothelypteris obrieni* Leschen & Lawrence, 1991; 24 – *Cryptothelypteris pteropilosus* Leschen & Lawrence, 1991; 25 – *Cryptothelypteris splendens* (Bruce, 1940); 26 – *Foveocryptus chenyardongi* sp. nov.; 27 – *Humerocryptus tumidus* (Broun, 1893). Scale bars = 1 mm.

lateral bead wider than discal puncture and narrower than antennal funicle; disc with narrow, shallow transverse basal impression; paramedial carinae and paralateral plicae absent; posterolateral angles about right, not projecting. Prothoracic hypomeron separated from the prosternum by a suture. Prosternum with anterior margin on different plane as disc; prosternal process flattened, with lateral beads weak, process slightly expanded apically, broadly rounded and crenulate with minute setae; procoxal cavity with anterolateral notch. Scutellar shield clearly visible and transverse. Elytron without humeral tooth or impressions; subapical gape present; punctation confused, dense and moderately impressed; decumbent setae not forming undulate pattern, with postscutellar and subapical setae directed posteriorly. Hind wing well developed. Mesoventrite with mesoventral cavity shallow and not flanked by sharp carinae. Mesanepisternal pit present and glabrous. Metaventrite without postcoxal lines; discrimen more than 1/2 length of metaventrite, posterior notch of metaventrite present. Metendosternite with anterior tendons approximate. Tarsi 5-5-5 in female, 5-5-4 in male; tarsi slender, tarsomere 5 as wide as preceding tarsomeres in lateral view; pro- and mesotarsomere 4 with ventral setae; mesotarsomere 3 unlobed, with few setae; mesotarsomeres 1-3 of equal lengths, mesotarsomere 4 slightly shorter, mesotarsomere 5 slightly shorter than mesotarsomeres 1-4 combined. Abdominal ventrites free and with medial and lateral calli present, intersegmental crenulations absent; ventrite 1 with intercoxal process broadly rounded, without postcoxal lines; medio-basal thickenings of ventrites 3-5 absent; apex of ventrite 5 without crenulations. Abdominal spiracles on segment VII with openings present and larger in diameter than spiracle VI, texture granulate and atrium rounded and saclike.

Remarks. This genus, like *Cryptothelypteris*, is known only from the Juan Fernandez Islands. Only three specimens are known. The male genitalia have not been described and are presumed lost (LESCHEN & LAWRENCE 1991) and the specimens we studied (MNNC and NZAC) were females.

Biology. The single species has been collected at altitudes of 1000-1200 m by G. Kuschel.

Distribution. Chile (Juan Fernandez Islands).

Included species (1). *Cryptosomatula longicornis* Bruce, 1940.

***Cryptothelypteris* Leschen & Lawrence, 1991**

(Figs 22-25, 81)

Cryptothelypteris Leschen & Lawrence, 1991: 330. Type species: *Cryptothelypteris obrieni* Leschen & Lawrence, 1991, by original designation.

Diagnosis. This genus may be distinguished by the antennal club composed of three antennomeres, lack of tempora, evenly convex pronotum (without pits or impressions) with no teeth, platforms, or protruding anterior angles, the broad, flat prosternal process, and all five abdominal ventrites free. It appears to be closely related to *Cryptosomatula*, from which it differs by the coarsely faceted eyes (Fig. 81), short discrimen (less than half length of metaventrite), wider pronotum (nearly as wide as or wider than elytra),

and very light, nearly effaced elytral punctation.

Redescription. Length 2.10-3.10 mm. Body form (Figs 22-25) elongate, parallel-sided or subfusiform, somewhat dull to shining dorsally, with sparse, moderate, or dense decumbent, short setae and often with sparse, longer, suberect setae dorsally; uni- or bicolored. Head without tempora; vertex without temporal depression immediately anterior to ridge; band of reticulate sculpture present. Frontoclypeus not projecting laterally; raised portion of frons between antennal insertions not constricted, wider than antennal club. Transverse ridge above antennal insertions absent. Eye (Fig. 81) large, rounded, coarsely faceted, contacting antennal cavity; interfacetal setae absent. Antennal club consisting of 3 antennomeres; antenna inserted into small cavity; antennomere 9 subequal or equal in width to antennomere 10. Mandible with apex bifid, subapical serrations present. Maxillary palpomere 4 distinctly longer than to 3; palpomere 4 not subulate. Gena without antennal groove; genal spines acute. Gular sutures incomplete, not reaching occipital foramen. Pronotum not explanate and weakly to strongly constricted at base, narrower than elytra, widest at middle or anteriorly; anterior angles absent, not projecting anteriorly (not extending anterior to cervical foramen of prothorax), without a distinct flat glandular surface or platform; lateral carina present and complete, bearing weakly developed setigerous tubercles, without glabrous space, width of lateral bead wider than discal puncture and narrower than antennal funicle; disc with narrow, shallow transverse basal impression; paramedial carinae and paralateral plicae absent; posterolateral angles about right, not projecting. Prothoracic hypomeron separated from the prosternum by a suture. Prosternum with anterior margin on same plane as disc; prosternal process broad, flat, with lateral beads extremely weak to absent, process slightly expanded apically, broadly rounded and crenulate with minute setae; procoxal cavity with anterolateral notch. Scutellar shield clearly visible and transverse. Elytron without humeral tooth or impressions; subapical gape present (but weakly developed); punctation confused, weakly impressed and sparse; vestiture dual or somewhat uniform with a few short, sparse, suberect setae present laterally and on disc, setae not forming undulate pattern, often with discal setae uniformly directed posteromedially, sometimes uniformly directed posteriorly. Hind wing poorly developed (brachypterous). Mesoventrite with mesoventral cavity shallow and flanked by sharp carinae. Mesanepisternal pit absent. Metaventrite without postcoxal lines; discrimen less than 1/2 length of metaventrite, posterior notch of metaventrite present. Metendosternite with anterior tendons widely separated or absent. Tarsi 5-5-5 in female, 5-5-4 in male; tarsi slender, tarsomere 5 as wide as preceding tarsomeres in lateral view; pro- and mesotarsomere 4 with many ventral setae; mesotarsomere 3 weakly lobed and setose; mesotarsomere 1 about 2× longer than tarsomere 4, mesotarsomeres 2 and 3 of subequal lengths, mesotarsomere 5 about as long as mesotarsomeres 1-3 combined. Abdominal ventrites free and with medial calli present and lateral calli absent, intersegmental crenulations absent; ventrite 1 with intercoxal process broadly rounded, without postcoxal lines; medio-basal thickenings of ventrites 3-5

absent; apex of ventrite 5 without crenulations. Abdominal spiracles on segment VII with openings present and larger in diameter than spiracle VI, texture granulate and atrium rounded and saclike. Aedeagus without tegminal strut, tegminal arms fused or separate; parameres separate and articulated to phallobase, inner surface not concave, length about 2–3× longer than wide; apices multisetose to asetose and lacking macrosetae; attachment point to phallobase not constricted, interparameral process absent; basipennis 4.5–5.0× longer than distipennis, with median carina; distipennis relatively short (about 1.2× longer than wide), outer rims tuberculate, with tubercles present on the inside surface of the sclerite, lateral lobes moderately widely separated, asymmetrical or symmetrical; internal sac with short, slender endophallites (*C. atomarioides*).

Remarks. This genus, like *Cryptosomatula*, is known only from the Juan Fernandez Islands. A key to the five included species can be found in LESCHEN & LAWRENCE (1991).

Biology. Most specimens were found by sweeping ferns, but also have been collected on other plants by beating, and by other methods such as leaf litter extraction.

Distribution. Chile (Juan Fernandez Islands).

Included species (5). *Cryptothelypteris atomarioides* (Grouvelle, 1919); *Cryptothelypteris obrieni* Leschen & Lawrence, 1991; *Cryptothelypteris pteropilosus* Leschen & Lawrence, 1991; *Cryptothelypteris skottsbergi* (Bruce, 1940); *Cryptothelypteris splendens* (Bruce, 1940).

Foveocryptus gen. nov.

(Figs 26, 91)

Type species. *Foveocryptus chenyandongi* sp. nov., by present designation.

Diagnosis. This genus may be distinguished most easily by the deep, circular impression in the center of the pronotum (Fig. 26). It can be further distinguished by the presence of divergent postcoxal lines on the metaventrite (Fig. 91), anterior angles of the pronotum not protruding, pronotum lacking a lateral glabrous space, teeth, or platforms, an antennal club composed of three antennomeres, and having all five abdominal ventrites free.

Description. Length 1.50–1.53 mm. Body form (Fig. 26) elongate, parallel-sided, somewhat shining dorsally, with dense decumbent setae and with scattered sparse, suberect setae dorsally; distinctly bicolored. Head with tempora prominent, length 1/4 length of eye; vertex with temporal depression immediately anterior to ridge; band of reticulate sculpture present. Frontoclypeus not projecting laterally; raised portion of frons between antennal insertions not constricted, wider than antennal club. Transverse ridge above antennal insertions absent. Eye large, rounded, contacting antennal cavity; interfacetal setae present. Antennal club consisting of 3 antennomeres; antenna inserted into small cavity; antennomere 9 subequal in width to antennomere 10. Mandible with apex bifid. Maxillary palpomere 4 distinctly longer than or subequal to 3; palpomere 4 not subulate. Gena without antennal groove; genal spines acute. Gular sutures incomplete, not reaching occipital foramen. Pronotum not explanate, narrower than elytra and not distinctly constricted at base, widest anteriorly;

anterior angles absent, not projecting anteriorly (not extending anterior to cervical foramen of prothorax), without a distinct flat glandular surface or platform; lateral carina complete, smooth, lacking teeth, crenulations, or setigerous tubercles, with lateral glabrous space absent, width of lateral bead wider than discal puncture and narrower than antennal funicle; disc with large, deep, distinct central fovea, two weak subbasal paramedial impressions, and a weak transverse basal impression; paramedial carinae and paralateral plicae absent; posterolateral angles obtuse. Prothoracic hypomeron fused to prosternum. Prosternum with anterior margin on same plane as disc; prosternal process with lateral marginal beads present, parallel, not connected around apex, process slightly expanded apically and ligulate, broadly rounded at the apex, and crenulate with minute setae; procoxal cavity with anterolateral notch. Scutellar shield clearly visible, transverse. Elytron with humeral tooth; impressions absent; subapical gape present; punctation confused, moderately dense and well impressed; vestiture dual with a few long, sparse, erect setae present, subdecumbent setae forming postscutellar undulation with setae directed medially. Hind wing well developed. Mesoventrite with mesoventritral cavity shallow, flanked by sharp carinae. Mesanepisternal pit absent. Metaventrite (Fig. 91) with anteriorly convergent postcoxal lines, continuous with lateral sides of metaventritral process; discripen more than 1/2 length of metaventrite, posterior notch of metaventrite present. Tarsi 5-5-4 in male; tarsi moderately slender, tarsomere 4 as wide as preceding tarsomeres in lateral view; pro- and mesotarsomere 3 lacking ventral setae; mesotarsomeres 2 and 3 unlobed; metatarsomeres 1–3 of equal lengths, mesotarsomere 4 about as long as mesotarsomeres 1–3 combined. Abdominal ventrites free, intersegmental crenulations absent; ventrite 1 with intercoxal process narrowly rounded, with acuminate postcoxal lines; medio-basal thickenings of ventrites 3–5 absent; apex of ventrite 5 lacking crenulations.

Remarks. We assume that the two known specimens are male based on the 5-5-4 tarsomeres; these were not dissected. The following characters are unknown: presence of subapical serrations on the mandible, form of the metendosternite, presence and distribution of abdominal calli, and forms of the spiracles and aedeagus.

Etymology. The generic name is derived from a combination of the Latin “fovea”, meaning pit, in reference to the central pit on the pronotum, and “-cryptus”, a common generic ending in Cryptophagidae. The gender is masculine.

Biology. One specimen was collected in a flight intercept trap, and the other was collected during heavy rains from wet wood.

Distribution. New Zealand.

Included species (1). *Foveocryptus chenyandongi* sp. nov.

Foveocryptus chenyandongi sp. nov.

(Figs 26, 91)

Type material. HOLOTYPE: male (NZAC), labeled: “NEW ZEALAND, WO, Pomarangai Rd, 18 Nov 2020, sifting wet rotting wood, Y. Chen, R. Leschen & D. Seldon, S38°21'08.9, E174°46'12.9, RL2213”. PARATYPE: NEW ZEALAND: ND: Warawara SF nr Hauturu Stream campsite, 35°22.309'S, 173°17.139'E, FIT (2), 6–13 December 2008, R. Leschen, T. Buckley & D. Seldon (1, NZAC).

Diagnosis. This is the only known member of the genus; therefore, it may be recognized by the characters given in the generic diagnosis above.

Description. Length 1.50–1.53 mm. Color of body (Fig. 26) dark brown, legs, mouthparts, and antennal club lighter; each elytron with broad light maculation extending from basal 1/4 to apical 1/3. Dorsal setae uniformly golden, vestiture converging to pronotal midline, undulating near base of the elytra, pronotum and elytra with long, decumbent setae, appearing somewhat longer on pronotal disc and apex of elytra, with scattered suberect setae. Ventral surfaces with recumbent setae, shorter in length compared with those on dorsum; densely punctate; prosternal process with sparse decumbent setae; punctation of metaventricle less coarse than prosternum, smaller in size at the center of disc, larger laterally; abdominal ventrites with punctures less impressed than those on metaventricle and in a matrix of micropunctate microsculpture, ventrite 5 bearing a patch of posteriorly-directed setae with a small impression at middle of sclerite.

Head punctate with smooth and shiny interspaces. Antennomere 2 globular, as long as wide, antennomeres 3 and 4 about as long as wide, narrower than 2 and slightly shorter than 5; antennomere 11 longer than 10, shorter than 9 and 10 combined. Pronotal length/width ratio ~0.82, widest at apex, wider across anterior angles than across posterior angles; lateral edges divergent, gradually widened anteriorly, anterior angles not projecting, posterior angles projecting posterolaterally and obtuse, posterior margin bisinuate, with narrow scutellar lobe; pronotum with a moderately deep medial fovea; paralateral plicae absent; pronotal punctation similar to that of frons, punctures separated by about two puncture diameters or less, with smooth and shiny interspaces, punctures larger in fovea, larger and contiguous at base. Elytra about 1.99× longer than combined width, about 1.27× wider than pronotum at greatest width, about 3.10× longer than pronotum at greatest length; punctation dense, punctures separated by 1–3 puncture diameters; sutural stria present to basal 1/3; disc lacking impressions.

Remarks. Unfortunately, the head and prothorax of the photographed (paratype) specimen were subsequently lost.

Etymology. Named for Yandong Chen (Institute of Zoology, Chinese Academy of Sciences, Beijing, China), enthusiastic microcoleopterist and keen beetle collector who collected the holotype specimen of this species.

***Humerocryptus* gen. nov.**

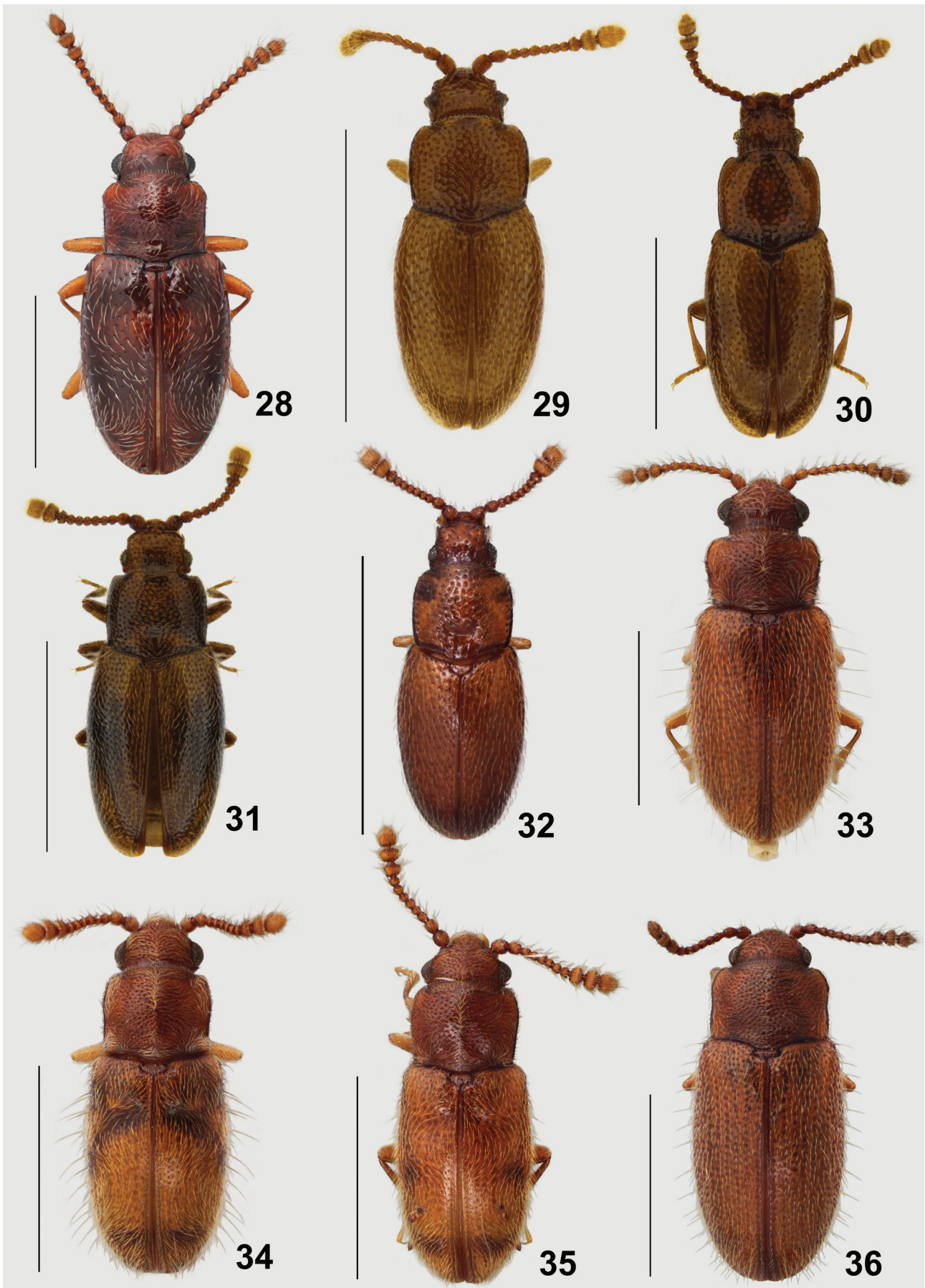
(Figs 27, 28, 79, 88, 89, 101)

Type species. *Cryptophagus tumidus* Broun, 1893, by present designation.

Diagnosis. This New Zealand genus is easily distinguished by the presence of a boss on the head (Fig. 89) and a spine on the humeral area of the elytron (Fig. 79), at the terminus of the superior elytral epipleural carina. In addition, they have an antennal club comprised of three antennomeres, pronotal platforms (Fig. 88), and all abdominal ventrites free.

Description. Length 1.60–1.85 mm. Body form (Figs 27–28) moderately shortened, shining dorsally, with dense decumbent setae dorsally; distinctly bicolored. Head with

tempora prominent, length from about 1/5 to 1/3 length of eye; vertex with broad temporal depression immediately anterior to ridge; band of reticulate sculpture present. Frontoclypeus not projecting laterally; raised portion of frons between antennal insertions not constricted, wider than antennal club; frons between and anterior to eyes transversely elevated, forming a boss (Fig. 89). Transverse ridge above antennal insertions absent. Eye large, rounded, contacting antennal cavity; interfacetal setae absent. Antennal club consisting of 3 antennomeres; antenna inserted into relatively large cavity; antennomere 9 subequal in width to antennomere 10. Mandible with apex bifid, subapical serrations present. Maxillary palpomere 4 distinctly longer than or subequal to 3; palpomere 4 not subulate. Gena without antennal groove; genal spines acute (Figs 88–89). Gular sutures incomplete, not reaching occipital foramen. Pronotum not explanate, narrower than elytra and not constricted at base, widest anteriorly; anterior angles absent, not projecting anteriorly (not extending anterior to cervical foramen of prothorax), with tumidity and with an indistinct flat glandular surface or platform (Figs 88, 89); lateral carina lacking teeth, crenulations, or setigerous tubercles, obliterated in apical third (Figs 88–89), with lateral glabrous space narrow, width of lateral bead wider than discal puncture and narrower than antennal funicle; disc with transverse basal impression present (Figs 88, 89); paramedial carinae and paralateral plicae absent; posterolateral angles about right. Prothoracic hypomeron fused to prosternum, notosternal suture faintly indicated, with distinct impression along basal half of suture (Fig. 88). Prosternum with anterior margin on different plane than disc (Fig. 88) with outline gently or weakly descending anteriorly; prosternal process with lateral beads weakly indicated, but with pair of weak, slightly convergent carinae near apex flanking a longitudinal groove, process slightly expanded apically, truncate apically and crenulate with minute setae; procoxal cavity with anterolateral notch. Scutellar shield clearly visible and transverse. Elytron with humeral tooth (Fig. 79); subbasal impression present, subapical impression present but weakly indicated; subapical gape present; punctation confused, not dense and moderately to shallowly impressed; vestiture uniform, decumbent setae forming undulate pattern, with postscutellar and subapical setae usually directed laterally. Hind wing well developed. Mesoventrite with mesoventritral cavity shallow and flanked by sharp carinae. Mesanepisternal pit present and glabrous. Metaventricle without postcoxal lines; discrimen more than 1/2 length of metaventricle, posterior notch of metaventricle present. Metendosternite with anterior tendons approximate. Tarsi 5-5-5 in female, 5-5-4 in male; tarsi slender, tarsomere 5 as wide as preceding tarsomeres in lateral view; pro- and mesotarsomere 4 lacking setae; mesotarsomere 3 weakly lobed and setose; mesotarsomere 1 about 1/3 the length of 2, mesotarsomeres 2–4 of equal lengths, mesotarsomere 5 about as long as mesotarsomeres 1–4 combined. Abdominal ventrites free and with medial calli, lateral calli absent, intersegmental crenulations absent; ventrite 1 with intercoxal process broadly rounded, lacking postcoxal lines; medio-basal



Figs 28–36. Habitus of species of Picrotini. 28 – *Humerocryptus* n. sp. 1 (New Zealand); 29 – *Neopicrotus peckorum* Leschen, 1996; 30 – *Neopicrotus* n. sp. 1 (Chile); 31 – *Neopicrotus* n. sp. 2 (Australia); 32 – *Neopicrotus* n. sp. 3 (Australia); 33 – *Notocryptus australis* (Redtenbacher, 1868); 34 – *Notocryptus discoideus* (Broun, 1893); 35 – *Notocryptus distinctus* (Broun, 1893); 36 – *Notocryptus lindensis* (Blackburn, 1891). Scale bars = 1 mm.

thickenings of ventrites 3–5 absent; apex of ventrite 5 lacking crenulations. Abdominal spiracles with opening on segment VII present and larger in diameter than spiracle VI, annulate, and atrium rounded and saclike. Aedeagus (Fig. 101) without tegminal strut and arms fused without a suture, or tegminal arms separate and apically acute and joined by a membrane; parameres fused together and to phallobase, their combined length about 1/2 as long as wide; apices bisetose and lacking macrosetae; attachment point to phallobase not constricted, interparameral process absent; basipenis 3.0–5.0× longer than distipenis, without median carina, or a barely indicated at midline; distipenis relatively short about as long as wide, outer rims tuberculate, lateral lobes widely separated, symmetrical; internal sac with two short slender endophallites that diverge and curve outward anteriorly.

Etymology. The generic name is derived from a combination of the Latin “*humerus*”, meaning shoulder, in reference to the elytral humeral spine, and “-*cryptus*”, a common generic ending in Cryptophagidae. The gender is masculine.

Biology. *Humerocryptus tumidus* has been collected by sifting leaf litter and a new species from Westland has been collected from flood debris and under bark.

Distribution. New Zealand.

Included species (1+1). *Humerocryptus tumidus* (Broun, 1893) comb. nov. (from *Micrambina*); one undescribed species.

Neopicrotus Leschen, 1996

(Figs 29–32)

Neopicrotus Leschen, 1996: 606. Type species: *Neopicrotus peckorum* Leschen, 1996, by original designation.

Diagnosis. This genus is easily distinguished by the body (Figs 29–32) appearing shining and glabrous, with sparse, inconspicuous setae dorsally, the antennae inserted into deep concavities on frons with a narrow strip of cuticle (narrower than antennal club) in between, the small eyes with long tempora, antennomere 9 intermediate in width between antennomeres 8 and 10, and absence of postcoxal lines on abdominal ventrite 1.

Redescription. Length 1.05–1.60 mm. Body form (Figs 29–32) elongate, shining dorsally, with short but dense decumbent setae dorsally; uni- or bicolored. Head with tempora prominent, length 1/3 length of eye or greater; vertex with broad temporal depression immediately anterior to ridge; band of reticulate sculpture present. Frontoclypeus not projecting laterally; raised portion of frons between antennal insertions strongly constricted, much narrower than antennal club. Transverse ridge above antennal insertions absent. Eye small, rounded, not contacting antennal cavity; interfacetal setae absent. Antennal club consisting of 3 antennomeres; antenna inserted into relatively large cavity; antennomere 9 smaller in width than antennomere 10, but greater in width than antennomere 8 (sometimes causing the club to appear to consist of only two antennomeres). Mandible with apex bifid, subapical serrations present. Maxillary palpomere 4 distinctly shorter or subequal to 3; palpomere 4 weakly to

distinctly subulate. Gena without antennal groove; genal spines acute. Gular sutures complete or incomplete (not reaching occipital foramen). Pronotum not explanate, narrower than elytra and not constricted at base, widest at middle; anterior angles absent, not projecting anteriorly (not extending anterior to cervical foramen of prothorax), without a distinct flat glandular surface or platform; lateral carina complete, lacking teeth, crenulations, or setigerous tubercles, with lateral glabrous space absent, width of lateral bead wider than discal puncture and narrower than antennal funicle; disc without impressions; paramedial carinae and paralateral plicae absent; posterolateral angles obtuse. Prothoracic hypomeron fused to prosternum, some with a posterior shallow pocket or pit in the position of the base of the notosternal suture. Prosternum with anterior margin on same plane as disc; prosternal process with lateral beads absent, but with strongly convergent carinae near apex, ending in narrowly rounded point, process slightly expanded apically, narrowly rounded apically and crenulate with minute setae; procoxal cavity with or without anterolateral notch. Scutellar shield clearly visible and transverse, weakly triangular. Elytron with a minute humeral tooth; impressions absent; subapical gape present; punctation confused, dense and impressed; vestiture uniform, decumbent setae forming weakly undulate pattern, with postscutellar setae directed medioposteriorly and subapical setae directed lateroposteriorly. Hind wing absent. Mesoventrite with mesoventral cavity bowl-shaped and flanked by sharp carinae. Mesanepisternal pit present and setose. Metaventrite without postcoxal lines; discrimen absent, posterior notch of metaventrite present. Metendosternite with anterior tendons widely separated or absent. Tarsi 5-5-5 in female, 5-5-4 in male; tarsi not slender, tarsomere 5 slightly to significantly wider than preceding tarsomeres in lateral view; pro- and mesotarsomere 4 with ventral setae, mesotarsomere 3 unlobed, with few setae, mesotarsomeres 1–4 of equal lengths, mesotarsomere 5 short, about as long as mesotarsomeres 1–3 combined. Abdominal ventrites free and without medial and lateral calli absent, intersegmental crenulations absent; ventrite 1 with intercoxal process narrowly rounded, lacking postcoxal lines; medio-basal thickenings of ventrites 3–5 absent; apex of ventrite 5 lacking crenulations. Abdominal spiracles on segment VII with openings present and not larger in diameter than spiracle VI, annulate, atrium rounded and saclike. Aedeagus with tegminal strut present and broad, tegminal arms fused without a distinct suture; parameres separate and articulated to phallobase, inner surface not concave, length about 3.0× longer than wide; apices trisetose; attachment point to phallobase constricted, interparameral process absent; basipenis about 7× longer than distipenis, without median carina; distipenis about as long as wide, outer rims smooth, lateral lobes reduced and widely separated, asymmetrical; internal sac with a pair of very short and thin endophallites.

Remarks. LESCHEN (1996) described this genus as having an antennal club with two antennomeres; however, in the context of this revision we consider the antennal club in this genus to be comprised of three antennomeres.

Biology. Specimens of these apterous species have been collected in leaf and log litter.

Distribution. Australia, Chile.

Included species (1+3). *Neopicrotus peckorum* Leschen, 1996; three undescribed species from Chile and Australia.

***Notocryptus* gen. nov.**

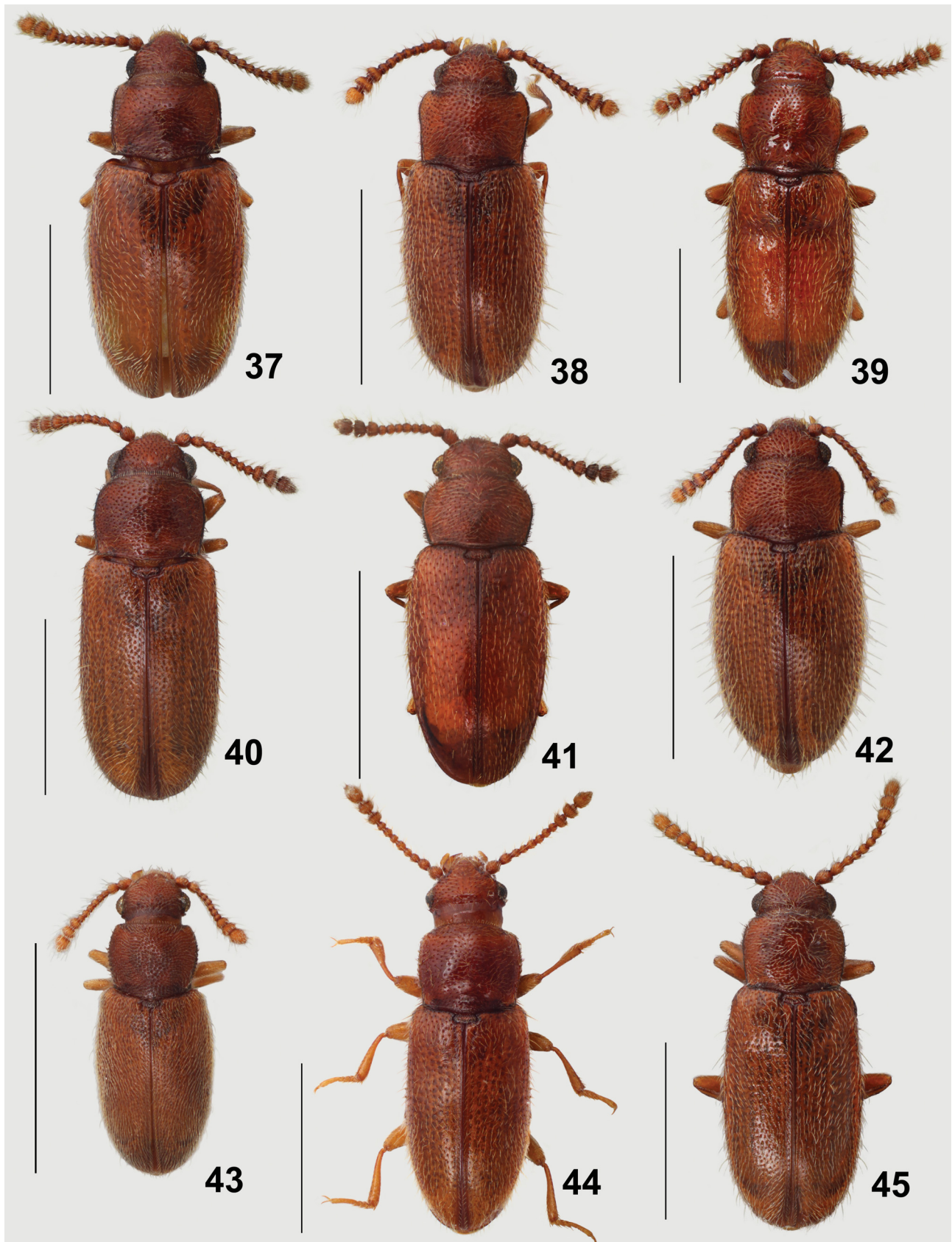
(Figs 33–49, 86, 90, 92, 102)

Type species. *Cryptophagus australis* Redtenbacher, 1868, by present designation.

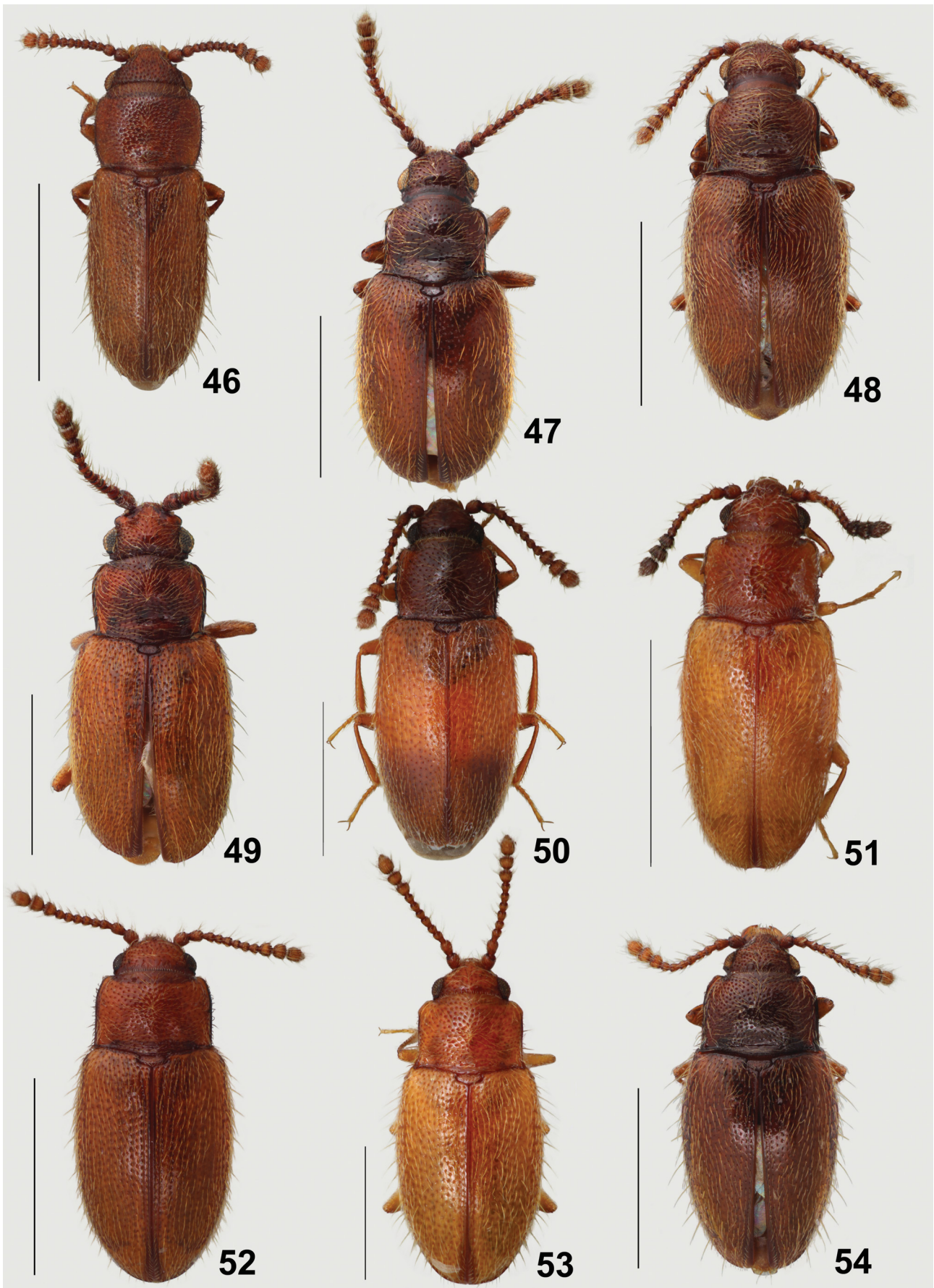
Diagnosis. This Australian and New Zealand genus is the largest and most heterogeneous genus of Picrotini, and currently serves as a collection of species with generalized characters and habitus; they may be characterized by having the following features in combination: pronotal bead not expanded and without glabrous space; abdominal ventrites free; antennal club composed of three antennomeres; pronotal platforms and teeth absent (Fig. 86); body with dense, conspicuous setation dorsally; anterior pronotal angles rounded, obtuse; pronotum with basal pits or impression(s) (sometimes weak); discrimen present; metaventricle without postcoxal lines (Fig. 92).

Description. Length 1.10–2.30 mm. Body form variable (Figs 33–49), elongate and parallel-sided to subfusiform, prothorax distinctly narrower than elytra, or nearly as wide as elytra, shining dorsally, with dense decumbent setae and usually with many medium-length to long, sparse, suberect to erect setae dorsally; unicolorous (most), sometimes distinctly bicolored or multicolored. Head with tempora usually present but sometimes absent, when present at least one-fourth length of eye, sometimes greater; vertex with temporal depression present or absent immediately anterior to ridge; band of reticulate sculpture present or absent. Frontoclypeus usually not projecting laterally (slightly to distinctly projecting laterally just anterior to eye in two undescribed species); raised portion of frons between antennal insertions not constricted, slightly narrower to about as wide as or wider than antennal club. Transverse ridge above antennal insertions absent. Eye large, rounded, contacting antennal cavity; interfacetal setae present or absent. Antennal club consisting of 3 antennomeres; antenna inserted into small cavity; antennomere 9 (rarely) barely wider than 8, to (usually) subequal in width to antennomere 10. Mandible with apex bifid, subapical serrations present. Maxillary palpomere 4 distinctly longer than or subequal to 3; palpomere 4 not subulate. Gena without antennal groove; genal spines sharply acute to obtuse and poorly developed. Gular sutures incomplete, not reaching occipital foramen. Pronotum not explanate and sometimes weakly constricted at base, usually narrower than elytra, usually widest in anterior half, sometimes widest at posterior angles (2 undescribed species from Australia); anterior angles present or absent, sometimes projecting anteriorly, extending anterior to cervical foramen of prothorax, without a distinct flat glandular surface or platform (Fig. 86); lateral carina present and complete, smooth and lacking teeth, crenulations, or setigerous tubercles, with lateral glabrous space absent, width of lateral bead wider than discal puncture

and (usually) narrower than antennal funicle, sometimes wide; disc with basal impression present or absent, if present usually transverse and not paired; paramedial carinae absent, paralaral plicae usually absent but sometimes present; posterolateral angles variable from acute and projecting to obtuse. Prothoracic hypomeron usually fused to prosternum (separated by suture in 2 undescribed species). Prosternum with anterior margin on same plane as disc; prosternal process with lateral beads present and parallel, connecting around apex, or absent but with paired parallel carinae flanking a central, longitudinal groove or depression (Fig. 90) (a medial longitudinal carina present in two undescribed species), process slightly expanded apically, narrowly to broadly rounded and crenulate with minute setae; procoxal cavity with or without anterolateral notch. Scutellar shield clearly visible, transverse to obtusely triangular. Elytron without humeral tooth; subbasal impression often present (distinct in *N. discoideus*), subapical impression usually absent (weakly present in one undescribed species); subapical gape present; punctation confused, often extremely dense and well or moderately impressed; vestiture usually dual with a few to numerous long or short, erect or suberect setae present laterally and on disc (erect setae virtually absent in two undescribed species), decumbent setae sometimes directed straight posteriorly, often with undulate pattern with postscutellar and subapical setae directed laterally. Hind wing well developed. Mesoventricle with mesoventral cavity shallow and punctate to deep, glabrous and bowl-like and sometimes flanked by sharp carinae. Mesanepisternal pit present, either lined with setae or glabrous. Metaventricle without postcoxal lines (Fig. 92); discrimen present, more or less than 1/2 length of metaventricle, posterior notch of metaventricle usually present, a broad lineate glandular field surrounds the discrimen in males of one undescribed species. Metendosternite with anterior tendons approximate. Tarsi 5-5-5 in female, 5-5-4 in male; tarsi moderately slender, tarsomere 5 as wide as preceding tarsomeres in lateral view; pro- and mesotarsomere 4 asetose or unisetose; mesotarsomere 3 not or weakly lobed, with few setae, mesotarsomeres 1–3 of subequal to equal lengths, mesotarsomere 5 about as long as or distinctly shorter than mesotarsomeres 1–4 combined. Abdominal ventrites free and with medial and lateral calli usually present (medial calli absent in 1 undescribed species from New Zealand, lateral calli absent in 3 species), intersegmental crenulations usually absent (present in 2 undescribed species); ventrite 1 with intercoxal process narrowly to broadly rounded, with or without postcoxal lines, when present either scalloped or acuminate; medio-basal thickenings of ventrites 3–5 absent; apex of ventrite 5 with or without crenulations. Abdominal spiracles on segment VII with openings present and usually larger in diameter than spiracle VI, texture granulate and atrium rounded and saclike. Aedeagus (Fig. 102) with tegminal strut absent, tegminal arms separate or fused, with or without a suture; parameres separate and articulated to phallobase, surface microtuberculate in one undescribed species, inner surfa-



Figs 37–45. Habitus of species of Picrotini. 37 – *Notocryptus* n. sp. 1 (New Zealand); 38 – *Notocryptus* n. sp. 2 (Australia: WA); 39 – *Notocryptus* n. sp. 3 (New Zealand); 40 – *Notocryptus* n. sp. 4 (Australia: NSW, Tas, Vic); 41 – *Notocryptus* n. sp. 5 (New Zealand); 42 – *Notocryptus* n. sp. 6 (Australia: WA); 43 – *Notocryptus* n. sp. 7 (New Zealand); 44 – *Notocryptus* n. sp. 8 (New Zealand); 45 – *Notocryptus* n. sp. 9 (New Zealand). Scale bars = 1 mm.



Figs 46–54. Habitus of species of Picrotini. 46 – *Notocryptus* n. sp. 10 (Australia: NSW, Tas); 47 – *Notocryptus* n. sp. 11 (Australia: NSW, Qld, Vic); 48 – *Notocryptus* n. sp. 12 (Australia: NSW, Qld, Vic); 49 – *Notocryptus* n. sp. 13 (Australia: Qld); 50 – *Odontosomatula carltoni* sp. nov.; 51 – *Odontosomatula* n. sp. 1 (New Zealand); 52 – *Orthoscelis transversus* sp. nov.; 53 – *Orthoscelis* n. sp. 1 (Australia: NSW, Qld, Tas, Vic); 54 – *Orthoscelis* n. sp. 2 (Australia: ACT, NSW, Tas, Vic). Scale bars = 1 mm.

ce not or slightly concave, length about 2–9× longer than wide; apices asetose, uni- or multisetose; attachment point to phallobase not constricted, interparameral process absent; basipenis 2.5–6× longer than distipenis, with or without median carina; distipenis about as long as wide or relatively longer, up to 4× longer than wide, outer rims not or weakly to strongly crenulate, lateral lobes not widely separated, typically symmetrical but weakly to distinctly asymmetrical in some species; internal sac with a pair of short, regularly or irregularly shaped sclerites, or sclerites absent.

Remarks. As indicated above in the diagnosis, this genus is the most heterogeneous one within the Picrotini. Species included tend to have a generalized morphology, and the genus is almost certainly polyphyletic as presently conceived. Although certain species groups supported by characters can potentially be delimited, such as the presence of a medial longitudinal prosternal carina in two undescribed Australian species, we chose not to prematurely fracture this genus into multiple units pending a molecular phylogenetic analysis. Many species are quite abundant among cryptophagid material from Australia and New Zealand.

An examination of types of *Cryptophagus australis* Redtenbacher 1868, *C. hispidulus* Broun, 1880 syn. nov., and *C. obscurus* Broun, 1893 syn. nov. revealed that they fall within the range of variation of a single widespread New Zealand species. The type of *C. obscurus* is simply a darker color variation, which occurs in most long series of this species. These three species are here synonymized, and the name *Notocryptus australis* (Redtenbacher, 1868) takes priority.

A habitus line drawing of *Notocryptus lindensis* (Blackburn, 1891) was provided in MATTHEWS (1992: fig. 43).

Biology. The species are commonly collected in window, flight intercept and Malaise traps, sweeping vegetation, and pyrethrum fogging, and can be collected from flowers, rotten wood, and by sifting leaf litter. *Notocryptus australis* can be abundant at forest edges and beaten from plants and found on flowers (this species was misidentified as “*Micrambina rutila*” by KUSCHEL (1990)). Specimens of *N. discoideus* have been collected from under the wood of kahikatea (*Dacrycarpus dacrydioides* (A. Rich.) de Laub.; Podocarpaceae) and under the bark of *Pittosporum* Banks ex Sol. (Pittosporaceae) and *Sophora* L. (Fabaceae). *Notocryptus distinctus* has been collected in a branch trap of *Vitex lucens* Kirk (Lamiaceae) and on *Pittosporum tenuifolium* Banks & Sol. ex Gaertn., including freshly cut branches (KUSCHEL 1990). It also occurs on sap flows and external damage of *Pittosporum crassifolium* Banks & Sol. ex A. Cunn. trees caused by the bark beetle *Chaetoptelius mundulus* (Broun, 1881) (Coleoptera: Curculionidae: Scolytinae; Y. Chen, pers. comm.). Undescribed New Zealand species have been collected under the bark of *Plangiantus regius* (Poit.) Hochr. (Malvaceae), in decaying nikau palm (*Rhopalostylis sapida* H. Wendl. & Drude; Arecaceae), *Brachyglottis elaeagnifolia* (Hook. f.) B. Nord. (Asteraceae), and beaten from *Cassinia vauvilliersii* Hook. f. (Asteraceae). Gut contents we examined consisted of indeterminate material, but one specimen of

N. lindensis from Australia had a gut packed with fungal hyphae. An undescribed species has been collected in the male cones of cycads (*Macrozamia* Miq.; Zamiaceae) in Western Australia and another undescribed species from Codfish Island, New Zealand has been collected from bird guano, its gut packed with indeterminate matter.

Etymology. The generic name is derived from a combination of the Greek “*notios*”, meaning southern, and “*-cryptus*”, a common generic ending in Cryptophagidae. The gender is masculine.

Distribution. Australia, New Zealand.

Included species (4+13). *Notocryptus australis* (Redtenbacher, 1868) comb. nov. (from *Cryptophagus*); *Notocryptus discoideus* (Broun, 1893) comb. nov. (from *Micrambina*); *Notocryptus distinctus* (Broun, 1893) comb. nov. (from *Brounina*); *Notocryptus lindensis* (Blackburn, 1891) comb. nov. (from *Cryptophagus*); at least 13 undescribed species from Australia and New Zealand.

Odontosomatula gen. nov.

(Figs 50, 51, 78)

Type species. *Odontosomatula carltoni* sp. nov., by present designation.

Diagnosis. This genus is easily distinguished from all other picrotines by the presence of sharp, asetose teeth along the lateral carina of the pronotum, easily visible in dorsal view (Fig. 78). Additionally, the antennal club is composed of three antennomeres, the pronotum has a lateral glabrous space and lacks platforms, and the abdominal ventrites are free.

Description. Length 1.60–2.20 mm. Body form (Figs 50, 51) elongate, fusiform, prothorax quadrate, distinctly narrower than elytra, shining dorsally, with moderately dense decumbent setae and with (undescribed species from New Zealand) or without (*O. carltoni*) sparse suberect to erect setae dorsally; unicolorous to weakly bicolored. Head with tempora present, less than one-fourth (*O. carltoni*) to one-third (undescribed species from New Zealand) length of eye; vertex with temporal depression present immediately anterior to ridge; band of reticulate sculpture present (*O. carltoni*) or absent. Frontoclypeus not projecting laterally; raised portion of frons between antennal insertions not constricted, about as wide or wider than antennal club. Transverse ridge above antennal insertions absent. Eye large, rounded, contacting antennal cavity; interfacetal setae present. Antennal club consisting of 3 antennomeres; antenna inserted into small cavity; antennomere 9 subequal in width to antennomere 10. Mandible with apex bifid. Maxillary palpomere 4 slightly longer than 3; palpomere 4 not subulate. Gena without antennal groove; genal spines sharply acute, prominent. Gular sutures incomplete, not reaching occipital foramen. Pronotum not explanate and not constricted at base, distinctly narrower than elytra, widest at middle; anterior angles feebly extending anterior to cervical foramen of prothorax (*O. carltoni*) or not (undescribed species from New Zealand), without a distinct flat glandular surface or platform; lateral carina present and complete, with several prominent teeth (*O. carltoni*; Fig. 78) or one large tooth (undescribed species

from New Zealand), lacking crenulations or setigerous tubercles, with lateral glabrous space present, width of lateral bead about as wide as antennal funicle; disc with narrow transverse basal impression; paramedial carinae absent, paralateral plicae present (*O. carltoni*) or absent (undescribed species from New Zealand); posterolateral angles right to slightly acute. Prothoracic hypomeron separated from prosternum by suture. Prosternum with anterior margin on same plane as disc; prosternal process with lateral beads present, parallel, connecting across apex, slightly expanded apically, broadly to narrowly rounded and crenulate with minute setae; procoxal cavity with anterolateral notch. Scutellar shield clearly visible, transverse. Elytron without humeral tooth; subbasal impression absent, subapical impression absent; subapical gape present; punctation confused, moderately dense to dense, weakly to moderately impressed; vestiture dual with a few to numerous long or short, erect or suberect setae present laterally and on disc (undescribed species from New Zealand) or decumbent only (*O. carltoni*), decumbent setae with undulate pattern with postscutellar and subapical setae directed laterally (undescribed species from New Zealand) or directed straight posteriorly (*O. carltoni*). Hind wing well developed. Mesoventrite with mesoventral cavity shallow and punctate, flanked by carinae. Mesanepisternal pit present, glabrous. Metaventrite without postcoxal lines; discrimen present, more than half length of metaventrite, posterior notch of metaventrite present. Metendosternite not studied. Tarsi 5-5-5 in female, 5-5-4 in male (at least in undescribed species from New Zealand; male of *O. carltoni* unknown); tarsi slender, tarsomere 5 as wide as preceding tarsomeres in lateral view; pro- and mesotarsomere 4 bisetose; mesotarsomere 3 not lobed, with few setae; mesotarsomeres 1–3 of subequal to equal lengths, 1 slightly longer than 2, 4 slightly shorter than 3, mesotarsomere 5 slightly longer than mesotarsomeres 1–4 combined. Abdominal ventrites free; ventrite 1 with intercoxal process narrowly to broadly rounded, with acuminate (undescribed species from New Zealand) or without (*O. carltoni*) postcoxal lines; medio-basal thickenings of ventrites 3–5 absent; apex of ventrite 5 without crenulations.

Etymology. The generic name is derived from a combination of the Greek “*odontos*”, meaning tooth, and “*somatos*”, meaning “of the body”, in reference to the lateral pronotal teeth. The gender is feminine.

Biology. The species we describe here is from two female specimens collected in forests in high altitude *Polylepis* Ruiz & Pav. (Rosaceae) forests in the páramo in Ecuador, whereas the other, undescribed species is from the Three Kings Islands of New Zealand, represented by a single specimen. These were not dissected, and characters of the mandible and internal structures of the abdomen were not examined.

Distribution. Ecuador, New Zealand.

Included species (1+1). *Odontosomatula carltoni* sp. nov.; one undescribed species from New Zealand.

Odontosomatula carltoni sp. nov.

(Figs 50, 78)

Type material. HOLOTYPE: female (QCAZ), labeled: “ECUADOR: Azuay: Cajas, 25 km NW Cuenca, 3700 m 7 Jan. 1992, C. Carlton, R. Leschen #127, ex:beating”. PARATYPE: ECUADOR: AZUAY: Cajas, 25 km NW Cuenca, 3700 m, beating, 7 January 1992, C. Carlton & R. Leschen (1, SEMC).

Diagnosis. This species may be distinguished from the other known (but undescribed) putative species of *Odontosomatula* by the presence of 8–9 teeth (instead of a single tooth) on each side of the pronotum (Fig. 78), the lack of an emargination along the middle of each pronotal carina, and the absence of postcoxal lines on abdominal ventrite 1.

Description. Length 2.05–2.20 mm. Color of dorsal surface dark reddish-brown, basal 2/3 of elytra diffusely paler (Fig. 50); antennae uniformly reddish-brown; undersurfaces and legs uniformly pale reddish-brown. Dorsal setae primarily golden, long, vestiture converging to central point on pronotum, elytral setae uniformly directed posteriorly; body devoid of erect setae. Ventral surfaces with dense, recumbent setae; gula, genae, and prosternum with coarse, dense punctation; hypomeron with a few large punctures centrally on disc; prosternal process covered with dense, suberect setae; punctation of metaventrite coarse but less dense than that of prosternum, distinctly finer medially; abdominal ventrites with punctures fine, denser than that of metaventrite.

Head with coarse, moderately dense punctation on frons, punctures separated by about one puncture diameter, with smooth and shiny interspaces. Antennomere 2 subovate, longer than wide, antennomere 3 slightly narrower, slightly longer than 2, antennomere 4 equal in width to 3, distinctly shorter than 3 and slightly shorter than 2; antennomere 11 rounded, slightly longer than 10, much shorter than 9 and 10 combined. Pronotal length/width ratio ~0.80, widest at about middle, width across anterior angles slightly greater than width across posterior angles; lateral edges gently arcuate, with slight sinuation posteriorly, with row of 8–9 sharp, posteriorly directed teeth along lateral carina, 4 large teeth in anterior half and 4–5 small teeth in posterior half (Fig. 78); anterior angles slightly projecting, obtuse, posterior angles acute, slightly projecting, posterior margin weakly sinuate, with truncate scutellar lobe; pronotum with broad, very shallow basal transverse impression, without paramedial carinae; with small, shallow glabrous pits just medial of posterior angles and sublateral plicae present; pronotal punctation coarse, punctures separated by about one to two puncture diameters, with smooth and shiny interspaces. Elytra about 1.63× longer than combined width, about 1.38× wider than pronotum at greatest width, about 2.79× longer than pronotum at greatest length; discal punctures separated by about one and a half to two puncture diameters, coarser near basal margin, gradually becoming finer posteriorly; sutural stria complete, reaching nearly to scutellar shield anteriorly; disc with faint subbasal impression. Abdominal ventrite 1 without postcoxal lines. Male unknown.

Remarks. The two known specimens of this species are both female.

Etymology. Patronymic for Christopher Carlton, beetle specialist who accompanied the second author during a stress-free jaunt in the *Polylepis* forests of Ecuador.

***Orthoscelis* gen. nov.**

(Figs 52–55, 96, 103)

Type species. *Orthoscelis transversus* sp. nov., by present designation.

Diagnosis. This genus is easily recognized among Picrotini by having abdominal ventrites 1 and 2 connate (Fig. 96), the antennal club composed of three antennomeres, and by the anterior pronotal angles weakly or strongly projected but rounded and obtuse. Two of the four known species (Figs 53, 54) have a flat glandular surface at the anterior angles (the other two, including *O. transversus*, have only a slight swelling; Figs 52, 55). Additionally, the elytra of known species are uniformly colored. Three of the species (including *O. transversus*) have well-developed lateral carinae on the prosternal process which converge posteriorly to a point.

Description. Length 1.30–1.65 mm. Body form (Figs 52–55) elongate and parallel-sided to subfusiform, prothorax slightly to distinctly narrower than elytra, shining dorsally, with dense decumbent setae and usually with many medium-length to long, sparse, suberect to erect setae dorsally and (especially) laterally; unicolorous. Head with tempora usually present (absent in 1 undescribed species), when present short, less than one-fourth length of eye; vertex with temporal depression present or absent immediately anterior to ridge; band of reticulate sculpture present. Frontoclypeus not projecting laterally; raised portion of frons between antennal insertions not constricted, about as wide or wider than antennal club. Transverse ridge above antennal insertions absent. Eye usually large, rounded (medium-sized and flattened in 1 undescribed species), contacting antennal cavity; interfacetal setae present, often sparse, long, and restricted to posterior portion of eye. Antennal club consisting of 3 antennomeres; antenna inserted into small cavity; antennomere 9 subequal in width to antennomere 10. Mandible with apex bifid, subapical serrations present. Maxillary palpomere 4 distinctly longer than 3; palpomere 4 not subulate. Gena without antennal groove; genal spines obtuse, rounded to sharp. Gular sutures present, incomplete, not reaching occipital foramen. Pronotum weakly explanate laterally, not constricted at base, slightly to distinctly narrower than elytra, usually widest at posterior angles; anterior angles present, blunt, projecting anterior to cervical foramen of prothorax, with or without a distinct flat glandular surface or platform, if without then with slight swelling near anterior angle; lateral carina present and complete, smooth and lacking teeth, crenulations, or setigerous tubercles, with lateral glabrous space present, width of lateral bead wider than discal puncture and (usually) narrower than antennal funicle, sometimes wide; disc with weak to distinct basal transverse impression (weak, paired discal impressions in 1 undescribed species); paramedial carinae absent, paralateral plicae present; posterolateral angles sharp, right to slightly acute, somewhat projecting. Prothoracic

hypomerion separated from prosternum by suture (suture often difficult to trace). Prosternum with anterior margin on same plane as disc; prosternal process with lateral beads usually distinct, convergent to sharp point at apex, or parallel and connected around apex (1 undescribed species), process slightly expanded apically, narrowly rounded, usually crenulate with minute setae; procoxal cavity with or without anterolateral notch. Scutellar shield clearly visible, transverse to weakly obtusely triangular. Elytron without humeral tooth; subbasal and subapical impressions absent; subapical gape present; punctation confused, dense and weakly impressed; vestiture dual with a numerous long, erect or suberect setae present on disc and (especially) laterally, decumbent setae directed straight posteriorly, not forming undulate pattern. Hind wing well developed. Mesoventrite with mesoventral cavity usually shallow and glabrous or weakly punctate (deep, glabrous and bowl-like in 1 undescribed species) and usually flanked by sharp carinae. Mesanepisternal pit present, glabrous. Metaventrite with short, weak postcoxal lines; discrimen present, more than 1/2 length of metaventrite, posterior notch of metaventrite present. Metendosternite with anterior tendons approximate. Tarsi 5-5-5 in female, 5-5-4 in male; tarsi moderately slender, tarsomere 5 as wide as preceding tarsomeres in lateral view; pro- and mesotarsomere 4 setose, mesotarsomere 3 not or weakly lobed, with few setae, mesotarsomeres 1–4 of equal lengths, mesotarsomere 5 longer than or equal to mesotarsomeres 1–4 combined. Abdominal ventrites 1–2 connate (Fig. 96), medial calli usually absent (present in *O. transversus*), lateral calli absent, intersegmental crenulations usually absent (present in 1 undescribed species); ventrite 1 with intercoxal process narrowly rounded, usually without postcoxal lines (long, acuminate, inwardly curved lines in 1 undescribed species); medio-basal thickenings of ventrites 3–5 absent; apex of ventrite 5 without crenulations. Abdominal spiracles on segment VII with openings absent, texture granulate and atrium rounded and saclike. Aedeagus (Fig. 103) with tegminal strut absent, tegminal arms fused at apex, with suture; parameres separate and articulated to phallobase, inner surface concave, length about 2× longer than wide; apices multisetose; attachment point to phallobase not constricted, interparameral process present (may be acute, subacute or blunt at apex); basipenis 2–3× longer than distipenis, with median carina; distipenis ovoid (about as long as wide) to elongate (2× longer than wide), outer rims strongly to weakly crenulate, lateral lobes narrowly to widely separated, symmetrical; internal sac with a pair of very long, fused endophallites divergent proximally and extending nearly the length of the internal sac.

Etymology. The generic name is derived from a combination of the Greek prefix “*ortho-*”, meaning “straight” or “right”, in reference to the transversely quadrate pronotum with straight sides, and “*-scelis*”, a common genus ending in Cryptophagidae. The gender is masculine.

Biology. Members of this genus have mainly been collected by Malaise, flight intercept, and window traps, by spraying trees with pyrethrum, and sweeping vegetation.

Distribution. Australia.

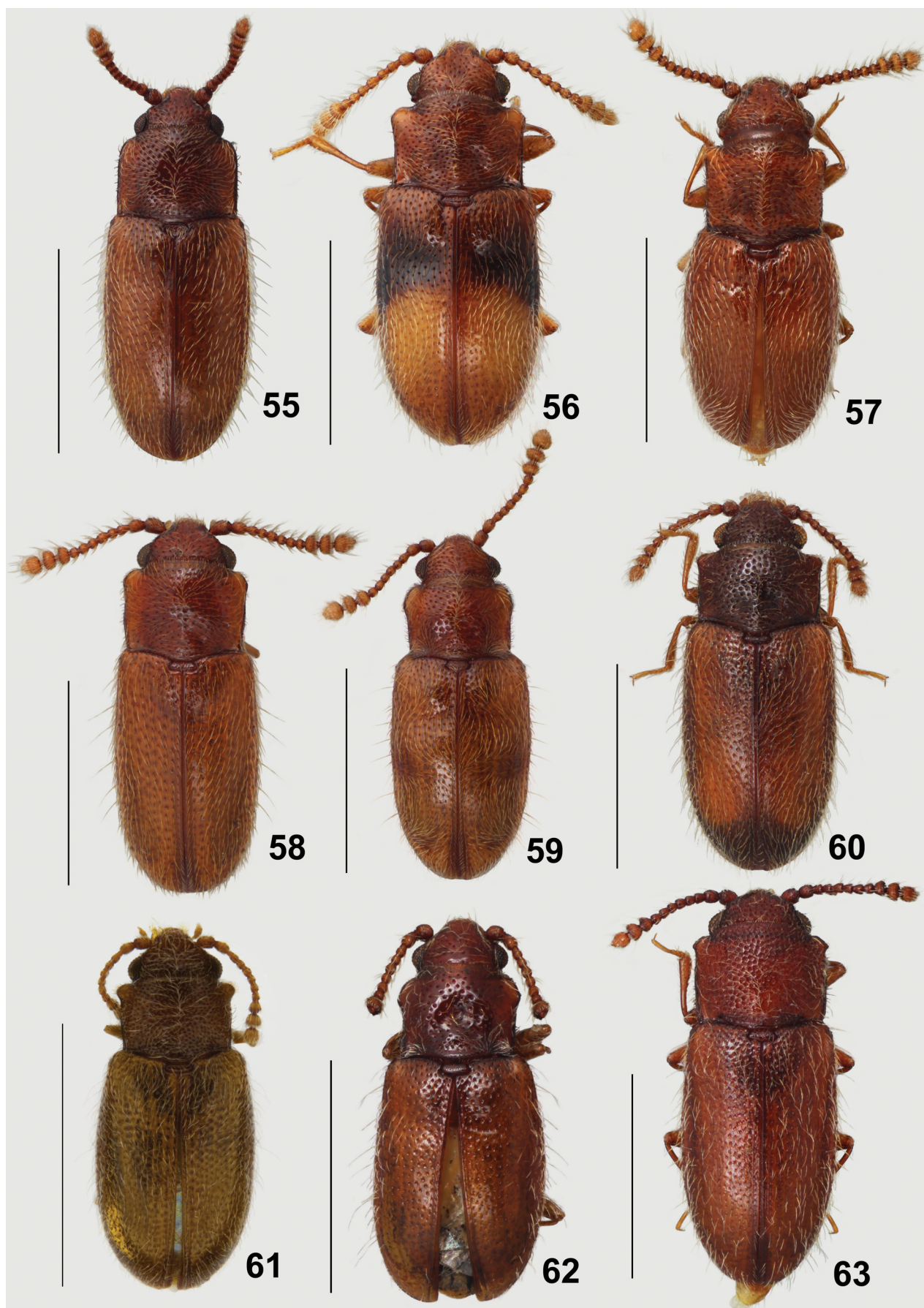
Included species (1+3). *Orthoscelis transversus* sp. nov.; three undescribed species from Australia.

***Orthoscelis transversus* sp. nov.**

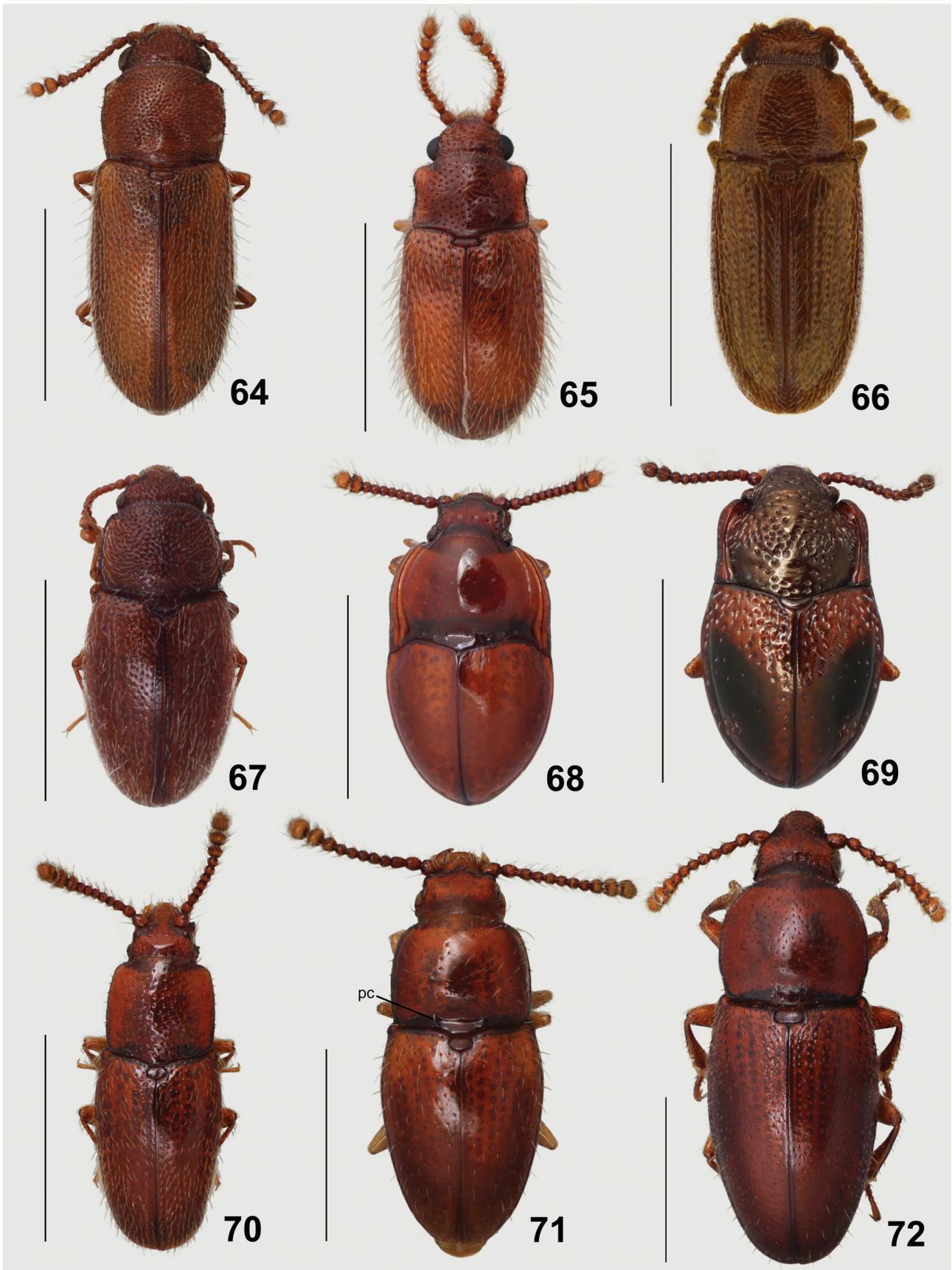
(Figs 52, 96, 103)

Type material. HOLOTYPE: male (ANIC), labeled: "41.30S 145.20, TAS Savage R. Pipeline Rd 20 Apr. 1989 Tube 11 pyrethrum knockdown H. Mitchell". PARATYPES (529): **AUSTRALIA: NEW SOUTH WALES:** Comboyne, J. Armstrong (1, ANIC); Jamberoo Mountain Road, 34°39'S 150°43'E, at escarpment, subtropical rainforest, 25 December 1993, C. Reid (2, ANIC); Kosciusko NP, 0.8 km SW Leather Barrel Creek Picnic Area, 36°32'S 148°11'E, 108 m, open *Eucalyptus* forest with shrubby understorey, pyrethrum fogging large old *Eucalyptus* logs, 21 February 1993, A. Newton & M. Thayer (1, ANIC); Kosciusko NP, SSW Pinnacle Mountain, Grass Flat Creek, 760 m, Berlesate, 9 December 1999, R. Leschen (1, NZAC); Unumgar SF, near Grevillia, Coxs Road, 28°27'S 152°45'E, 580 m, subtropical rainforest, flight intercept (window) trap, 2–11 January 1987, A. Newton & M. Thayer (1, ANIC). **TASMANIA:** 10 km ENE Nunamara, 41°22'S 147°24'E, ex pan trap, 12 January – 6 February 1983, I. Naumann & J. Cardale (7, ANIC); 14 km S Bronte Park, 42°15'S 146°29'E, Malaise, ethanol, 15 January – 3 February 1983, I. Naumann & J. Cardale (1, ANIC); 2 km NE by N Mt. Ossa, 41°52'S 146°03'E, 1000 m, closed forest litter, flight intercept trap #3, 30 November 1990 – 8 January 1991, E. Nielsen & E. Edwards (16, ANIC); same except 8 January – 12 February 1991, A. Calder & W. Dressler (7, ANIC); same except 13 February – 7 March 1991, I. Naumann & M. Horak (4, ANIC); 32 km N Smithton, Dismal Swamp, mixed *Nothofagus cunninghamii* & *Acacia melanoxylon*, litter in crown of *Dicksonia antarctica*, 26 November 1977, J. Kethley (1, FMNH); 4 km E Rosebery, 41°47'S 145°35'E, Malaise, ethanol, 16 January – 1 February 1983, I. Naumann & J. Cardale (2, ANIC); 4 km S Mt. Oakleigh, 41°51'S 146°03'E, 860 m, closed forest, Malaise trap #3, 8 January – 12 February 1991, A. Calder & W. Dressler (13, ANIC); same except flight intercept trap #2 (1, ANIC); 4 km S Mt. Oakleigh, 41°51'S 146°03'E, 880 m, closed forest, Malaise trap #3, 1 March 1990, W.E.B.S. (3, ANIC); same except 7 November 1990 (4, ANIC); same except 13 February – 7 March 1991, I. Naumann & M. Horak (5, ANIC); same except 30 November – 8 January 1991, E. Nielsen & E. Edwards (3, ANIC); same except flight intercept trap #2 (2, ANIC); 4 km SE Weldborough, 41°14'S 147°56'E, 13 January – 7 February 1983, I. Naumann & J. Cardale (2, ANIC); same except ex pan trap (4, ANIC); Ben Ridge Road, 5.2 km E Telopea Road, 41°21'S 147°40'E, 870 m, *Nothofagus cunninghamii* rainforest, ex window trap, 16 January – 1 February 1993, A. Newton & M. Thayer (1, ANIC); Bennets Road, Canopy Walk, 7 km WNW Geeveston, 43°09'S 146°50'E, on shrub white flowers, 14 February 1992, D.S. Horning, Jr. (1, ANIC); Big Sassy Creek, 42°42'S 147°52'E, rainforest, pyrethrum knockdown tube 144, 12 May 1989, Greenslade & Rounsevell (2, ANIC); same except *Atherosperum* rainforest, pyrethrum knockdown tube 137, Diggle (4, ANIC); same except pyrethrum knockdown tube 138, H. Mitchell (3, ANIC); Celery Top Islands, Bathurst Harbour, 43°22'S 146°09'E, 4 December 1990, I. Naumann (1, ANIC); same except Malaise trap, 3 December 1990 – 15 January 1991, E. Nielsen & E. Edwards (5, ANIC); same except closed forest, Malaise trap #2, 7 December 1990 – 15 January 1991 (23, ANIC); 5, TMAG; same except 15 April – 29 May 1991, M. Comfort (7, ANIC); same except 29 May – 29 August 1991 (24, ANIC); same except 15 March – 15 April 1991, E. Edwards & J. Berry (15, ANIC); same except 20 February – 15 March 1991, M. Horak & P. McQuillian (10, ANIC); same except flight intercept trap #2 (1, ANIC); same except 7 December 1990 – 15 January 1991, E. Nielsen & E. Edwards (27, ANIC); Claytons, Bathurst Harbour, 43°22'S 146°06'E, flight intercept trap #2, 15 January 1991 – 20 February 1991, A. Calder & W. Dressler (6, ANIC); same except 29 August – 28 November 1991, I. Naumann & G. Clarke (1, ANIC); same except flight intercept trap #3, 7 December 1990 – 15 January 1991, E. Nielsen & E. Edwards (16, ANIC); same except 15 January – 20 February 1991, A. Calder & W. Dressler (3, ANIC); same except 20 February – 15 March 1991, M. Horak & P. McQuillian (2, ANIC); same except 29 August – 28 November 1991, I. Naumann & G. Clarke (3, ANIC); same except Malaise trap, 3 December 1990 – 15 January 1991, E. Nielsen & E. Edwards (5, ANIC); same except closed forest, Malaise trap #2, 15 January – 20 February

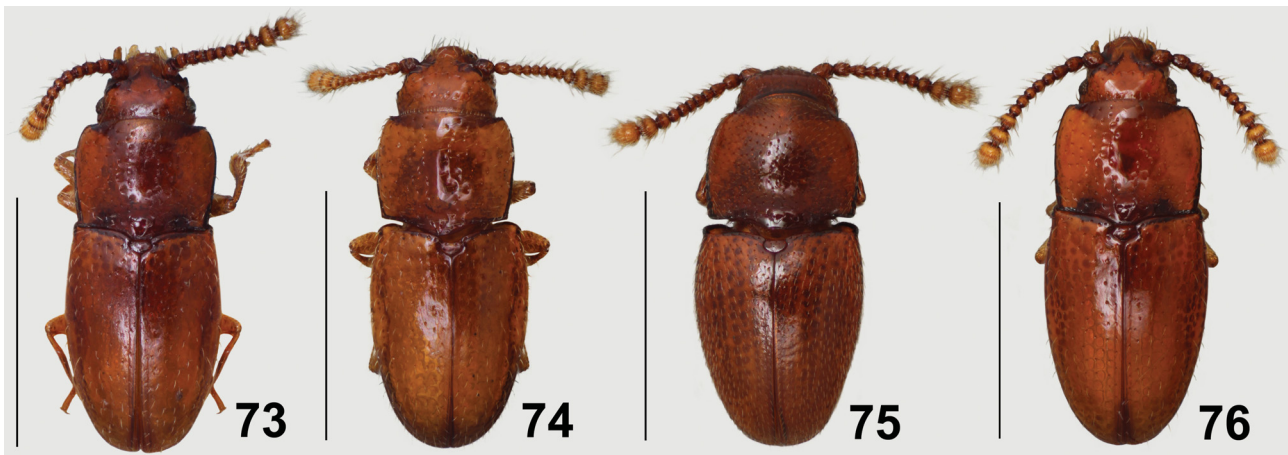
1991, A. Calder & W. Dressler (20, ANIC); same except Malaise trap #3, 7 December 1990 – 15 January 1991 (26, ANIC); same except E. Nielsen & E. Edwards (6, ANIC); same except 15 January – 20 February 1991, A. Calder & W. Dressler (7, ANIC); same except 20 February – 15 March 1991, M. Horak & P. McQuillian (13, ANIC); same except 15 March – 15 April 1991, E. Edwards & J. Berry (6, ANIC); same except 15 April – 29 May 1991, M. Comfort (8, ANIC); same except 26 May – 29 August 1991 (1, ANIC); same except 29 August – 28 November 1991, I. Naumann & G. Clarke (9, ANIC); Cradle Mountain, campground, 41°35'S 145°56'E, 880 m, tree 4 site 2, pyrethrum knockdown tube 233, 14 November 1989, H. Mitchell (1, ANIC); same except tree 3, pyrethrum knockdown tube 236, 15 November 1989, R. Coy (5, ANIC); same except tree 3 site 2, pyrethrum knockdown tube 172, H. Mitchell (1, ANIC); same except edge tree 2, pyrethrum knockdown tube 173, 16 November 1989 (1, ANIC); same except edge tree 1, pyrethrum knockdown tube 174 (1, ANIC); same except tree 1, pyrethrum knockdown tube 313 (2, ANIC); Cradle Mountain, Lake St. Clair NP, Waldheim Weindorfers Forest, 41°38'S 145°47'E, 940 m, *Athrotaxis selaginoides/Nothofagus cunninghamii* forest, ex window trap, 14–30 January 1983, A. Newton & M. Thayer (1, ANIC); Lake Chisholme Forest Reserve, 41°08'S 145°04'E, 180 m, *Eucalyptus obliqua* forest, ex window trap, 12–29 January 1983, A. Newton & M. Thayer (5, ANIC); Melaleuca near Bathurst Harbour, 43°25'S 146°10'E, closed forest litter, flight intercept trap #1, 7 December 1990 – 15 January 1991, E. Nielsen & E. Edwards (1, ANIC); same except closed forest, Malaise trap #1, 15 January – 20 February 1991, E. Nielsen & E. Edwards (4, ANIC); Mt. Barrow Road, 890 m, beating foliage *Nothofagus cunninghamii*, 15–17 February 1980, A. Newton & M. Thayer (1, ANIC); Mt. Michael, 41°11'S 148°00'E, 740 m, pyrethrin knockdown tree 1, tube 176, 26 November 1989, R. Coy (6, ANIC); same except tube 180, 27 November 1989, H. Mitchell (1, ANIC); same except tube 181, R. Coy (1, ANIC); same except pyrethrin knockdown tree 2, tube 185, 26 November 1989, H. Mitchell (2, ANIC); same except tube 186, R. Coy (7, ANIC); same except pyrethrin knockdown tree 1, tube 187 (5, ANIC); same except tube 188, H. Mitchell (3, ANIC); same except tube 202, sweeping, 27 November 1989 (4, ANIC); Murchison Highway, State Reserve, Que River Mine Road, 41°36'S 145°41'E, 680 m, *Nothofagus cunninghamii* forest, window trap, 11–27 January 1983, A. Newton & M. Thayer (2, ANIC); Old Farm Road, 2 km E Mt. Wellington, 42°54'S 147°61'E, sweeping, 20 June 1989, P. Greenslade (2, ANIC); Pelion Gap, Mt. Ossa, 41°50'S 146°03'E, 1120 m, closed forest, Malaise trap #6, 30 November 1990 – 8 January 1991, E. Nielsen & E. Edwards (5, ANIC); Pelion Hut, 3 km S Mt. Oakleigh, 41°50'S 146°03'E, 860 m, *Nothofagus*, pyrethrin knockdown log and tree roots, April – May 1992, P. Greenslade & M. Comfort (1, ANIC); same except closed forest, Malaise trap #1, 30 November 1990 – 8 January 1991, E. Nielsen & E. Edwards (3, ANIC); same except 8 January – 12 February 1991, A. Calder & W. Dressler (4, ANIC); same except Malaise trap #2, 30 November 1990 – 8 January 1991, E. Nielsen & E. Edwards (11, ANIC); same except 8 January – 12 February 1991, A. Calder & W. Dressler (2, ANIC); same except 9–21 November 1991, I. Naumann & G. Clarke (3, ANIC); same except 13 February – 7 March 1991, I. Naumann & M. Horak (1, ANIC); same except Malaise trap #4, 8 January – 12 February 1991, A. Calder & W. Dressler (8, ANIC); same except 30 November 1990 – 8 January 1991, E. Nielsen & E. Edwards (3, ANIC); same except 8 January – 12 February 1991, A. Calder & W. Dressler (1, ANIC); same except 9–21 November 1991, I. Naumann & G. Clarke (2, ANIC); same except 26 September – 9 November 1991, Smith & Thomas (3, ANIC); same except 13 February – 7 March 1991, I. Naumann & M. Horak (4, ANIC); same except 7 March – 9 April 1991, E. Edwards & J. Berry (2, ANIC); same except Malaise trap #5, 30 November 1990 – 8 January 1991, E. Nielsen & E. Edwards (4, ANIC); same except I. Naumann & M. Horak (6, ANIC); same except 9–21 November 1991, I. Naumann & G. Clarke (5, ANIC); same except 26 September – 9 November 1991, Smith & Thomas (5, ANIC); same except 7 March – 9 April 1991, E. Edwards & J. Berry (8, ANIC); same except flight intercept trap #1, 30 November 1990 – 8 January 1991, E. Nielsen & E. Edwards (5, ANIC); same except 8 January – 12 February 1991, A. Calder & W. Dressler (1, ANIC); same except Malaise trap #2, 6 November 1990, W.E.B.S. (3, ANIC); same except Malaise trap #5, 9 April – 6 June 1991, M. Comfort (2, ANIC); Sandspit Forest Reserve, S of Orford, 42°43'S 147°50'E, *Eucalyptus globulus* with rainforest understorey, ex window trap, 17 January – 2 February 1983, A.



Figs 55–63. Habitus of species of Picrotini. 55 – *Orthoscelis* n. sp. 3 (Australia: NSW, Qld, Vic); 56 – *Ostreacryptus basalis* (Grouvelle, 1919); 57 – *Ostreacryptus clarkae* Leschen, 2001; 58 – *Ostreacryptus helmsi* (Reitter, 1880); 59 – *Ostreacryptus insignis* (Reitter, 1880); 60 – *Ostreacryptus nigroapicalis* (Blackburn, 1903); 61 – *Ostreacryptus* n. sp. 1 (Australia: WA); 62 – *Ostreacryptus* n. sp. 2 (Australia: Tas); 63 – *Ostreacryptus* n. sp. 3 (Australia: ACT). Scale bars = 1 mm.



Figs 64–72. Habitus of species of Picrotini. 64 – *Ostreacryptus* n. sp. 4 (Australia: NSW, Tas, Vic); 65 – *Ostreacryptus* n. sp. 5 (New Zealand); 66 – *Papuacryptus striatopunctatus* sp. nov.; 67 – *Paragnetaria slipinskii* sp. nov.; 68 – *Picrotus thoracicus* Sharp, 1886; 69 – *Picrotus* n. sp. 1 (New Zealand); 70 – *Thortus amoenus* (Broun, 1912); 71 – *Thortus ovalis* Broun, 1893; 72 – *Thortus* n. sp. 1 (New Zealand: Auckland Islands). Scale bars = 1 mm. Abbreviations: pc = paramedial carina.



Figs 73–76. Habitus of species of Picrotini. 73 – *Thortus* n. sp. 2 (New Zealand); 74 – *Thortus* n. sp. 3 (New Zealand); 75 – *Thortus* n. sp. 4 (New Zealand); 76 – *Thortus* n. sp. 5 (New Zealand). Scale bars = 1 mm.

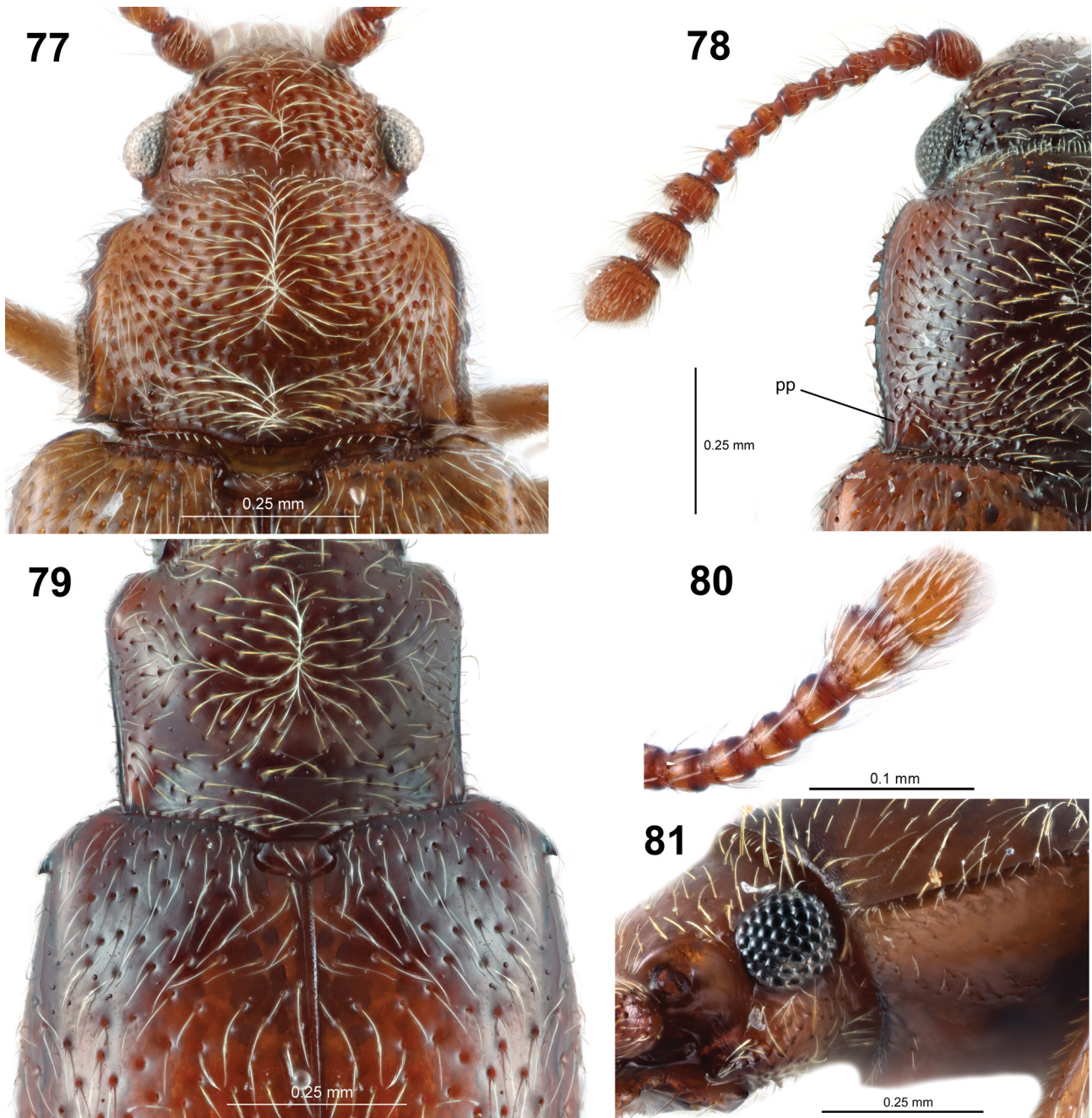
Newton & M. Thayer (1, ANIC; 1, FMNH); same except pyrethrum fogging large old fungusy logs, 2 February 1983 (2, ANIC); Savage River, Pipeline Road, 41°30'S 145°20'E, *Eucryphia*, pyrethrum knock-down tube 73, 20 April 1989, B. Brown (1, ANIC); same except *Nothofagus*, pyrethrum knockdown tube 75, 19 April 1989 (5, ANIC); Schulhofs Road, 8.7 km NE Upper Blessington, 41°26'S 147°36'E, 870 m, *Eucalyptus delegatensis* / *Eucalyptus obliqua* forest, ex window trap, 16 January – 1 February 1993, A. Newton & M. Thayer (3, ANIC; 1, FMNH); Warra Warra Valley, 10 January 2002, R. Leschen (1, NZAC). **VICTORIA:** Baw Baw Alpine Reserve, 0.7 km NE Neulynes Mill, 37°51'S 146°15'E, 1035 m, *Eucalyptus delegatensis* forest with *Nothofagus cunninghamii*, window trap, 14–26 February 1993, A. Newton & M. Thayer (1, ANIC); Bendoo Bonang SF, Bonang highway, 56 km NNE Orbost, 37°15.42'S 148°43.49'E, 635 m, tree fern gully, Malaise trap, 11 January – 11 February 2005, C. Lambkin & N. Starick (3, ANIC); Cement Creek, N of Warburton 814, 37°43'S 145°42'E, 625 m, *Eucalyptus regnans* / *Nothofagus cunninghamii*, flight intercept (window) trap, 27 January – 11 February 1987, A. Newton & M. Thayer (1, ANIC); Haines Junction, 1.9 km W on Turtons Track 809, 38°39'S 143°42'E, 525 m, wet sclerophyll forest, flight intercept (window) trap, 26 January – 8 February 1987, A. Newton & M. Thayer (2, ANIC); Macedon, 10 July 1946, E. Smith (1, ANIC); Otway NP, Binn Road, 4.3 km N Cape Orn, 38°43'S 143°35'E, wet sclerophyll forest, flight intercept (window) trap, 25 January – 8 February 1987, A. Newton & M. Thayer (1, ANIC); Otway NP, Maits Rest, 38°45'S 143°33'E, 260 m, wet sclerophyll *Nothofagus cunninghamii*, flight intercept (window) trap, 25 January – 8 February 1987, A. Newton & M. Thayer (12, ANIC; 3, FMNH); Tarra-Bulga NP, Grand Ridge Road at Traralgon Balook Road, 38°25'S 146°34'E, ridge top open *Eucalyptus* / *Acacia* forest, ex window trap, 13–25 February 1983, A. Newton & M. Thayer (1, ANIC); Warburton, 2.2 km NE on Acheron Way, 37°44'S 145°43'E, 320 m, *Eucalyptus regnans* with *Acacia*, ex window trap, 15–27 February 1993, A. Newton & M. Thayer (1, ANIC).

Diagnosis. This species may be distinguished from the three other known (but undescribed) putative species of *Orthoscelis* by the presence of very short tempora on the head, the lack of a platform at the anterior pronotal angle, the nearly parallel-sided pronotum, and the absence of postcoxal lines on abdominal ventrite 1 (Fig. 96).

Description. Length 1.30–1.60 mm. Color of dorsal and ventral surfaces pale reddish-brown (Fig. 52). Dorsal setae primarily golden, long, vestiture converging to central point on pronotum, elytral setae uniformly directed posteriorly; with numerous suberect setae on elytral disc and long erect setae along lateral edges of elytra. Ventral surfaces with dense, recumbent setae; gula and genae with coarse punctation; prosternum with extremely coarse, dense

punctation, hypomeron with a few larger punctures anteriorly, punctures becoming finer posteriorly and laterally, puncture row present along posterior margin; triangular portion of prosternal process impunctate; punctation of metaventre moderately coarse and dense, distinctly finer laterally and posteriorly; abdominal ventrites with punctures fine, similar to that of metaventre.

Head with fine, moderately dense punctation on frons, punctures separated by about one to two puncture diameters, with smooth and shiny interspaces; tempora present, short, much less than 1/4 length of eye in dorsal view; vertex not impressed immediately anterior to occipital ridge. Antennomere 2 subovate, longer than wide, antennomere 3 slightly narrower, slightly shorter than 2, antennomere 4 equal in width to 3, distinctly shorter than 3; antennomere 11 rounded, slightly longer than 10, much shorter than 9 and 10 combined. Pronotal length/width ratio ~0.75, almost parallel-sided, widest just anterior to middle, width across anterior angles slightly less than width across posterior angles; lateral edges faintly sinuate, without teeth, swellings, or platforms, marginal bead slightly thicker near anterior angles; anterior angles slightly projecting, obtuse, rounded, posterior angles right, sharp, slightly projecting, posterior margin very weakly sinuate, with broad, arcuate scutellar lobe; pronotum with broad, faint, shallow basal transverse impression, without carinae or paralateral plicae along base; with small, shallow glabrous pits just medial of posterior angles; lateral bead narrow, without wide glabrous space; pronotal punctation relatively fine, dense, similar to that of head, punctures separated by about one to two puncture diameters, with smooth and shiny interspaces; procoxal cavity without anterior notch; apex of prosternal process crenulate with minute setae. Elytra about 1.49× longer than combined width, about 1.45× wider than pronotum at greatest width, about 2.89× longer than pronotum at greatest length; discal punctures fine, relatively dense, separated by about one to one and a half puncture diameters, coarser near basal margin, gradually becoming finer posteriorly; sutural stria complete, reaching nearly to scutellar shield anteriorly; disc without subbasal impression; mesoventral cavity shallow, not flanked by sharp carinae;



Figs 77–81. Characters of Pictroini. 77–78 – detail of pronotum. 77 – *Chimaerocryptus johnsoni* sp. nov.; 78 – *Odonotosomatula carltoni* sp. nov. 79 – pronotum and base of elytra, *Humerocryptus* n. sp. 1. 80 – antennal club, *Paragnetaria slipinskii* sp. nov. 81 – eye, *Cryptothelypteris pteropilosus* Leschen & Lawrence, 1991. Abbreviations: pp = paralateral plica.

metaventral discrien extending slightly more than half length of mesoventrite. Pro- and mesotarsomere 5 longer than 1–4 combined. Abdominal ventrite 1 (Fig. 96) without postcoxal lines; some ventrites with medial calli; sutures between ventrites without intersegmental crenulations. Aedeagus (Fig. 103) with tegminal arms fused at apex, with a suture; interparameral process subacute; basipenis 3× longer than distipenis and about 2× longer than wide, outer rims weakly crenulate, lateral lobes narrowly separated.

Biology. We have examined hundreds of this species and most are collected by mass sampling techniques, Malaise and flight intercept traps and by pyrethrum fogging of various trees.

Etymology. From the Latin participle “*transversus*”, in reference to the strongly transversely quadrate pronotum.

Distribution. Distributed in southeastern Australia from Tasmania, where most of the material originated, north to New South Wales.

Ostreacryptus Leschen, 2001

(Figs 56–65, 87)

Ostreacryptus Leschen, 2001: 7. Type species: *Ostreacryptus clarkae* Leschen, 2001, by original designation.

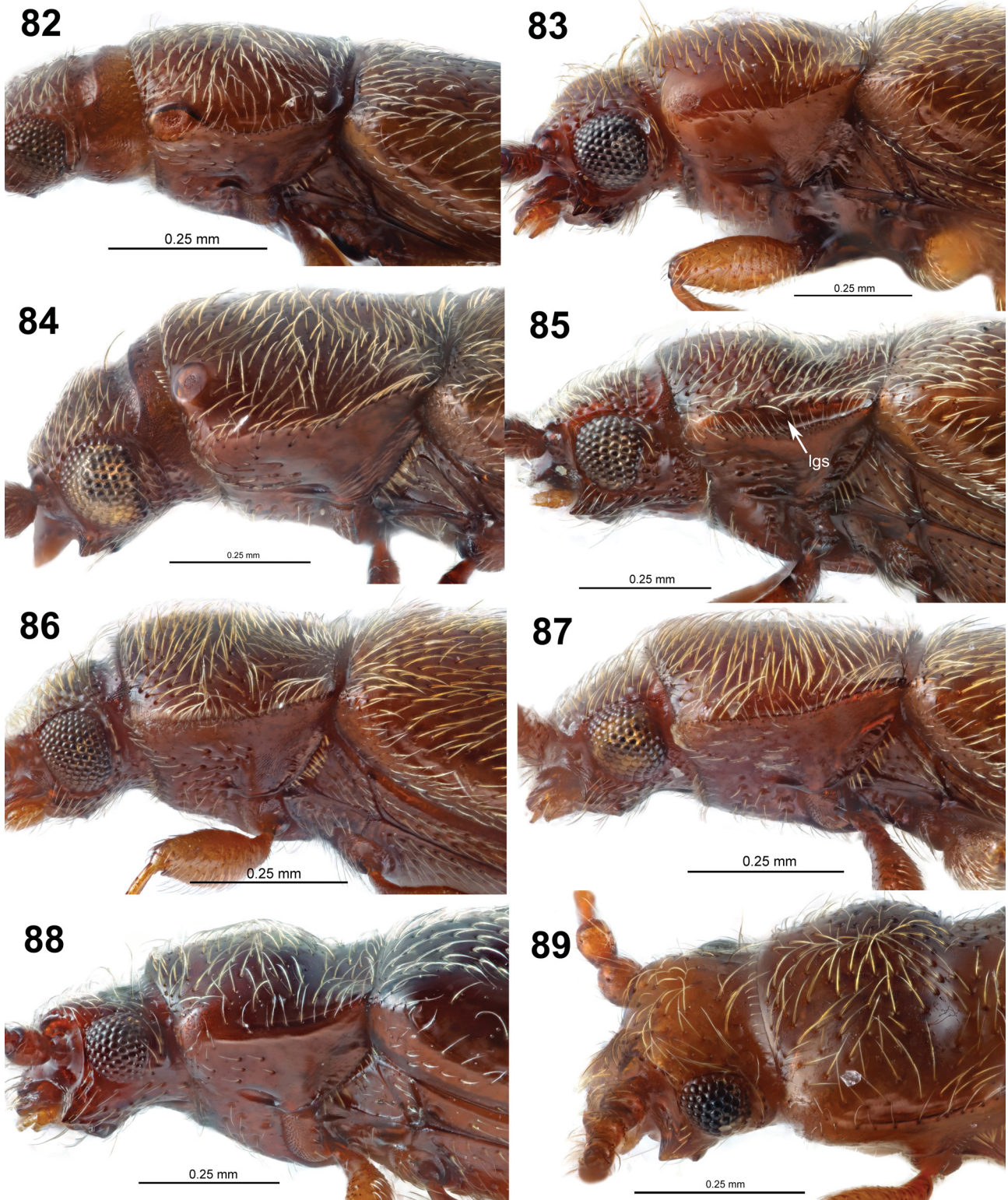
Diagnosis. This genus is unique among Pictroini for possessing swollen anterior angles of the pronotum, which may form distinctive knob-like structures in some species

but never form a flat glandular surface. Additionally, the antennal club is composed of three antennomeres, the body is densely setose, and the elytral punctation is confused. The abdominal ventrites are usually free, but in one species (*O. helmsi*) ventrites 1 and 2 are connate.

Redescription. Length 1.25–1.66 mm. Body form (Figs 56–65) variable, elongate and parallel-sided to short and subfusiform, prothorax sometimes short and transverse, slightly to distinctly narrower than elytra, usually shining dorsally (dull in 2 undescribed species from Australia), with sparse to dense decumbent setae and usually with many medium-length to long, sparse, suberect to erect setae dorsally; unicolorous (most), sometimes weakly bicolored or distinctly tricolored. Head with tempora present or absent, when present, variable, from less than one-fourth length of eye, to greater than 1/3 length of eye; vertex with temporal depression present immediately anterior to ridge; band of reticulate sculpture present or absent. Frontoclypeus not projecting laterally; raised portion of frons between antennal insertions not constricted, slightly narrower to about as wide as or wider than antennal club. Transverse ridge above antennal insertions usually absent (weakly present in *O. clarkae*). Eye small (*O. clarkae*) to large, rounded, contacting antennal cavity; interfacetal setae usually present (absent in *O. clarkae*). Antennal club consisting of 3 antennomeres; antenna inserted into small cavity; antennomere 9 subequal in width to antennomere 10. Mandible with apex bifid, subapical serrations present. Maxillary palpomere 4 usually distinctly longer than 3; palpomere 4 not subulate. Gena without antennal groove; genal spines sharply acute to obtuse and poorly developed. Gular sutures incomplete, not reaching occipital foramen. Pronotum not explanate and not or extremely weakly constricted at base, slightly to distinctly narrower than elytra, usually widest near anterior angles, sometimes equally wide at posterior angles (1 undescribed species from New Zealand), rarely widest at middle (1 undescribed species from Australia); anterior angles formed into weak to prominent knob-like structures, sometimes extending anterior to cervical foramen of prothorax, but without a distinct flat glandular surface or platform (Fig. 87); lateral carina present and complete, smooth and lacking teeth, crenulations, or setigerous tubercles, with lateral glabrous space usually absent (present in *O. basalis*), width of lateral bead wider than discal puncture and narrower than antennal funicle; disc with basal impressions paired and usually distinct (weak in *O. helmsi*); paramedial carinae absent, paralateral plicae present (e.g., *O. insignis*) or absent (e.g., *O. helmsi*); posterolateral angles either acute and projecting or right-angled. Prothoracic hypomeron fused to prosternum. Prosternum with anterior margin usually on same plane as disc (slightly depressed [= more dorsal] in 1 undescribed species from New Zealand); prosternal process with lateral beads present, parallel, slightly convergent at apex and connected across apex in form of narrowly rounded point, process slightly expanded apically, truncate or broadly rounded and usually crenulate with minute setae (simple in *O. clarkae*); procoxal cavity with or without anterolateral notch. Scutellar shield clearly

visible, transverse to obtusely triangular. Elytron without humeral tooth; subbasal impression usually present (very distinct in *O. basalis*), medial transverse impression present in 1 species (*O. insignis*), subapical impression absent; subapical gape present; punctation confused, moderately to extremely dense and weakly to moderately impressed; vestiture usually dual with a few to numerous long or short, erect or suberect setae present laterally and on disc (virtually absent in *O. basalis* and *O. clarkae*), decumbent setae directed straight posteriorly or with undulate pattern with postscutellar and subapical setae directed laterally. Hind wing well developed (vestigial in *O. clarkae*). Mesoventrite with mesoventral cavity shallow and punctate, sometimes flanked by sharp carinae. Mesanepisternal pit present, either lined with setae or glabrous. Metaventrite without postcoxal lines; discrimen present, usually more than half length of metaventrite (shorter than one-half length of metaventrite in *O. clarkae*), posterior notch of metaventrite present. Metendosternite with anterior tendons approximate in fully winged species (widely separated in *O. clarkae*). Tarsi 5-5-5 in female, 5-5-4 in male; tarsi moderately slender, tarsomere 5 as wide as preceding tarsomeres in lateral view; pro- and mesotarsomere 4 asetose; mesotarsomere 3 not or weakly lobed, with few setae; mesotarsomeres 1–3 equal, males of some species with tenet setae, mesotarsomere 5 about as long as mesotarsomeres 1–4 combined. Abdominal ventrites usually free (ventrites 1 and 2 connate in *O. helmsi*); with medial calli present, lateral calli present or absent, intersegmental crenulations usually absent (present in *O. helmsi* and *O. nigroapicalis*); ventrite 1 with intercoxal process narrowly to broadly rounded, with or without postcoxal lines, acuminate when present; medio-basal thickenings of ventrites 3–5 absent; apex of ventrite 5 with or without crenulations. Abdominal spiracles on segment VII with openings usually present (absent in *O. helmsi*) and usually larger in diameter than spiracle VI, texture usually granulate (annulate in *O. clarkae*) and atrium rounded and saclike. Aedeagus with tegminal strut absent, tegminal arms separate; parameres separate and articulated to phallobase (fused to phallobase in *O. clarkae*), parameres fused together in one undescribed species, inner surface not or slightly concave, length about 2–3× longer than wide; apices asetose or multisetose; attachment point to phallobase not constricted, interparameral process present or absent; basipenis 4.5–7× longer than distipenis, with or without median carina; distipenis about as long as wide or slightly longer, outer rims not or weakly crenulate, lateral lobes narrowly to widely separated, typically symmetrical, distinctly asymmetrical in *O. helmsi*; internal sac with a pair of endophallites that are very long and slender, extending the length of the internal sac, with apical hooks, or shorter and irregularly shaped, or absent.

Remarks. With this revision we expand the concept of this genus significantly from LESCHEN (2001) to include species from Australia, New Zealand, and Chile with knob-like anterior pronotal angles. The type species, *O. clarkae*, as noted in the description above, diverges in a number of characters probably related to brachyptery and flightlessness.



Figs 82–89. Head and pronotum of Picrotini. 82–88 – lateral view. 82 – *Antarcticotectus rutilus* (Broun, 1880); 83 – *Antarcticotectus silvanus* (Broun, 1880); 84 – *Antarcticotectus tasmanicus* (Blackburn, 1907); 85 – *Chiliotis* sp.; 86 – *Notocryptus australis* (Redtenbacher, 1868); 87 – *OstreaCryptus helmsi* (Reitter, 1880); 88 – *Humerocryptus* n. sp. 1. 89 – dorsolateral view, *Humerocryptus tumidus* (Broun, 1893). Abbreviations: lgs = lateral glabrous space.

Biology. Most species can be collected by flight intercept and Malaise traps and beating vegetation, while others (e.g., *O. clarkae*) can be collected by sifting leaf litter and logs, or found under bark (e.g., *O. helmsi*), where larvae and adults are collected together, though they may also occur on fungi (KUSCHEL 1990). *OstreaCryptus insignis*

(Reitter, 1880) has been collected from a variety of plants and also from fungi (KUSCHEL 1990), including sooty mold, and guts of dissected species may be filled with phragmaspores, conidia and fungal hyphae and undifferentiated material.

Distribution. Australia, Chile, New Zealand.

Included species (5+5). *Ostreacryptus basalis* (Grouvelle, 1919) comb. nov. (from *Micrambina*); *Ostreacryptus clarkae* Leschen, 2001; *Ostreacryptus helmsi* (Reitter, 1880) comb. nov. (from *Micrambina*); *Ostreacryptus insignis* (Reitter, 1880) comb. nov. (from *Micrambina*); *Ostreacryptus nigroapicalis* (Blackburn, 1903) comb. nov. (from *Cryptophagus*); five undescribed species from Australia and New Zealand.

***Papuacryptus* gen. nov.**

(Fig. 66)

Type species. *Papuacryptus striatopunctatus* sp. nov., by present designation.

Diagnosis. This genus may be distinguished from all other Picrotini by the punctation of the elytron being arranged into regular longitudinal rows (Fig. 66; all other Picrotini have confused elytral punctation). Additionally, *Papuacryptus* possess an antennal club composed of three antennomeres, no pronotal platforms or knobs, and abdominal ventrites 1–2 connate.

Description. Length 1.40–1.48 mm. Body form (Fig. 66) elongate, parallel-sided, prothorax quadrate, transverse, only slightly narrower than elytra, shining dorsally, with moderately dense decumbent setae and with sparse suberect setae dorsally; unicolorous. Head with tempora virtually absent; vertex with temporal depression present immediately anterior to ridge; band of reticulate sculpture present. Frontoclypeus not projecting laterally; raised portion of frons between antennal insertions not constricted, about as wide as antennal club. Transverse ridge above antennal insertions absent. Eye large, rounded, contacting antennal cavity; interfacetal setae present. Antennal club consisting of 3 antennomeres; antenna inserted into small cavity; antennomere 9 slightly narrower than antennomere 10. Maxillary palps short, palpomere 4 slightly longer than 3; palpomere 4 narrow, nearly subulate. Gena without antennal groove; genal spines obtuse, rounded. Gular sutures absent. Pronotum not explanate and not constricted at base, slightly narrower than elytra, parallel-sided; anterior angles feebly extending anterior to cervical foramen of prothorax, without a distinct flat glandular surface or platform; lateral carina present and complete, lacking teeth, crenulations or setigerous tubercles, with lateral glabrous space weakly indicated, width of lateral bead narrower than antennal funicle; disc with weak basolateral impressions; paramedial carinae absent, paralateral plicae present; posterolateral angles sharp, right. Prothoracic hypomeron fused to prosternum, suture obscured but longitudinal glabrous puncture present just anterior of anterolateral corner of procoxal cavity. Prosternum with anterior margin on same plane as disc; prosternal process with lateral beads present, parallel, connecting across apex, process slightly expanded apically, broadly rounded and with minute setae, margin apparently not crenulate; procoxal cavity without anterolateral notch. Scutellar shield clearly visible, transverse, with widely rounded apex. Elytron without humeral tooth; subbasal impression absent, subapical impression absent; subapical gape present; punctation in 9 distinct rows (not counting sutural or marginal row), moderately dense and moderately

impressed, with a few scattered punctures in striae intervals; vestiture dual with a few short to medium-length, suberect setae present laterally and on disc (shorter on disc), arising from punctures on striae intervals, decumbent setae arising from striae punctures, uniformly directed posteriorly. Hind wing well developed. Mesoventrite with mesoventral cavity shallow and impunctate, flanked by distinct carinae. Mesanepisternal pit apparently absent. Metaventrite without postcoxal lines; discrimen absent, posterior notch of metaventrite absent. Metendosternite not studied. Tarsi (presumably) 5-5-5 in female, 5-5-4 in male; tarsi moderately slender, tarsomere 5 as wide as preceding tarsomeres in lateral view; pro- and mesotarsomere 4 asetose; mesotarsomere 3 not or weakly lobed, setose; mesotarsomeres 1–3 subequal, mesotarsomere 5 about as long as mesotarsomeres 1–4 combined. Abdominal ventrites 1–2 connate; intersegmental crenulations absent; ventrite 1 with intercoxal process broadly rounded, with acuminate postcoxal lines extending nearly to posterior edge; medio-basal thickenings of ventrites 3–5 absent; apex of ventrite 5 without crenulations.

Remarks. We have examined two male specimens which were not dissected. Details of the mandible and internal characters of the abdomen were not examined.

Etymology. The generic name is in reference to the geographic origin of the only described species, and “-cryptus”, a common generic ending in Cryptophagidae. The gender is masculine.

Biology. The single species has been collected by leaf litter sifting in a secondary growth *Nothofagus* forest.

Distribution. Indonesia (Irian Jaya), Papua New Guinea.

Included species (1). *Papuacryptus striatopunctatus* sp. nov.

***Papuacryptus striatopunctatus* sp. nov.**

(Fig. 66)

Type material. HOLOTYPE: male (SMNS), labeled: “Irian Jaya Panlal Mulia (s.) Wuyuneeri 1900-2200m, 6-7.VII. A. RIEDEL leg. 1994.”. PARATYPE: PAPUA NEW GUINEA: NE New Guinea, Mt. Kaindi, *Nothofagus pullei* 2nd growth, 25 February 1971, T. Tigner (1, ANIC).

Diagnosis. This is the only known member of the genus; therefore, it may be recognized by the characters given in the generic diagnosis above.

Description. Length 1.40–1.48 mm. Color uniformly pale reddish-brown on dorsal (Fig. 66) and ventral surfaces, thoracic ventrites slightly infuscated; appendages also reddish-brown, antennal club somewhat paler. Dorsal setae silvery, long, vestiture converging to posteromedial point on pronotum, uniformly directed posteromedially on each elytron; elytra with moderately long, sparse, suberect setae along sides in posterior half, disc with mixture of suberect and recumbent setae, suberect setae not much longer than recumbent setae. Ventral surfaces with dense, recumbent setae; gula, genae, prosternum and hypomeron densely, moderately coarsely, uniformly punctate; hypomeron posteriorly with microsculptured impunctate region; prosternal process impunctate and shiny medially with a few suberect setae laterally; punctation of metaventrite as dense as that of prosternum but finer, especially medially, impunctate in an elongate triangle medially; abdominal

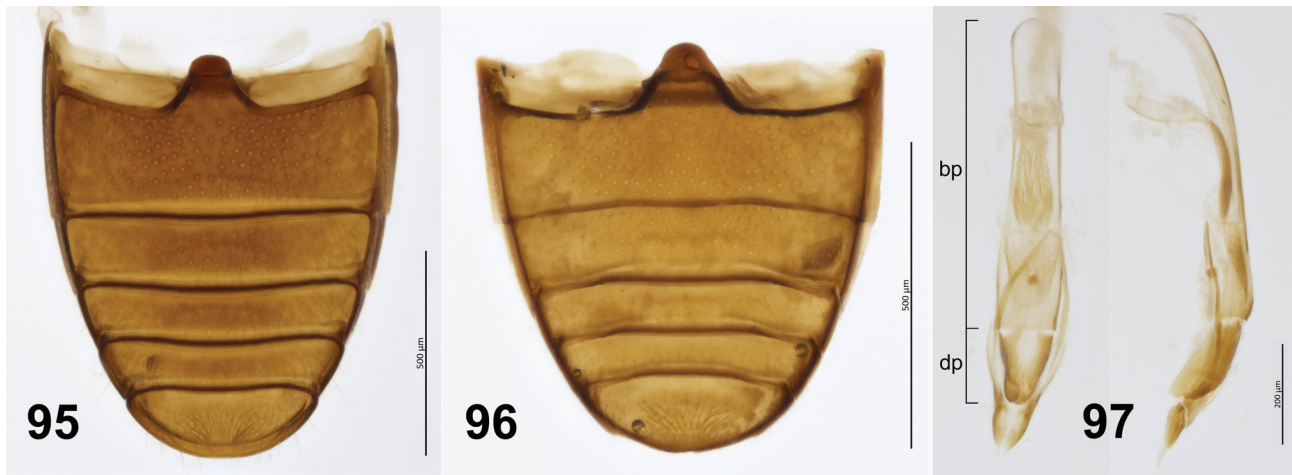


Figs 90–94. Ventral characters of Picrotini. 90 – prosternum, *Notocryptus* n. sp. 11. 91–92 – metaventricle. 91 – *Foveocryptus chenyardongi* sp. nov.; 92 – *Notocryptus* n. sp. 12. 93–94 – basal abdominal ventrites. 93 – *Austroscelis gibbipennis* (Blackburn, 1891); 94 – *Cordosomatula magnabagishae* sp. nov.

ventrites with punctuation fine, similar to that of metaventricle but uniform.

Head with very coarse, dense punctation on frons, punctures separated by less than one puncture diameter, with smooth and shiny interspaces; with narrow, transverse impunctate area at vertex. Antennomere 2 ovate, slightly longer than wide, antennomere 3 slightly narrower, about equal in length to 2, antennomere 4 equal in width to but much shorter than 3; antennomere 11 longer than 10, distinctly shorter than 9 and 10 combined. Pronotal length/width ratio ~ 0.76 , almost parallel-sided, greatest width just anterior to middle, width across posterior angles slightly greater than across anterior angles; anterior angles moderately projecting, obtuse, posterior angles right, not projecting, posterior margin weakly sinuate, with broad,

truncate scutellar lobe; pronotum without broad basal transverse impression, with narrow gutter anterior to posterior marginal bead, without carinae or paralaral plicae along base, with small, shallow glabrous pits just medial of posterior angles; pronotal punctation moderately dense, punctures separated by about one puncture diameter, with smooth and shiny interspaces, punctures on central part of disc larger. Elytra about $1.67\times$ longer than combined width, about $1.16\times$ wider than pronotum at greatest width, about $2.54\times$ longer than pronotum at greatest length; sutural stria strongly indicated on elytron anteriorly nearly to scutellar shield; with 9 discal punctate striae, which are slightly impressed in basal 2/3 of elytra for striae 1–3 (in addition to engraved sutural stria and puncture row along lateral bead), becoming increasingly less impressed and disorganized



Figs 95–97. Abdomens and aedeagus viewed with partial transmitted light. 95–96 – abdomen. 95 – *Antarcticotectus silvanus* (Broun, 1880); 96 – *Orthoscelis transversus* sp. nov. 97 – aedeagus, dorsal and right lateral views, *Antarcticotectus silvanus*. Abbreviations: bp = basipenis; dp = distipenis.

laterally; interstriae with scattered setae (especially in odd-numbered interstriae), recumbent setae originating from striae punctures, suberect setae originating from interstitial punctures; additional rows of punctures with recumbent setae situated along the striae and lateral margins of elytron; disc not impressed. Aedeagus not studied.

Remarks. This species is only known from the holotype and paratype, both of which are apparently male based on the 5-5-4 tarsal formula.

Etymology. From the Latin participle “*striatus*” and adjective “*punctatus*”, referring to the punctate striae of the elytra, unique among Picrotini.

Paragnetaria gen. nov.

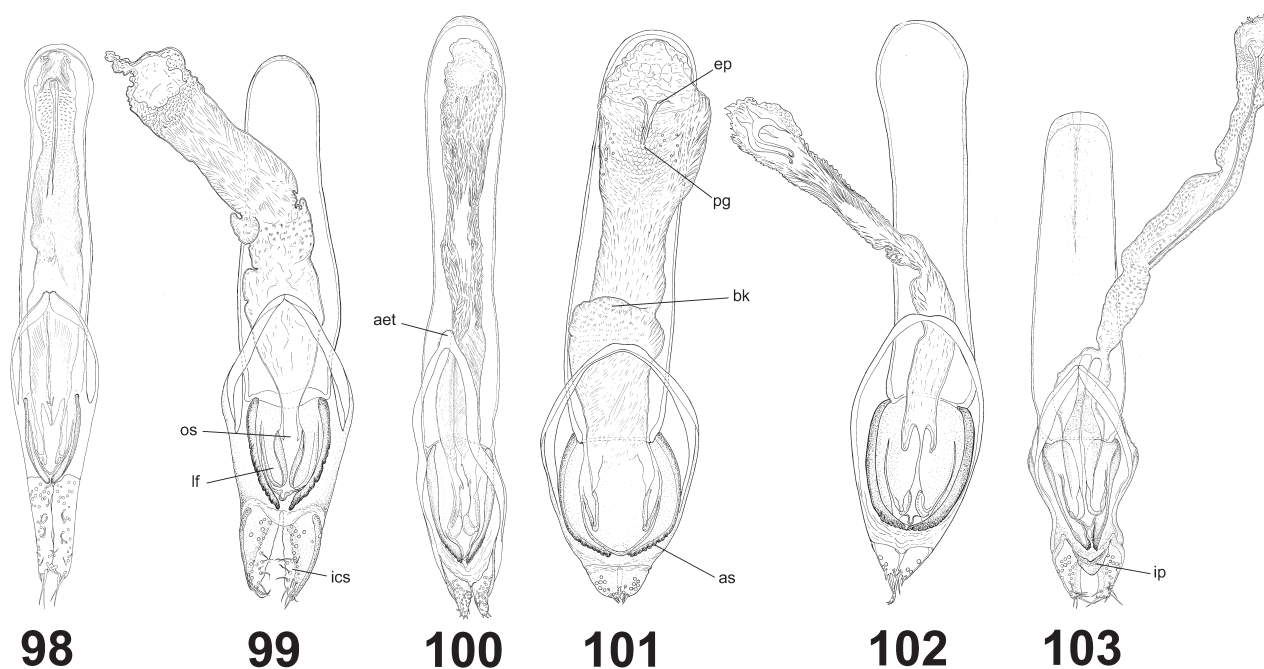
(Figs 67, 80)

Type species. *Paragnetaria slipinskii* sp. nov., by present designation.

Diagnosis. This genus is easily distinguished by the combination of the antennal club composed of two antennomeres (Fig. 80) and abdominal ventrites 1 and 2 connate. Additionally, the body is densely setose, there is a short antennal groove beneath the eye, there are no platforms, knobs or glabrous spaces on the pronotum, though the lateral carinae possess distinct setigerous tubercles, and the elytral punctation is confused. The tarsal formula, at least in the female, is 4-4-4, though this is very difficult to observe in dry-mounted specimens.

Description. Length 1.20–1.69 mm. Body form fusiform, elongate (undescribed species) to stout (*P. slipinskii*; Fig. 67), prothorax narrower than elytra, shining dorsally, with dense decumbent setae and with abundant medium-length to long, suberect to erect setae dorsally; unicolorous. Head with tempora present, at least one-fourth length of eye; vertex with temporal depression present immediately anterior to ridge; band of reticulate sculpture present. Frontoclypeus not projecting laterally; raised portion of frons between antennal insertions not constricted, slightly wider than antennal club. Transverse ridge above antennal insertions absent. Eye small, rounded, contacting antennal cavity; interfacetal setae present. Antennal club consisting of 2

antennomeres; antenna inserted into small cavity; antennomere 9 almost imperceptibly wider than 8, much narrower than antennomere 10. Mandible with apex bifid, subapical serrations absent. Maxillary palpomere 4 subequal in length to slightly longer than 3; palpomere 4 narrowly conical, almost subulate. Gena with a short, broad antennal groove just ventral to the eye, open posteriorly; genal spines blunt, obtuse and poorly developed. Gular sutures absent. Pronotum not explanate and not constricted at base, narrower than elytra, widest at about middle; anterior angles present, slightly projecting anterior to cervical foramen of prothorax, without a distinct flat glandular surface or platform; lateral carina present and complete, lacking crenulations, but with several distinct setigerous tubercles, with lateral glabrous space present but small, width of lateral bead wider than discal puncture and narrower than antennal funicle; disc without impressions; paramedial carinae and paralateral plicae absent; posterolateral angles sharp, about right or slightly obtuse. Prothoracic hypomeron fused to prosternum, suture between them not evident. Prosternum with anterior margin on same plane as disc; prosternal process with pair of weak, convergent carinae coming to narrowly rounded point at apex, process slightly expanded apically, broadly rounded and crenulate with minute setae; procoxal cavity without anterolateral notch. Scutellar shield clearly visible, transverse to obtusely triangular. Elytron without humeral tooth; subbasal and subapical impressions absent; subapical gape present; punctation confused, dense and weakly impressed; vestiture dual with numerous moderately long, suberect to erect setae present laterally and on disc, decumbent setae uniformly directed straight posteriorly, not forming undulate pattern. Hind wing vestigial. Mesoventrite with mesoventral cavity shallow, glabrous, and flanked by sharp carinae. Mesanepisternal pit present, glabrous. Metaventricle with short postcoxal lines; discrimen absent, posterior notch of metaventricle absent. Metendosternite with anterior tendons approximate. Tarsi 4-4-4 in female [male unknown]; tarsi moderately slender, tarsomere 4 as wide as preceding tarsomeres in lateral view; pro- and mesotarsomere 3 setose;



Figs 98–103. Aedeagus, dorsal view. 98 – *Austroscelis gibbipennis* (Blackburn, 1892); 99 – *Bellascalis pecki* sp. nov.; 100 – *Cordosomatula magnabagishae* sp. nov.; 101 – *Humerocryptus* n. sp. 1; 102 – *Notocryptus australis* (Redtenbacher, 1868); 103 – *Orthoscelis transversus* sp. nov. Abbreviations: aet = anterior extension of tegmen; as = apical serrations; bk = basal kink of internal sac; ep = endophallites; ics = inner concave surface; ip = interparameral plate; lf = lateral fold; os = ostium; pg = primary gonopore.

mesotarsomere 2 not or weakly lobed, with few setae; mesotarsomeres 1–3 equal; mesotarsomere 4 longer than mesotarsomeres 1–3 combined. Abdominal ventrites 1–2 connate, suture between them present but poorly marked, with medial calli absent and lateral calli present, intersegmental crenulations present; ventrite 1 with intercoxal process broadly rounded, with long, acuminate postcoxal lines; medio-basal thickenings of ventrites 3–5 absent; apex of ventrite 5 without crenulations. Abdominal spiracles on segment VII with openings present and larger in diameter than spiracle VI, texture granulate and atrium rounded and saclike.

Remarks. There are at least two species of this genus, both occurring in Australia. They differ externally by the elytral length, but are otherwise quite similar. None of the specimens we dissected were males; additional material is needed to describe the aedeagus and confirm that the 4-4-4 tarsomere character state is also present in the male.

Etymology. The generic name is derived from a combination of the Greek prefix “para-”, meaning near, and *Aagnetaria*, a picrotine genus that it superficially resembles. The gender is feminine.

Biology. Members of this genus have been collected using a variety of methods, including sifting and Berlese of leaf litter, pitfall traps, and, oddly for species with vestigial hind wings, Malaise and flight intercept traps.

Distribution. Australia.

Included species (1). *Paragnetaria slipinskii* sp. nov.; one additional undescribed species from Australia.

***Paragnetaria slipinskii* sp. nov.**

(Figs 67, 80)

Type material. HOLOTYPE: female (ANIC), labeled: “33.53S 140.44E

(GPS), 32km N of Renmark S.A., 11-26 Oct 1995, Pitfall trap, mallee, A.Lambie & K.R.Pullen // CALPERUM STATION/BOOKMARK BIOSPHERE RESERVE INVERTEBRATE SURVEY // ANIC Specimen [green label]”. PARATYPES (4): AUSTRALIA: NEW SOUTH WALES: Mt. Flora, near Mittagong, 34°22’S 150°25’E, 15 April 1976, R.J. Bartell (1, ANIC). SOUTH AUSTRALIA: 31 km NW Renmark, Calperum Station, 33°59’S 140°30’E, dry froggery paddock, FIT, 30 March – 2 May 1995, K. Pullen (1, ANIC); 31 km NW Renmark, 33°59’S 140°30’E, Calperum Station/Bookmark Biosphere Reserve Invertebrate Survey, 2 May – 8 June 1995, flight/ground intercept trap, K.R. Pullen (1, ANIC). VICTORIA: Inglewood, G. Oke (1, MVMA).

Diagnosis. This species may be distinguished from the other known (but undescribed) putative species of *Paragnetaria* by its smaller size, stouter body, and protarsomere 4 about as long as protarsomeres 1–3 combined.

Description. Length 1.20–1.30. Color of body (Fig. 67) dark brown, legs, mouthparts, and antennal club lighter. Dorsal setae uniformly silver, vestiture converging to central point on pronotum, pronotum and elytra with long, decumbent setae, elytra with scattered erect and suberect setae. Ventral surfaces with recumbent setae, shorter in length compared with those on dorsum; densely and uniformly punctate; prosternal process with sparse setae; punctuation of head, metaventrite and abdominal ventrites less coarse and smaller in size than prosternum.

Head punctate with smooth and shiny interspaces. Antennomere 2 cylindrical, about 1.5–2× longer than wide, antennomere 3 longer than 4, 4 and 5 equal, 6 shorter than 5 and 6; 7, 8, and sometimes 9 about equal or 9 longer than 8; antennomere 11 longer than 9 and 10 (Fig. 80). Pronotal length/width ratio ~0.76, widest at or just behind middle; lateral edges weakly convex and subparallel-sided, widened anteriorly, anterior angles not projecting, posterior angles acute and almost right; lateral edges each with 5–6

large setigerous tubercles; posterior margin not sinuate, very weakly posteriorly arcuate, with bead present at middle; pronotum lacking foveae or paralateral plicae; pronotal punctation similar to that of frons, punctures separated by 1 puncture diameter or less, smaller and denser at posterolateral corners. Elytra about 1.99× longer than combined width, about 1.31× wider than pronotum at greatest width, about 2.11× longer than pronotum at greatest length; punctation dense, punctures separated by 1–3 puncture diameters, becoming more diffuse posteriorly; sutural stria present to base; disc lacking impressions. Tarsomere 4 as wide as protarsomere 4 and as long as tarsomeres 1–3 combined.

Remarks. There is minor variation among the relative lengths of the antennomeres and the punctation of the pronotum and elytra among the specimens we have examined, but we have treated these as the same species. Eventually, males from these localities will need to be examined to confirm the species identity.

Etymology. The species name is patronymic for Adam Ślipiński (CSIRO), friend of the authors and renowned expert in a wide range of Coleoptera, as well as co-editor of the *Australian Beetles* series.

Picrotus Sharp, 1886

(Figs 68, 69)

Picrotus Sharp, 1886: 394. Type species: *Picrotus thoracicus* Sharp, 1886, by monotypy.

Diagnosis. This genus is easily distinguished from other Picrotini by the broad body form and the extremely wide lateral bead of the pronotum (Figs 68, 69). Additionally, the body is virtually glabrous dorsally and the antennal club is composed of only two antennomeres.

Redescription. Length 1.05–1.27 mm. Body form (Figs 68, 69) extremely short, stout, ovate, with extremely short, extremely sparse, inconspicuous decumbent setae dorsally, erect or suberect setae totally absent; weakly to strongly bicolored. Head without tempora; vertex with (undescribed species) or without (*P. thoracicus*) ridge, temporal depression immediately anterior to ridge lacking; band of reticulate sculpture lacking. Frontoclypeus not projecting laterally anterior to antennal insertions; raised portion of frons between antennal insertions not strongly constricted, as wide as or wider than antennal club. Transverse ridge above antennal insertions present (*P. thoracicus*) or absent (undescribed species). Eye small, conical, contacting antennal cavity (*P. thoracicus*) or not (undescribed species); interfacetal setae absent. Antenna inserted into large cavity on head; antennal club consisting of 2 antennomeres; antennomere 9 equal in width to antennomere 8 or almost imperceptibly wider. Mandible with apex bifid, subapical serrations present. Maxillary palpomere 4 subequal in length to 3; palpomere 4 conical but not subulate. Gena without antennal groove; genal spines broadly to narrowly rounded, right to obtuse. Gular sutures present, incomplete, not reaching occipital foramen. Pronotum not explanate, not constricted at base, equal in width to base of elytra, widest in basal half, distinctly transverse; anterior angles weakly to strongly projecting anteriorly (extending anterior to cervical foramen of prothorax), without a distinct

platform but (in undescribed species) with slight swelling associated with small, flat glandular area; lateral carina present and complete, not bearing setigerous tubercles, width of lateral bead about as wide as antennal club; disc with weak (*P. thoracicus*) or without transverse basal impression extending across width of pronotum; paramedial carinae and paralateral plicae absent; posterolateral angles obtuse (undescribed species) to narrowly rounded, acute, and projecting posteriorly (*P. thoracicus*). Prothoracic hypomeron fused to prosternum (*P. thoracicus*) or separated by suture (undescribed species). Prosternum with anterior margin on same plane as disc; prosternal process with lateral marginal beads weakly (undescribed species) to strongly (*P. thoracicus*) present, parallel-sided, connected across apex, process with (*P. thoracicus*) or without (undescribed species) narrow longitudinal depression medially, process expanded (undescribed species) or not (*P. thoracicus*) apically, apex truncate and not crenulate, lacking setae; procoxal cavity with (undescribed species) or without (*P. thoracicus*) anterolateral notch. Scutellar shield clearly visible and transverse (undescribed species) or mostly hidden except for extreme apex (*P. thoracicus*). Elytron lacking humeral tooth, lacking subbasal and subapical impressions; subapical gape absent; punctation extremely sparse, fine, virtually absent (*P. thoracicus*) to coarse, densely concentrated in scutellar region (undescribed species); vestiture originating in punctures, uniformly short and recumbent. Hind wing vestigial. Mesoventrite with mesoventritral cavity bowl-like, glabrous, flanked by sharp carinae. Mesanepisternal pit absent. Metaventrite with short, crenulate postcoxal lines; discrimen absent, posterior notch of metaventrite absent. Metendosternite with anterior tendons widely separated or absent. Tarsi 5-5-5 in female, 5-5-4 in male; tarsi moderately slender to compact, tarsomere 5 as wide (*P. thoracicus*) or wider as preceding tarsomeres in lateral view; pro- and mesotarsomere 4 asetose; mesotarsomere 3 not lobed, with few setae; mesotarsomeres 1–3 of subequal to equal lengths with 1 slightly shorter (*P. thoracicus*) or longer than 2, 3 and 4 equal, 4 slightly shorter than 3, mesotarsomere 5 equal to (*P. thoracicus*) or shorter than tarsomeres 1–4 combined. Abdominal ventrites free (*P. thoracicus*) or 1–3 solidly fused with sutures nearly obliterated (undescribed species), with medial calli absent, lateral calli present or absent, intersegmental crenulations absent; ventrite 1 with intercoxal process broadly rounded, with postcoxal lines absent; medio-basal thickenings of ventrites 3–5 absent; apex of ventrite 5 with crenulations. Abdominal spiracles on segment VII with openings present and not larger in diameter than spiracle VI, texture smooth and atrium rounded and saclike. Aedeagus with tegminal strut absent, tegminal arms contiguous; parameres fused to phallobase and broadly at their bases and separated at the apex (*P. thoracicus*) or separate and articulated to phallobase with inner surface concave (undescribed species), fused parameres combined about 1.2× wider than long (*P. thoracicus*) or about 3× longer than wide; apices multisetose; attachment point to phallobase not constricted, interparameral process present (undescribed species) or absent; basipenis 4× (undescribed species) to about 8× (*P.*

thoracicus) longer than distipennis, without median carina; distipennis rectangular and transverse and about 1.2× wider than long (*P. thoracicus*) to elongate and about 2× longer than wide (undescribed species), outer rims not crenulate, lateral lobes narrowly to widely (*P. thoracicus*) separated, symmetrical; internal sac with a pair of thin sclerites that extend 2/3 the length of the sac (*P. thoracicus*) or a single arrow-shaped plate (undescribed species).

Remarks. There are three species in this New Zealand genus (Chen & Leschen, in prep.), one described (Fig. 68), one from the southeastern part of the North Island that is undescribed and very similar to *P. thoracicus*, and another (Fig. 69) very different from the other two having distinctive characters noted above in the description, such as the eye contacting antennal cavity, connate abdominal ventrites 1 and 2, a widened tarsomere 5, a rugose body form, and an unusual arrow-shaped plate in the internal sac that suggest it may be a separate genus. Despite these differences, we consider the genus monophyletic based on the characters in the diagnosis.

Biology. Specimens of *Picrotus* are found in leaf litter, and *P. thoracicus* may be rather abundant, whereas the remaining two undescribed species are known by significantly fewer specimens.

Distribution. New Zealand.

Included species (1+2). *Picrotus thoracicus* Sharp, 1886; two undescribed species from New Zealand.

***Thortus* Broun, 1893**

(Figs 70–76)

Thortus Broun, 1893: 1345. Type species: *Thortus ovalis* Broun, 1893, by original monotypy.

Diagnosis. This genus can be distinguished from other Picrotini by the mostly shining, glabrous (asetose), unicolorous body (Figs 70–76), the antennae each being inserted into a deep cavity with a narrow strip of raised cuticle separating each (narrower than width of antennal club), a reduced number of eye facets (fewer than 15), and the presence of postcoxal lines on abdominal ventrite 1 (absent in one undescribed species).

Redescription. Length 1.22–2.07 mm. Body form (Figs 70–76) relatively short, fusiform, usually with sparse, inconspicuous decumbent or suberect setae dorsally, setae always short on disc of elytra, often longer, sparse setae present around elytral humeri; reddish-brown, unicolorous or with yellowish-brown maculations. Head with tempora; vertex with or without temporal depression immediately anterior to ridge; band of reticulate sculpture present. Frontoclypeus weakly to strongly projecting laterally anterior to antennal insertions; raised portion of frons between antennal insertions usually strongly constricted, narrower than antennal club, broader in certain undescribed species, not carinate. Transverse ridge above antennal insertions usually present, absent in some undescribed species. Eye reduced, contacting antennal cavity or not; interfacetal setae absent. Antenna inserted into large cavity on head; antennal club consisting of 3 antennomeres, but almost appearing to consist of 2 antennomeres since antennomere 9 intermediate in width between antennomeres 8 and 10. Mandible with

apex bifid or trifid, subapical serrations present or absent. Maxillary palpomere 4 subequal in length to 3; palpomere 4 subulate. Gena without antennal groove; genal spines right and rounded to acute. Gular sutures present, incomplete, not reaching occipital foramen. Pronotum not explanate, sometimes weakly constricted at base, slightly to distinctly narrower than elytra, widest at middle or in anterior third, usually relatively elongate; anterior angles slightly projecting anteriorly (extending just anterior to cervical foramen of prothorax), without a distinct flat glandular surface or platform; lateral carina present and complete (indistinct in *T. amoenus*), not bearing setigerous tubercles, without glabrous space, width of lateral bead wider than discal puncture and narrower than antennal funicle; disc often with transverse basal impression, half width of pronotum or narrower, usually distinct but sometimes very shallow when present; paramedial carinae present when transverse impression is present, paralateral plicae absent; posterolateral angles obtuse to nearly right, rounded to distinct. Prothoracic hypomeron fused to prosternum, suture not evident, but often a partial or complete groove present, usually with small, rounded impression at posterior end. Prosternum with anterior margin on same plane as disc; prosternal process with lateral marginal beads present, parallel-sided, often wide, connected across apex, process not expanded apically, apex truncate and crenulate with minute setae; procoxal cavity with anterolateral notch. Scutellar shield clearly visible and transverse. Elytron lacking humeral tooth or with weak tooth, lacking subbasal impressions; subapical gape present; punctation confused, extremely sparse and fine in most species, denser in *T. amoenus*; vestiture uniform with a few short, sparse, suberect setae present laterally and on disc, denser in *T. amoenus*, setae not or forming very weak undulate pattern, with post-scutellar and subapical setae directed posteriorly. Hind wing vestigial. Mesoventrite with mesoventritral cavity bowl-like and flanked by sharp carinae, or shallow and not flanked by sharp carinae. Mesanepisternal pit present and lined with setae or absent. Metaventrite without postcoxal lines; discrimen absent or present and less than 1/3 length of metaventrite, posterior notch of metaventrite absent or present and weak. Metendosternite with anterior tendons widely separated or absent. Tarsi 5-5-5 in female, 5-5-4 in male or 4-4-4 in both sexes of one undescribed species; tarsi moderately slender, tarsomere 5 as wide as preceding tarsomeres in lateral view; pro- and mesotarsomere 4 asetose; mesotarsomere 3 not lobed, with few setae; mesotarsomeres 1–3 of subequal to equal lengths, mesotarsomere 5 equal to or subequal to mesotarsomeres 1–4 combined. Abdominal ventrites free and with medial and lateral calli present or absent, intersegmental crenulations absent; ventrite 1 with intercoxal process narrowly to broadly rounded, with postcoxal lines present (absent in one new species from Auckland Islands, New Zealand), scalloped or acuminate; medio-basal thickenings of ventrites 3–5 absent; apex of ventrite 5 with or without crenulations. Abdominal spiracles on segment VII with openings present and not larger in diameter than spiracle VI, texture annulate and atrium rounded and saclike. Aedeagus with tegminal

strut absent, tegminal arms contiguous or separated at apex with a membrane; parameres separate and articulated or solidly fused to phallobase, inner surface concave or not, length about 2–5× longer than wide; apices microsetose or asetose; attachment point to phallobase not constricted, interparameral process absent; basipenis 3–5× longer than distipenis, with or without median carina; distipenis about as long as wide to elongate (up to 3× longer than wide), outer rims not crenulate, lateral lobes narrowly to widely separated, symmetrical; internal sac without or with a pair of short, slender endophallites.

Remarks. There are 11 species, of which nine are undescribed (Chen & Leschen, in prep.). Most are geographically restricted, with most new species occurring in the South Island, New Zealand, and a comparatively large-bodied new species from the subantarctic Auckland Islands (Fig. 72).

Biology. Specimens of *Thortus* are found in leaf litter. *Thortus ovalis* may be rather abundant in northern portion of the South Island, while most other species tend to be collected in low numbers. The gut of one dissected specimen contained undifferentiated matter.

Distribution. New Zealand.

Included species (2+9). *Thortus amoenus* (Broun, 1912), comb. nov. (from *Cryptophagus*); *Thortus ovalis* Broun, 1893; nine undescribed species from New Zealand.

Note on *Micrambina* Reitter, 1878

Unfortunately, as noted in LESCHEN & GIMMEL (2012), the type specimen of *Micrambina amitta* Reitter, 1878 is misplaced or destroyed. REITTER (1878: 128) himself noted this much: “Während der Untersuchung ist mir das einzige ausgezeichnete Thierchen verloren gegangen, weshalb ich die Beschreibung desselben ausführlicher nicht geben kann. [During the investigation I lost the only excellent animal, which is why I cannot give a more detailed description of it.]”. This is the type species of *Micrambina* Reitter, 1878, a generic name historically widely used in Picrotini. However, after careful consideration of the original description of the genus, we believe it fits closely with the concepts of *Loberoschema* Reitter, 1896 or *Stengita* Reitter, 1875 (see LESCHEN 2003 for notes on the validity of these genera), both members of Erotylidae: Cryptophilinae: Toramini, particularly with regard to the punctate-striate elytra and the obtuse callosity on the anterior angle of the pronotum. Here is the original Latin description of the genus (REITTER 1878: 128):

Antennae robustae, articulo primo incrassato, clava 3-articulata. Prothorax transversus, basin versus leniter angustatus, lateribus integer, margine laterali extus canaliculato, angulis anticis incrassato callosis. Elytra striato-punctata. Tarsorum articulus tertius vix lobatus.

Loberoschema and *Stengita* were originally described in the Cryptophagidae, and in the notes that follow the Latin diagnosis, Reitter noted the similarity of *Micrambina* to *Loberus* LeConte, 1861 (now Erotylidae: Loberinae) and *Micrambe* Thomson, 1863 (Cryptophagini). *Loberoschema* occurs from Central America to Chile, while *Stengita* occurs in Chile (LESCHEN 2003). As additional evidence for this transfer, the type locality of *M. amitta* is “Colombia”,

which is outside the known range of the tribe Picrotini, but within that of *Loberoschema*. *Micrambina amitta* should be considered a member of the Toramini as a *genus et species inquirenda*.

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Appendix: Summary checklist of described world Picrotini

Aagnetaria Bruce, 1953

- Aagnetaria pilosella* (Blackburn, 1891) Australia (SA)
 = *Aagnetaria cryptophagoides* Bruce, 1953 syn. nov.

Antarcticotectus Brookes, 1951

- Antarcticotectus aucklandicus* Brookes, 1951 New Zealand
Antarcticotectus rutilus (Broun, 1880) comb. nov. New Zealand
Antarcticotectus silvanus (Broun, 1880) comb. nov. New Zealand
Antarcticotectus tasmanicus (Blackburn, 1907) comb. nov. Australia (TAS)

Austroscelis gen. nov.

- Austroscelis gibbipennis* (Blackburn, 1892) comb. nov. Australia (VIC, TAS)

Bellascelis gen. nov.

- Bellascelis pecki* sp. nov. Australia (NSW, QLD)

Chileothortus gen. nov.

- Chileothortus infuscatus* sp. nov. Chile

Chiliotis Reitter, 1875

- = *Brounina* Bruce, 1943 syn. nov.
Chiliotis analis (Reitter, 1876) comb. nov. Chile
Chiliotis exilis Grouvelle, 1919 Chile
Chiliotis formosus Reitter, 1875 Chile
Chiliotis fossulatus (Bruce, 1943) comb. nov. Chile
Chiliotis germaini Grouvelle, 1919 Chile
Chiliotis gigas Grouvelle, 1919 Argentina
Chiliotis gracilis Grouvelle, 1919 Chile
Chiliotis laticeps Grouvelle, 1919 Chile
Chiliotis longicornis Grouvelle, 1919 Chile

Chimaerocryptus gen. nov.

- Chimaerocryptus johnsoni* sp. nov. Chile

Connatocryptus gen. nov.

- Connatocryptus utiku* sp. nov. New Zealand

Cordosomatula gen. nov.

- Cordosomatula magnabagishae* sp. nov. Australia (NSW, QLD)

Cryptosomatula Bruce, 1940

- Cryptosomatula longicornis* Bruce, 1940 Juan Fernandez Is.

Cryptothelypteris Leschen & Lawrence, 1991

- Cryptothelypteris atomarioides* (Grouvelle, 1919) Juan Fernandez Is.
 = *Cryptophagus selkirki* Bruce, 1940
Cryptothelypteris obrieni Leschen & Lawrence, 1991 Juan Fernandez Is.
Cryptothelypteris pteropilosus Leschen & Lawrence, 1991 Juan Fernandez Is.
Cryptothelypteris skottsbergi (Bruce, 1940) Juan Fernandez Is.
Cryptothelypteris splendens (Bruce, 1940) Juan Fernandez Is.

Foveocryptus gen. nov.

- Foveocryptus chenyardongi* sp. nov. New Zealand

Humerocryptus gen. nov.

- Humerocryptus tumidus* (Broun, 1893) comb. nov. New Zealand

Neopicrotus Leschen, 1996

- Neopicrotus peckorum* Leschen, 1996 Chile

Notocryptus gen. nov.

- Notocryptus australis* (Redtenbacher, 1868) comb. nov. New Zealand
 = *Cryptophagus hispidulus* Broun, 1880 syn. nov.
 = *Cryptophagus obscurus* Broun, 1893 syn. nov.
Notocryptus discoideus (Broun, 1893) comb. nov. New Zealand
Notocryptus distinctus (Broun, 1893) comb. nov. New Zealand
Notocryptus lindensis (Blackburn, 1891) comb. nov. Australia (SA, VIC)

Odontosomatula gen. nov.

- Odontosomatula carltoni* sp. nov. Ecuador

Orthoscelis gen. nov.

Orthoscelis transversus sp. nov. Australia (NSW, TAS, VIC)

Ostreacryptus Leschen, 2001

Ostreacryptus basalis (Grouvelle, 1919) comb. nov. Chile
Ostreacryptus clarkae Leschen, 2001 New Zealand
Ostreacryptus helmsi (Reitter, 1880) comb. nov. New Zealand
= *Cryptophagus rubellus* Broun, 1880
Ostreacryptus insignis (Reitter, 1880) comb. nov. New Zealand
= *Cryptophagus vestitus* Broun, 1880
Ostreacryptus nigroapicalis (Blackburn, 1903) comb. nov. Australia (VIC)

Papuacryptus gen. nov.

Papuacryptus striatopunctatus sp. nov. New Guinea

Paragnetaria gen. nov.

Paragnetaria slipinskii sp. nov. Australia (NSW, SA, VIC, WA)

Picrotus Sharp, 1886

Picrotus thoracicus Sharp, 1886 New Zealand
= *Picrotus sanguineus* Broun, 1893
= *Picrotus pensus* Broun, 1910

Thortus Broun, 1893

Thortus amoenus (Broun, 1912) comb. nov. New Zealand
Thortus ovalis Broun, 1893 New Zealand

