

REVIEW OF THE *THALYCRA* COMPLEX (COLEOPTERA: NITIDULINAE) WITH THREE NEW GENERA AND NOTES ON MYCOPHAGY

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Abstract.— The 12 genera of the *Thalycra* complex are reviewed, diagnosed, and keyed. The group is related to the *Pocadius* complex (based on larval and adult morphology) and is characterized by the following adult characters in combination: body form elongate and convex, pronotal and elytral margins narrowly explanate, vestiture of setae relatively sparse, length of antennomere 11 smaller than 9 and 10 combined, and metacoxae approximate with a moderately narrow intercoxal process. Three genera are described as new: *Pocadiolyera* Kirejtshuk and Leschen, **gen. nov.** (type species: *Pocadiolyera peruensis* Kirejtshuk and Leschen, **sp. nov.**; *P. guyanaensis* Kirejtshuk, **sp. nov.**), *Tagmalycera* Kirejtshuk and Leschen, **gen. nov.** (type species: *Tagmalycera ashei* Kirejtshuk and Leschen, **sp. nov.**) and *Thalycrinella* Kirejtshuk, **gen. nov.** (type species: *Neothalycera latitibialis* Audisio and Kirejtshuk, 1983). The species *Quadrifrons castaneus* Blatchley, 1916 (= *Cychramus zimmermani* Horn 1879, **new synonymy**), *Pocadionta dentipes* (Grouvelle, 1898), and *Pleuroceces montanus* Olliff, 1891 are redescribed. Biological information is summarized for each genus while fungal host relationships are emphasized. Members of *Thalycera* Erichson, and possibly *Quadrifrons* Blatchley, are specialists on hypogean fungi while the related genera *Pocadiolyera* and *Tagmalycera* are specialists on Agaricaceae. New New Zealand records for the species *Thalycrodes australis* (Blackburn) are provided.



Key words.— Coleoptera, Nitidulidae, mycophagy, hypogean fungi, systematics.

INTRODUCTION

The classification of mycophagous Nitidulinae with convex body forms is poorly understood and here we attempt to define informally a group of taxa related to the genus *Thalycera* Erichson. This group has been traditionally regarded as closely related to, or placed together with, genera related to *Pocadius* Erichson (Erichson 1843, Reitter 1919, Parsons 1943). Older European classifications included *Thalycera* and *Pocadius* together in the same groups (e.g., Pocadiini Seidlitz, 1872 and *Thalycrina* Thomson 1859). The modern concept of this group, referred to here as the *Thalycera* complex, was alluded to by Parsons (1943) to include *Neothalycera* Grouvelle, *Thalycera*, *Thalycrodes* Blackburn, and *Xenostromylybus* Wollaston. Audisio and Kirejtshuk (1983) noted the similarity among these genera including *Pseudothalycera* Howden, but excluded *Xenostromylybus* from consideration. Kirejtshuk and

Lawrence (1992) treated a group of Australian genera they called the *Thalycrodes* complex (consisting of *Australycera* Kirejtshuk and Lawrence, *Rixerodes* Kirejtshuk and Lawrence, and *Thalycrodes*) that we consider as members of the *Thalycera* complex. In this paper we review the genera belonging to the *Thalycera* complex and describe two neotropical genera containing three species, erect a new genus for the African species *Neothalycera latitibialis* Grouvelle, provide a key to the genera, and summarize fungal host information for each genus.

Specimens are deposited in the following collections: Canadian Museum of Nature (Ottawa, CMN); Canadian National Collection (Biosystematic Research Institute, Ottawa, CNC); Entomology Research Museum, Lincoln University (Lincoln, New Zealand, LUNZ); Escuela Agrícola Pamamericana (Tegucigalpa, Honduras, EAP); Facultad de Biología, Universidad del Valle de Guatemala (Guatemala City, GUAT); Field Museum of Natural History (Chicago, FMNH); Forest Research Institute (Rotorua, New Zealand, FRNZ); Museo de Historia Natural, Universidad de San Marcos (Lima, Peru, MNHU); Museo de Insecta,

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Facultad de Agronomía (Universitaria de Costa Rica, MIFA); Natural History Museum (London, NHML); New Zealand Collection of Arthropods (Auckland, NZAC); Prague National Museum (Czech Republic, PNMC); R. Leschen Collection (Auckland, RALC); Snow Entomological Museum, (Lawrence, Kansas, SEMC); United States National Museum (Washington, USNM); Zoological Institute of the Russian Academy of Sciences (St. Petersburg, ZIN); Zoologische Staatssammlung (Munich, ZSM).

Measurements are given in mm. Acronyms for New Zealand localities follow Crosby et al. (1976).

SYSTEMATIC POSITION AND COMPOSITION

Because the higher classification of the convex nitidulines is poorly defined many authors refer to some informal generic groupings as complexes, groups, or lineages. The *Thalyera* complex was reviewed, in part, as the *Thalyerodes* complex by Kirejtshuk and Lawrence (1992) and these were placed in the *Pocadius* lineage, claimed to be previously defined by Audisio and Kirejtshuk (1983) in their paper. However, there is no reference to, nor is there a complete list of taxa for, the *Pocadius* lineage provided by Audisio and Kirejtshuk (1983). Characters for the *Pocadius* lineage were listed by Kirejtshuk and Lawrence (1992) and are, "type of pubescence and elytral punctation, approximate hind coxae, and peculiarities of tibial structure and genitalia of both sexes". Unfortunately, these characters are not enough to describe explicitly the *Pocadius* lineage and a list of the inclusive taxa for the *Pocadius* lineage has not been published. What constitutes a lineage or a complex of genera in these nitiduline groups must be considered in a comprehensive review of the subfamily classification which is beyond the scope of this paper.

Instead of recognizing a *Pocadius* lineage (Kirejtshuk and Lawrence 1990, 1992), we recognize two informal groups of genera that may be closely related – the *Thalyera* and *Pocadius* complexes. These are covered in the following discussion.

The *Thalyera* complex includes the following genera, including three described in this paper: *Thalyera* (Holarctic; Howden 1961, Jelinek 1982); *Pseudothalyera* Howden and *Quadrifrons* Blatchley (Nearctic; Parsons 1943); three Australian genera (*Thalyerodes*, *Rixerodes* and *Australyera*); *Neothalyera* and *Thalyerinella* gen. nov. (Afrotropical; Audisio and Kirejtshuk 1983); *Pleuroneces* Olliff (Neotropical); *Pocadionta* Lucas (Patagonian); *Pocadiolyera* gen. nov. and *Tagmatyera* gen. nov. (Neotropical). The name *Thalyerina* Thomson (1859) could be applied to the *Thalyera* complex, however, we believe that formal names of tribal rank should be applied only where natural groups are clearly defined by covarying sets of homologies.

The *Thalyera* complex can be separated from the *Pocadius* complex by a more elongate body form, pronotal

and elytral sides narrowly explanate (the sides are widely explanate in *Physoronia* Reitter and *Pocadionta*), vestiture of setae relatively sparse, length of antennomere 11 smaller than 9 and 10 combined, metacoxae approximate with a moderately narrow intercoxal process. The antennal club in the *Pocadius* complex is evenly covered by small sensillae which is also the condition in *Pocadiolyera* and *Tagmatyera* of the *Thalyera* complex. Otherwise, the sensillae are confined to the apices of antennomeres 9 and 10 surrounded by a distinct edge. Although the protibia vary in the two complexes, the meso- and metatibiae of the *Thalyera* complex (with the exception of *Thalyera*) do not have stout spines along the outer edge (like some genera of the *Pocadius* complex) and frequently have subapical spines or forked projections.

The *Pocadius* complex includes the following genera (covered, in part, by Kirejtshuk 1997a): *Atarphia* Reitter, 1884 (Palaeartic, Indo-malayan, and Australian; Kirejtshuk 1984, 1986a, 1992); *Hebasculinus* Kirejtshuk, 1992 (Palaeartic and Indo-malayan); *Hebascus* Erichson, 1843 (Neotropical); *Hyleopocadius* Jelinek, 1977 (Neotropical); *Lordyodes* Reitter, 1884 (Palaeartic and Indo-malayan); *Niliodes* Murray, 1868 (Neotropical); *Physoronia* Reitter, 1884 (Palaeartic and Indo-malayan); *Pocadioides* Ganglbauer, 1899 (Palaeartic and Indo-malayan); *Pocadius* Erichson, 1843 (world wide except for New Zealand); *Pocadites* Reitter, 1884 (Palaeartic and Indo-malayan); *Pseudoplatychora* Grouvelle, 1890 (Indo-malayan; Jelinek 1982); *Taraphia* Audisio and Jelinek, 1993 (Indo-malayan); *Teichostethus* Sharp, 1891 (Neotropical). The genus *Taraphia* was included in the axyroid complex of genera by Audisio and Jelinek (1993), but is treated as a member of the *Pocadius* complex in this study.

There are several adult characters that are shared between the *Thalyera* and *Pocadius* complexes, all of which could be recognized as plesiomorphies or vary within the two groups: body with vestiture of setae, head with vertexal line or abruptly constricted dorsally, mesosternum visible in ventral view, and ovipositor with gonostyli. Larval characters that may support a close relationship among the two complexes were identified from the comprehensive work by Hayashi (1978) and the description for *Thalyera sinuata* Howden, the only known larva from the *Thalyera* complex (see descriptions in Howden 1961). Most nitidulines have two tarsungular setae, although one of these may be strongly reduced (e.g., *Physoronia*) or absent (e.g., *Oxyenemus* Erichson). One tarsungular seta is present in members of *Pocadites*, *Pocadius*, and *Thalyera* and outside this group in some species of *Pallodes* Erichson. The hypopharyngeal sclerome of nitidulines typically has a pair of well developed anterior horns, but these are absent in *Pocadius* and are reduced or possibly absent in *Thalyera* (these are present in *Pocadites*).

Presently, unique characters can not be unequivocally identified to support the relationship between these two complexes and without undertaking a complete and thorough phylogenetic study and revision of the entire

Nitidulinae, we assume that these groups are monophyletic and sister taxa. Old provincial classifications of Nitidulidae restricted to European faunas that included *Thalycra* and *Pocadius* support a view that these two taxa are related (e.g., Reitter 1873; Ganglbauer 1899). Further, the close relationship may be supported based on an association of some members of these two groups that specialize on fungi without exposed hymenia (i.e., Gasteromycetes and hypogean fungi; but see below).

FUNGAL ASSOCIATIONS

Many convex Nitidulines are associated with Basidiomycetes (Lawrence 1989, 1991; Lawrence and Milner 1996; Kirejtshuk and Kirk-Spriggs 1996; Leschen and Carlton 1996), although there are a few taxa that occur on flowers (e.g., *Camptodes* Erichson and taxa related to *Aethina* Erichson and *Cychramus* Kugelann). All members of the *Pocadius* complex for which hosts are known are associated with epigeal Basidiomycetes. Some occur inside or at the base of the sporocarps of puffballs and other Gasteromycetes (*Pocadius*, *Physoronia*, and *Pocadioides* (= *Lordyrodes*, see Kirejtshuk 1997a)) (Benick 1952, Jelinek 1960, Hayashi 1978, Lawrence 1991, Kirejtshuk 1992, Audisio 1993, Leschen and Carlton 1994) while others are associated with lignicolous Basidiomycetes with exposed hymenia (*Atarphia*, *Hebascus*, *Physoronia*, *Teichostethus*; Hayashi 1978; Leschen and Carlton 1996; Leschen, personal observation). In contrast, mycophagous members of the *Thalycra* complex appear to be associated with hypogean Gasteromycetes (*Quadrifrons* and *Thalycra*) or epigeal Agaricales (*Pocadiolyera* and *Tagmatyera*). Most records for *Thalycra* are from the genus *Rhizopogon* (Hymenogastreales, Hymenogastreales) or *Gautieria* (Gautieriales, Gautieriaceae) (Howden 1961; Fogel and Peck 1975). A mixed fungal diet may exist for the species *Thalycrodes pulchrum* Blackburn and *T. calvatum* Kirejtshuk and Lawrence which are recorded from *Coprinus comatus* (Miller ex Fries) S.F. Gray (Basidiomycetes, Agaricales, Coprinaceae) and Gasteromycetes, respectively (Kirejtshuk and Lawrence 1992). Specialization on hypogean fungi is rare in beetles and only occurs in the families Leiodidae (Leiodinae), Geotrupidae (Bolbo-ceratinae) and Nitidulidae (Fogel and Peck 1975, Newton 1984, Lawrence 1989). Though natural history data is lacking, specialization on hypogean fungi in the *Thalycra* complex may be restricted to *Thalycra* (and possibly *Quadrifrons*) and it is likely that refined collecting techniques will result in additional host data.

It is difficult to discriminate between incidental and true host associations because specific host use data are lacking for many taxa. Positive host associations can be implicated when large series of specimens are taken at a host in a single collection or repeated collections are made on the same host. For example, the single association of *Pleuroneces montanus* on *Puya* seed pods may represent

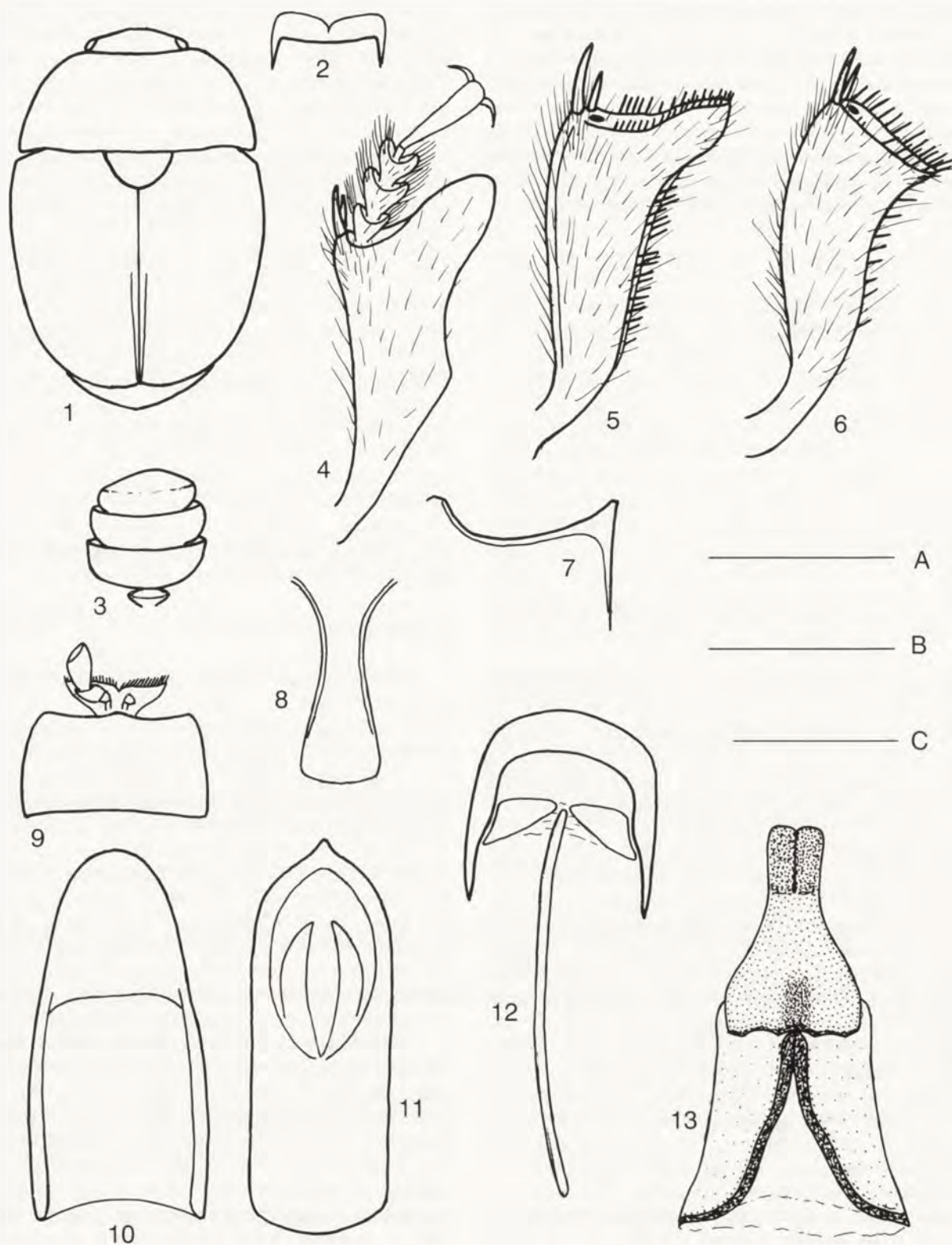
an incidental record. Likewise, the records for *Quadrifrons castaneus* (woody fungus; Blatchley 1916) and *Pseudothalycra knulli* (*Phallus*, Gasteromycetes, Phallales, Phallaceae; Howden 1961) may be incidental associations. Several specimens of *Neothalycra gigas* were collected from Aracaceae (Audisio and Kirejtshuk 1983) suggesting that this species is truly phytophagous. The strongly lobed tarsi of *Australycra*, *Pleuroneces* and *Thalycrinella* may indicate plant feeding habits, although direct observations are warranted.

Some members of the *Pocadius* complex and the *Thalycra* complex specialize on fungi with a concealed hymenium. Whether these host specializations are homologous in these groups is unknown. Most members of the possibly related *Cyllodes* complex (Kirejtshuk 1994, 1996, 1997b; Kirejtshuk and Kirk-Spriggs 1996; Leschen and Carlton 1996) feed on epigeal fungi suggesting that hypogean associations may be independently derived in the *Pocadius* and *Thalycra* complexes. Moreover, recent studies indicate that hypogean fungi have been derived several times from completely different epigeal ancestors (Bruns et al. 1989; Baura et al. 1992) making it unlikely that nitidulid associations with *Rhizopogon* and other Gasteromycetes is homologous across these taxa.

ADULT DESCRIPTIONS

Body. More or less elongate oval, rarely parallel-sided; very convex dorsally and moderately convex ventrally, dorsoventrally flattened in some genera. Surface distinctly punctured (elytral punctures dual and arranged in longitudinal rows in some genera). Vestiture of long setae present, sparsely distributed, forming longitudinal rows on dorsum in some species; pronotal and elytral margins with cilia or not (*Pocadiolyera* and *Tagmatyera*).

Head. Flattened and transverse; frons with a transverse depression between antennal insertions, poorly developed or absent in some species; frons slightly or strongly projecting, forming a small horn in *Riverodes* and *Tagmatyera*. Eyes moderately large and comprised of small facets; ocular setae present or absent. Antennal club more or less compact; 3-segmented; flattened or globular; slightly enlarged and densely covered with very small sensillae in *Pocadiolyera* and *Tagmatyera*; club very compact with paired vesicles in antennomeres 9 and 10 in *Thalycrodes* (see Kirejtshuk and Lawrence 1992) or in antennomere 9 in *Pocadionta*; length smaller than antennal scape in *Neothalycra* and *Thalycrinella*. Labrum bilobed, each lobe symmetrical; shallowly or deeply notched (notch never contacting frons); apex of lobe truncate or rounded. Mandibles moderately raised; usually with slightly projecting apices. Terminal labial palpomere elongate and narrowed at apex. Mentum transverse, triangular, or subquadrate. Antennal grooves present or poorly developed; arcuate and convergent towards midline or parallel; strong inner carina reduced or absent.



Figures 1–13. *Quadrifrons castaneus*. (1) dorsal habitus; (2) anterior portion of frons and labrum, dorsal view; (3) antennal club; (4) protibia and tarsus, dorsal view; (5) mesotibia, dorsal view; (6) metatibia, dorsal view; (7) right anterior portion of metasternum, ventral view; (8) prosternal process, ventral view; (9) mentum and ligula with palpus, ventral view; (10) tegmen, ventral view; (11) penis trunk, dorsal view; (12) anal sclerite and spiculum gastrale, ventral view; (13) ovipositor, ventral view. Scale bars: A = 2.0 mm to Fig. 1; B = 0.5 mm to Figs 2, 3, 4, 6, 7; C = 0.25 mm to Figs 8, 9, 10–13.

Dorsal surfaces. Pronotum with a marginal bead; present or absent at base and sides; lateral carina not explanate at sides (except for *Pocadionta*); anterior margin emarginate; basal margin slightly rounded or bisinuate. Elytra complete or moderately shortened with rounded apices; punctures seriate, dual or random. Epipleuron oblique or horizontal. Pygidium more or less exposed in dorsal view with rounded or subacute posterior margin; apex of male anal sclerite transverse, slightly or moderately exposed.

Ventral surfaces. Prosternal process moderately narrow (very narrow in *Quadrifrons*) or not; slightly curved apically between procoxae; projecting behind procoxae or not; apex vertically abrupt or convex; apical carina present or absent. Mesosternum behind procoxae visible in ventral view; rather excavate and subcarinate or vaulted medially. Metasternum moderately long and slightly convex; somewhat excavate in distal half, males of *Pocadiolyera* with a medial tubercle; submesocoxal line connected at middle or not; axillary space well developed or reduced; premetacoxal line parallel to metacoxal cavity or not; posterior edge more or less emarginate between coxae (somewhat straight in *Tagmalycera*).

Legs. Stout and moderately long. Tibiae usually dilated apically, with a more or less projecting outer subapical process (often modified with spines); rows of stout setae along outer edge present or absent. Tarsi simple and slightly elongate, tarsomeres 1–3 lobed or not.

Genitalia. Aedeagus flattened; tegmen with slightly projecting apical lobe, ventral plate of genital capsule divided into two parts. Ovipositor variable, styli present or absent.

Remarks. Some of the characters we include in the descriptions require explanation. In many convex Nitidulidae, especially those species that are related to *Cyllodes* Erichson, the anterior margin of the prosternal process may have an edge or marginal carina that is a posterior continuation of a marginal bead that surrounds the prosternum. We call this structure an apical carina. If present (Fig. 42), this carina offsets the apical wall (sensu Jelinek 1993) and lateral flanges of the prosternal process that may form a partial cowling behind the procoxae.

In many nitidulines, the margins of the pronota and elytra have elongate setae which we refer to as cilia.

Lines or beads associated with the margins of the coxal cavities are present on the metasternum and ventrite I which we refer to as subcoxal or precoxal lines. When these lines do not parallel or deviate from the coxal cavity we refer to this condition as convex. Note that the shape of these may actually refer to that space created by broadening of the bead which is also true of the axillary space at the anterior corners of the metasternum (Fig. 7).

In the descriptions that follow each genus, the diagnosis is a list of characteristics that are either diagnostic or phylogenetically informative while generic descriptions are detailed accounts of variation that we believe is important for recognizing morphological diversity.

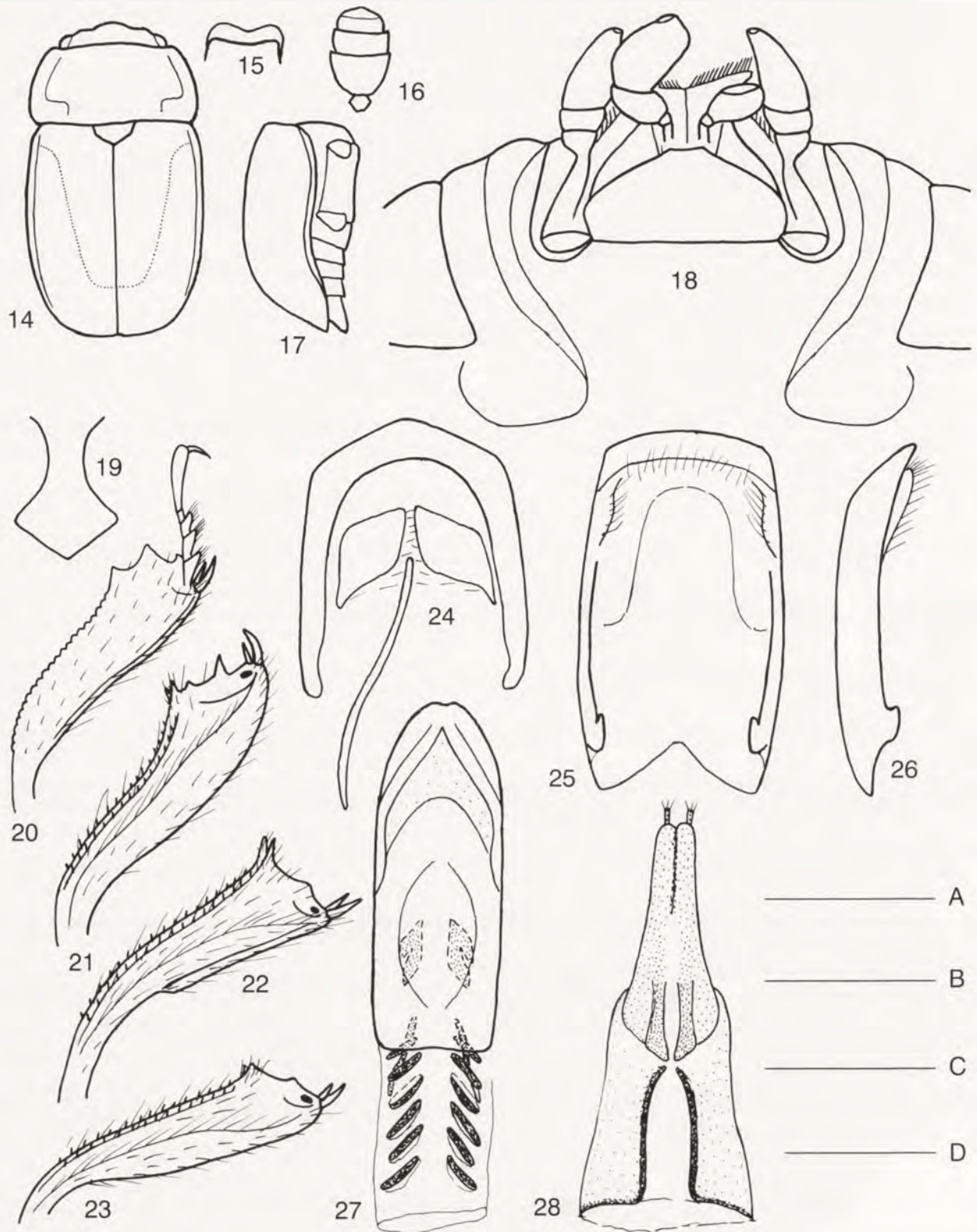
KEY TO THE GENERA OF THE *THALYCRA* COMPLEX

1. Elytra without longitudinal furrows or rows of punctures 2
- Elytra with distinct longitudinal furrows or rows of punctures (sometimes reduced) 6
- 2 (1). Antennal club not very compact, length in cross section over 3 the width; tibiae without well developed spines; New World 3
- Antennal club very compact, globular in form and length in cross section about 3× the width; tibiae with well developed spines; Holarctic 5
- 3 (2). Body very robust and convex, length of elytra equal to 2 that of prothorax; Southeastern United States 7. *Quadrifrons*
- Body more or less elongate and dorsoventrally flattened, length of elytra more than 2× that of prothorax; South America 4
- 4 3). Pronotum and elytra ciliate; Ecuador 3. *Pleuroneces*
- Pronotum and elytra aciliate; Chile 5. *Pocadionta*
- 5 (4). Pronotal and elytral cilia much shorter than half the width of tibiae; Holarctic 10. *Thalycra*
- Pronotal and elytral cilia much shorter than half the width of tibiae; western United States 6. *Pseudothalycra*
- 6 (1). Antennal club very small, length smaller than scape; Africa 7
- Antennal club larger, length larger than scape; Austral or Neotropical 8
- 7 (6). Body larger than 3.0 (3.2–10.2); anterior margin of pronotum emarginate 2. *Neothalycra*
- Body smaller (2.6–3.9); anterior margin of pronotum more or less straight 11. *Thalycrinella*
- 8 (6). Vestiture of setae on dorsum present; Australia 9
- Vestiture of setae on dorsum absent or very reduced; Neotropical 11
- 9 (8). Antennal club highly compacted, length of antennomere 9 longer than 10 and 11 combined 12. *Thalycerodes*
- Antennal club not compacted, length of antennomere 9 shorter than 10 and 11 combined 10
- 10(9). Tibiae with a rounded apex; pubescence long and erect 8. *Rixerodes*
- Tibiae with an angulate apex; pubescence uniformly decumbent 1. *Australycra*
- 11(8). Posterior margin of pronotum straight; apex of scutellum angulate; Central America 9. *Tagmalycera*
- Posterior margin of pronotum sinuate; apex of scutellum rounded; South America 4. *Pocadiolyera*

1. *AUSTRALYCRA* KIREJTSHUK AND LAWRENCE

Australycra Kirejtshuk and Lawrence, 1992: 139. Type species: *Lasiodactylus marginatus* var. *obscurus*, Blackburn, 1891: 106 (original designation). 1 species, Australia.

Diagnosis. Body shape elongate, robust and moderately convex. Dorsal surface glabrous, not rugose, densely



Figures 14–28. *Pocadiconta dentipes*. (14) dorsal habitus; (15) anterior portion of frons and labrum, dorsal view; (16) antennal club; (17) right lateral habitus; (18) ventral view of head; (19) prosternal process, ventral view; (20) male protibia and tarsus, dorsal view; (21) male mesotibia, dorsal view; (22) male metatibia, dorsal view; (23) female metatibia, dorsal view; (24) anal sclerite and spiculum gastrale, ventral view; (25) tegmen, ventral view; (26) tegmen, left lateral view; (27) penis trunk, dorsal view; (28) ovipositor, ventral view. Scale bars: A = 2.0 mm to Figs 14 and 17; B = 1.0 mm to Figs 15, 16, 18; C = 0.5 mm to Figs 20–24; D = 0.25 mm to Figs 25–28.

punctured, interspaces without microsculpture; setose, elytra with rows of decumbent setae; pronotal and elytral margin ciliate. Ocular setae present. Antennal club flattened and oval; antennomere 9 subequal to 10; length longer than scape; sensory sensillae confined to apices of antennomeres; paired vesicles absent. Frons without lobes concealing antennal insertions; transverse impression present but poorly developed; frontal horn absent. Labral lobes oblique, subrounded, and shallowly separated. Terminal palpomere of maxilla 3× as long as wide; labium 2× as long as wide. Antennal grooves represented by strong arcuate ridges behind and to side of mentum. Mentum subquadrate or subpentagonal, about 4× as wide as long. Pronotum with bead along entire margin, obliterated at middle of anterior and posterior margins; anterior corners rounded, posterior corners subangulate. Elytron with dual punctation and uniseriate, punctures and setae in rows; apex slightly truncate and subacute. Epipleuron suboblique; visible in lateral view. Prosternum without anterior horn; prosternal process about as wide as length of scape, more or less parallel-sided, projecting slightly beyond procoxae, apical carina absent. Submesocoxal line not connected at middle; axillary space poorly developed. Pre- and submetacoxal lines convex, not parallel to metacoxal cavity. Ventrites 2–5 without regularly spaced pits. Ovipositor relatively short; style subapical; gonocoxites separated, apices angulate, margin smooth. Tibiae dilated, with projecting subapical processes; outer margins without spines. Tarsomeres 1–3 dilated.

Remarks. This genus was recently treated by Kirejtshuk and Lawrence (1992) and can be recognized based on the following combination of characters: body comparatively robust, elongate oval and rather large (3.0–5.8), antennal club simple, pronotal and elytral margins ciliate, dual punctation and pubescence on the elytra, a weak sutural corner between the subacute elytral apices, intercoxal distance of procoxae subequal to that of metacoxae, and dilated tarsomeres 1–3.

2. *NEOTHALYCRA* GROUVELLE

Neothalyera Grouvelle, 1899: 299. Type species: *Neothalyera gigas* Grouvelle, 1899: 299 (subsequent designation by Audisio and Kirejtshuk, 1983: 370). 2 species, Africa.

Diagnosis. Body shape elongate, robust and moderately convex. Dorsal surface glabrous, not rugose, moderately punctured, interspaces without microsculpture; asetose, elytra without rows of decumbent setae; pronotal margin aciliate, elytral margin ciliate, with reduced setae. Ocular setae absent. Antennal club flattened and oval; antennomere 9 larger than 10; length smaller than scape; sensory sensillae confined to apices of antennomeres; paired vesicles absent. Frons without lobes concealing antennal insertions, notch present above insertion in one species; transverse impression absent; frontal horn absent. Labral lobes with obliquely truncate apices and deeply separated.

Terminal palpomere of maxilla 5 as long as wide; labium 4 as long as wide. Antennal grooves represented by strong arcuate ridges behind and to side of mentum. Mentum subpentagonal, 4× as wide as long. Pronotum with bead along entire margin, obliterated at middle of anterior and posterior margins; anterior and posterior corners rounded. Elytron with dual punctation with seriate rows of fine and distinct setae; apex truncate and slightly rounded. Epipleuron oblique; visible in lateral view. Prosternum without anterior horn; prosternal process about as wide as length of scape, slightly expanded posteriorly, projecting beyond procoxae, apical carina absent. Submesocoxal line not connected at middle (absent?); axillary space poorly developed. Premetacoxal line parallel to metacoxal cavity. Submetacoxal line parallel to metacoxal cavity. Ventrites 2–5 without regularly spaced pits. Ovipositor short; style absent; gonocoxites separated, apices crenulate, margin smooth. Tibiae dilated, with slightly projecting subapical processes; outer margins without spines; protibia with strongly projecting and stout subapical process. Tarsomeres 1–3 dilated.

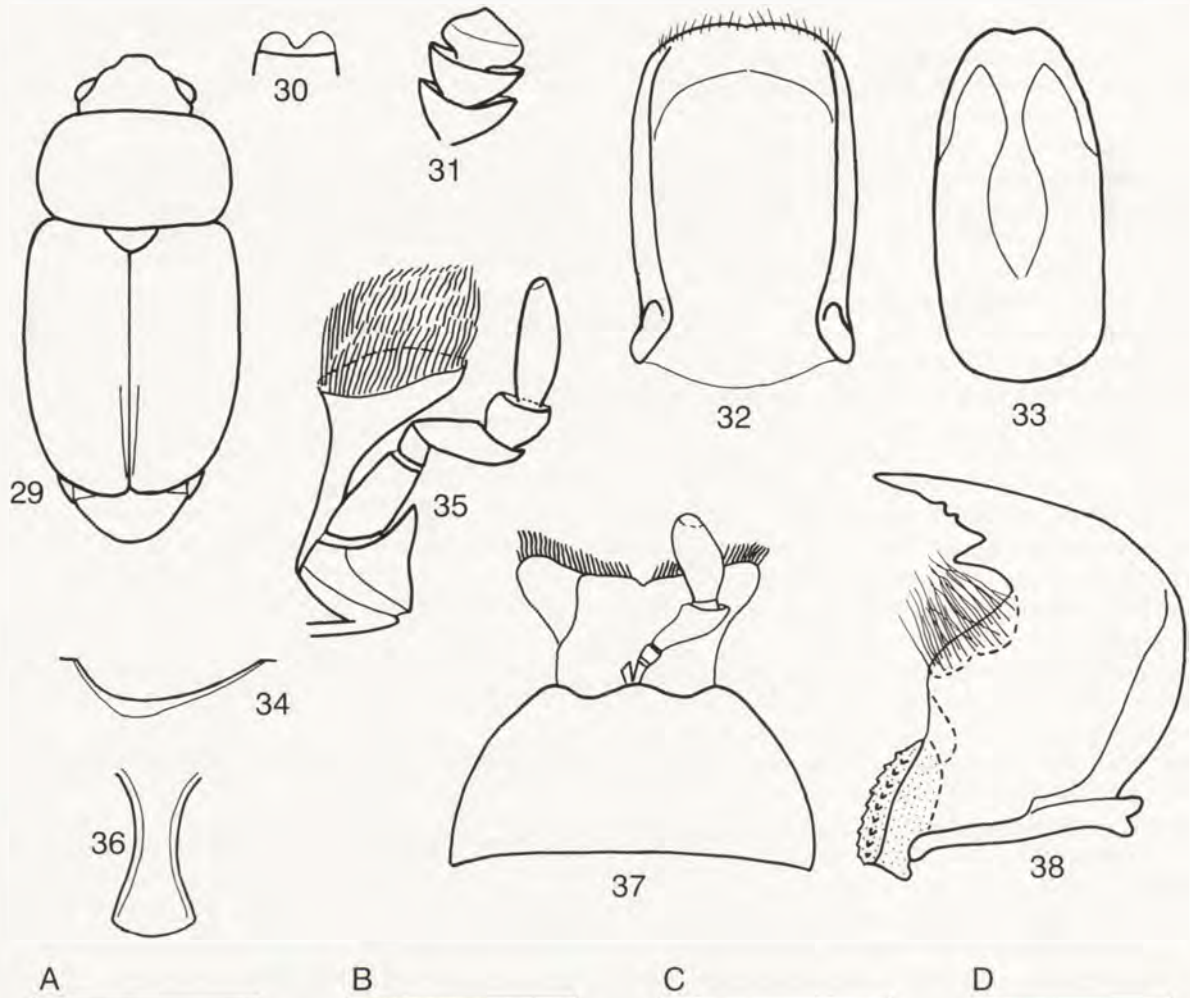
Remarks. This genus was treated by Audisio and Kirejtshuk (1983) who included the species *Neothalyera latitibialis* Audisio and Kirejtshuk and is the type species of the genus *Thalyerinella* describe below. *Neothalyera* is similar to *Thalyerinella* but differs from it by having a larger body (3.2–10.2), a smaller antennal club, labral lobes with obliquely truncate apices that are separated deeply, prosternal process subacute at apex and moderately projecting behind coxae, anterior edge of pronotum somewhat emarginate or truncate and with slightly projecting anterior corners, tarsomeres 1–3 widely lobed, elytra with separate and rounded apices, and a moderately concave elytral epipleuron. *Neothalyera* may also differ in diet (Audisio and Kirejtshuk, 1983), but hosts are unknown for *Thalyerinella*.

Plant Host. *Neothalyera gigas*: flowers of *Gonatopus boivinii* (Aracaceae).

3. *PLEURONECES* OLLIFF (Figs 29–38)

Pleuroneces Olliff, 1891: 59. Type species: *Pleuroneces montanus* Olliff, 1891: 60 (by monotypy). 1 species, Ecuador.

Diagnosis. Body shape elongate and weakly convex. Dorsal surface glabrous, not rugose, moderately punctured, interspaces microreticulated; vestiture of long decumbent setae (absent in one specimen), elytra without rows of decumbent setae; pronotal and elytral margins ciliate. Ocular setae absent. Antennal club flattened and oval; antennomere 9 equal to 10; length larger than scape; sensory sensillae confined to apices of antennomeres; paired vesicles absent. Frons without lobes concealing antennal insertions; transverse impression present; frontal horn absent. Labral lobes rounded and deeply separated. Terminal palpomeres of maxilla and labium 2.5× as long as wide. Antennal grooves reduced, represented by small ridges at side of men-



Figures 29–38. *Pleuroneces montanus*. (29) dorsal habitus (drawn from a specimen that had the pygidium distended); (30) anterior portion of frons and labrum, dorsal view; (31) antennal club; (32) tegmen, ventral view; (33) penis trunk, dorsal view; (34) left anterior portion of ventrite 1, ventral view; (35) maxilla, ventral view; (36) prosternal process, ventral view; (37) mentum and ligula with palpus, ventral view; (38) right mandible, dorsal view. Scale bars: A = 2.0 mm to Fig. 29; B = 1.0 mm to Fig. 34; C = 0.5 mm to Figs 30, 31, 36; D = 0.25 mm to Figs 32, 33, 35, 37, 38.

tum. Mentum subtrapezoidal, $2\times$ as wide as long. Pronotum with bead along entire margin; anterior and posterior corners rounded. Elytron without rows of setae; apex truncate and slightly rounded, covering pygidium. Epipleuron oblique; visible in lateral view. Prosternum without anterior horn; prosternal process about as wide as length of scape slightly expanded posteriorly, projecting beyond procoxae, apical carina absent. Submesocoxal line not connected at middle; axillary space absent. Premetacoxal line parallel to metacoxal cavity. Submetacoxal line not or slightly parallel to metacoxal cavity. Ventrites 2–5 without regularly spaced pits. Ovipositor moderately elongate with sides converging to apex; style present and subapical; gonocoxites not separated, apices rounded, margins smooth. Tibiae slightly dilated, without subapical processes; outer margins without spines. Tarsomeres 1–3 dilated.

Remarks. This genus is similar to *Pocadionta*, *Thalycra* and *Pseudothalycra* and differing from them by

the following combination of characters: body dorsoventrally compressed, antennal club flattened with antennomere 9 relatively small, tarsomeres 1–3 moderately lobed, premetacoxal line convex (deviating from metacoxal cavities). This genus is also similar to *Thalycrodes* but does not have longitudinal furrows and rows of punctures on the elytra. The single species in the genus is redescribed below. Some general comparative notes were included in the study by Grouvelle (1913).

Pleuroneces montanus Olliff, 1891: 60.

Body. Length 4.3, width 1.8, height 1.0. Moderately convex ventrally; dark brown, elytra, antennae and legs somewhat paler; shiny; dorsum with sparse, short and thin recumbent golden yellowish setae, slightly longer than distance between their insertions; pronotal and elytral sides

ciliate (setae short); underside and pygidium with more dense and longer subrecumbent setae.

Head. Head length somewhat shorter than distance between eyes, transverse depression present. Antennae as long as head width; antennomeres 2–4 subequal; length of club $\frac{2}{7}$ of total antennal length.

Dorsal surfaces. Head with distinct punctures, diameter of punctures 1.5–2.0× larger than eye facets; interspaces somewhat narrower than puncture diameter, with smooth microreticulation. Pronotal surface similar to head, but punctures more broadly separated, interspaces broader than a puncture diameter. Pronotum slightly flattened at disc and gently sloping to very narrowly explanate sides; bead of anterior margin feebly developed and of posterior margin well developed. Elytral surface with punctures as large as on head and pronotum, but more dense and with less distinct margins, interspaces smooth. Pygidium with small and indistinct punctures, interspaces with poorly developed or transversely undulate microreticulation. Elytra slightly flattened and gently sloping to sides and apices; subsutural lines visible in distal half. Pygidium with widely rounded apex.

Ventral surfaces. Microsculpture similar to pygidium; punctures well-developed on metasternal disk, interspaces between them nearly two puncture diameters, microsculpture similar to head and pronotum. Distance between mesocoxae slightly broader than that between metacoxae, more than 2 that between procoxae. Prosternal process about $\frac{3}{4}$ as wide as antennal club, slightly projecting behind coxae. Mesosternum moderately vaulted in the middle. Metasternum somewhat flattened and with feebly emarginate hind edge between metacoxae. Submesocoxal line parallel to cavity. Submetacoxal lines not parallel, arcuately deviated from edge of cavity ($\frac{1}{3}$ of length of ventrite 1). Hypopygidium with truncate apex. Epipleuron moderately elevated outwards.

Legs. Tibiae subtriangular and very stout, about as wide as antennal club, protibiae with more developed and projecting outer corner. Femora more than 1.5 times wider than tibiae. Tarsi rather wide, protarsi $\frac{2}{3}$ and meso- and metatarsi $\frac{1}{2}$ as wide as tibiae, claws simple.

Genitalia. Aedeagus (Figs 32 and 33) and ovipositor well sclerotized.

Type Material Examined. Lectotype (male, NHML), here designated: Antisanilla to Pinantura, Ecuador, 11 000 feet, Ed. Whymper, 99–179.

Additional material examined. ECUADOR (RALC): 2, Imbabura, Chachimiro, 18.Nov.1984, Leg V. Cevallos; 1, Azuay, 25 km NW Cuenca, Lago Toreadora, 3800 m, 31 Dec. 1991, C. Carlton, R. Leschen. #79, ex: puya seed pods.

Plant Host. *Puya* (Bromeliaceae) seed pods.

4. *POCADIOLYCRA KIREJTSHUK AND LESCHEN*, GEN. NOV. (Figs 39–52)

Type species. *Pocadiolykra peruensis*, new species.

Diagnosis. Body shape round, robust and convex. Dorsal surface glabrous, not rugose, moderately punctured, interspaces without microsculpture; asetose, elytra with rows of decumbent setae (these setae may be thin difficult to observe); pronotal margin aciliate, setae scarcely visible; margin ciliate, setae reduced. Ocular setae absent. Antennal club flattened and oval; antennomere 9 equal to 10; length larger than scape or flagellum; sensory sensillae evenly covering antennomeres; paired vesicles absent. Frons without lobes concealing antennal insertions, notch present above insertion; transverse impression present; frontal horn absent. Labral lobes rounded and shallowly separated. Terminal palpomeres of maxilla and labium 2× as long as wide. Antennal grooves well-developed. Mentum subpentagonal, about 2× as wide as long. Pronotum with bead along sides and anterior margins; anterior and posterior corners rounded. Elytron with dual punctation arranged serially; apex rounded. Epipleuron more or less horizontal; visible in lateral view. Prosternum with medial horn at anterior margin; prosternal process wider than length of scape, expanded posteriorly; projecting beyond procoxae, apical carina present. Submesocoxal line connected at middle behind anterior margin of axillary space; axillary space well-developed and broad. Premetacoxal line parallel to metacoxal cavity. Submetacoxal line convex, not parallel to metacoxal cavity. Ventrites 2–5 without regularly spaced pits. Ovipositor long; style absent; gonocoxites not separated, apices acute, margin with two anteriorly directed processes. Tibiae slightly dilated, with poorly developed subapical processes; outer margins without spines. Tarsomeres 1–3 dilated, metatarsus slightly dilated.

Body. Strongly convex ventrally; dorsum glabrous with distinct and large punctures, diffuse on head and pronotum, elytral punctures arranged into longitudinal rows; pronotal and elytral sides not ciliate; dorsal surface with sparse and very thin and inconspicuous setae; underside with distinct punctures, larger on ventrites and reduced on prosternum, and sparse inconspicuous pubescence.

Head. Head slightly convex; transverse impression shallow. Labral lobes moderately exposed from under frons; apices arcuate. Mandibles moderately raised. Mentum subpentagonal, transverse. Terminal labial palpomeres elongate with oblique apices. Length of antenna somewhat shorter than head width; club elongate oval, enlarged and compact, antennomeres subequal in width, length about $\frac{4}{7}$ total antennal length.

Dorsal surfaces. Pronotum evenly convex, emarginate and finely bordered at anterior edge, sides subparallel at basal half and arcuately narrowed in distal half, its base unbordered and strongly convex; sides evenly sloping to narrowly beaded margin. Scutellum with subrounded apex. Elytra with convex disc, steeply sloping to very narrowly explanate sides; apices separately rounded, forming a sutural angle; sutural lines absent. Pygidium with a very widely rounded apex in males and more narrowly in females.

Ventral surfaces. Antennal grooves distinct, rather prolonged behind mentum and arcuately convergent (with mod-

erately curved edges). The distance between mesocoxae somewhat more than 1.5× broader and that between metacoxae somewhat less than 1.5× broader than that between procoxae. Prosternum medially roof-like, with process acute at apex, not curved between coxae and moderately projecting behind. Mesosternum sharply and distinctly carinate medially. Metasternum flattened, as long as prosternum with process; angularly invaginated between metacoxae. Epipleura moderately wide; plane elevated outwards.

Legs. All tibiae subtriangular, rather narrow, somewhat widened at apices and with a developed subapical process (well developed in protibia); outer edge of meso- and metatibiae with rows of dense thin and moderately long setae. Femora 1.5–2.0× as wide as tibiae. Tarsomeres 1–3 moderately lobed in males and narrowly lobed in females; claws simple.

Genitalia. Aedeagus as in Figs 50–51. Ovipositor (Fig. 52) very long, with strongly pointed apex; styli absent.

Remarks. *Pocadiolyera* is very similar and closely related to *Tagmalyera* based on the following characters: body covered with very thin setae (that are difficult to observe) on the elytra, pygidium and ventral surfaces, antennal club with evenly-spaced sensillae, pronotal and elytral sides aciliate, and an acute ovipositor that lacks styli. *Pocadiolyera* differs from *Tagmalyera* by various characters (e.g., hind corners of pronotum distinct and with widely rounded apices and slightly projecting; elytra with more or less uniform seriate punctures with smooth and unpunctured interspaces between the rows; head with a transverse impression behind antennal insertions and with a slightly convex frons; antennal grooves arcuately convergent; prosternum medially vaulted; prosternal process with an acute apex; mesosternum distinctly carinate in the middle; metasternum about as long as prosternum). Two species are very similar in external and genitalic characteristics but can be distinguished by the key provided below.

Etymology. The name of this genus is derived from the combination of the two generic names *Pocadius* and *Thalyera*.

Key to the species of *Pocadiolyera*

1. Elytral punctures of one row with diameters smaller than eye facets between other rows of punctures with diameters slightly larger than eye facets; scarcely visible subdecumbent setae arising from smaller punctures *P. peruensis* sp. nov.
- Elytral punctures of one row with diameters equal to eye facets between other rows of punctures with diameters 2 larger than eye facets; well-developed golden subdecumbent setae arising from smaller punctures *P. guyanaensis* sp. nov.

Pocadiolyera peruensis Kirejtshuk
and Leschen, nov. sp. (Figs 39–52)

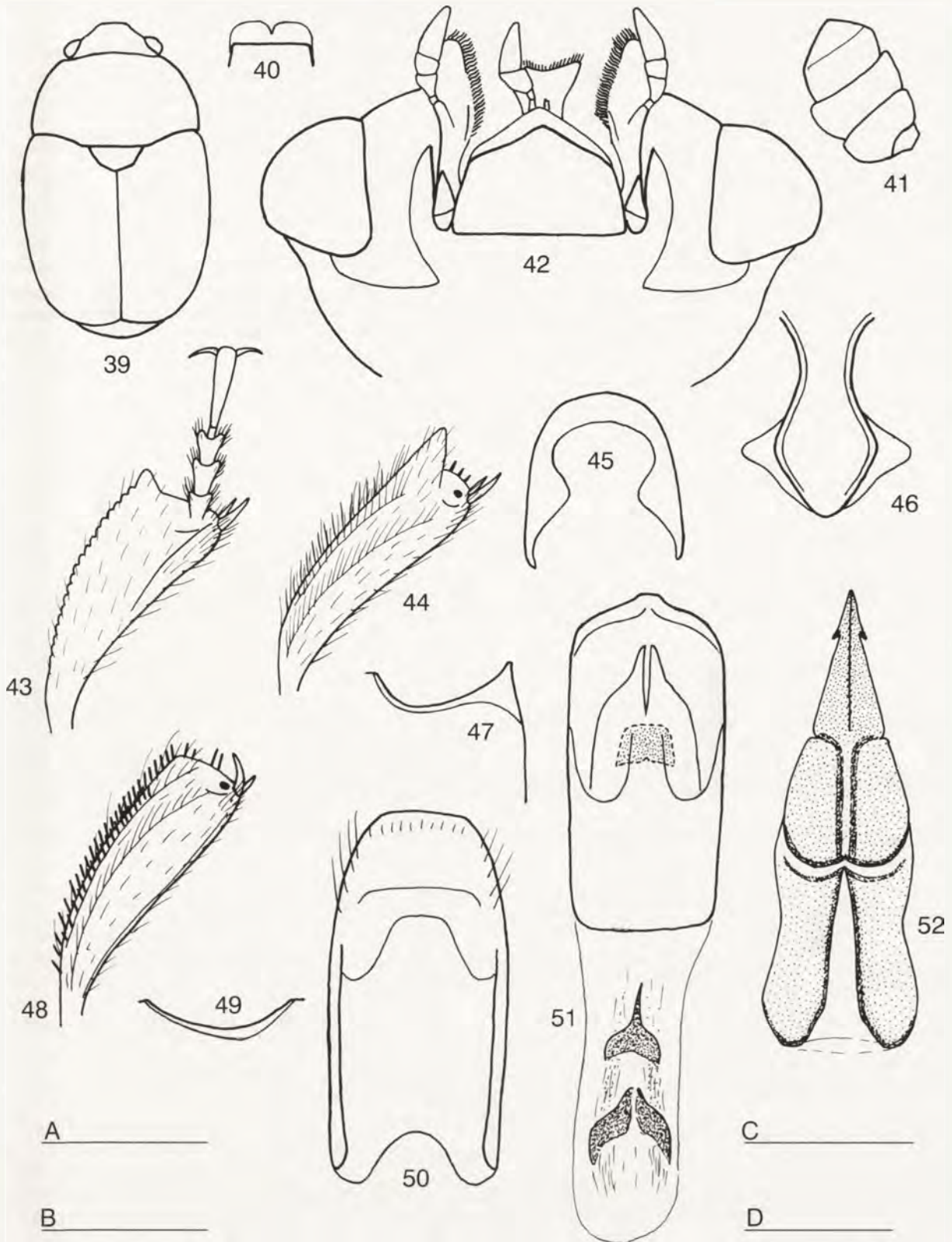
Body. Length 3.4–3.7, width 2.5, height 1.4. Oval, strongly convex dorsally and ventrally; reddish brown with

darker elytra and light antennal club and protibiae, prothorax and scutellum light brown in one specimen; dorsum nearly glabrous, although with rows of sparse, long, and scarcely visible setae on elytra, but with more dense, short, and slightly conspicuous setae on the pygidium; underside with very fine and sparse, slightly conspicuous gray setae.

Head. Length subequal to distance between eyes; eyes with small facets, slightly convex, with a shallow transverse impression on frons with a weakly emarginate anterior margin. Labral lobes moderately exposed from under frons with arcuate apices. Mandibles moderately raised. Mentum subpentagonal, transverse, twice as broad as long. Terminal labial palpomeres 2.5× as long as wide; apices oblique. Length of antennae about 3/4 as long as head width; club with segments subequal in width, strongly enlarged and compact, about 1/7 total antennal length.

Dorsal surfaces. Head surface with distinct but shallow punctures somewhat larger than eye facets; interspaces 1.0–1.5 times as broad as a puncture diameter, smooth or smoothly alutaceous. Pronotal surface with sparse small and distinct punctures, smaller than eye facets; interspaces 5–7 puncture diameters, completely smooth. Elytra with dual punctation, arranged in longitudinal rows of sparse punctures, as large as those on head and separated in rows 3–5 puncture diameters and between them a space of 5–6 puncture diameters, interspaces completely smooth; interspaces between punctures and between rows becoming narrower towards apex; rows of punctures slightly impressed in one specimen; scarcely visible subdecumbent setae arising from smaller punctures. Surface of pygidium and ventrites (except first one) with distinct and rather deep punctures, markedly larger than eye facets; interspaces between them narrower or not broader than a puncture diameter. Pronotum evenly convex, emarginate and finely bordered at fore edge, sides subparallel at basal half and arcuately narrowed in distal half, its base unbordered and strongly convex, and its sides evenly sloping to narrowly bordered edges. Scutellum pentagonal; apex subrounded. Elytra with rather convex disc, steeply sloping to extremely narrowly explanate sides and separately rounded apices, forming a sutural angle. Pygidium with a very widely rounded apex, from under which apex of anal sclerite scarcely exposed; that of female more narrowly rounded at apex.

Ventral surfaces. Antennal grooves distinct, rather prolonged behind mentum and arcuately convergent (with moderately curved edges). Surface of disc of metasternum and ventrite I with punctures, nearly as large as those on head, pygidium and ventrites; interspaces between them 1–4 puncture diameters, smooth; sides of metasternum without visible punctation and sculpture; punctures on middle of metasternum and first ventrite extremely small and sparse and interspaces between punctures of prosternum nearly smooth in one specimen. Prosternum with sparse and very reduced punctures and with coarsely alutaceous interspaces. The distance between mesocoxae somewhat more than 1.5× broader than that between



Figures 39–52. *Pocadiolyera peruensis*. (39) dorsal habitus; (40) anterior portion of frons and labrum, dorsal view; (41) antennal club; (42) ventral view of head; (43) protibia and tarsus, dorsal view; (44) metatibia, dorsal view; (45) anal sclerite, ventral view; (46) prosternal process, ventral view; (47) right anterior portion of metasternum, ventral view; (48) mesotibia, dorsal view; (49) left anterior portion of ventrite I, ventral view; (50) tegmen, ventral view; (51) penis trunk, dorsal view; (52) ovipositor, ventral view (note that the marginal spines were not drawn). Scale bars: A = 2.0 mm to Fig. 39; B = 1.0 mm to Figs 47 and 49; C = 0.5 mm to Figs 40, 41, 43, 44, 46, 48; D = 0.25 mm to Figs 42, 50–52.

metacoxae and somewhat less than $1.5\times$ broader than that between procoxae. Prosternum with acute apex, not curved between coxae, moderately projecting behind coxae. Mesosternum finely, but distinctly carinate medially. Metasternum flattened, as long as prosternum with process, rather flattened and with medial sharp tubercle; angularly invaginated between coxae; flattened or slightly convex at disc in female. Epipleuron nearly as wide as antennal club; elevated outwards.

Legs. Tibiae subtriangular, rather narrow, somewhat widened at apices and with a well-developed subapical process (strongly developed in protibiae); outer edge of meso- and metatibiae with dense rows of thin and moderately long setae. Femora $1.5\text{--}2.0\times$ as wide as tibiae. Tarsi about $2/3$ as long as tibiae, tarsomeres 1–3 moderately lobed, pro- and mesotarsi of female narrower, claws simple.

Genitalia. Aedeagus (Figs 50 and 51). Ovipositor (Fig. 52) strongly sclerotized; anal sclerite as in Fig. 49.

Remarks. This species is very similar to the other member of the genus but can be distinguished from by the characters provided in the key above.

Etymology. The name is derived from the combination of Peru and the Latin suffix *-ensis* denoting place.

Types. Holotype (male, MNHU): Tombopato Prov., 15 km NE Peurto Maldonado, Cuzco Amozónico, $12^{\circ}33'S$, $69^{\circ}03'W$, 200 m, Plot #Z2U16, 26 June 1989, J. S. Ashe, R.A.Leschen, #291. Paratypes: same data as Holotype except: (1, SEMC; 2 PNMC) 12 July 1989, #493, ex. *Favolus hexagonalis*; (2, ZIN) 13 July 1989, #486 ex., flight intercept trap; (1, SEMC) 4 July 1989, flight intercept trap; (1, RALC) 28 June, flight intercept trap.

Fungal Host. *Favolus hexagonalis* (Polyporaceae).

Pocadiolyera guyanaensis Kirejtshuk, sp. nov.

Body. Length 3.4–4.2, width 2.5, height 1.4. Same as *P. peruensis* except elytra dark or blackish; head and pronotum nearly glabrous; elytra with distinct longitudinal rows of conspicuous golden subdecumbent setae arising from small punctures; pygidium with diffuse dense and short conspicuous setae.

Remarks. This new species is very similar to *P. peruensis* in all respects and may eventually be regarded as a setose form of that species upon examination of additional specimens, especially with regard to variation in punctuation of the elytra.

Etymology. The name is derived from the combination of Guyana and the Latin suffix *-ensis* denoting place.

Types. Holotype (male, USNM): Guyana, Mazaruni-Potaro District, Takutu Mountains, $615'$, $595'W$, 10–20 December, Window trap in montane rainforest, near logging area, P.D. Perkins & W.E. Steiner. Paratypes: same data as Holotype (1 male, ZIN); French Guyana, le 16eme km route de St. Elie, $5^{\circ}17'S$ $53^{\circ}03'W$, 3,4,6,7.1995, V. Gusarov (2 females, RALC, ZIN).

5. *POCADIONTA* LUCAS (Figs 14–28)

Pocadionta Lucas, 1920: 526. Type species: *Pocadiopsis dentipes* Grouvelle, 1898: 360 (by monotypy). 1 species, Chile.

Pocadiopsis Grouvelle, 1898: 360, not Fairmaire, 1896: 17. Type species: *Pocadiopsis dentipes* Grouvelle, 1898: 360 (by monotypy). Preoccupied name in Tenebrionidae (see Lucas, 1920: 526).

Diagnosis. Body shape elongate-oval and moderately convex. Dorsal surface subglabrous, rugose, densely punctured, interspaces without microsculpture; asetose, elytra with irregular rows of decumbent setae; pronotal and elytral margins aciliate. Ocular setae absent. Antennal club flattened and oval; antennomere 9 larger than 10; length larger than scape; sensory sensillae confined to apices of antennomeres; paired vesicles present in antennomere 9, vesicles parallel-sided and extending beyond middle of antennomere. Frons with expanded lobes concealing antennal insertions; transverse impression present; frontal horn absent. Labral lobes more or less rounded and deeply separated. Terminal palpomere of maxilla $2.1\times$ as long as wide; labium about $2\times$ as long as wide. Antennal grooves distinct with well developed inner carina present beyond mentum. Mentum subquadrate, about $2\times$ as wide as long. Pronotum widely explanate with bead along entire margin, obliterated broadly at anterior margin; anterior and posterior corners angulate. Elytron with random punctation; apex rounded. Epipleuron oblique; visible in lateral view. Prosternum without anterior horn; prosternal process about $1/5$ as wide as the antennal club, expanded slightly posteriorly, projecting beyond procoxae, apical carina absent. Submesocoxal line not connected at middle; axillary space poorly developed. Premetacoxal line parallel to metacoxal cavity. Submetacoxal line parallel to metacoxal cavity. Ventrites 2–5 with regularly spaced pits. Ovipositor elongate; style present and subapical; gonocoxites not separated, apices rounded, margins smooth. Tibiae dilated, with projecting subapical processes; outer margins without spines; profibia with two projecting and subapical processes. Tarsomeres 1–3 not dilated.

Remarks. This genus is similar to *Thalyera*, *Pleuroceces* and *Pseudothalyera* and differs from all of them by the rugose dorsal surfaces, widely explanate margins of the pronotum and elytra, and regularly-spaced pits at the anterior margins of ventrites 2–5. This genus is also similar to *Thalyerodes* but does not have longitudinal furrows and rows of punctures on the elytra. The single species in the genus is redescribed below.

The pits on the ventrites resemble the ovate or round punctures present at similar locations in some of the species of the axyroid group covered by Audisio and Jelinek (1993). The pits of *Pocadionta* are filled with a wax-like substance that is easily dissolved in KOH. Small fungal spores were visible inside some of the pits.

Pocadionta dentipes (Grouvelle, 1898: 360).

Body. Length 3.4–4.1, width 1.8–2.1, height 1.0–1.2. Moderately convex ventrally; chestnut brown to dark

brown, male specimens darker than females; dark brown with paler mouthparts, antennae, pronotal sides, prescutellum, and elytral apices in some specimens, abdominal apex, and tibiae and tarsi or entire legs paler in other specimens. Dorsum somewhat shiny, with rather dense, moderately long and thin, rather conspicuous recumbent golden yellowish setae, about 2 longer than distance between their insertions; pronotal and elytral sides without well-developed cilia; underside with sparse and less conspicuous subrecumbent yellowish setae.

Head. Head $\frac{3}{4}$ as long as than distance between eyes, transverse depression present, frons slightly expanded over antennal insertions. Labral lobes moderately exposed from under frons. Mandibles moderately raised. Mentum subtriangular, width $3\times$ that of length. Terminal labial palpomere about $2\times$ as long as wide, apex oblique. Antennae somewhat shorter than width of head, antennomere 2 markedly shorter than 3 and slightly longer than 4, length of club about $\frac{1}{3}$ total antennal length.

Dorsal surfaces. Head and pronotal surface with extremely dense, irregular and distinct or punctures, punctures slightly impressed in some specimens; diameter of punctures $1.5\text{--}2.5\times$ that of eye facets; interspaces smooth or with indistinct microreticulation. Elytral surface with slightly larger and sparser punctures than those on head and pronotum, not as impressed with less distinct margins, interspaces smoothly microreticulated. Pronotum moderately vaulted at disc and gently sloping to widely explanate sides (explanate area about $\frac{2}{3}$ width of antennal club), anterior and posterior margins with poorly developed bead (appearing obliterated at middle). Elytra moderately convex and gently sloping to sides and apices; apices subacute forming a very small sutural angle; subsutural lines visible in distal fourth. Pygidium with narrowly rounded, subacute apex.

Ventral surfaces. With very sparse, small and distinct punctures, interspaces about one puncture diameter or broader, with more or less smooth microreticulation of points; disk of metasternum and ventrite 1 punctures larger (diameters larger than eye facets), interspaces $3\text{--}4\times$ puncture diameters, completely smooth. Antennal grooves distinct; ending shortly behind mentum, arcuately convergent. Prosternum indistinctly punctured, densely and finely microreticulated. Distance between mesocoxae slightly broader than that between metacoxae, more than $2\times$ broader than distance between procoxae. Prosternal process about $\frac{4}{5}$ as wide as antennal club, apex angular and projecting behind coxae. Mesosternum moderately vaulted, finely carinate in the middle. Metasternum broadly and weakly depressed at middle, feebly invaginated between metacoxae. Subcoxal lines behind meso- and metacoxal cavities parallel to coxal cavities. Hypopygidium with widely rounded apex. Epipleuron moderately elevated outwards.

Legs. Tibiae subtriangular and comparatively slender, about $\frac{3}{4}$ as wide as antennal club, protibiae with two projecting subapical teeth (or projections), meso- and metatibiae with one projection; metatibiae of male angularly curved

at middle, dilated at inside margin of curve; hypopygidium with subtruncate apex. Femora about $1.3\text{--}1.5$ wider than tibiae. Tarsi narrow with simple tarsomeres, claws simple.

Genitalia. Aedeagus moderately sclerotized; apex of penis trunk acute; armature of internal sac with paired and heavily sclerotized oblique plates that subsymmetrically disposed along the middle. Ovipositor moderately sclerotized.

Material examined. CHILE: (1, ZSM) Fdo. Malcho, Cord. Parral, Marzo 1958, M. Rivera; (1, ZIN) Coll. Oyarzun; (1, ZIN) Termas Tolhuaca, Malleco, 15-III-1986, Coll. Madariaga; (1, FMNH) 1986, L. Penā Coll., Acc. # 17-422; (6, CMN); (3, FMNH); (2, RALC); (3, ZIN) Talca Prov., Alto de Vilches, 70 km E Talca, 1300 m, 5.XII.1984-20.II.1985, FMHD #85-891, *Nothofagus*, S. Peck, P. #85-6, FIT; (1, ZIN) Termas Tolhuaca, Malleco, 15-III-1986, Coll. Madariaga, L. Penā Coll., Acc#17-422; (1, CMN) 40 km W Angol Nahuelb. Nat. Pk., 9.XII.84-17.II.85, S. & J. Peck, 12-1500 m, FITS, *Nothofagus-Araucaria* For.; (1, CMN) Cautin, 10 km S Pucon, Vol. Villarrica P., 15.XII.84-10.II.85, S. & J. Peck, FIT, 900 m, *Nothofagus gravenash*.

6. PSEUDOTHALYCRA HOWDEN

Pseudothalycra Howden, 1961: 49. Type species: *Pseudothalycra knulli* Howden, 1961: 50 (by monotypy). 1 species, southwest United States.

Diagnosis. Body shape elongate to elongate oval, robust and strongly convex. Dorsal surface moderately shining, not rugose, densely punctured, interspaces without microsculpture; vestiture of long erect setae, elytra with irregular rows of decumbent setae, pronotal and elytral margins ciliate. Ocular setae present. Antennal club spherical, oval and round; antennomere 9 larger than 10 and 11 combined; length longer than scape; sensory sensillae confined to apices of antennomeres; paired vesicles not observed. Frons without lobes concealing antennal insertions; transverse impression present; frontal horn absent. Labral lobes not deeply separated and transverse. Terminal palpomere of maxilla $2\times$ as long as wide; labium slightly longer than wide. Antennal grooves absent. Mentum transverse. Pronotum without bead; anterior corner angulate, posterior corner rounded. Elytron with random punctation; apex truncate. Epipleuron oblique; visible in lateral view. Prosternum without anterior horn; prosternal process about as wide as length of scape; slightly widened posteriorly, projecting beyond procoxae, apical carina absent. Submesocoxal line not connected at middle; axillary space absent. Premetacoxal line parallel to metacoxal cavity. Submetacoxal line parallel to metacoxal cavity. Ventrites 2-5 without regularly spaced pits. Ovipositor elongate; style present and subapical; gonocoxites widely separated, apices rounded, margin smooth. Protibia strongly dilated with strongly projecting flattened subapical spines, meso- and metatibia weakly-dilated and subapical process reduced; outer margins with large spines. Tarsomeres 1-3 not dilated.

Remarks. *Pseudothalyera* is very similar to *Thalyera* and can be distinguished from it by the presence of a more convex body (the pronotal and elytral margins are slightly visible in dorsal view), a distinctly tuberculate body surface with elongate setae arising from the base of the tubercles, and strongly divergent gonocoxites (Howden 1961). Howden (1961) noted the intermediate position of *Thalyera leechi* Howden between *Thalyera* and *Pseudothalyera* and Audisio (1993) treated *Pseudothalyera* as a questionable synonymy of *Thalyera*.

Material Examined. UNITED STATES: California, Santa Rosa M., VI-25-46, D.J. & J.N. Knull Collrs., Paratype, *Pseudothalyera knulli* H. Howden.

Fungal Host. *Phallus* (= *Ithyophallus*) *impudicus* Linnaeus (Howden 1961).

7. *QUADRIFRONS* BLATCHLEY (Figs 1–13)

Quadrifrons Blatchley, 1916: 92. Type species: *Quadrifrons castaneus* Blatchley, 1916: 92 (by monotypy). 1 species, Florida.

Diagnosis. Body shape oval, robust and convex. Dorsal surface moderately shining, rugose, densely punctured, interspaces microreticulated; vestiture of short suberect setae, elytra with irregular rows of decumbent setae, pronotal and elytral margins ciliate. Ocular setae present. Antennal club flattened, oval and round; antennomere 9 subequal to 10; length longer than scape; sensory sensillae confined to apices of antennomeres; paired vesicles absent. Frons without lobes concealing antennal insertions; transverse impression present; frontal horn absent. Labral lobes, slightly arcuate and shallowly separated. Terminal palpomere of maxilla 3 as long as wide; labium 1.5× as long as wide. Antennal grooves reduced, represented by very small ridges behind mentum. Mentum subquadrate, 3.5× as wide as long. Pronotum with weakly developed bead along entire margin; anterior corners rounded; posterior corners angulate. Elytron with random punctation; apex truncate. Epipleuron horizontal; slightly visible in dorsal view. Prosternum without medial horn at anterior margin; prosternal process very narrow, about as wide as length of scape, more or less parallel-sided, projecting beyond procoxae, apical carina present. Submesocoxal line connected at middle at level in front of axillary space; axillary space well-developed. Premetacoxal line not parallel to metacoxal cavity. Submetacoxal line parallel to metacoxal cavity. Ventrites 2–5 without regularly spaced pits. Ovipositor short; styli absent; gonocoxites not separated, apices rounded, margin smooth. Tibiae strongly dilated; outer margins without spines; protibia with strongly projecting and stout subapical process. Tarsomeres 1–3 dilated.

Remarks. This genus can be easily characterized by an oval and very robust and convex body of medium size (3.2–4.3), dorsal surfaces indistinctly and densely punctured and microreticulated and covered with suberect setae, a round antennal club with antennomere 9 subequal to 10, strongly dilated tibiae with a strongly projecting and

stout subapical process (presumably for digging), ocular setae, pronotal base without a marginal bead, a narrow prosternal process that is not curved along the procoxae, submetacoxal lines strongly deviating from edge of coxal cavities. *Quadrifrons* looks similar to some members of *Thalyera* with a similar body form and tibial structure but can be distinguished from them by the absence of tibial spines on the outer margin. The single species in *Quadrifrons* is redescribed below.

Howden (1961) believed that *Quadrifrons* was not related to *Thalyera* based on an absence of tibial spines and a labrum that is not bilobed. Our view is that the labrum is bilobed but the lobes are not deeply separated. Comparisons made between a paratype of *Quadrifrons castaneus* and the type of *Cychramus zimmermani* Horn, 1879 led Howden (1961) to synonymize these genera, although he did not synonymize the two species. We believe that Howden (1961) was misled by Horn's (1879) placement of *C. zimmermani* in the genus *Cychramus*. We examined these types and conclude that the generic synonymy is unjustified because *Quadrifrons* differs in many respects from *Cychramus* (type species: *C. luteus* Fabricius). *Quadrifrons* can be distinguished from *Cychramus* based on the following characters: body surface rugose, antennal club compact (not loosely-jointed), antennal grooves well-developed with an inner carina extending beyond level of the mentum, elytron narrowly explanate, ovipositor with elongate gonocoxites, and tibiae strongly dilated. The North American species of *Cychramus* are somewhat intermediate between the type species of *Cychramus* and *Quadrifrons* and a more detailed study of *Cychramus* is necessary to confirm placement of the United States species.

Quadrifrons castaneus Blatchley, 1916: 92

Cychramus zimmermani Horn, 1879: 319. **New synonymy.**

Body. Length 3.2–4.3, width 2.1–2.5, height 1.2–1.7. Slightly convex ventrally; dorsum, antennal club and elytron dark brown; underside, antennal flagellum and legs somewhat lighter (light brown); dorsum rugose with rather dense, short and very conspicuous suberect golden grayish setae, lengths slightly longer than distance between their insertions, elytral setae in longitudinal rows and are slightly longer than those on pronotum; pronotal and elytral sides densely ciliate with long setae; underside with denser and much longer (especially along the middle of prosternum) subrecumbent golden grayish setae.

Head. Head about 2/3 as long as distance between eyes; transverse depression shallow. Labrum scarcely exposed from under frons. Mandibles moderately raised. Mentum subquadrate, 3.5× as wide as long. Terminal labial palpomere about 1.5× as long as wide with oblique apices. Antennae somewhat shorter than head width, antennomere 2 shorter than 3 and longer than 4; length of club about 1/3 total length of antenna.

Dorsal surfaces. Head with distinct tubercles, diameter of tubercle about 1.5× larger than eye facet; interspaces somewhat longer than diameter of tubercle, with contrasting but slightly smooth microreticulation. Pronotal surface similar to head, but tubercles smaller and interspaces 2–3× as broad as a tubercle diameter. Elytral surface with very small, indistinct and sparsely distributed tubercles, interspaces with smooth microreticulation. Pygidium with very dense and indistinct small tubercles and with strong microreticulation. Pronotum relatively convex at disc and steeply sloping to very narrowly explanate sides. Elytra relatively convex and very steeply sloping to sides; apices truncate, subsutural lines slightly impressed and visible in distal half. Pygidial apex widely rounded in male and narrowly rounded in female.

Ventral surfaces. Indistinctly tuberculate with well developed microreticulation. Distance between mesocoxae and metacoxae slightly wider than that between procoxae. Prosternal process not curved along coxae; slightly wider than antennomere 2, apex subacute; slightly projecting behind coxae. Mesosternum slightly vaulted at middle. Metasternum somewhat convex and with medial excavation in distal half; posterior edge feebly invaginated between metacoxae. Submesocoxal lines deviated from outer corner of metasternum, parallel to mesocoxal cavity. Hypopygidium with subtruncate apex. Epipleuron moderately elevated outwards.

Legs. Tibiae subtriangular and very stout, with strongly projecting outer subapical process, very stout, about 1.5 times as wide as antennal club, protibia with flattened apex, meso- and metatibiae with excavate area at apex for tarsal reception. Femora more than 1.5 times wider than tibiae. Tarsi slightly dilated, claws simple.

Genitalia. Aedeagus as in Figs 11, and 12. Ovipositor moderately sclerotized and as in Fig. 13.

Remarks. Howden (1961) noted that *Quadrifrons castaneus* and *Cychramus zimmermanni* were possibly synonyms and we formalize the synonymy of these two names here. The generic synonymy of *Quadrifrons* with *Cychramus* is discussed above.

Material Examined. UNITED STATES: (3, CNC) Archibald Sta. Lk. Placid, FLA, Apr. 23, 1961, A. & H. Dietrich; (1, CNC) Gainesville, Fla., Mar. 24, 1953, H.F. Howden, sweep weeds, *Cychramus zimmermanni* Horn, HH 54, similar to *Quadrifrons castaneus* Blatch, compa. with Blatchley specimen, Feb. 1958, H. F. Howden [hand written label]; (1, CMN) Bastrop St. Pk., Tex., June 9 1954, H.F. Howden, Rotten Water-melon rind; (1, CMN) Raleigh, N.C., X.18.1952, H. & A. Howden, *Rhizopogon piceus* B and C.

Fungal Hosts. *Rhizopogon piceus*; undetermined lignicolous fungus (Blatchley 1916).

8. *RIXERODES* KIREJTSHUK AND LAWRENCE

Rixerodes Kirejtshuk and Lawrence, 1992: 136. Type species: *Rixerodes cornutus* Kirejtshuk and Lawrence, 1992: 138 (original designation). 2 species, Australia.

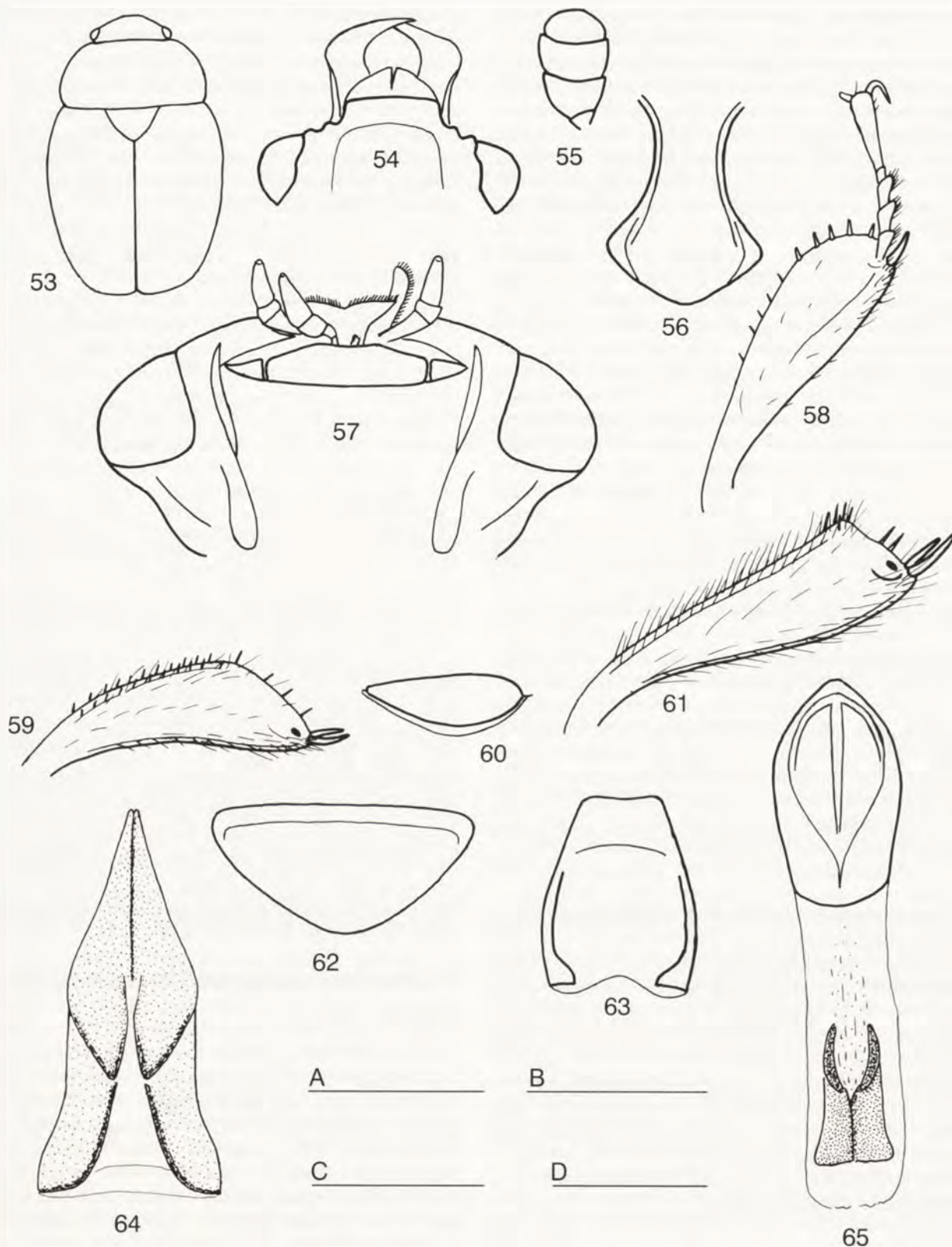
Diagnosis. Body shape elongate, robust and moderately convex. Dorsal surface glabrous, moderately densely punctured and rugose, interspaces without microsculpture; setose, elytra with rows of elongate decumbent setae; pronotal and elytral margins ciliate, setae widely separated. Ocular setae present. Antennal club flattened and oval; antennomere 9 slightly longer than 10; length larger than scape; sensory sensillae confined to apices of antennomeres; paired vesicles absent. Frons without lobes concealing antennal insertions; frontal horn present. Labral lobes transverse and not separated. Terminal palpomere of maxilla 4× as long as wide; labium 2–3× as long as wide. Antennal grooves represented by strong arcuate ridges behind and to side of mentum. Mentum subquadrate, about 6× as wide as long. Pronotum with bead along entire margin, obliterated broadly at middle of anterior margin; anterior and posterior corners rounded. Elytron with dual punctation and biseriate, punctures and setae in seriate; apex truncate. Epipleuron suboblique; visible in lateral view. Prosternum without anterior horn; prosternal process narrow, about as wide as 1/2 length of scape, greatly expanded posteriorly, projecting slightly beyond procoxae, apical carina absent. Submesocoxal line not connected at middle; axillary space well-developed. Pre- and submetacoxal lines convex, not parallel to metacoxal cavity. Ventrites 2–5 without regularly spaced pits. Ovipositor short; style subapical; gonocoxites not separated (fused in one species), apices rounded, margin smooth. Tibiae not dilated, without subapical processes; outer margins without spines. Tarsomeres 1–3 dilated.

Remarks. This genus was recently treated by Kirejtshuk and Lawrence (1992) and can be recognized based on the following combination of characters: body setose and comparatively small, elongate and weakly convex (2.0–4.2), elytra with dense punctation and longitudinal rows of long, suberect setae, tibiae relatively narrow with rounded or subrounded outer apical corners and without outer marginal spines, intercoxal distance of procoxae about 0.33× greater than that of metacoxae.

9. *TAGMALYCRA* KIREJTSHUK AND LESCHEN, GEN. NOV. (Figs 53–65)

Type species: *Tagmalycra ashei*, sp. nov.

Diagnosis. Body shape oval, robust and convex. Dorsal surface glabrous, not rugose, moderately punctured, interspaces microreticulated only on pronotum; asetose, elytra without rows of decumbent setae; pronotal and elytral margins aciliate. Ocular setae absent. Antennal club flattened and oval; antennomere 9 equal to 10; length larger than scape or equal to flagellum; sensory sensillae evenly covering antennomeres; paired vesicles absent. Frons without lobes concealing antennal insertions, notch present above insertion; transverse impression present; frontal horn present. Labral lobes converging anteriorly, shallowly separated. Terminal palpomeres of maxilla and



Figures 53–65. *Tagmatyera sualis*. (53) dorsal habitus; (54) anterior portion of male head, dorsal view; (55) antennal club; (56) prosternal process, ventral view; (57) ventral view of head; (58) protibia and tarsus, dorsal view; (59) mesotibia of male, dorsal view; (60) left anterior portion of ventrite I, ventral view; (61) metatibia, dorsal view; (62) pygidium, dorsal view; (63) tegmen, ventral view; (64) ovipositor, ventral view; (65) penis trunk, dorsal view. Scale bars: A = 2.0 mm to Fig. 53; B = 1.0 mm to Fig. 60; C = 0.5 mm to Figs 54, 55, 58, 59, 61, 62; D = 0.25 mm to Figs 56, 57, 63–65.

labium 2× as long as wide. Antennal grooves well-developed. Mentum quadrate, 3× as wide as long. Pronotum with bead at sides and anterior margins; anterior corners subangulate, posterior corners rounded. Elytron with dual punctation arranged serially; apex rounded. Epipleuron more or less horizontal; visible in lateral view. Prosternum without anterior horn; prosternal process as wide as length of scape, expanded posteriorly, projecting beyond procoxae, apical carina present. Submesocoxal line not connected at middle; axillary space well-developed. Premetacoxal line parallel to metacoxal cavity. Submetacoxal line convex, not parallel to metacoxal cavity. Ventrites 2–5 without regularly spaced pits. Ovipositor long; style absent; gonocoxites not separated, apices acute, margin smooth. Tibiae without subapical processes; meso- and metatibiae without spines on outer margins, slightly dilated; protibia not dilated with subapical row of spines. Tarsomeres 1–3 not dilated.

Body. Moderately convex ventrally; dorsum glabrous with distinct and large punctures, diffuse on head and pronotum, those on elytra dual and arranged into longitudinal rows of dense large punctures with an irregular row of slightly visible and sparse punctures; pronotal and elytral sides aciliate; underside with sparse distinct punctures, prosternum virtually apunctate.

Head. Slightly convex, with a large and deep transverse impression, convex along eye margin, frons with a small horn and subtruncate anteriorly. Labral lobes nearly transverse, moderately exposed from under frons; apices more or less truncate. Mandibles moderately raised; outer corner projecting with a pointed apex in males, not projecting with rounded apex in females. Mentum subquadrate, strongly transverse. Terminal labial palpomeres elongate with narrowed apices. Length of antennae somewhat shorter than head width; club elongate oval with arcuate sides, strongly enlarged and compact, length about $\frac{3}{7}$ total antennal length.

Dorsal surfaces. Pronotum evenly convex, transversely truncate and finely beaded at anterior edge, sides strongly curved anteriorly and posteriorly, greatest width at middle or just behind the middle, base not beaded and strongly convex, sides evenly sloping to narrowly bordered edges, hind corners widely rounded and not projecting. Scutellum subtriangular with subrounded apex. Elytra with rather convex disc, dual punctures arranged in longitudinal rows of larger punctures and raised stripe between them bearing rows of much smaller punctures, steeply sloping (partly subvertical) to narrowly explanate sides; apices separately rounded forming a sutural angle. Pygidium with widened rounded apex in males, narrowed in females.

Ventral surfaces. Antennal grooves distinct, prolonged behind mentum and slightly arcuately convergent. Distance between mesocoxae about 2× that between metacoxae, somewhat less than 2× as broad as that between procoxae. Prosternum with medially convex process, gently vaulted at middle, rounded at apex, slightly curved

along coxae and slightly projecting behind. Mesosternum rather excavate and medially vaulted. Metasternum rather convex, much longer than prosternum, posterior margin almost straight or weakly invaginated between coxae. Epipleura moderately wide, plane elevated outwards.

Legs. All tibiae subtriangular, moderately wide, widened before apices with rounded outer subapical corners; outer margin of meso- and metatibiae with dense rows of thin and moderately long setae. Femora about 1.5 times as wide as tibiae. Tarsi with tarsomeres 1–3 very narrowly lobed or almost simple, claws simple.

Genitalia. Aedeagus as in Figs 63–64. Ovipositor (Fig. 65) very long, apex pointy.

Remarks. This new genus is closely related to *Pocadiolyera* (see **Remarks** for that genus). The anterior portion of the frons in *Tagmalyera suavis* is vaulted and its medial part is distinctly depressed forming a small anterior horn similar to the condition present in species of *Rixerodes*. The sexual dimorphism of the mandibles is analogous to that in species of *Viettherchnus* Kirejtshuk, 1985 (Kirejtshuk and Kirk-Spriggs 1996).

Etymology. The name of this genus is a combination of the generic name *Thalyera* and Greek word *tagma* meaning unit.

Tagmalyera ashei Kirejtshuk and Leschen, sp. nov.

Body. Length 2.5–3.6, width 1.4–2.1, height 0.9–1.4. Dorsum glabrous; pronotal and elytral sides not ciliate; underside with sparse distinct punctures, more reduced on prosternum. Color variable: unpigmented to pigmented; unicolorous red-brown, tan and brown to brown with darker infusate elytra; venter, antennae, and legs usually paler than dorsum.

Head. Slightly convex, with transverse impression and small horn; a weak impression and less and frontal horn reduced or absent in females. Mentum subquadrate, strongly transverse, more than 4× as wide as long. Terminal labial palpomeres elongate with narrowed apices, about 2.5× as long as wide. Antennal length $\frac{4}{5}$ as long as head width; club elongate oval, about 1.5× as long as wide with arcuate sides, strongly enlarged and compact, about $\frac{3}{7}$ total antennal length.

Dorsal surfaces. Head and pronotal surface with distinct punctures larger than eye facets; interspaces with small punctures, 1.0–1.5× as broad as a puncture diameter, very smooth with indistinct microreticulation. Scutellum with uniform large punctures; interspaces less than a puncture diameter, microsculpture similar to head and pronotum. Elytra with large punctures arranged into longitudinal rows of dense punctures with a row of irregular and slightly impressed punctures; interspaces between rows of large punctures 4–6 puncture diameters, without microsculpture. Surface of pygidium with punctures, as large as those on scutellum; interspaces smaller with microsculpture. Elytron without subsutural lines. Pygidium slightly exposed in males.

Ventral surfaces. Ventrites similar to pygidium except interspaces more or less broader, lacking microsculpture; surface of first ventrite, metasternum and prosternum with sparse and very reduced punctures (especially at sides of metasternum) and with coarsely alutaceous to completely smooth interspaces. Mesosternum rather excavate and medially vaulted. Epipleuron moderately wide (about $\frac{2}{3}$ as wide at base as antennal club), elevated outwards.

Genitalia. Aedeagus as in Figs 63 and 65. Ovipositor (Fig. 65) moderately sclerotized.

Remarks. The coloration varies drastically in this species from unicolorous red-brown, tan, and brown to brown with darker infuscate elytra. The venter, antennae, and legs are usually lighter than the dorsum. Variation does not seem to match discrete differences in elevation, but all individuals from a single collection or locality are similar in color. The series of specimens from Puntarenas (Costa Rica, Rio Guancial) are tan while those from the higher elevation site in Zacapa (Guatemala, 2000 m) are red-brown. The remaining specimens are darker in color.

The specimens from Guanacaste (Costa Rica) are different from the remaining series of specimens in having a distinctly smaller body size (2.1–2.4), poorly developed secondary sexual characters, a uniformly unpigmented cuticle, more uniform punctation of the head and pronotum, and the punctate rows on the elytra are shallowly impressed. Dissections of these revealed no significant difference in the genitalia, although the shape of the tegmen is somewhat more elongate than that in other specimens. It is likely that this population may represent a lowland variation and other collections along elevation transects are necessary.

There is also minor variation in shape of the pronotum, and the definition of the punctation and microsculpture, all of which appears to be inconsistent within each locality. The outer corners of mandibles in some males are slightly projecting and resemble the condition present in females.

Etymology. Patronymic for Steve Ashe, collector of many new species (including this one) of neotropical Nitidulidae.

Types. Holotype (male, SEMC): Costa Rica, Puntarenas, Rio Guancial, 1450 m, 27 May 1989, J. Ashe, R. Brooks, R. Leschen, ex. in brown spored Agaricaceae. Paratypes: COSTA RICA: same data as holotype (8, MIFA; 1, MNHU; 11, RALC; 39, SEMC; 5 ZIN); Guanacaste, Maritza Biol. Stn., 550 m, 22 May 1993, J. & A. Ashe, #042, ex. misc. mushrooms (2, MIFA; 1, RALC; 10, SEMC; 2, ZIN); same data except flight intercept trap, #036 (1, SEMC); same data except ex *Agaricus* sp., #045 (1, SEMC). GUATEMALA: Zacapa, 20 km, N Estancia de la Virgen, 2000 m, 24.VI.1993, R. Brooks & J. Ashe, # 093, exc. on gilled mushrooms (2, GUAT; 5, SEMC; 2, ZIN); Zacapa, 3.5 km SE La Union, 1500 m, 25–27 June 1993, J. Ashe & R. Brooks, #101, ex: flight intercept trap (1, SEMC); same data except, 25–27 June 1993 (1, SEMC); Baja Verapaz, 4 km S Purulhá, 1650 m, 30 June 1993, Ashe, Brooks, #161, exc. gilled mushrooms (2, GUAT; 4, SEMC; 1, ZIN). HON-

DURAS: Olancho, La Muralla, 14 km N La Union, 1450 m, 25.VI.1994, 15°06'N, 86°42'W, J. Ashe, R. Brooks, # 205, exc. gilled mushrooms (13, SEMC; 5, ZIN); El Paraiso, 6.9 km W Yusecarán, Cerro Monserrat, 1760 m, 13°55'N, 86°24'W, 10 June 1994, J. Ashe & R. Brooks, #068, ex: gilled mushrooms (8, EAP; 30, SEMC; 5, ZIN); same data except 11–27 June 1994, no field number (5, SEMC); same data except 7–10 June 1994, #064 (2, SEMC); same data except 7 June 1994, #024 (5, SEMC).

Fungal Hosts. *Agaricus* sp. and undetermined Agaricaceae.

10. *THALYCRA* ERICHSON

Thalycra Erichson, 1843: 305. Type species: *Nitidula ferrida* Olivier, 1790: 12 (by monotypy). 18 species, Holarctic.

Perthalycra Horn, 1879: 309. Type species: *Perthalycra murrayi* Horn, 1879: 310 (by monotypy). First synonymized by Howden, 1961: 8.

Diagnosis. Body shape elongate to elongate oval, robust and moderately convex. Dorsal surface moderately shining, not rugose, moderately densely punctured, interspaces without microsculpture; vestiture of short suberect setae, elytra with irregular rows of decumbent setae, pronotal and elytral margins ciliate. Ocular setae present. Antennal club spherical, oval and round; antennomere 9 larger than 10 and 11 combined; length longer than scape; sensory sensillae confined to apices of antennomeres; paired vesicles absent. Frons without lobes concealing antennal insertions; transverse impression present; frontal horn absent. Labral lobes rounded and shallowly separated. Terminal palpomere of maxilla 2.0–2.2× as long as wide; labium 2× as long as wide. Antennal grooves absent or reduced, represented by very small ridges behind mentum. Mentum subpentagonal, about 2.0–2.5× as wide as long. Pronotum with bead along entire margin; anterior and posterior corners angulate or rounded. Elytron with random punctation; apex truncate. Epipleuron oblique; visible in lateral view. Prosternum without medial horn at anterior margin; prosternal process about as wide as length of scape; slightly widened posteriorly; projecting beyond procoxae, apical carina absent. Submesocoxal line connected at middle at level in front of axillary space; axillary space poorly developed. Premetacoxal line parallel to metacoxal cavity. Submetacoxal line parallel to metacoxal cavity. Ventrites 2–5 without regularly spaced pits. Ovipositor variable style present and subapical; gonocoxites separated or not, apices truncate, rounded, or somewhat pointed, margin smooth. Pro- and mesotibia strongly dilated with strongly projecting subapical process, metatibia less dilated and subapical process reduced; outer margins with spines. Tarsomeres 1–3 not dilated.

Remarks. This genus was treated by Howden (1961). The majority of the described species are distributed in the Nearctic while the type species is widespread in the western part of the Palearctic (Audisio 1993). *T. willmeri* Jelinek,

1982 is known from Afghanistan and Pakistan (Kirejtshuk, unpublished). *Pseudothalyera* may be closely related to *Thalyera* based on similarities among body forms (especially in the proportions of the sclerites and appendages). The genus can be diagnosed according to the characters used in the key and by a moderately convex and elongate oval body (2.8–6.0, with most specimens being 3.0–4.0) that is normally covered with setae arising from punctures and by the pronotal and elytral sides visible from above. *Thalyera* is also similar to *Thalyerodes* and *Thalyerinella*, but differs from these taxa by its randomly distributed punctation and pubescence on elytra and a round antennal club.

Fungal Hosts. *Thalyera carolina* (Wickham): *Rhizopogon nigrescens* Coker & Couch, *Rhizopogon* sp. (Howden 1961); *T. fervida* (Olivier): *Gautieria* sp. (Wrndle 1950), *Rhizopogon* sp. (Audisio 1980; Audisio 1993), *Rhizopogon rubescens* (Tul.) Tul. (Benick 1952); *T. concolor* (LeConte): *Gautieria* sp. (Fogel and Peck 1975); *T. parsoni* Howden: *Rhizopogon* sp. (Howden 1961); *T. sinuata* Howden: *Rhizopogon* sp. (Howden 1961).

11. *THALYCRINELLA* KIREJTSHUK, GEN. NOV.

Type species. *Neothalyera latitibialis* Audisio and Kirejtshuk, 1983: 373.

Diagnosis. Body shape elongate oval, robust and moderately convex. Dorsal surface glabrous, not rugose, moderately punctured, interspaces without microsculpture; asetose, elytra without rows of decumbent setae; pronotal margin aciliate, elytral margin ciliate, with reduced setae. Ocular setae absent. Antennal club flattened and oval; antennomere 9 larger than 10; length smaller than scape; sensory sensillae confined to apices of antennomeres; paired vesicles absent. Frons without lobes concealing antennal insertions, notch present above insertion in one species; transverse impression absent; frontal horn absent. Labral lobes with arcuate or rounded apices, oblique and moderately separated. Terminal palpomere of maxilla 5 as long as wide; labium 4 as long as wide. Antennal grooves represented by strong arcuate ridges behind and to side of mentum (on gena). Mentum subpentagonal, 4 as wide as long. Pronotum with bead along entire margin, obliterated at middle of anterior and posterior margins; anterior and posterior corners rounded. Elytron with dual punctation with seriate rows of fine and distinct setae; apex truncate and slightly rounded. Epipleuron oblique; visible in lateral view. Prosternum without anterior horn; prosternal process about as wide as length of scape, slightly expanded posteriorly, not projecting beyond procoxae, apical carina absent. Submesocoxal line not connected at middle (absent?); axillary space poorly developed. Premetacoxal line parallel to metacoxal cavity. Submetacoxal line parallel to metacoxal cavity. Ventrites 2–5 without regularly spaced pits. Ovipositor long; style absent; gonocoxites not separated, apices not crenulate, margin smooth. Tibiae dilated, with slightly pro-

jecting subapical processes; outer margins without spines; protibia with strongly projecting and stout subapical process. Tarsomeres 1–3 slightly dilated.

Body. Moderately convex ventrally, with a faint luster; dorsum with distinct and large punctures, diffuse on head and pronotum; elytra with 10 longitudinal rows of punctures; dorsum very finely and shortly, rather inconspicuously pubescent; pronotal and elytral sides finely and very shortly ciliate; underside with indistinct punctures, but prosternum obsoletely punctured.

Head. Head slightly convex; transverse impression present. Labral lobes moderately exposed from under frons; apices arcuate. Mandible moderately raised. Mentum subquadrangular, transverse. Terminal labial palpomere elongate; apex oblique. Antenna somewhat shorter than width of head; club oval, small and strongly compact, approximately as long as antennal scape.

Dorsal surfaces. Pronotum evenly convex and subelliptical; sides steeply sloping; bead narrow. Scutellum with rounded apex. Elytra slightly flattened at disc; steeply sloping to very narrowly explanate margin; apices truncate. Pygidium with a very widely rounded apex in males and more narrowly in females.

Ventral surfaces. Antennal grooves distinct; slightly prolonged behind mentum; arcuately convergent. Distance between coxae subequal. Prosternum with process moderately curved between coxae; and not projecting behind coxae. Mesosternum evenly vaulted medially. Metasternum flattened and somewhat longer than prosternum; angularly invaginated between coxae. Epipleura comparatively narrow, plane rather elevated outwards.

Legs. All tibiae subtriangular, very stout, strongly dilated at apices; well developed subapical process present; protibia with forked process; outer edge of meso- and metatibiae with thin and moderately long setae. Femora 1.5–2.0× as wide as tibiae. Tarsi with 1–3 tarsomeres moderately lobed, claws simple.

Genitalia. Aedeagus well sclerotized. Ovipositor very long, with simple apex, styli absent.

Remarks. This genus is very similar to *Neothalyera* and distinguishing characters were mentioned in the **Remarks** for *Neothalyera*. The single species included in the genus was described previously by Audisio and Kirejtshuk (1983).

Etymology. The name of this genus is derived from the generic name *Thalyera* in its Greek diminutive form.

12. *THALYCRODES* BLACKBURN

Thalycrodes Blackburn, 1891: 110. Type species: *Thalyera australis* Germar, 1848: 187 (subsequent designation by Kirejtshuk and Lawrence 1992:122). 9 species, Australia and New Zealand.

Diagnosis. Body shape elongate, robust and moderately flattened. Dorsal surface moderately shining, not rugose, densely punctured, interspaces without microsculpture; setose, elytra with rows of decumbent

setae; pronotal and elytral margins ciliate. Ocular setae present. Antennal club flattened and oval; antennomere 9 longer than 10 and 11 combined; length larger than scape; sensory sensillae confined to apices of antennomeres; paired vesicles present. Frons without lobes concealing antennal insertions, notch present above insertion; transverse impression present; frontal horn absent. Labral lobes rounded and shallowly separated. Terminal palpomere of maxilla 2.5× as long as wide; labium 1.2× as long as wide. Antennal grooves represented by strong arcuate ridges behind and to side of mentum. Mentum subpentagonal, about 2.5–3.0× as wide as long. Pronotum with bead along entire margin; anterior and posterior corners angulate or subangulate. Elytron with dual punctation and biseriata, punctures and setae in seriate rows; apex rounded. Epipleuron oblique; visible in lateral view. Prosternum without anterior horn; prosternal process about slightly wider than length of scape, slightly expanded posteriorly, projecting beyond procoxae, apical carina absent. Submesocoxal line connected at middle; axillary space well-developed. Pre- and submetacoxal lines convex, not parallel to metacoxal cavity. Ventrites 2–5 without regularly spaced pits. Ovipositor long; style subapical; gonocoxites not separated, apices more or less rounded, margin smooth. Tibiae dilated, with projecting subapical processes; outer margins of meso- and metatibiae with spines; protibia with strongly projecting and stout subapical processes. Tarsomeres 1–3 slightly dilated.

Remarks. This genus was recently treated by Kirejtshuk and Lawrence (1992). The species of this genus are of medium size (2.3–4.2) and are similar to those of *Thalycera*; and the genus may be closely related to *Pocadionta* and *Pseudothalycera*. *Thalycerodes* differs from these taxa by having distinct rows of furrows and punctures on the elytra and can be characterized by a highly compact antennal club with internal sensory vesicles opening between the antennomeres, tibiae with a strongly projecting subapical process that is usually forked, and a medial setiferous fovea on the male prosternum.

This genus was first reported in New Zealand by Kuschel (1990) who listed the species *Thalycera australis* from Lynfield, Auckland based on a single specimen. Additional localities for this introduced species (listed below) suggest that it is widespread in the North Island and present in the northern portion of the South Island.

Material Examined. NEW ZEALAND: AK, Orewa, 21 Mar 1982, S. Thorpe, to light (NZAC); BP, Ruatahuna, Mimiha campground, 14 Dec 1994, R. M. Emberson, P. Syrett, on car and tent (LUNZ); NN, Bullivants I, Mapua Estuary, Dec 1987, A. K. Walker, Malaise trap in coastal scrub (NZAC); TO, Rangitaiki SF, J. Hutcheson, 28 Nov 1985, ex malaise trap, *Dracophyllum subulatum* frost flat (2, FRNZ); 1 same, except 21 Nov 1985 (FRNZ); TO, Kaingaroa, Malaise trap, J. Hutcheson, 23 Dec 1994, 1KGA3, 14 yr., *P. radiata*/bracken-lotus cmpt 368; same but 30 Dec 1994 (FRNZ).

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