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A Revision of the World Species of the Tribe *Aegialiini*
(*Coleoptera*, *Scarabaeidae*, *Aphodiinae*)

(Pp. 397—506, pl. XXIII, 159 text-figs.)

Rewizja światowych gatunków plemienia *Aegialiini*
(*Coleoptera*, *Scarabaeidae*, *Aphodiinae*) *

Abstract: The present paper contains a review of the species of the tribe *Aegialiini* of the world. Notes on morphology, taxonomy, bionomy and distribution are added. Four species are described as new. Several taxa are synonymized or their status is lowered as no constant differences were found among them or the distinguishing characters proved insufficient. The phylogeny of several groups of species is explained on the ground of their supposed historical interrelation, present distribution and structure of female genitalia. The characters of female genitalia have not been utilised to date, however, they are of taxonomical importance.

INTRODUCTION

This paper presents a first revision of the world species of the tribe *Aegialiini*. The work has been accomplished in the Institute of Systematic and Experimental Zoology of the Polish Academy of Sciences in Kraków, basing on collections of selected museums of the world, private collections, as well as author's own materials and observations. The systematic part of the paper contains identification keys and definitions of individual taxons, including redescriptions of 41 species and descriptions of 4 new species with illustrations of their morphological features. The systematic revision has been performed on the base of 86 investigated holotypes and paratypes, 1810 other specimens and the existing literature. In cases, when the localization of holotypes was impossible to determine, or author had no opportunity to verify them, appropriate references from the literature were employed and the original descriptions and comments cited.

* Praca wykonana w ramach problemu MR. II. 3.

Apart from the definitions of individual taxons, the relevant references from systematic literature, significant titles from faunistic literature, bionomical and distributional data, as well as author's own comments and the localities of investigated individuals have been given; the latter have been arranged according to their geographical localization. All localities of a given species mentioned in the text (including the localities taken from the cited literature) have been marked on schematic distributional maps. The names of sites of localities have been determined in the English transliteration basing on the following atlases: The World Atlas, Moscow 1967; Rand McNALLY Road Atlas, United States-Canada-Mexico, 1972; ANDREES Hand-Atlas, Bielefeld-Leipzig 1937. The systematic classification has been determined on ground of the analysis of external and internal morphology of the species, among others concerning the morphology of female copulatory organs, which is regarded as an useful criterion not only as far as taxonomy is concerned, but also for phylogenetic considerations, presented in a separate chapter of this work.

The collections from the following museums and private sources have been discussed and employed for the investigations (the abbreviations given below will be used consequently throughout the text):

- AMNH — American Museum of Natural History, New York (Lee H. HERMAN, Jr)
- BMNH — British Museum of Natural History, London
- CAS — California Academy of Sciences, San Francisco (D. H. KAVANAUGH)
- CK — Collection of Mr G. KABAKOV, Leningrad (G. KABAKOV)
- CNC — Canadian National Collection, Dep. of Agriculture, Ottawa (J. Mc NAMARA)
- EIHU — Entomological Institute, Hokkaido University, Sapporo (S. TAKAGI)
- FMNH — Field Museum of Natural History, Chicago Ill. (H. DYBAS, L. BERNARD)
- HMNH — Hungarian Museum of Natural History, Budapest (S. ENDRÖDI)
- IML — Instituto „Miguel LILLO”, Rio de Janeiro
- ISEZ — Institute of Systematic and Experimental Zoology, Polish Academy of Science, Kraków
- MBR — Museo Argentino de Ciencias Naturales „Bernardino RIVADAVIA”, Buenos Aires
- MCZ — Museum of Comparative Zoology, Cambridge, Mass. (M. K. THAYER)
- MGF — Museum G. FREY, Tützing bei München
- MHNB — Muséum d'Histoire Naturelle, Bâle (M. WITTMER)
- MHNG — Muséum d'Histoire Naturelle, Genève (I. LÖBL)
- MNHN — Muséum National d'Histoire Naturelle, Paris (A. DESCARPENTRIES)
- NMP — National Museum in Prague, Dep. of Entomology (J. JELÍNEK)
- NR — Naturhistoriska Riksmuseet, Stockholm (I. PERSSON)
- OSU — Oregon State University, Corvallis, Ore. (J. D. LATTIN)
- SAM — South Australian Museum, Adelaide (E. G. MATTHEWS)
- ZIL — Zoological Institute, U.S.S.R. Academy of Science, Leningrad (O. L. KRYZHANOVSKIJ)
- ZIW — Zoological Institute, Polish Academy of Science, Warszawa (R. BIELAWSKI)
- ZMC — Zoological Museum, Copenhagen
- ZMH — Zoological Museum, Helsinki (H. SILFVERBERG)
- ZMK — Zoological Museum, Kiel
- ZMHU — Zoologisches Museum an der Humboldt Universität, Berlin (F. HIEKE)

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HISTORICAL ACCOUNT OF THE GROUP

Similarly to many other representatives of the animal world, first three species of *Aegialiini*, that inaugurated the systematic history of the group, were described in 18th century by European precursors of systematics under the names: *Scarabaeus arenarius* FABRICIUS, 1787; *Scarabaeus rufus* FABRICIUS, 1792; *Scarabaeus sabuleti* PANZER, 1797. All the above species live in Europe, and the broad literature concerning them contains numerous transformations of their generic nomenclature. In 1798 ILLIGER transferred *S. sabuleti* PANZ. to the genus *Aphodius*, which he had earlier introduced. Later, FABRICIUS (1801) included both remaining species to the same genus. Genus *Aegialia* was established by LATREILLE (1807), for the species *Scarabaeus globosus* KUGELANN (1794), a lone synonym of the previously described *S. arenarius* FABR. That generic name, however, has not been recognized for a long time, and numerous authors included three mentioned species to various genera: e.i. GYLLENHAL (1808) placed *arenarius* and *sabuleti* in the genus *Psammodius* HEER, similarly to ESCHSCHOLTZ (1822) who described the first Nearctic species of *Aegialiini*, *Psammodius cylindricus*, placing it in the same genus, where it remained until MANNERHEIM (1843) transferred it to the genus *Oxyomus* STEPH. It was ERICHSON (1848), who restituted LATREILLE's generic name, which was accepted subsequently by American investigators, and consistently used for new, successively described species, such as *Aegialia lacustris* LE CONTE (1850), *A. crassa* LEC. (1857), *A. conferta* HORN (1871), etc. *Aegialia* was also accepted as a generic name in the first monographic work of HORN (1887), and included all new Nearctic species as well as those already known at that time. At the same time, in the European literature new generic names appeared again: THOMSON (1863) introduced a generic name *Psammoporus* for the species *sabuleti* PANZ., which was later regarded as a synonym of *Aegialia* LATR. BEDEL (1911) transferred *S. rufus* FABR. from the genus *Aphodius* ILL., to a new, monotypic genus *Rhysothorax*, reinstating the name *Psammoporus* THOMS. for the species *sabuleti* PANZ. Thus, in Europe the genus *Aegialia* LATR. sensu ERICHSON (1848) et auct. seque. was divided into three genera: Holarctic *Aegialia* LATR. and European monotypic *Psammoporus* THOMS. and *Rhysothorax* BED. The name *Psammoporus* has been also used in recent years among others by PETROVITZ (1961, 1963, 1968) and NIKRITIN (1975) in descriptions of the new Asian species. In

1931 appeared a monograph of Nearctic *Aegialiini* revised by BROWN. It contained identification keys and descriptions of 17 species, including 6 previously unknown in science. BROWN separated two subspecies, introduced a new genus *Micraegialia* for *A. pusilla* HORN (described earlier), and established subgenera within *Aegialia* LATR. He retained the name *Psammoporus* for one of the subgenera and introduced three new names: *Leptaegialia*, *Anomalaegialia* and *Aegialia* sensu stricto. Since BROWN's monography, four new species have been described on the American continent: *A. convexa* FALL (1932), *A. browni* SAYLOR (1934), *A. argentina* MARTINEZ, PEREIRA, VULCANO (1970) and one monotypic genus *Annegialia* HOWDEN (1971). One of the greatest achievements of the American investigators of this group, was the study on the biology of three Nearctic species: *A. blanchardi* HORN, *A. lacustris* LEC. and *A. browni* SAYLOR, (JERATH, 1960; RITCHER, 1966; CORNELL, 1967). Careful examination of larval morphology, ignored in the earlier literature, permitted to find a close relationship between the investigated group and the species of subfamily *Aphodiinae*. Similarities existing between the larvae of *Aegialia* and „other *Aphodiinae*” were formulated by JERATH (1960) in form of eight arguments supporting his view, that *Aegialiini* regarded by taxonomists as a separate subfamily should be included to *Aphodiinae* as a tribe. Earlier cytological studies of VIRKKI (1951) on some species of the group *Scarabaeidae laparosticti* showed, that groups *Aphodiini* and *Aegialiini* possess the same features as far as cytological tests and spermatogenesis are concerned, but they fundamentally differ in that respect from other investigated *Scarabaeidae*.

The Middle-Asian and North-African genus *Eremazus* was established in 19th century by MULSANT (1851) for the species *unistriatus* MULS. Subsequently, under the generic name *Aegialia* were described *E. punctatus* (HAROLD, 1869) and *E. marmottani* (FAIRMAIRE, 1870). Synonimizing the species known at that time SHARP (1875) introduced for them two new genera: *Tolisus* and *Millingenia*. In 1897 CLOUËT made the first (and the last as yet) revision of the genus *Eremazus*, which contained the explanation of synonymies, descriptions, as well as identification key for five species including a new one, *E. sefrensis* CLOUËT. The last species of that genus, *E. cloueti* SEMENOV et MEDVEDEV (1938), according to the results of the present revision, has turned out to be another synonym of *E. unistriatus* MULS.

The remaining representatives of the genus *Aegialia* LATR. are mainly Asian species: *A. nitida* WATERH., *A. hybrida* REITT., *A. kamtschatica* MOTSCH., and *A. comis* (LEWIS) (*Psammodius*), described in the previous century from Eastern Siberia and Japan; description of two more species, Siberian *A. friebi* (BALTHASAR, 1935) and Mongolian *A. abdita* (NIKITIN, 1975) has made a significant contribution to the knowledge about fauna of Asian *Aegialiini*.

The Himalayan species form an interesting group, only recently recognized. First of them, *Silluvia elongata* was described by LANDIN (1949) and placed in a separate subfamily *Silluviinae*, without justification in that case. Later, in his critical review of BALTHASAR's monography (1963, 1964), LANDIN (1965)

admitted that the genus *Silluvia* should be included to the *Aphodius* — *Aegialia* system, but basing on other principles than BALTHASAR'S (1964), who groundlessly recognized *S. elongata* as the synonym of *Caelius denticollis* LEWIS. In fact, *S. elongata* is a typical representative of the Himalayan group of *Aegialiini*, and the next species of that group (*A. himalayana*, *A. wassuensis*) were described by PETROVITZ (1963, 1968) and STEBNICKA, 1977 (*A. gogona*, *A. petrovitzi*).

The last, monotypic genus *Saprus* from Tasmania, described by BLACKBURN (1904) has not been revised for last 70 years, and has occupied a rather unclear systematic position, as yet.

Actually existing collections of *Aegialiini* are rather scarce and scattered over the museums of the world. Most of the specimen dating from 18th and 19th century is accompanied by some very sketchy and incomplete data concerning the sites of their collection, which makes the determination of their localities on the distributional maps extremely difficult, moreover, the informations about their environment are also rare. On the other hand, author was unable to examine all collections and it can not be excluded that in some museums there are the lacking links, integrating closer the fauna of the investigated group. Nevertheless, the compilation of all data available to author has allowed to present — partially, at least — the picture of today fauna of *Aegialiini*.

MORPHOLOGY

A fundamental feature, which distinguishes species of *Aegialiini* from other *Aphodiinae*, is a shortened clypeus exposing mouth organs. The feature is in fact the only, which determines a taxonomic status of *Aegialiini* as one of the tribes of *Aphodiinae*, since there are many overlapping features among various groups of that subfamily. Another feature typical for *Aegialiini* are toothed, strongly sclerotized mandibulae, well adapted to crushing hard organic materials that serve as a food. The morphology of remaining parts of the body, such as general shape and the structure of pronotum, elytra, wings, legs and male copulatory organs is generally similar to other tribes of *Aphodiinae*.

The beetles belonging to *Aegialiini* are ovaly shaped or elongated, sometimes slightly flattened, with the length of the body in the range of 1.8—8.8 mm. The upper part of body is naked or partially piliferous. Coloration: yellowish-brown, reddish-brown, brown, brownish-black or black. The head is flat or slightly convex, wide, with the surface granulated or punctated and sometimes with marked frontal suture — slightly indented or protruded. Eyes are small, mostly invisible. Antennae consist of 9 segments. The last segment of maxillary palpus mostly cylindrical, in some species can be extended in the middle part and covered with clearly visible, fine hair. A moderately convex pronotum has in its middle part the length of about 1/2 or 1/3 of the elytra length; pronotal surface is variously punctated, on its sides oval or rounded fovea can be frequently observed; the recesses on the whole pronotal surface are, however, very rare. The base

of pronotum with or without marginal line, sides always margined, mostly distinctly crenated, anterior angles predominantly are sharp and elongated, whereas posterior ones are well rounded or obtuse, occasionally indented on the sides of the base. Oval or elongated elytra cover almost whole pigidium, their surface is smooth, only occasionally longitudinally carinated, with 10 punctated striae and intervals as an almost constant feature. In most species humeri show the presence of more or less developed humeral denticles. The wings are mostly well developed and capable of flying, although some species such as *Aegialia arenaria* (FABR.) are brachypterice with very limited flying capabilities — it seems, however, that *Aegialiini* fly rather reluctantly. The legs are slender or robust, anterior tibiae possess two to five lateral teeth and an apical spur, a toothed ledge occurs occasionally on the bottom side of tibiae. Middle tibiae are mostly slender, slightly widened at the ends, with slender and sharp or obtuse apical spurs. Posterior tibiae are slender and elongated or short and robust, hairy in most cases, sometimes possessing setae at apex, with a more or less pronounced transverse ridges or denticles, and with slender and sharp or foliaceous and obtuse apical spurs. The tarsi can be long or short, with cylindrical or triangular tarsal segments and with faint claws. Metasternum is mostly flat, smooth or punctated, with more or less pronounced, indented or protruded longitudinal midline. Abdomen consists of 6 segments, has variable structure and variable morphology of sternites. The external features of sexual dimorphism include the shape of apical spurs of anterior tibiae, structure of pronotum, pigidium and the last sternite of abdomen — all those features are considered in the systematic part of this work, where definitions of individual species are discussed.

If compared, the morphology of copulatory organs in subtribes *Aegialiina* and *Eremazina* is different and demands separate description. The structure of aedeagus in male of *Aegialiina* is similar to other *Aphodiinae*: it is more or less sclerotized with symmetrical parameres, occasionally (e.i. in species of *Silluvia* subgenus) very fine hair occur on pars proximalis. The shape of aedeagus as well as apical parts of parameres are mostly quite similar, and frequently the differences between individual species are almost indistinguishable. In representatives of the subgenus *Psammoporus* THOMS. or *Aegialia* s. str. minimal differences in the external morphology and in the structure of aedeagus as well as considerable individual variability make identification of species very difficult. Fortunately, the microscopic examination of the female copulatory organs morphology allowed to find distinct differences between the species. The female copulatory organ has a membranous character, and can be easily damaged. It consists of two very poorly sclerotized elements: a tubular, porous spermatheca and the valves with symmetrical styli attached to the sides of valves and localized on the ventral part of the abdomen. The differences in the morphology and structure of spermatheca are hardly visible, whereas the shape and, quite often, chetotaxy of styli are individual and constant for each species. Most of the species belonging to subgenus *Psammoporus* THOMS. possess very weakly chitinized, rudimentary and small styli, with a single quite smooth and thick

seta, or several shorter setae. Similar rudimentary short styli occur in only one species of the subgenus *Aegialia* s. str.: in *A. conferta* HORN; rest of the species of *Aegialia* s. str., as well as other subgenera of *Aegialiina* are characterized by rather large, leaf-shaped styli overgrown at the dorsal side with longer or shorter smooth setae, often possessing a cup-shaped base. Since those setae are extremely delicate and fragile, they are only occasionally found intact — even damaged, however, they leave in their places characteristic spots. The proper removal of the copulatory organs depends on the precise dissection of muscles connecting bursa copulatrix with pigidium. Individual subgeneric groups show some differences in the morphology of the female copulatory organs, e.g. in species of the subgenus *Leptaegialia* BROWN, where is a single semicircular plate connecting both styli instead of a pair of valves (which can be observed in *Psammoporus* THOMS., or *Silluvia* LAND.).

The species of the subtribus *Eremazina* have different morphology of copulatory organs. In both sexes flattened pigidium forms at the tergal side of the abdomen a plate accreted at sides with the ventral plate localized inside the last sternite; the ventral plate is probably an additional, sixth sternite and its localization may play a thermoregulatory role. Those elements form a ring surrounding the copulatory apparatus, accompanied by two styli which in males of different species have very similar shape. On the other hand, aedeagi considerably differ in their structure from species to species. Pars proximalis is poorly sclerotized in contrast to pars intermedia which is a strong sclerite covered at the base of parameres with smooth setae. Parameres are well sclerotized and possess distinct features, useful for the identification of the species. The female copulatory apparatus consist of a ring similar to that described in males, membranous bursa copulatrix, spermatheca and a pair of elongated styli covered with very numerous feathery setae. The styli of individual species have similar shapes and chaetotaxy.

In young individuals of *Aegialiina* additional sclerites, thinner than skeleton chitinous may occur between lateral teeth of anterior tibiae, at the top of tibiae and the terminal parts of apical spurs, which can bring about changes in the proper shape of the leg. In older individuals those sclerites are damaged, in very old ones they are worn away and lose their features characteristic for a given species.

It should be mentioned, that the investigations on the morphology of the female copulatory organs have not been reviewed on such scale previously, they are, however, far from being complete, possessing rather a preliminary character at the moment. The females of a few species are unknown yet, or have not been examined because of their absence in the investigated material.

ZOOGEOGRAPHY AND PHYLOGENY

Aegialiini possess features of the typically Holarctic tribe — its representatives populate zones of subarctic and temperate climates in four regions. The major part of species inhabit Palearctica (22 species) and Nearctica (20 species)

in the north transcending the polar circle, in the south reaching about the 32° of the northern latitude, in the mountains they can be found up to 4000 m over the sea level. The Neotropical (Patagonia) and Australian (Tasmania) regions are populated by only two different species occurring in a zone between 30° and 45° of the southern latitude. Subtribus *Aegialiina* populates mainly north-eastern outskirts of Palearctica, reaching the southern ranges of Himalayas in the south and approximately Eastern Sajan in the west. There is a considerable disjunction between the Eastern Sajan and the Ural Mountains, which separates Asian from European species, the latter (three species) populate a subarctic and temperate zone of the Northern and Middle Europe, reaching Ural Mountains in the east. Subtribus *Eremazina* exists exclusively in Palearctica, populating the open terrains of the Middle and South-Western Asia as well as the North Africa, approximately between 30° and 45° of the northern latitude. Nearctic species of *Aegialiina* populate mainly eastern and western part of the region with a visible disjunction on the grassy terrains in the middle part of the continent.

A partial answer for a question of when and how individual groups of closely related species or species arising from the same ancestors have originated can be found in the analysis of their current distribution as well as of the time and way of crossing the intercontinental barriers.

Early differentiation of *Scarabaeidae* is little known at the moment; scarce paleontological materials dating mostly from Tertiary (Oligocene, Miocene, Pliocene) have provided the ground for assumption, that the group is young and its development occurred in the lower Tertiary (BALTHASAR, 1956, 1963). The most important fossil finding described by GRABAU (1923) and revised by PING (1928), *Pteroscarabaeus yeni* GRABAU belongs to the late Cretaceous forms (Shantung) and is an easily recognizable representative of *Lamellicornia* [(*Geotrupinae* or *Coprinae*), CROWSON, 1955; LANDIN, 1960]. It seems therefore, that the idioadaptation process of proper *Scarabaeidae* took place in lower Cretaceous (LANDIN, 1960), or in upper Jura. The lack fossils from those periods can be explained by the conditions of soil environments where early forms of *Scarabaeoidea* were living, unfavourable to preservation of fossils, in contrast to the situation of other families of beetles, known from more numerous Mesozoic fossils. According to BALTHASAR (1963) the genus *Aegialia* was found in sediments from Oligocene (U.S.A., Wyoming, Green River). Thus, if *Aegialiini* existed as early as in Tertiary, they must be the historically oldest part of the present fauna and in some regions they have existed incessantly since that period.

The hypothesis presented below is based on the geographical distribution, ecology and morphology of the closely related groups of species. The subtribus *Aegialiina* populates tundra, mountain regions and regions of deciduous and mixed forests of the temperate climate; the subtribus *Eremazina* lives on deserts and semi-deserts of the South-Western Asia and Northern Africa. There are very scarce informations concerning the ecology of the few species of the latter subtribus, which makes longer discussion unjustified. On the other hand, the analysis of ecological adaptations and dispersion mechanism of *Aegialiina* leads to

the following conclusions: all or almost all species of *Aegialiina* are littoral, frigidophilic, and live on sandy coasts of seas and oceans, as well as on the banks of inland waters, including cold mountain brooks. They disperse mainly by passive transport, transferred by the water together with ex-river debris, forest bedding and waterside flora. The possibilities of such dispersion were discussed — among others — by DARLINGTON (1938), who called it „over-water dispersal”. On the ground of zoogeography of *Aegialiina* four separate regions, devoid of common species (except introduced individuals) can be distinguished: Palearctic, Nearctic, Neotropical and Australian. It can be supposed, that the migration occurred and ended a long time ago, since e.g. groups of local species, related to hypothetical migrants appeared in Palearctic and Nearctic. According to a generally accepted theory, North-Eastern Asia was the main centre of the speciation of Holarctic species, with the Bering landbridge serving as the way of most intensive exchange west-east and vice versa (MAYR, 1946; SIMPSON, 1947; LINDROTH, 1957; DARLINGTON, 1957; DE LATTIN, 1967; UDVARDY, 1969). It is difficult to determine the evolution centre of Holarctic *Aegialiini*; in case of Nearctic species their large number might justify the supposition, that the centre of speciation was localized on the American continent, and the landbridge connecting it with Asia made the dispersal of species in Palearctic possible. The Tertiary distribution of *Aegialiina* was without doubt much more widespread than the present one, the ecological adaptations of that group of species can suggest, that its ancestors populated coasts of Tetida (e.i. North-Eastern Boreal province), and subsequently dispersed to the western coasts of Atlantic Ocean as the sea separating Europe from Asia ebbed away. The current distribution of Eremazina has probably also its origin in Tertiary; that group could speciate somewhere to the south of Tetida during the period of Middle Asian desert fauna formation (KRYZHANOVSKIY, 1965). The European species of the genus *Aegialia* LATR. are most probably remnants of a richer Tertiary fauna and a postglacial relict. *A. arenaria* inhabiting the European coasts of Atlantic and Baltic was introduced to North America (DARLINGTON, 1927; LINDROTH, 1957), to Azores (LANDIN, 1960) and to Japan; similarly, *A. rufa* (= *spissipes* LEC.) was introduced to America. Typically for „Europeanization” both species colonized cold-to-temperate climatic zones of the eastern part of North America (LINDROTH, 1957; UDVARDY, 1969). Third European species, *A. sabuleti* is a typical representative of the Boreal-mountainous fauna and a postglacial relict living in the mountains of Middle Europe.

The occurrence of two representatives of *Aegialiina* in Argentina and Tasmania, relatively, could also be dated from Tertiary, but it is difficult to draw some reasonable conclusion in this case, since those two species are separated from the rest of their tribus by huge disjunction — predominantly theoretical, including areas with poorly recognized or unrecognized fauna. Thus, it can not be excluded, that *Aegialiina* populate climatically suitable mountain regions of South America; fractions of the North American fauna possibly could reach that continent in late Pliocene when Panamanian landbridge emerged from the

sea again, and disperse to the East of Andes, or they could penetrate South America by waterways. This is no more than a hypothesis, which must be supported by further discoveries of new Neotropical species. The Tasmanian species, closely related to mountain groups of Himalayan and Nearctic species, occupies a very interesting position: as a second species it lives in a south-temperate climate in the zone of *Nothofagus*, which also forms forests of the far Neotropical south. The comparison of the current zoogeographical and geobotanical data has proved, that there are numerous connections between Patagonia and Notogea (KRYZHANOVSKIY, 1976). The archipelago existing between Asian mainland has most probably undergone numerous transformations, but it has never formed a landbridge; accidental immigrants, however, could arrive from Asia, crossing the fluctuating water distances. The separation of the species in Tasmania, divided from Australia by Bass Strait, formerly a land bridge, can suggest, that in Australia exist (or existed) populations of species originating indirectly from Asia or North America. The accidental migration has occurred irrespectively from the periods of such configuration of lands and oceans (seas) which had favoured the intensive dispersal of the animals. The invertebrates possess particularly well pronounced capabilities of dispersion, especially in terms of passive transport of both, adult individuals (a sufficiently small animal can travel over considerable distances with a hurricane) as well as eggs and pupae attached to plants transported by water.

The considerable biological changes of the Eurasian and North American flora and fauna, including severe disturbances, reversions and accelerated speciation, that occurred during the Quaternary are quite well documented (FRENZEL, 1960; HOWDEN, 1969). The climatic changes in the Quaternary played a considerable role in the evolution of biota in Africa, Australia and South America. Three or four glacial periods correlated with northern glaciation occurred in southern part of South America (VUILLEUMIER, 1971). The southern regions of Australia and Tasmania also underwent considerable glaciation during Pleistocene (DAVIES, 1974; WILLIAMS, 1974). The present distribution of *Aegialiina* species (Fig. 2) can be approximately comprised within the borders of the last glaciation Würm-Wisconsin. The species of two most numerous subgenera: *Psammoporus* THOMS. and *Aegialia* s. str. had certainly the most complicated Quaternary history. In the northern parts of the northern-temperate zone extremely unstable conditions forced animals to encroach and withdraw alternately, often resulting in a geographical disjunction. During glaciation the Arctic elements moved southwards, they subsequently returned leaving behind the populations that entered the mountains; behind the forefront of ice remained also populations isolated in the unglaciated refugia, which subsequently fused with the populations returning from the south. In North America glacial periods reduced the terrains hitherto populated to approximately 1/3 (HOWDEN, 1966), the Wisconsin glaciation narrowed and pushed the „zones of life” down to the south (DILLON, 1956). The situation of the north-temperate Palearctic zones was quite similar. The species of *Aegialiina* which survived to the present day

must have been characterized by a strongest biotic resistance; they survived the Würm-Wisconsin glaciation most probably in the refugia isolated behind the forefront of ice, in waterside refugia heated by warm sea streams and in mountain refugia. Quite obviously, a distributional disjunction of some species must have occurred in that time, and the postglacial recolonization of the deserted regions could be restricted or stopped by the appearance of various barriers. It can be supposed, that on poorly recognized (in terms of faunistics) areas of Eastern Siberia and the Far East *Aegialiina* are more closely distributed, as they are in Neartica. It seems, that the Eastern Palearctica and the Western Neartica are the ancient centres of dispersion and exchange of *Aegialiini*, as well as the persisting, climatically and environmentally stabilized refugia.

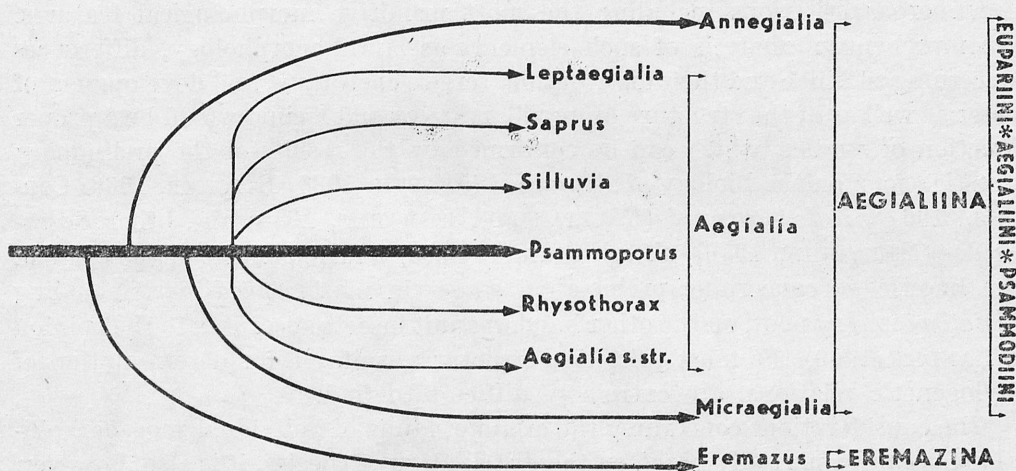


Fig. 1. Reconstructed phylogeny of genera and subgenera of *Aegialiini*

The attempt to determine a phylogenetic sequence of individual groups of *Scarabaeidae*, to establish their interdependences and the evolutionary trends is a very difficult task, demanding scrupulous investigations. CROWSON (1955) has suggested, that some *Scarabaeidae*, including *Aphodiinae* are obviously „near a peak” of evolutionary succession of the beetles existing at present. His opinion is based on the number of antennal segments, on the morphology of mandibulae and labrum and on the poorly recognized structure of larvae; he also paid attention to some primitive morphological structures of some *Scarabaeidae*, such as the shape of mouth organs, protruding forward and exposed. LANDIN (1960) also inclines to the opinion, that the protruding mouth organs and strongly sclerotized mandibulae possess a primitive character. On that ground forms found in *Aegialiini* group should be considered as phylogenetically older than other *Aphodiinae*, since in the latter subfamily the mentioned features seem to disappear gradually, which finds a reflection in the elongation of clypeus covering mouth organs and involution of mandibular sclerites. Between both

extremes there is a number of transitional forms, very closely related. Those features have, quite obviously, an adaptational character, and depend on the ecological demands of a given species or a group of species, predominantly on the character of food. According to the opinion of many authors including BALTHASAR (1956, 1963) and LANDIN (1960) the saprophagy is a primitive phenomenon and it was probably a primary nutritional way of those species, which at the moment feed in faeces. The mouth organs of saprophagic *Aegialiini* and *Psammodiini*, as well as of the majority of coprophagic *Aphodiini* have been adapted to the character of the food and to the way of feeding, however, the ecological differences and concomitantly occurring adaptational features can have in each group a secondary character. The base of phylogenetic considerations, at least in respect to the most closely related group of species, should be the combination of numerous criterions including the most primitive morphological features. A comprehensive analysis of such elements as larval morphology, differences concerning sensillae and their distribution, tergite chetotaxy, and development of raster as well as of the structure of maxillary galea and lacinia would be a proper direction of studies, which can be confirmed by the results of the preliminary investigations on the biology of *Aegialiini* (JEARTH, 1960; RITCHER, 1966; CORNELL, 1967), *Aulonocnemini* (PAULIAN and LUMARET, 1974) and other *Scarabaeidae* (MEDVEDEV, 1976), allowing a more natural arrangement of the system. The knowledge concerning preimaginal stages in most *Aphodiinae*, including *Aegialiini* is very poor, on the other hand in adult insects according to the opinion of LANDIN (1960) the most primitive structures, suitable for determination of phylogenetic relations, are extremely difficult to find.

The considerations concerning the origin of fauna of individual zoogeographical areas can be partially based on the distribution of species, it is also, however, necessary to introduce the time factor and principles defining the degree of relation between species or between natural groups of species, e.g. morphological similarities of copulatory organs as a criterion of the conformity of a given group. The results of author's preliminary studies on the morphology of female copulatory organs of *Aegialiini* show the similarity in the external and internal morphology of species, and on that ground some uniform groups can be formed. The present distribution and the differences in the morphology of *Aegialiina* and *Eremazina* subtribes indicate an early ramification of the evolution line. *Aegialiina* possess to some extent a demonstrable continuity of evolution, it is difficult, however, to determine the phylogenetic connections between *Eremazina* and the other *Aphodiinae*. Similarly, the genus *Annegialia* HOWDEN has been classified by author with the subtribus *Aegialiina* only conditionally, since it probably belongs to the group of transitional links between *Aegialiini* and *Psammodiini* or *Eupariini*. The existence of other groups of species which can be classified as such links is beyond doubt, but they are poorly recognized or unknown; most of those known are singular genera with one or a few species, regarded by some investigators as separate subfamilies, outwardly isolated from bigger, uniform groups of species. The dominating genus, *Aegialia* LATR., includes 6 subgenera, connected

morphologically, but rather differentiated territorially. One of them is a circum-polar *Psammoporus* THOMS.; its preglacial, Arctic-Subarctic distribution was probably more dense, but within a range similar to that of today. A gradual adaptation to the increasingly cold climate has probably allowed many species to survive glacial periods in their former refugia. According to the suggestion of LINDROTH (1957) the Arctic and Subarctic species can be generally older; they are more resistant to the climatic conditions and to the stress of a passive transport, moreover, their widespread distribution has demanded more time to be achieved.

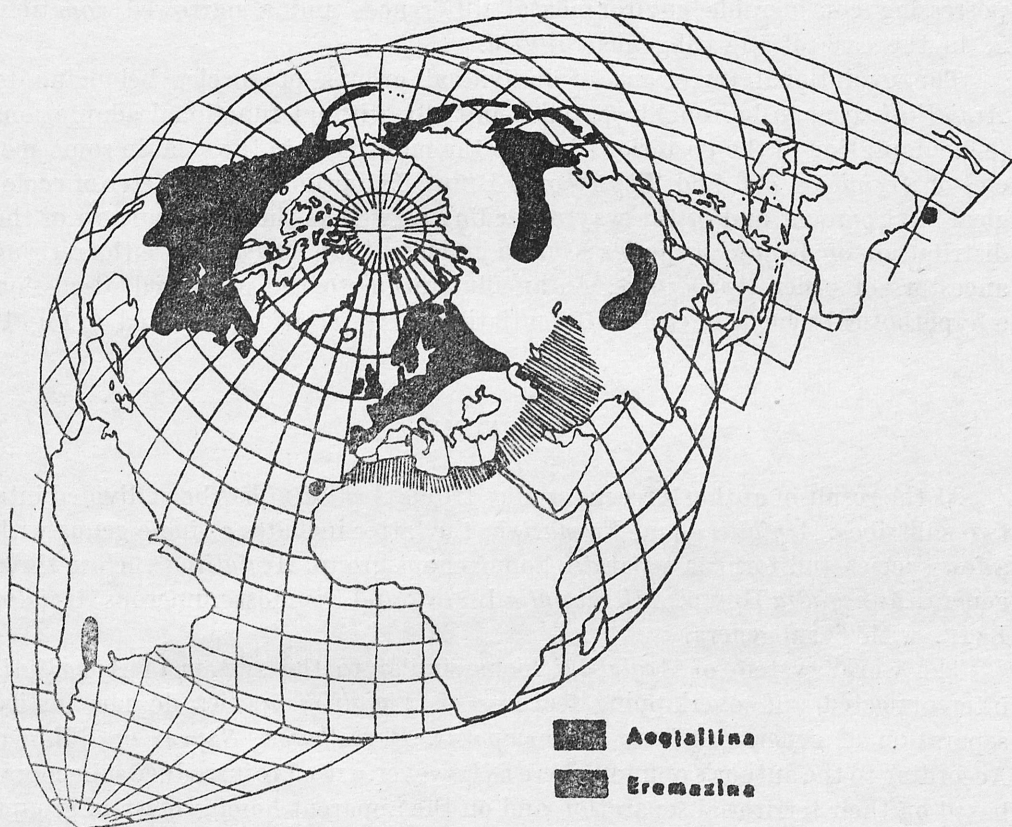


Fig. 2. Known distribution of *Aegialiini* in the world

On the other hand, primitive morphological features of the female copulatory organs in most species of *Psammoporus* might suggest, that those species are phylogenetically older than other groups. The most numerous, also Holarctic subgenus *Aegialia* s. str. includes species with morphological features, a number of functional adaptations as well as psammophilic character most similar to the related features of *Psammodiini* species. The external and internal morphology of species belonging to the remaining subgenera as well as the character of their

„vital zones” are very similar and indicate a close relation to both, *Psammoporus* THOMS. and *Aegialia* s. str. species. A supposition, that they are some kind of transitory forms between *Psammoporus* THOMS. and *Aegialia* s. str. can not exclude possibility, that all those species developed at the same time as isolated populations resembling the present *Psammoporus* group. According to the opinion of ZEUNER (1943) the time does not play a decisive role in the speciation, which is dependent on many other factors such as variable climatic conditions able to bring about a sudden and intense evolutionary processes even during a short period of time. The evolution is most rapid in case of small populations, strictly separated from the rest of their group by various barriers, such as high mountains possessing considerable environmental differences and a narrowed zonation, as in the case of the subgenus *Silluvia*.

The evolutionary directions of individual groups of species belonging to *Aegialiini* seem to be roughly parallel, initially without functional adaptations (e.g. adaptation of the posterior tibiae to the movement in the sand in some species of *Aegialia* s. str. and *Rhysothorax* BED.). The primitive character of ecological environment and of the way of feeding as well as the relict pattern of the distribution of *Aegialiini* species seem to indicate, that *Aegialiini* are the retiring ancestors of other *Aphodiinae*. As an illustration to the presented discussion a hypothetical scheme of early differentiation of *Aegialiini* is presented on Fig. 1.

TAXONOMY

As the result of author's recent studies tribus *Aegialiini* has been divided into two subtribes: *Aegialiina* and *Eremazina*; the latter includes a single genus with a few species and forms a separate, homogenous group. *Aegialiina* enclose three genera: *Annegialia* HOWD., *Micraegialia* BROWN and the most numerous *Aegialia* LATR. with 6 subgenera.

The world system of *Aegialiini* looks similar to the system of *Aphodiini*; interconnected and overlapping features of *Aegialiini* species do not justify separation of genera, such as *Psammoporus*, *Rhysothorax*, *Saprus* or *Silluvia*. According to the author's opinion, there is, however, a need to introduce subgenera, based on their territorial separation and on the apparent homogeneity of groups of species concerned, moreover, such classification facilitates identification of species. For principal reasons traditional generic names will be retained for subgenera, with only one subgeneric name — *Anomalaegialia* BROWN — synonymized. The remaining synonyms as well as comments concerning individual taxons are included in the systematic part of this work; the arrangement of that part is being proposed by the author as follows:

Subtribus *Aegialiina*, stat. nov.

I. Genus *Annegialia* HOWDEN, 1971

1. *ataeniformis* HOWDEN, 1971 (type species)

II. Genus *Micraegialia* BROWN, 1931

1. *pusilla* (HORN, 1887) (type species)
- III. Genus *Aegialia* LATREILLE, 1807
 - A. Subgenus *Rhysothorax* BEDEL, 1911, stat. nov.
(= *Anomalaegialia* BROWN, 1931)
 1. *rufa* (FABRICIUS, 1792) (type species)
(= *spissipes* LE CONTE, 1878)
 - B. Subgenus *Silluvia* LANDIN, 1949, stat. nov.
(= *Silluinae* LANDIN, 1949)
 1. *gogona* STEBNICKA, 1977
 2. *himalayana* (PETROVITZ, 1968)
 3. *petrovitzi* STEBNICKA, 1977
 4. *wassuensis* (PETROVITZ, 1963)
 5. *elongata* (LANDIN, 1949)
(= *Caelius denticollis* BALTHASAR, 1964 (nec LEVIS, 1895))
 6. *sinica* sp. nov.
 7. *shashi* sp. nov.
 - C. Subgenus *Leptaegialia* BROWN, 1931
 1. *rufescens* HORN, 1887
 2. *montana* BROWN, 1931
 3. *browni* SAYLOR, 1934
 4. *humeralis* BROWN, 1931
 - D. Subgenus *Saprus* BLACKBURN, 1904, stat. nov.
 1. *griffithi* BLACKBURN, 1904 (type species)
 - E. Subgenus *Aegialia* s. str.
 1. *argentina* MARTINEZ, PEREIRA, VULCANO, 1970
 2. *blanchardi* HORN, 1887
 3. *nitida* WATERHOUSE, 1875
 4. *comis* (LEVIS, 1895)
(= *freyi* PETROVITZ, 1961)
 5. *hybrida* REITTER, 1892
 6. *convexa* FALL, 1932
 7. *conferta* HORN, 1871
 8. *cartwrighti* sp. nov.
 9. *punctata* BROWN, 1931
 10. *latispina* LE CONTE, 1878
 11. *opifex* HORN, 1887
 12. *arenaria* (FABRICIUS, 1787) (type species)
 13. *crassa* LE CONTE, 1857
 - F. Subgenus *Psammoporus* THOMSON, 1863
 1. *opaca* BROWN, 1931
 2. *terminalis* BROWN, 1931
 3. *nana* BROWN, 1931
 4. *lacustris* LE CONTE, 1850
 5. *cylindrica* (ESCHSCHOLTZ, 1822)
 6. *criddlei* BROWN, 1931

7. *sabuleti* (PANZER, 1797) (type species)
8. *abdit*a (NIKritIN, 1975)
9. *kamtschatica* MOTSCHULSKY, 1860
10. *frie*bi BALTHASAR, 1935
11. *sibirica* sp. nov.
12. *exarata* MANNERHEIM, 1853 (species incertae sedis)

Subtribus *Eremazina*, stat. nov.

I. Genus *Eremazus* MULSANT, 1851

1. *unistriatus* MULSANT, 1851
= *cloueti* SEMENOV et MEDVEDEV, 1938
2. *cribratus* SEMENOV, 1893
3. *sefrensis* CLOUËT, 1897
4. *punctatus* (HAROLD, 1869)
5. *marmottani* (FAIRMAIRE, 1870)

Key to Subtribes

1. Elytra distinctly striate or carinate. Anterior tibiae with two or three lateral teeth; middle and hind tarsal segments cylindrical . . . *Aegialiina*
- Elytra smooth, without striae or carinae. Anterior tibiae with four or five lateral teeth; middle and hind tarsal segments triangular . . *Eremazina*

Subtribus *Aegialiina* (stat. nov.)

Key to Genera

1. Body elongated, moderately convex. Disc of pronotum with scattered tubercles and concavities; elytra carinate, setaceous. Legs and tibial spurs slender *Annegialia* HOWDEN
- Body oblong ovate or elongate, strongly or moderately convex. Disc of pronotum punctate without tubercles and concavities, sometimes lateral fovea present. Elytra striate, nude or piliferous. Legs stout or slender, tibial spurs slender or foliaceous 2.
2. Elytra piliferous. Middle coxae widely separated. Abdominal segments except the last pruinose, strongly narrowed at middle; the penultimate segment visible only on the sides; the last segment longer than the others combined *Micraegialia* BROWN
- Elytra nude, sometimes lateral and apical parts of elytra very indistinctly and scarcely pubescent. Middle coxae narrowly separated. Abdominal segments pruinose, not narrowed at middle; the penultimate segment visible throughout the abdominal width; the last segment much shorter than the others combined *Aegialia* LATREILLE

I. Genus *Annegialia* HOWDEN

Annegialia HOWDEN, 1971: 1466—1468.

Type species: *A. ataeniformis* HOWDEN, 1971, by monotypy.

Description (according to HOWDEN, 1971, somewhat modified). Body small, elongate. Head rather wide, dorsum and clypeus with distinct tubercles. Labrum and mandibulae exposed, terminal segment of maxillary palpus cylindrical, antennae nine-segmented, the clubs three segmented. Pronotum approximately one-third time as long as elytra; sides distinctly serrate, posterior edge with marginal bead; disc concave near anterior angles, posterior half of midline indented and with distinct groove extending arcuately from just behind middle almost to lateral edges just before middle; convex portions of pronotum with scattered tubercles. Elytra elongate, humeri distinct, not dentate; disc of each elytron with moderately convex carinae; intervals between nearly flat, and with two rows of large punctures; elytral carinae finely serrate and with minute, erect setae. Fore tibia rather short, the three lateral teeth small, terminal spur small acute. Middle and hind tibiae slender, tarsi and spurs slender. Abdomen with six sternites, the first largely concealed by the metacoxae; abdominal segments distinctly delimited by deep transverse grooves, anterior edge of each segment above the groove crenulate.

Remarks. The classification of this genus is difficult because of the presence of a complex of features typical for other tribal groups of the *Aphodiinae* subfamily. HOWDEN's comment is fully valid: „If other characters are considered it could be argued that *Annegialia* should be placed in the *Eupariini*. The elytra are not unlike those of some *Ataenius* HAR., the concavities near the anterior angles of the pronotum and the characters of the meso- and metasterna resembles those of *Euparixa* BROWN. The lateral grooves of the pronotum are roughly similar to those of some *Psammodiini*.” The basic criterions accepted for all *Aegialiini* species include in this case a shortened clypeus exposing mouth organs, as well as secondary characters, such as 9-segmented antennae and 6-segmented abdomen. Further conclusions have been presented in detail in the chapter dealing with phylogeny.

I. *Annegialia ataeniformis* HOWDEN

(Pl. XXIII)

Annegialia ataeniformis HOWDEN, 1971:1468.

Holotype (sex not examined): Utah, 14 mi S. Hanksville, 28 July 1968, light Sand-Oak area, coll HOWDEN. (See under „Remarks”).

Description (according to HOWDEN, 1971, somewhat modified). Length 3.9 mm, greatest width 1.5 mm, color reddish brown. Clypeus anteriorly with margin very shallowly, broadly emarginate; sides laterally, beyond emargination,

divergent and nearly straight, inwardly angulate just before eyes; disc slightly tumid, posterior margin delimited by depressed sutural line, surface with distinct tubercles; eyes oval, largely concealed by pronotal edge. Pronotum widest near anterior angles, sides evenly arcuate to posterior midline (posterior portion slightly narrower and more evenly rounded then depicted), surface with distinct tubercles, more numerous near anterior margin. Scutellum very small, triangular. Elytra elongate, sides slightly divergent to posterior fourth, then arcuate to suture; each elytron with six entire carinae (including sutural and marginal carinae) and four very short carinae between, only at base; all elytral carinae, except sutural ones anteriorly finely serrate and with minute, erect setae. Middle and hind legs slender; femora slender, dorsoventrally flattened, ventral surface granular, with scattered tubercles and setae, tibiae slightly bowed inwardly, irregularly, longitudinally carinate, the carinae serrate and setose; tarsi and terminal spurs slender, hind tarsus shorter than the tibia, first tarsal segment of middle and hind tarsi approximately twice as long as second segment. Mesosternum depressed anteriorly; middle coxae only moderately separated. Metasternum with impressed midline, posterior fourth of each side midway to margins with shallow concave depression; surface granular and with small, scattered tubercles and a few fine setae. Other characters as given under the generic description.

Sexual dimorphism unknown.

Biology unknown. „The area in which the specimen was taken was a sand-dune, dry-wash area beside a dirt road running from the Fairview Ranch east to the road between Hanksville and Lake Powell. The most unusual feature of the area was the numerous clumps of a scrub-oak, *Quercus gambelii* NUT. (or near), 6 to 8 ft in height, with areas of bare sand between” (HOWDEN, 1971).

Remarks. The original holotype of *A. ataeniformis* has not been examined by the author. The description of the species has been revised on the ground of the scanning micrographs of the holotype kindly sent to the author by Prof. H. F. HOWDEN and reproduced in this paper by his courtesy. The cited above data concerning the environment, in which the species has been found tempt to suggest, that as far as ecology is concerned, it falls within the borders of biotopes and vital zones of other species of *Aegialiini*. On the other hand, the described environment could have been accidental if there was a case of a mechanical transport of one of many individuals living in other biotope.

Distribution (Fig. 91). North America — Utah.

II. Genus *Micraegialia* BROWN

Micraegialia BROWN, 1931: 10—11; HATCH, 1971:440;

Aegialia HORN, 1887: 99, 102.

Type species: *M. pusilla* HORN, by monotypy.

Description. Body oblong oval, strongly convex. Terminal segment of maxillary palpus elongate oval. Clypeus closely punctate, without granules. Pronotum

about half time as long as elytra, sides and base feebly crenulate, piliferous. Elytra finely striate, humeri very finely dentate; intervals moderately convex, punctate, each puncture bearing a hair. Legs and terminal spurs slender, tarsi slender, hind tibiae without transverse ridges, tarsi long. Middle and hind femora elongate, very finely pubescent. Middle coxae widely separated, the intercoxal process of mesosternum feebly carinate. Abdomen except the last segment pruinose, the second, third and fourth segments strongly narrowed at middle, the penultimate segment visible only on the sides, the last segment longer than the others together at middle.

Distribution (Fig. 91). North America.

I. *Micraegialia pusilla* (HORN)

(Figs. 8, 91)

Aegialia pusilla HORN, 1887: 99, 102;

Micraegialia pusilla: BROWN, 1931: 11—12; HATCH, 1971: 440.

Holotype ♀: Washington Territory, No. 3625, coll. MCZ. Seen by the author.

Description. Length 1.9—2.5 mm. Body strongly convex, short, reddish black or dark brown, shining; legs and clypeal margin reddish, antennal clubs yellow. Head three-fourths as wide as pronotum, very coarsely and closely punctate, without trace of granules, frontal suture feebly marked; clypeal margin arcuate, genae not prominent, their side margins quite continuous with those of the clypeus. Pronotum convex, sides feebly arcuate and crenate, basal margin sinuate each side of middle, piliferous, basal marginal line very fine; anterior angles acute, posterior angles broadly rounded; surface with a small, indistinct fovea on each side near middle of lateral declivity, coarsely and doubly punctate, the punctures sparse at middle, rather close on the sides, the median line broadly impunctate except at base and apex. Scutellum very small, impunctate, shining. Elytra slightly wider than the pronotum, humeri finely dentate; striae moderately impressed, finely punctate, intervals feebly convex, each with two irregular rows of fine punctures and very short yellow hairs. Legs slender; lateral teeth of fore tibia obtusely rounded, well separated, terminal spur acute; hind tibiae almost three times as long as wide, very slightly longer than the hind tarsus, tibial spurs slender, parallel, acute; hind femora with a few hair-bearing punctures. Metasternum finely punctate, shortly piliferous; last abdominal segment longer than the others together at middle.

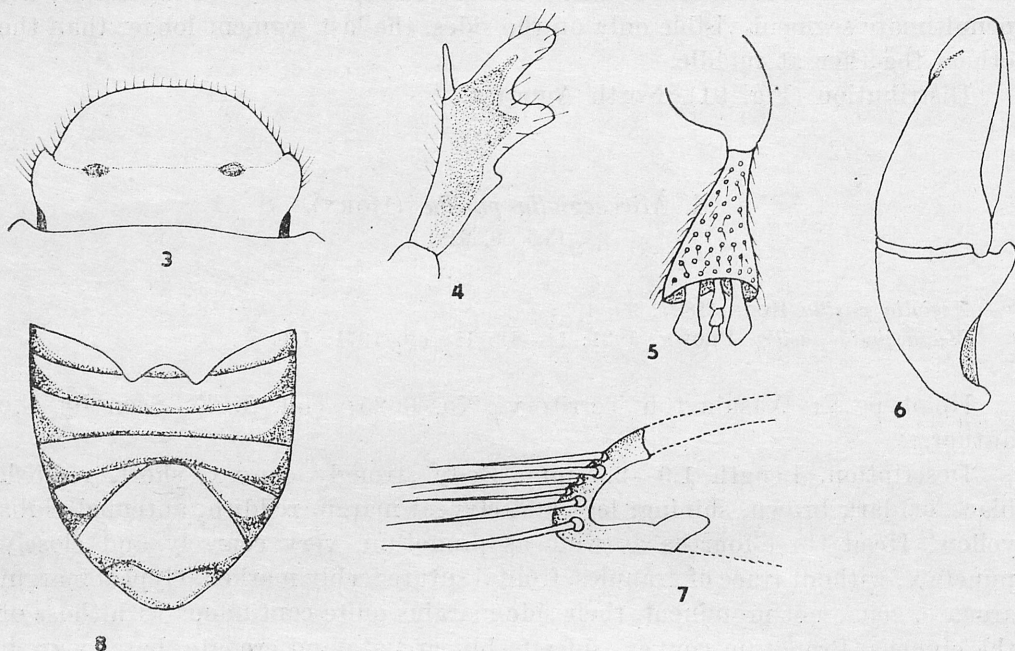
Male. Metasternum rather closely punctate. Abdomen not very convex, the last segment not distinctly alutaceous.

Female. Metasternum very sparsely punctate. Abdomen strongly convex, the last segment distinctly alutaceous.

Biology unknown.

Distribution (Fig. 91). Canada and U.S.A. Recorded from: Washington — „probably Spokane”; Manitoba — Aweme, Birtle; British Columbia — Cawston, Hosmer (HORN, 1887; VAN DYKE, 1928; CRIDDLE, 1929; BROWN, 1931; HATCH, 1971).

Material examined. The holotype and one specimen ♂. Manitoba — Aweme, 24 IV 1903 E. CRIDDLE (MCZ).



Figs. 3—7. *Aegialia (Rhysothorax) rufa* (FABR.), 3 — head; 4 — right fore tibia; 5 — hind tibia; 6 — aedeagus; 7 — stylus. Fig. 8. *Microaegialia pusilla* (HORN) — abdomen

III. Genus *Aegialia* LATREILLE

Aegialia LATREILLE, 1807: 96; CUVIER, 1817: 281; LATREILLE, 1825: 359, CASTELNAU, 1840: 99; MULSANT, 1842: 325, 326—328; WESTWOOD, 1847: 157; ERICHSON, 1848: 792, 916—920; LACORDAIRE, 1856: 114, 124—125; GÜTFLEISCH, 1985: 301, 319; THOMSON, 1859: 82; THOMSON, 1863: 72—74; JACQ. DU VAL, 1863: 29, 83; HAROLD, 1867: 278; MULSANT et REY, 1871: 144, 405—410; HORN, 1871: 293—294; REDTENBACHER, 1872: 96, 473; HORN, 1887: 98—106; SEIDLITZ, 1891: 29, 145; SEIDLITZ, 1891: 29, 153; REITTER, 1892: 149, 249—252; REITTER, 1892: 11, 111—114; d'ORBIGNY, 1896: 198, 256—257; EVERTS, 1901: 12, 14, 37—38; REITTER, 1909: 319; BEDEL, 1911: 94; KUHN, 1913: 399—400; A. SCHMIDT, 1913: 8—10; PORTEVIN, 1931: 32—33; BROWN, 1931: 12—19, 42—49; PORTA, 1932: 397; PAULIAN, 1941: 153; JANSSENS, 1951: 19; ENDRÖDI, 1956: 24—25; TESÁŘ, 1957: 163—164; PANIN, 1957: 214—215; JANSSENS, 1960: 134—135; CORELLA, 1967: 207; MACHAT-SCHKE, 1969: 294—295; HATCH, 1971: 440; STEBNICKA, 1976: 54;

Scarabaeus: FABRICIUS, 1787: 11; HERBST, 1789: 291; FABRICIUS, 1792: 39; KUGELANN, 1794: 514; PANZER, 1797: no. 37; PAYKULL, 1798: 27; FABRICIUS, 1798: 24;

- Aphodius*: ILLIGER, 1798: 20—21; ILLIGER, 1801: 20; FABRICIUS, 1801: 81, 82; ILLIGER, 1803: 195; STURM, 1805: 169—171; SCHÖNHERR, 1806: 86—88; HEER, 1841: 532;
- Psammodius*: GYLLENHAL, 1808: 6; GYLLENHAL, 1820: 7; ESCHSCHOLTZ, 1822: 11; STEPHENS, 1830: 210; HEER, 1841: 532; BALTHASAR, 1964: 530, 540 (partim);
- Oxyomus*: MANNERHEIM, 1843: 262;
- Psammoporus*: THOMSON, 1863: 72; d'ORBIGNY, 1896: 257; BEDEL, 1911: 94; PAULIAN, 1941: 154; JANSSENS, 1951: 16; TESAŘ, 1957: 160—171; JANSSENS, 1960: 133; CORELLA, 1967: 208 (*Psammophorus*); STEBNICKA, 1976: 55;
- Saprus*: BLACKBURN, 1904: 150, 178—179; A. SCHMIDT, 1913: 5—6, (syn. nov.);
- Rhysothorax*: BEDEL, 1911: 93; PAULIAN, 1941: 153; JANSSENS, 1951: 17; TESAŘ, 1957: 162; JANSSENS, 1960: 134; STEBNICKA, 1976: 54;
- Silluvia*: LANDIN, 1949: 3—6 (*Silluviinae*) (syn. nov.).

Type species: *A. arenaria* (FABRICIUS).

Description. Body oblong ovate or elongate, strongly or moderately convex, sometimes subdepressed. Head wide, surface granulate or punctate. Pronotum more or less distinctly punctate, the side margins and base often crenate. Elytra distinctly striate, nude, sometimes lateral and apical part of elytra very indistinctly and scarcely pubescent. Legs stout or slender, tibial spurs slender or foliaceous, tarsi varying from moderately long to short; anterior tibiae with two or three lateral teeth, middle coxae narrowly separated, hind femora robust or slender, abdomen normal. Sexual characters diverse.

Key to Subgenera

1. Body elongate, subparallel or parallel 2.
- Form of body variable, but never notably elongate. 5.
2. Clypeus granulate, pronotum roughened by indistinct, poorly defined punctures and feeble rugae; basal marginal line indistinct, sometimes interrupted at middle. Elytral humeri not dentate. Posterior tibiae stout, terminal spurs foliaceous *Rhysothorax* BEDEL
- Clypeus punctate, pronotum with well defined punctures, without rugae; basal marginal line distinct and entire. Elytral humeri dentate. Posterior tibiae slender, terminal spurs slender 3.
3. Color carbon black or brownish black. Length of body more than 5 mm *Silluvia* LANDIN
- Color reddish yellow or dark brown. Length of body less than 5 mm. 4.
4. Color reddish yellow. Terminal segment of maxillary palpus much wider at basal third than at base *Leptaegialia* BROWN
- Color dark brown. Terminal segment of maxillary palpus cylindrical. *Saprus* BLACKBURN
5. Pronotum about one-third time as long as elytra, surface near the posterior angles impunctate or very feebly punctate. Middle and hind tibiae stout or slender, terminal spurs slender or foliaceous *Aegialia* s. str.

- . Pronotum about half time as long as elytra, surface near the posterior angles always coarsely and closely punctate. Middle and hind tibiae slender, terminal spurs slender *Psammoporus* THOMSON

A. Subgenus *Rhysothorax* BEDEL (stat. nov.)

Rhysothorax BEDEL, 1911: 93;

Anomalaegialia: BROWN, 1931: 15 (syn. nov.).

Type species: *A. (R.) rufa* (FABRICIUS).

Description. Body elongate, almost parallel, reddish or reddish brown. Ter-



Fig. 9. Known distribution of *Aegialia (Rhysothorax) rufa* (FABR.) in Europe

minal segment of maxillary palpus much wider at basal third than at base, head with well defined, rounded granules. Pronotum about half as long as elytra, sides moderately arcuate, indistinctly crenate, basal marginal line very fine, often interrupted at middle; surface with very poorly defined rugae and punctures. Elytral humeri rounded, without denticles. Anterior tibiae wide, with three lateral teeth; middle tibiae rather stout, terminal spurs slender; hind tibiae

short, stout, upper side with small, closely distributed tubercles, terminal spurs foliaceous, obtusely pointed, the tarsi of moderate length.

Remarks. The generic name *Rhysothorax* has been retained by the author as the name of a subgenus including only a single Holarctic species *A. rufa* (FABR.) (= *spissipes* LEC.); *Anomalaegialia* BROWN, as the ensuing name of the same species has been acknowledged as the younger synonym of *Rhysothorax* BED.

Distribution (Fig. 9, 37). Europa and North America.

1. *Aegialia* (*Rhysothorax*) *rufa* (FABRICIUS) (comb. nov.)

(Figs. 3—7, 9, 37)

Scarabaeus rufus FABRICIUS, 1792: 39;

Aphodius rufus: FABRICIUS, 1801: 82; ILLIGER, 1803: 195; SCHÖNHERR, 1806: 88;

Rhysothorax rufus: BEDEL, 1911: 93; PAULIAN, 1941: 153; JANSSENS, 1951: 17; TESÁŘ, 1957: 162, f. 93; JANSSENS, 1960: 134, f. 82; STEBNICKA, 1976: 54, f. 149;

Aegialia rufa: ERICHSON, 1848: 918; GUTFLEISCH, 1859: 319; THOMSON, 1863: 73; MULSANT et REY, 1871: 410; REDTENBACHER, 1872: 473; SEIDLITZ, 1891: 145; SEIDLITZ, 1891: 153; REITTER, 1892: 112; d'ORBIGNY, 1896: 256; EVERTS, 1901: 38; REITTER, 1909: 319; KUHN, 1913: 400; PORTEVIN, 1931: 32; SAVČENKO, 1938: 39; MACHATSCHKE, 1969: 294;

Scarabaeus sabuleti var. β : PAYKULL, 1798: 27;

Aegialia spissipes: LE CONTE, 1878: 611; HORN, 1887: 100, 105; BROWN, 1931: 15—16; (syn. nov.).

Lectotype of *rufa* (sex not recorded): „Suecia”, coll. ZMC. Not seen by the author, (see under „Remarks”).

Holotype of *spissipes* (♀): Michigan, Marquette, No. 3725, coll. MCZ. Seen by the author.

Description. Length 3.5—5 mm. Body elongate, almost parallel, moderately convex and robust, reddish or reddish brown, shining. Terminal segment of maxillary palpus much wider at basal third than at base. Head wide, clypeal margin finely reflexed, rounded, genae distinctly prominent, their margins not quite continuous with those of the clypeus; surface finely and closely granulate. Pronotum about half as long as elytra, anterior angles more or less produced, obtuse, posterior angles broadly rounded; sides margined, moderately arcuate, indistinctly crenate, basal marginal line very fine, often interrupted at middle; pronotal surface feebly subrugose and subpunctate, distinctly roughened throughout, finely punctate near anterior margin. Scutellum small, triangular, impunctate. Elytra moderately convex, slightly broader behind, humeri not dentate, rounded; disc with rather fine, moderately impressed striae, striae punctures indistinct, intervals flat, impunctate. Anterior tibiae wide, lateral teeth well separated, rounded apically, the middle and apical teeth elongate, terminal spur slender, straight; middle tibiae rather stout, terminal spurs slender; hind tibiae short, robust, not quite twice as long as wide, with small, closely distributed tubercles; terminal spurs foliaceous, obtusely pointed, hind tarsus about two-thirds as long as the tibia. Hind femora wide with a few punctures

near posterior margin. Metasternum flat, slightly alutaceous, midline indistinct. Abdominal segments shining at middle, feebly alutaceous on the sides with a few scattered punctures.

Male. The last abdominal segment shorter and less convex than in female. Aedeagus normal.

Female. The last abdominal segment longer and more convex than in male. Stylus short, rounded, with six evident moderately long setae.

Biology unknown. This psammobiontic, littoral species occurs on sandy banks of inland waters; being rare, can be found mostly in ex-water plant debris. Dates collected: January to September.

Remarks. The lectotype of *A. rufa* has not been investigated by the author; the comment is based on LANDIN's paper (1956) containing a revision of *Aphodiini* and *Aegialiini* species described by FABRICIUS, and detailed data concerning the specimens described. The species is well known in Europe including Poland and its taxonomical status seems to be beyond doubt. The differences between European and American representatives of *A. rufa* are generally diminutive; the morphology of male and female copulatory organs is identical, whilst the pronotum of European individuals shows very frequently a weak, but continuous basal marginal line, and more pronounced punctation, as compared to the American specimens. The latter features, however, fall within the range of individual variability of animals from both continents.

Distribution (Fig. 9, 37). Europa; Canada and U.S.A. (introduced). Recorded from: England — Lancashire, Cheshire, Wales; France — Basin of Somme, Pas-de-Calais; Belgium — Melle; Netherlands — Rotterdam, Grave, Zeeburg, Amsterdam, Roermond; German Federal Republic — Friesland: Norderney, Borkum; Hamburg, Holstein: Boberg, Bad Schwartau, Amrum Isl.; Westfalen: Gütersloch; Rheinland: Krefeld, Bonn, Trier; Hessen: Rheinhalbinsel, Mainz; German Democratic Republic — Brandenburg: Zinnowitz, Berlin, Spandau; Denmark — Southern Jutland, Fanö Isl.; Norway — Stavanger; Sweden — Scania, Sandhammaren; Poland — Koszalin, Warszawa, Kraków; Russian S.F.S.R. — Kaliningrad, Voronež; Latvian S.S.R. — Riga, Lubana; North America — Newfoundland: Miquelon Isl; Massachusetts: Tyngsboro; Michigan: Marquette (SAVČENKO, 1938; BROWN, 1931; LINDROTH, 1957; HORION, 1958; JANSSENS, 1960; LANDIN, 1960; LANDIN, 1961; STEBNICKA, 1976).

Material examined. The holotype and 28 specimens. Europa: Poland — Warszawa: Świder, 16 VII 1906, W. MACZYŃSKI (ZIW); Gocław, 12 I 1948, shore of Vistula, R. BIELAWSKI (ZIW); 27 II 1950, M. MROCZKOWSKI (ZIW); Kraków, 29 IV 1939, S. POPEK (ISEZ), 30 VII 1973, under plants near Vistula river, Z. STEBNICKA (ISEZ); KAZAKH S.S.R. — Charkin, 27 V 1951, shore of Ural river (ZIL); Uralsk, 12 VI 1949 (ZIL); North America: Nova Scotia — Sable Isl., West end, 5—7 VII 1967, H. F. HOWDEN (CNC); Colorado — Big Meadows, 8 mi N. Wolf Cr. Pass, 8700 ft, 13 VII 1968, E. C. BECKER (CNC); Indiana — Pine Village, 14 V 1905, A. B. WOLCOTT (FMNH); Michigan — Cheboygan Co., VIII 1935 (CNC); Massachusetts — Lowell, coll. F. BLANCHARD (MCZ); Ipswich, 22 V 1926, J. DARLINGTON (MCZ); Tyngsboro, 25 IV 1901 (MCZ, CNC).

B. Subgenus *Silluvia* LANDIN (stat. nov.)

Silluvia LANDIN, 1949: 3—6 (*Silluviinae*).

Type species: *A. (S.) elongata* (LANDIN).

Description. Body elongate, almost parallel, subdepressed, lateral and apical parts of elytra very indistinctly and scarcely pubescent. Terminal segment of maxillary palpus cylindrical or coniform, mandibles broad, strongly sclerotized, dentate; under side of body partly strongly punctate. Head wide, surface distinctly punctate without granules. Pronotum about half as long as elytra, lateral and basal margins more or less crenate, basal marginal line distinct and entire, more or less sinuate; pronotal surface coarsely punctate. Elytra elongate, humeri strongly dentate; striae moderately deep with a row of coarse punctures. Legs slender, tibial spurs slender, sharply pointed, tarsi slender. Abdominal segments sometimes crenate along inner margins. Sexual characters evident in the anterior tibial spurs, posterior angles of pronotum and in sculpture of pigidium.

Distribution (Fig. 67). Himalayas.

Key to Species

1. Length 8.8 mm. Under side of fore tibia with two denticles *A. (S.) gogona* STEBN.
- Length less than 8 mm. Under side of fore tibia with three denticles. . 2.
2. First segment of posterior tarsus and upper tibial spur equal in length. Surface of head entire closely and coarsely punctate 3.
- First segment of posterior tarsus shorter than the upper tibial spur. Clypeal surface with fine, scattered punctures, front closely and coarsely punctate 4.
3. Pronotal surface with a small, circular, impunctate area at middle. *A. (S.) himalayana* (PETROV.)
- Pronotal surface without circular, impunctate area at middle. *A. (S.) petrovitzi* STEBN.
4. Abdominal sterna slightly crenate along inner margins. Posterior tarsus almost as long as the tibia *A. (S.) wassuensis* (PETROV.)
- Abdominal sterna not crenate along inner margins. Posterior tarsus about two-thirds as long as the tibia 5.
5. First segment of posterior tarsus longer than the following three segments combined *A. (S.) elongata* (LAND.)
- First segment of posterior tarsus shorter than the following three segments combined 6.
6. Surface of head everywhere densely, moderately punctate *A. (S.) sinica* sp. n.
- Clypeal surface with fine punctures, front more coarsely and closely punctate *A. (S.) shashi* sp. n.

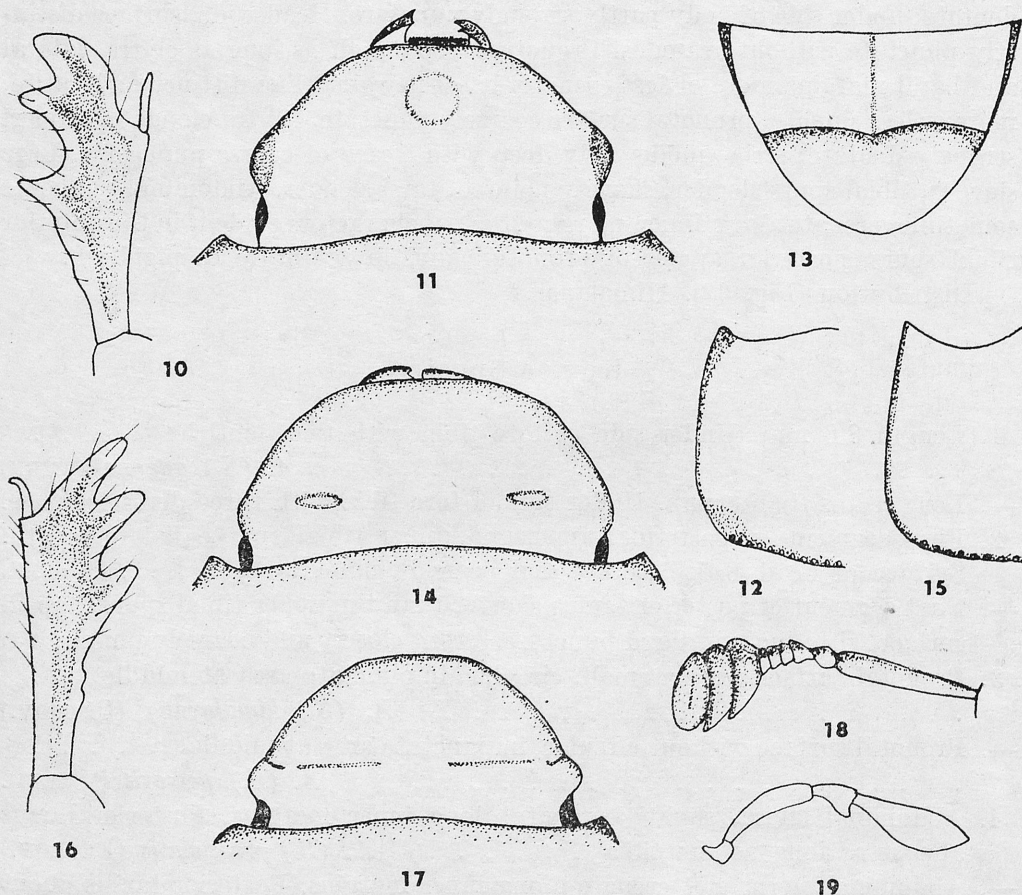
1. *Aegialia (Silluvia) gogona* STEBNICKA

(Figs. 10—12, 67)

Aegialia gogona STEBNICKA, 1977: 269—270.

Holotype ♀: Bhutan, Kotoka-Gogona, 2500—3400 m, Expedition 1972, coll. MHNB.

Description. Body elongate, almost parallel, subdepressed, carbon-black, moderately shining. Legs dark brown, antennal clubs yellowish brown. Terminal



Figs. 10—12. *Aegialia (Silluvia) gogona* STEBN. 10 — left fore tibia of female; 11 — head; 12 — side of pronotum. Figs. 13—15. *A. (S.) petrovitzi* STEBN. 13 — pigidium; 14 — head; 15 — side of pronotum. Fig. 16. *A. (S.) sinica* sp. nov. — right fore tibia of male. Fig. 17. *A. (S.) wassuensis* (PETROV.) — head. Figs. 18—19. *A. (S.) elongata* (LAND.). 18 — antenna; 19 — palpus maxillaris

segment of maxillary palpus somewhat wider at basal third than at base. Lateral parts of elytra very indistinctly and scarcely pubescent.

Female. Length 8.8 mm. Head wide with a very slight convexity at middle of the clypeus; frontal suture very feebly impressed, clypeal margin finely reflexed, genae slightly prominent, obtusely rounded, their side margins not quite

continuous with those of the clypeus; clypeal surface with fine and scattered punctures, front and occiput closely and coarsely punctate. Pronotum about half as long as elytra, anterior angles acute, posterior angles broadly rounded, sides and base margined, slightly crenate, the edges shortly and scarcely piliferous; surface punctures fine and coarse, the latter less numerous from halfway outward to sides forming small and shallow pits, those of discal area to anterior edge finer and more numerous. Scutellum moderately great, triangular, with a few minute punctures at base. Elytra slightly flattened, humeri very strongly and sharply dentate; striae deep with moderately coarse, distant punctures; discal intervals flat, impunctate, distinctly crenate along inner margins. Legs slender; the two apical teeth of fore tibia slightly approximate, the third separate, under side with two denticles, terminal spur slender, straight and acute; middle and hind tibiae elongate with very indistinct, incomplete transverse ridges, terminal spurs slender and sharply pointed, tarsi slender; hind tarsus almost as long as the tibia, upper spur of hind tibia longer than the first tarsal segment which equal the length of the following three segments combined. Hind femora rather impunctate, shining. Metasternum slightly convex, indistinctly alutaceous, with very fine punctures and strong, deep midline. Abdominal segments shining, impunctate, pigidium shagreened, very shortly and scarcely piliferous.

Male unknown. Biology unknown.

Distribution (Fig. 67). Himalayas — Bhutan.

2. *Aegialia (Silluvia) himalayana* (PETROVITZ) (comb. nov.)

(Figs. 26—27, 67)

Psammoporus himalayanus PETROVITZ, 1968: 186—187.

Holotype ♂: Sikkim, Katapahar, leg. GEBAUER, coll. MHNG. Seen by the author.

Description. Body elongate, almost parallel, subdepressed, carbon black, shining; legs and antennal clubs very dark brown. Terminal segment of maxillary palpus cylindrical, elongate. Lateral and apical parts of elytra very indistinctly and scarcely pubescent.

Male. Length 7.0 mm. Head rather wide, moderately convex, with a very slight convexity at middle of clypeus and very shallow concavities on either frontal side; frontal suture not evident, clypeal margin very finely reflexed, genae slightly prominent, obtusely rounded, their margins not quite continuous with those of the clypeus; surface entire closely and coarsely punctate. Pronotum about half as long as elytra; anterior angles acute, posterior angles obtusely rounded, sides and base margined, slightly crenate, basal margin with a row of coarse punctures forming small and shallow pits; the edges very shortly and scarcely piliferous; surface punctures close, mixed fine and moderately coarse, the latter somewhat less numerous from halfway to posterior edge, those of discal area to anterior edge and outward to sides finer and more numerous; disc with a small, circular, impunctate area at middle. Scutellum triangular, shining, with

a few minute punctures at base. Elytra slightly convex, humeri distinctly and sharply dentate; striae deep with moderately coarse, distant punctures; discal intervals rather flat with very indistinct, fine, scattered punctures, only lateral part of shoulders closely, explicitly punctate. Legs slender; the two apical teeth

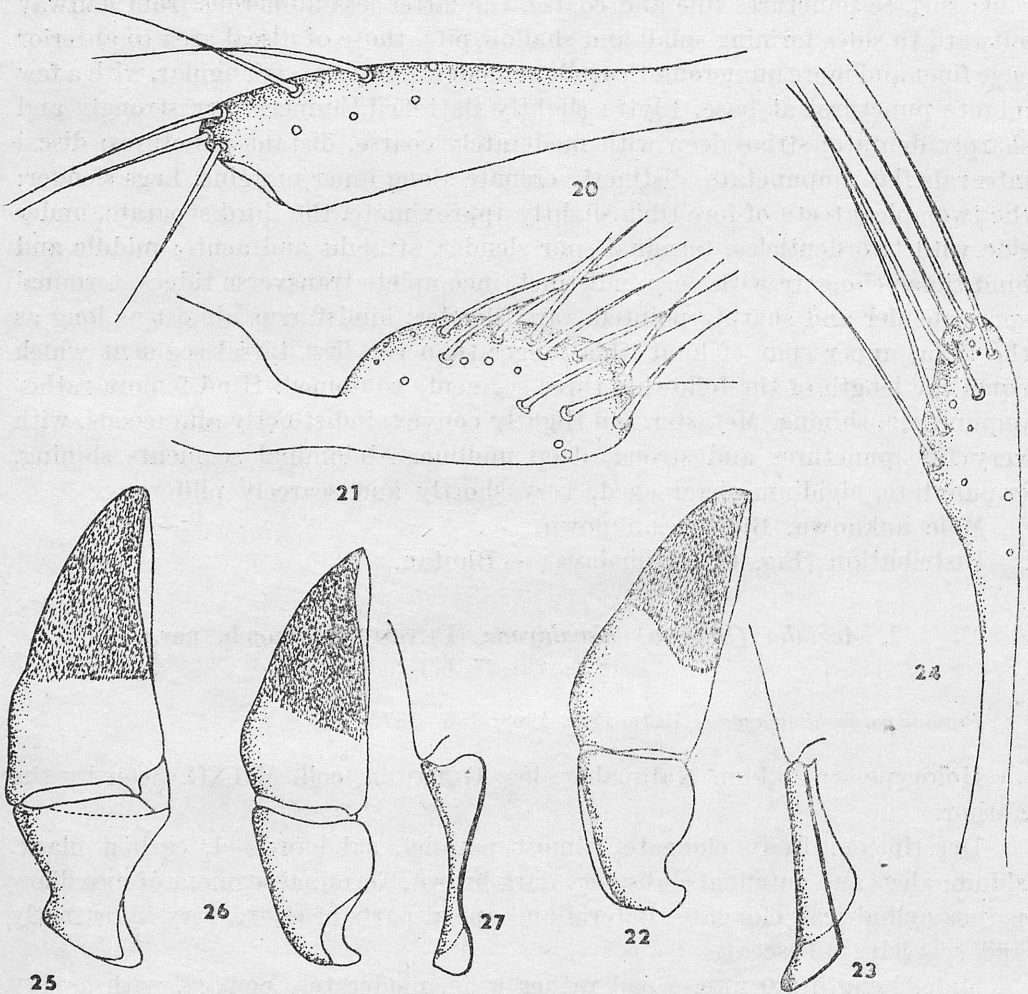


Fig. 20. *Aegialia (Silluvia) elongata* (LAND.) — stylus. Figs. 21—23. *A. (S.) sinica* sp. nov. 21 — stylus; 22 — aedeagus; 23 — paramera dorsally. Fig. 24. *A. (S.) shashi* sp. nov. — stylus. Fig. 25. *A. (S.) petrovitzi* STEBN. — aedeagus. Figs. 26—27. *A. (S.) himalayana* (PETROV.). 26 — aedeagus; 27 — paramera dorsally

of fore tibia slightly approximate, the third separate, under side with three denticles, terminal spur small, bent inward and feebly downward to sharp tip; middle and hind tibiae elongate with very indistinct, incomplete transverse ridges; terminal spurs slender, tarsi slender; hind tarsus almost as long as the tibia; upper spur of hind tibiae, first tarsal segment and following three segments combined about equal in length. Hind femora very finely punctate. Metasternum

finely punctate, shining, midline moderately deep. Abdominal segments shining, very finely, scarcely punctate, not crenate along inner margins. Pigidium feebly convex, shagreened, with rather strong transverse ridge. Pars proximalis of aedeagus very closely, distinctly pubescent.

Female unknown. Biology unknown.

Distribution (Fig. 67). Himalayas — Sikkim.

3. *Aegialia (Silluvia) petrovitzi* STEBNICKA

(Figs. 13—15, 25, 67)

Aegialia petrovitzi STEBNICKA, 1977: 270—272.

Holotype ♂: W. India, Manali, 10 IX 1969, G.A. CALVET, coll. MHNG.

Description. Body elongate, almost parallel, subdepressed, black, moderately shining; legs dark brown, antennal clubs brown. Terminal segment of maxillary palpus cylindrical. Lateral and apical parts of elytra very indistinctly and scarcely pubescent.

Male. Length 5.5 mm. Head semicircular, flat, rather wide, frontal suture not evident; clypeal margin finely reflexed, genae not prominent, their margins quite continuous with those of the clypeus; surface entire closely and coarsely punctate with two very small, impunctate areas on the frontal sides, occiput finely punctate. Pronotum about half as long as elytra; anterior angles acute, posterior angles obtusely rounded, sides and base margined, distinctly crenate, basal margin with a row of coarse punctures forming small and shallow pits; the edges shortly and scarcely piliferous; pronotal surface closely and coarsely punctate throughout, the punctures are smaller and closer on the sides. Scutellum triangular, impunctate, shining. Elytra slightly flattened, humeri very strongly and sharply dentate, striae deep with very coarse, distant punctures which practically contiguous the same size as discal punctures of pronotum; discal intervals flat, almost impunctate, strongly crenate along inner margins. Legs slender; the two apical teeth of fore tibia slightly approximate, the third separate, under side with three denticles, terminal spur moderately slender, rather small, strongly bent inward and slightly downward to sharp tip; middle and hind tibiae elongate with very indistinct, incomplete transverse ridges, terminal spurs and tarsi slender; hind tarsus almost as long as the tibia; upper spur of hind tibia, first tarsal segment and following three segments combined equal in length. Hind femora with moderately coarse punctures. Metasternum flat, shining, midline moderately deep. Abdominal segments very finely and closely punctate, slightly crenate along inner margins. Pigidium feebly convex, shagreened, very shortly piliferous with strong transverse ridge. Pars proximalis of aedeagus very closely, distinctly pubescent.

Female unknown. Biology unknown.

Remarks. The species is named in honor of R. PETROVITZ who had recognized this beetle as an undescribed species and labelled it „sp. n.”

Distribution (Fig. 67). Himalayas — India.

4. *Aegialia (Silluvia) wassuensis* (PETROVITZ) (comb. nov.)

(Figs. 17, 67)

Psammoporus wassuensis PETROVITZ, 1963: 118—119.

Holotype ♂: W. Sichuan, Sankiangkou, Wassuland, Selong 4000 m, VII—VIII 1934, leg. FRIEDRICH, coll. MGF. Paratype ♀ seen by the author: the same data as holotype, coll. MHNG.

Description. Body elongate, almost parallel, subdepressed, carbon-black, feebly shining; legs very dark brown, antennal clubs yellowish brown. Terminal segment of maxillary palpus cylindrical. Lateral and apical parts of elytra very indistinctly and scarcely pubescent. Head rather flat, wide; clypeal margin very finely reflexed, genae slightly prominent, rounded, their margins not quite continuous with those of the clypeus; frontal suture distinctly impressed, interrupted at middle; surface of clypeus with fine and scattered punctures, front and occiput closely and coarsely punctate. Pronotum about half as long as elytra; anterior angles acute, sides and base margined, distinctly crenate, basal margin with a row of coarse punctures forming small and shallow pits; the edges shortly and scarcely piliferous; surface punctures mixed moderately fine and coarse, the latter less numerous from halfway outward to sides, those of discal area to anterior edge finer and more numerous, most numerous on the sides of pronotum. Scutellum small, triangular, impunctate. Elytra slightly flattened, humeri very strongly and sharply dentate; striae deep with coarse, distant punctures; discal intervals feebly convex, very finely punctate, moderately crenate along inner margins. Legs slender; the teeth of fore tibia obtuse, the two apical slightly approximate, the third separate, under side with three small denticles. Middle and hind tibiae elongate with very indistinct, incomplete transverse ridges, terminal spurs slender, sharply pointed; hind tarsus almost as long as the tibia; upper spur of hind tibia longer than the first tarsal segment which equals the length of the following three segments combined. Hind femora very finely punctate, feebly piliferous. Metasternum slightly alutaceous, midline moderately deep. Abdominal segments shining, rather smooth, slightly crenate along inner margins; pigidium feebly convex, shagreened, very shortly and scarcely piliferous.

Male — according to PETROVITZ (1963). Length 7.4 mm. Posterior angles of pronotum with moderately deep emargination. Terminal spur of fore tibia bent inward.

Female. Length 6.2 mm. Posterior angles of pronotum obtusely rounded without emargination. Terminal spur of fore tibia straight and acute.

Biology unknown.

Remarks. Body length of the paratype ♀: 7.0 mm according to PETROVITZ, 6.2 mm according to author's measurements.

Distribution (Fig. 67). Himalayas — China.

5. *Aegialia (Silluvia) elongata* (LANDIN) (comb. nov.)

(Figs. 18—20, 67)

Silluvia elongata LANDIN, 1949: 6—7;

Silluvia elongator: BALTHASAR, 1964: 479;

Caelius denticollis: BALTHASAR, 1964: 479 (nec LEWIS, 1895).

Holotype ♀: N. E. Burma, Kambaiti, 7000 ft, 12 V 1934, R. MALAISE, coll. NR. Seen by the author.

Description. Body elongate, almost parallel, subdepressed, moderately shining; color carbon-black, elytral suture narrowly rufescent, legs reddish-brown, antennal clubs yellowish brown. Terminal segment of maxillary palpus strongly widened at basal half, lateral and apical parts of elytra very indistinctly and scarcely pubescent.

Female. Length 7.2 mm. Head rather wide, clypeal margin finely reflexed, rounded, genae slightly prominent, their margins not quite continuous with those of the clypeus, frontal suture evidently impressed only on the sides of front; clypeal punctures very fine, dense, frontal and occipital area more coarsely and closely punctate. Pronotum about half as long as elytra, moderately convex; anterior angles acute, posterior angles obtusely rounded, sides and base distinctly margined, slightly crenate, the edges shortly and scarcely piliferous; pronotal surface moderately coarsely and closely punctate throughout, the punctures of median area irregularly distributed, closer laterally, a little finer near anterior margin. Scutellum smooth, impunctate, triangular, with somewhat curved sides. Elytra elongate, flattened, very slightly broader hindwards, humeri moderately strongly, sharply dentate; striae deep with a row of moderately coarse, distant punctures, slightly crenating inner margins of intervals; intervals feebly convex, shining, with minute sculpture and very minute, indistinct punctures. Legs slender; lateral teeth of fore tibia obtusely rounded, the two apical slightly approximate, the third separate, under side with three distinct denticles, terminal spur straight and acute; middle and hind tibiae with very indistinct, incomplete transverse ridges, terminal spurs slender and sharply pointed, tarsi slender; hind tarsus about two-thirds as long as the tibia, first tarsal segment slightly shorter than the upper spur and longer than the following three segments combined. Hind femora finely punctate, shining. Metasternum very indistinctly punctate, midline strongly impressed. Abdominal sterna with a very fine punctures, slightly alutaceous, pigidium shagreened, finely punctate. Stylus elongate with five evident, moderately long setae.

Male unknown. Biology unknown.

Remarks. The female copulatory apparatus was damaged, it was however possible to excise one stylus and to reconstruct its chetotaxy.

Distribution (Fig. 67). Himalayas — Burma.

6. *Aegialia (Silluvia) sinica* sp. n.

(Figs. 16, 21—23, 67)

Holotype ♂: China, Sichuan, Omeishan, 2100—3100 m, 25 VI 1955, leg. YAN SIN-CHI, coll. ZIL; Paratypes: 4 ♂♂, 2 ♀♀ the same data as holotype; 2 ♂♂, 2 ♀♀ in coll. ZIL, 1 ♂, 1 ♀ in coll. ISEZ.

Description. Length 5.2—5.4 mm. Body elongate, slightly broader behind, moderately convex, shining; color black or reddish-black, legs and antennal clubs reddish brown. Terminal segment of maxillary palpus feebly widened at basal third, lateral and apical parts of elytra very indistinctly and scarcely pubescent. Head rather wide, semicircular, genae very feebly prominent, their margins rather quite continuous with those of the clypeus; clypeal margin finely reflexed, frontal suture indistinct; surface everywhere densely, evenly, moderately punctate, the punctures slightly finer at extreme anterior margin. Pronotum about half as long elytra, anterior angles acute, posterior angles obtuse, sides and base margined, slightly crenate; surface very irregularly, rather coarsely punctate throughout, distinctly closer laterally, especially just behind the middle where the punctures tend to coalesce. Scutellum triangular, slightly convex apically with a few microscopic punctures at base. Elytra moderately convex, slightly broader hindwards, humeri strongly and sharply dentate; striae moderately deep with a row of moderately coarse, densely distributed punctures slightly crenating inner margins of intervals; intervals convex, shining, impunctate, lateral part of shoulders with very fine, scattered punctures. Legs slender; lateral teeth of fore tibia separated, rather sharp, under side with three denticles; middle and hind tibiae with indistinct, incomplete transverse ridges, terminal spurs slender, acute, tarsi slender; hind tarsus about two-thirds as long as the tibia, first tarsal segment insignificantly shorter than the upper spur and shorter than the following three segments combined. Hind femora narrow, surface densely, moderately, uniformly punctate. Metasternum shining, finely and closely punctate, midline strongly impressed. Abdominal segments shining with very minute sculpture, pigidium shagreened, finely punctate and very shortly, scarcely piliferous.

Male. Terminal spur of fore tibia small, distinctly bent inward. Pigidium with a strong, transverse ridge in basal two-thirds. Punctures of metasternum fine, less densely distributed than in female. Pars proximalis of aedeagus very closely, distinctly pubescent.

Female. Terminal spur of fore tibia small, straight, sharply pointed, pigidium without transverse ridge. Punctures of metasternum moderately fine, more densely distributed than in male. Stylus widened with ten evident, moderately long setae.

Biology unknown.

Distribution (Fig. 67). Himalayas — China.

7. *Aegialia (Silluvia) shashi* sp. n.

(Figs. 24, 67)

Holotype ♀: China, Sichuan, Omeishan, 2100—3100 m, 25 VI 1955, leg. OU PEN-ZUN, coll. ZIL.

Description. Body elongate, parallel, subdepressed, shining; color black, the sides of clypeus and elytral suture narrowly reddish brown, legs reddish brown, antennal clubs yellowish brown. Terminal segment of maxillary palpus widened at basal third, somewhat coniform; lateral and apical parts of elytra very indistinctly and scarcely pubescent.

Female. Length 6.6 mm. Head rather wide, flat, genae slightly prominent, obtusely rounded, their margins not quite continuous with those of the clypeus; clypeal margin finely reflexed, frontal suture distinctly impressed; clypeal surface finely and closely punctate, the punctures separated by their diameters, frontal and basal area with more coarse and close punctures separated by less than their diameters. Pronotum about half as long as elytra, sides and base margined, slightly crenate, the edges shortly and scarcely piliferous; anterior angles acute, posterior angles obtusely rounded; surface punctures moderate-to-coarse, the latter irregularly spaced, generally rather widely separated on disc and closer laterally where they are separated by their diameters or less; the punctures over the anterior one-third of the disc noticeably finer. Scutellum triangular, moderately great with a few minute punctures at base. Elytra elongate, slightly flattened, humeri rather strongly and sharply dentate; striae moderately deep with a row of moderately coarse, distant punctures slightly crenating inner margins of intervals; discal intervals flat with very minute punctures marked by fine alutaceous punctures throughout; lateral part of shoulders more distinctly punctate. Legs slender; lateral teeth of fore tibia obtusely rounded, the two apical slightly approximate, the third separate, under side with three denticles, terminal spur straight and acute; middle and hind tibiae with very indistinct, incomplete transverse ridges, terminal spurs slender and sharply pointed, tarsi slender; hind tarsus about two-thirds as long as the tibia, first tarsal segments slightly shorter than the upper spur and shorter than following three segments combined. Hind femora with very minute sculpture, finely and indistinctly punctate. Metasternum slightly alutaceous, finely punctate, midline strongly impressed. Abdominal segments shining, feebly shagreened, pigidium shagreened, finely punctate and very shortly, scarcely piliferous. Stylus elongate, with six evident, rather long setae.

Male unknown. Biology unknown.

Distribution (Fig. 67). Himalayas — China.

C. Subgenus *Leptaegialia* BROWN

Leptaegialia BROWN, 1931: 12—13; HATCH, 1971: 440.

Type species: *A. (L.) humeralis* BROWN.

Description. Body elongate, parallel, subdepressed, surface of head very

densely, finely punctate, virtually subgranulate; terminal segment of maxillary palpus much wider at basal third than at base, distinctly scarcely pubescent. Pronotum about half as long as elytra, sides and base margined, slightly crenate, marginal line evenly arcuate without trace of sinuations; anterior angles moderately produced, acute, posterior angles broadly rounded; surface with mixed coarse and very fine punctures. Elytra subdepressed, almost parallel, humeri mostly dentate, striae distinctly punctate. Legs moderately stout or slender, terminal spurs of middle and hind tibiae more or less slender, never foliaceous, tarsi slender. Sexual characters evident in the anterior tibial spurs and in the last abdominal segment.

Distribution (Fig. 37). North America.

Key to Species

1. Posterior tibiae twice as long as wide; posterior tibial spurs slightly flattened, widest at middle. *A. (L.) rufescens* HORN
- Posterior tibiae three times as long as wide; posterior tibial spurs slender, parallel 2.
2. Pronotum near the posterior angles with very fine and sparse, indistinct punctures or virtually impunctate *A. (L.) montana* BROWN
- Pronotum near the posterior angles with a few coarse punctures and with fine punctures distinct throughout 3.
3. Elytral humeri feebly, indistinctly dentate. Pronotal surface between the punctures not alutaceous *A. (L.) browni* SAYL.
- Elytral humeri strongly dentate. Pronotal surface between the punctures slightly alutaceous *A. (L.) humeralis* BROWN

1. *Aegialia (Leptaegialia) rufescens* HORN

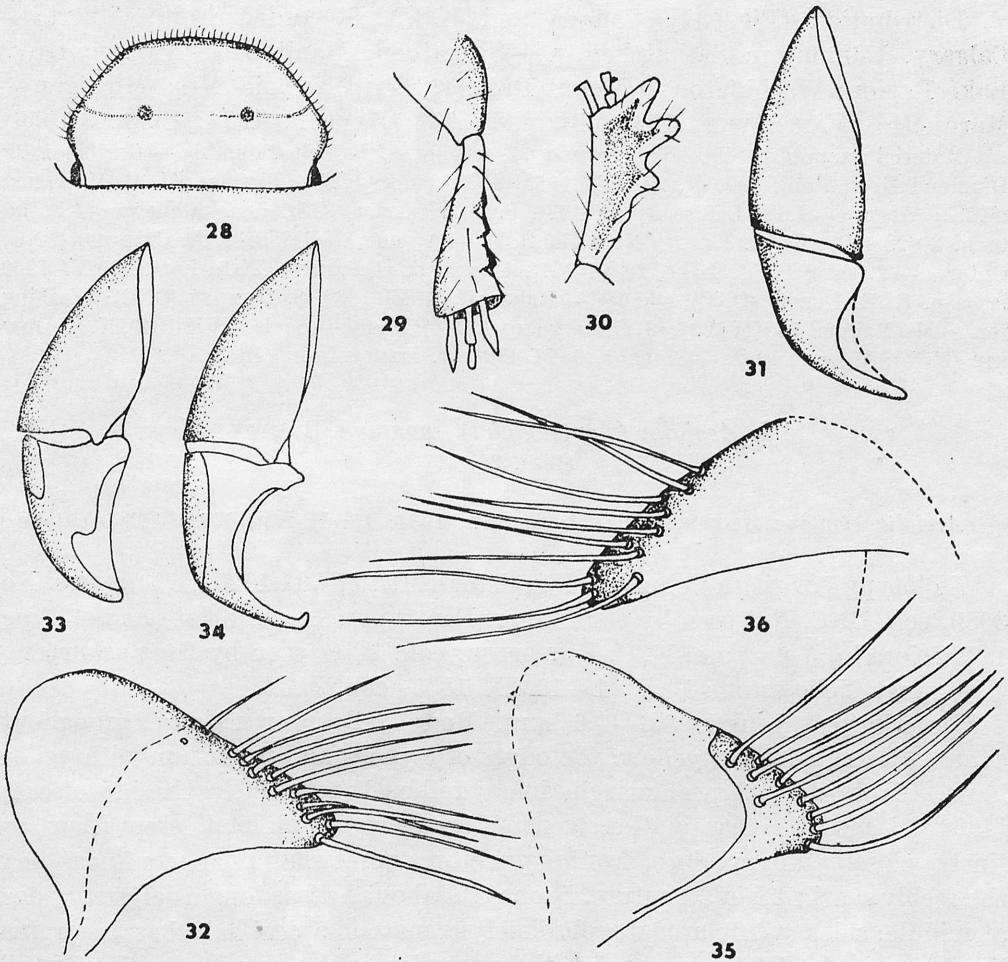
(Figs. 28—33, 37)

Aegialia rufescens HORN, 1887: 99, 100; BROWN, 1931: 14—15; SAYLOR, 1934: 75;
Aegialia rufa: LE CONTE, 1878: 610 (nec FABRICIUS, 1792).

Holotype ♀: Michigan, Marquette, No. 3721, coll. MCZ. Seen by the author.

Description. Length 3.5—4.9 mm. Body reddish yellow or rufous throughout, shining, antennal clubs yellow; the edges of clypeus and pronotum with yellow hairs. Head wide, clypeal margin finely reflexed, rounded each side of very shallow median emargination; genae very feebly prominent, clypeal surface finely, closely subgranulate, frontal punctures somewhat finer, frontal suture indistinct. Pronotum about half as long as elytra, widest at middle; sides evenly arcuate, obsoletely crenate in apical half, basal marginal line strong, obsoletely crenate at the posterior angles; surface with a small, indistinct fovea on each side near middle of lateral declivity; the punctures mixed fine and coarse, the latter somewhat irregularly distributed, everywhere sparse, absent near the anterior margin and posterior angles; the fine punctures scarcely distinct, sparse

and regular throughout, closer near the anterior margin. Scutellum triangular, impunctate. Elytra subequal in width to pronotum, humeri slightly prominent, not dentate; striae moderately impressed, rather coarsely punctate, intervals feebly convex, impunctate. Anterior tibiae wide, lateral teeth well separated, obtusely rounded; middle and hind tibiae rather short, the latter twice as long



Figs. 28—32. *Aegialia (Leptaegialia) rufescens* HORN. 28 — head; 29 — hind tibia; 30 — right fore tibia of male; 31 — aedeagus; 32 — stylus. Fig. 33. *A. (L.) humeralis* BROWN — aedeagus. Figs. 34—35. *A. (L.) browni* SAYL. 34 — aedeagus; 35 — stylus. Fig. 36. *A. (L.) montana* BROWN — stylus.

as wide; hind tibial spurs stout, slightly but very distinctly wider at middle than at base, obtusely pointed; first posterior tarsal segment shorter than the upper spur and subequal to following two segments combined; hind tarsus about two-thirds as long as the tibia. Hind femora finely, sparsely and indistinctly punctate. Metasternum slightly concave, punctate. Abdominal sterna shining, each with a row of coarse punctures along inner margin.

Male. Apical spur of fore tibia wide, parallel, truncate at apex, the inner apical angle prolonged inwardly, very acute; last abdominal segment shorter than in female. Aedeagus normal.

Female. Apical spur of fore tibia narrow, rounded at apex; last abdominal segment longer than in male. Stylus wide with eleven evident, rather long setae.

Biology unknown. Dates collected: April to October.

Distribution (Fig. 37). Canada and U.S.A. Recorded from: Alberta — Calgary, Edmonton; Saskatchewan — Saskatoon; Manitoba — Aweme; Great Lake Region; Washington — Mount Rainier; Sierra Nevada Mts; Michigan — Marquette (VAN DYKE, 1928; BROWN, 1931; SAYLOR, 1934; CLARK, 1956).

Material examined. The holotype and 22 specimens. British Columbia — Garibaldi Pk, Diamond Head Trail, 5000 ft, 27 VIII 1953, S. D. HICKS (CNC); Terrace, M. E. HIPPLEY (MCZ); Alberta — Lake Louise, 16 IX 1936, S. M. WILLIAMS (CNC); Saskatchewan — Saskatoon, 30 X 1928, K. M. KING (CNC); Manitoba — Aweme, 26 IV 1912, E. CRIDDLE (CNC); Ontario — 22 mi S Pickle Lake, 20 VI 1973, CAMPBELL et PARRY (CNC); Latta, 20 VI 1965, in cave, R. E. LEECH (CNC); Quebec — Roberval, 30 VI 1939, S. DUMONT (CNC); Washington — Mt Rainier, 18 VII 1927, J. DARLINGTON (MCZ); Idaho — Sagle, 4 VII 1949, N. M. DOWNE (MCZ); Massachusetts — Nahant, 3 VI 1925, J. DARLINGTON (MCZ).

2. *Aegialia (Leptaegialia) montana* BROWN

(Figs. 36, 37)

Aegialia montana BROWN, 1931: 14; SAYLOR, 1934: 75; HATCH, 1971: 441 (*montanus*).

Holotype ♀: British Columbia, Revelstoke Mt., 17 VII 1925, A. DENNYS, No. 3080, coll. CNC. Not seen by the author. Paratypes: 1♀ same data as holotype; 1 ♂ Colorado, Veta pass, F. C. BOWDITCH, coll. CNC, seen by the author; 1 ♂ Wyoming, Yellowstone Park, 1—19 IX 1885, coll. MCZ.

Description. Length 3.6—4.6 mm. Body yellow or rufous throughout, shining, antennal clubs yellow; the edges of clypeus and pronotum with yellow hairs. Head wide, clypeal margin finely reflexed, rounded each side of very indistinct median emargination; genae very feebly prominent, clypeal surface finely, closely subgranulate, frontal punctures somewhat finer, confluent near the feebly marked frontal suture. Pronotum about half as long as elytra, widest at middle; sides evenly arcuate, obsoletely crenate in apical half; basal marginal line strong, obsoletely crenate at the posterior angles; surface with a small, indistinct fovea on each side near middle of lateral declivity; the punctures mixed fine and coarse, the latter somewhat irregularly distributed, everywhere sparse, not attaining the anterior margin and absent near the posterior angles; the fine punctures scarcely distinct, sparse and regular, closer near the anterior margin. Scutellum triangular, impunctate. Elytra parallel, a little narrower than the pronotum, humeri very feebly dentate; striae moderately impressed, rather coarsely punctate; intervals feebly convex, apparently impunctate. Legs slender; anterior tibiae wide, lateral teeth obtusely rounded, the emargination separating the two most apical teeth very shallow; middle and hind tibiae with indistinct transverse denticles, terminal spurs slender, sharply pointed, almost equal in

length; hind tibiae about three times as long as wide; first posterior tarsal segment shorter than the upper spur and subequal in length to following two segments combined; hind tarsus about three — fourths as long as the tibia. Hind femora finely, indistinctly punctate. Metasternum finely punctate, slightly concave; abdominal sterna with a row of rather coarse punctures distributed along inner margins.

Male. Apical spur of fore tibia wide; parallel, truncate at apex, the inner apical

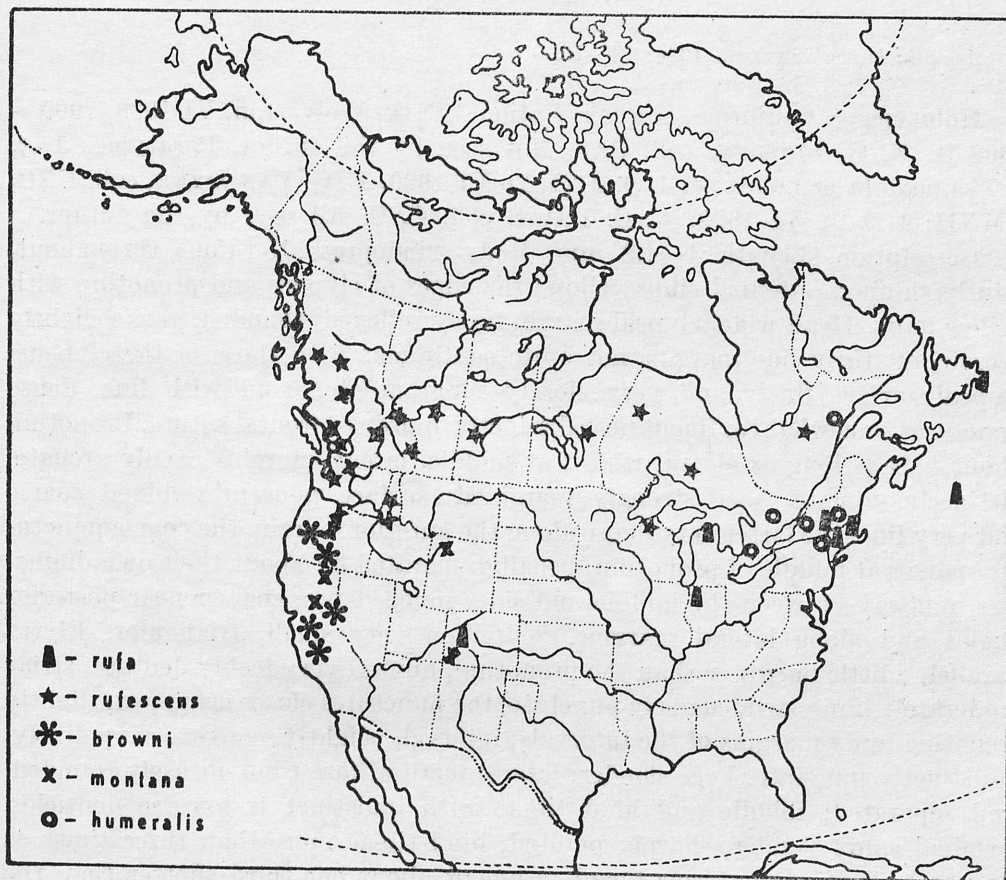


Fig. 37. Known distribution of the subgenus *Leptaegialia* in North America

angle prolonged inwardly, very acute; last abdominal segment shorter than in female.

Female. Apical spur of fore tibia narrow, rounded at apex; last abdominal segment longer than in male. Stylus rather wide with ten visible, moderately long setae.

Biology unknown.

Distribution (Fig. 37). Canada and U.S.A. Recorded from: British Columbia — Revelstoke Mt.; Ontario; Washington; Idaho; Wyoming — Yellowstone

Park; Colorado — Veta Pass (BROWN, 1931; SAYLOR, 1934; BROWN, 1934; HATCH, 1971).

Material examined. The paratype and 6 specimens. British Columbia — Alamo, 18 IV 1941, in duff forest, H. B. LEECH (CNC); Vancouver, 30 III 1930, H. B. LEECH (AMNH); Oregon — Crater Lake, Nat. Pk., Rim Drive, 7200 ft, fir litter, H. W. KRANTZ (OSU); California, R. C. CASSELBERRY (AMNH).

3. *Aegialia (Leptaegialia) browni* SAYLOR

(Figs. 34—35, 37, 51—53)

Aegialia browni SAYLOR, 1934: 74—75.

Holotype ♂: California, Sequoia National Park, Wolverton, VI 1929, 7000—9000 ft, E. G. LINSLEY, coll. CAS. Not seen by the author. Paratypes: 1 ♂, 1 ♀ same data as holotype; 1 ♂, 2 ♀♀, 20 VI 1929, E. C. VAN DYKE, coll. CNC, AMNH; 1 ♀, 22 VI 1929, A. C. DAVIS, coll. CNC. All seen by the author.

Description. Length 4—4.2 mm. Body subdepressed, rufous throughout, faintly shining, antennal clubs yellow; the edges of clypeus and pronotum with yellow hairs. Head wide, clypeal margin finely reflexed, rounded, genae slightly prominent, their side margins not quite continuous with those of the clypeus; clypeal surface finely and very closely subgranulate, front with fine, dense punctures somewhat confluent near distinctly impressed frontal suture. Pronotum about half as long as elytra, widest at middle, lateral margins evenly arcuate, distinctly crenate, base strongly margined; surface punctures mixed coarse and very fine, the latter very dense along the anterior margin, the coarse punctures sparser at middle of pronotum, usually separated by about their own diameters, midway between the middle and sides much dense, sparser near posterior angles and along lateral margins. Scutellum very small, triangular. Elytra parallel, a little narrower than the pronotum, humeri very feebly dentate; striae moderately impressed, coarsely punctate, the punctures closer near apex, slightly crenating inner margins of the intervals; intervals slightly convex, very finely, indistinctly punctate. Legs slender; lateral teeth of fore tibia obtusely rounded, well separated; middle and hind tibiae with indistinct transverse denticles, terminal spurs slender, sharply pointed; hind tibiae more than three times as long as wide; first posterior tarsal segment about one-third shorter than the upper spur and subequal to following two segments combined; hind tarsus about two-thirds as long as the tibia. Hind femora extremely finely and sparsely punctate. Metasternum finely punctate, midline indistinct; abdominal sterna shining, feebly punctate.

Male. Apical spur of fore tibia wide, parallel, truncate at apex, the inner apical angle prolonged inwardly, very acute. Pronotal margins less distinctly crenate than in female. Aedeagus normal.

Female. Apical spur of fore tibia narrow, rounded at apex. Pronotal margins more distinctly crenate than in male. Stylus wide with nine visible, moderately long setae.

Larva. Original description of larva (according to CORNELL, 1967). „The following description is based on 11 third instars and cast skins of 5 third instars reared to the pupal or adult stage. All of the larvae were collected by J. F. and S. J. CORNELL on Mary's Peak, 14 miles west of Corvallis, Benton Co., Oregon, from soil with *Carex* and grasses under Noble Fir (*Abies procera* REHD.) at the edge of the summit meadow. The dates and numbers collected are as follows: 1, 10 May 1966; 1, 4 June 1966; and 14, 9 July 1966. The reared adults were determined by O. L. CARTWRIGHT of the U. S. Nat. Mus.

Maximum width of head capsule. 1.08—1.30 mm. Cranium yellowish white, surface smooth except for three small depressions of each side of frons; 5—7 dorsoepicranial setae and 18—20 micro-sensillae on each side. Epipharynx with 10—12 micro-sensillae along base of protophoba. Maxillary stridulatory area with row of 9—12 conical teeth. Galea dorsally with 5—6 stout teeth. Lacinia dorsally with row of 7 long setae near mesal edge and seta posteriorly. Laetotorma and dextotorma produced about equally posteriorad. Abdominal segments I—V each with three dorsal annulets; each anterior annulet (prescutum of JERATH, 1960) with 8—9 short setae; each middle annulet (scutum of JERATH, 1960) with 8 long and 10—12 short setae on each side; each posterior annulet (scutellum of JERATH, 1960) with 8—10 short setae. Raster with teges of 25—39 short hamate setae curved at their distal ends”.

Distribution (Fig. 37). U.S.A. Recorded from: California; Oregon (SAYLOR, 1934; CORNELL, 1967).

Material examined. Six paratypes and 8 specimens. Oregon — Mary's Peak, 14 mi W Corvallis, 8 V 1958, Noble Fir litter, J. D. LATTIN (OSU); Huckleberry Mt., 6500 ft, 20 VI 1911, E. C. VAN DYKE (AMNH); California — Sequoia Nat. Pk, 20 VI 1929, „the specimens were caught at dusk flying near an old decayed log, at 9000 ft altitude”, E. C. VAN DYKE (AMNH); Bass Lake, 10 IV 1934 (AMNH); Giant Forest, 6400 ft, 1 VII 1915 (AMNH).

4. *Aegialia* (*Leptaegialia*) *humeralis* BROWN

(Figs. 33, 37)

Aegialia humeralis BROWN, 1931: 13; SAYLOR, 1934: 75;

Holotype ♂: Ontario, Hastings Co., 1884, leg. EVANS, No. 3079, coll. CNC. Not seen by the author. Paratypes: 1 ♀, New Hampshire, Mt Washington (sub-alpine), VII 1896, coll. MCZ; 2 ♀♀, Massachusetts, Framingham, 8 V 1909, C. A. FROST; 1 ♂ seen by the author, New Hampshire, Three Mile Id. V 1927, coll. CNC; 1 ♀, New Jersey, West Point, 24 V 1910, W. ROBINSON.

Description. Length (according to BROWN, 1931) 3.4—4 mm. Body reddish yellow throughout, shining, antennal clubs yellow; the edges of clypeus and pronotum with yellow hairs. Head wide, clypeal margin finely reflexed, arcuate, genae very feebly prominent; clypeal surface finely, closely subgranulate, frontal punctures somewhat finer, confluent near the feebly marked frontal suture. Pronotum about half as long as elytra, widest at middle, sides evenly arcuate, distinctly crenate in apical half, basal marginal line strong, crenate at the pos-

terior angles; surface with a small, indistinct fovea on each side near middle of lateral declivity, the punctures mixed fine and coarse, the latter somewhat irregularly distributed, usually rather sparse and always quite sparse at middle, not attaining the anterior margin and very sparse near the posterior angles; the fine punctures scarcely distinct, sparse and regular, closer near anterior margin. Scutellum triangular, impunctate. Elytra subdepressed, a little narrower than the pronotum, humeri very strongly dentate; striae moderately impressed, rather coarsely punctate, intervals feebly convex, very finely, moderately closely punctate. Legs slender; anterior tibiae wide, lateral teeth obtusely rounded, well separated; middle and hind tibiae slender, the latter three times as long as wide, tibial spurs slender, sharply pointed; first posterior tarsal segment shorter than the upper spur and subequal to following two segments combined; hind tarsus about three-fourths as long as the tibia. Hind femora very finely, indistinctly punctate. Metasternum finely punctate, midline distinctly impressed; abdominal sterna shining, each with a row of moderately coarse punctures distributed along inner margins.

Male. Apical spur of fore tibia wide, parallel, truncate at apex, the inner apical angle prolonged inwardly, very acute. Aedeagus normal.

Female. Apical spur of fore tibia narrow, rounded at apex. Stylus not investigated.

Biology unknown.

Distribution (Fig. 37). Canada and U.S.A. Recorded from: Ontario; Massachusetts; New Hampshire; New Jersey (BROWN, 1931; SAYLOR, 1934).

Material examined. One paratype and 2 specimens ♂♀ (1 specimen of female with abdomen damaged). Ontario — Minden, 27 V 1931, G. S. WALLEY (CNC); Quebec — Portneuf Co., St Catherine, 26 V 1960, J. C. AUBÉ (CNC).

D. Subgenus *Saprus* BLACKBURN (stat. nov.)

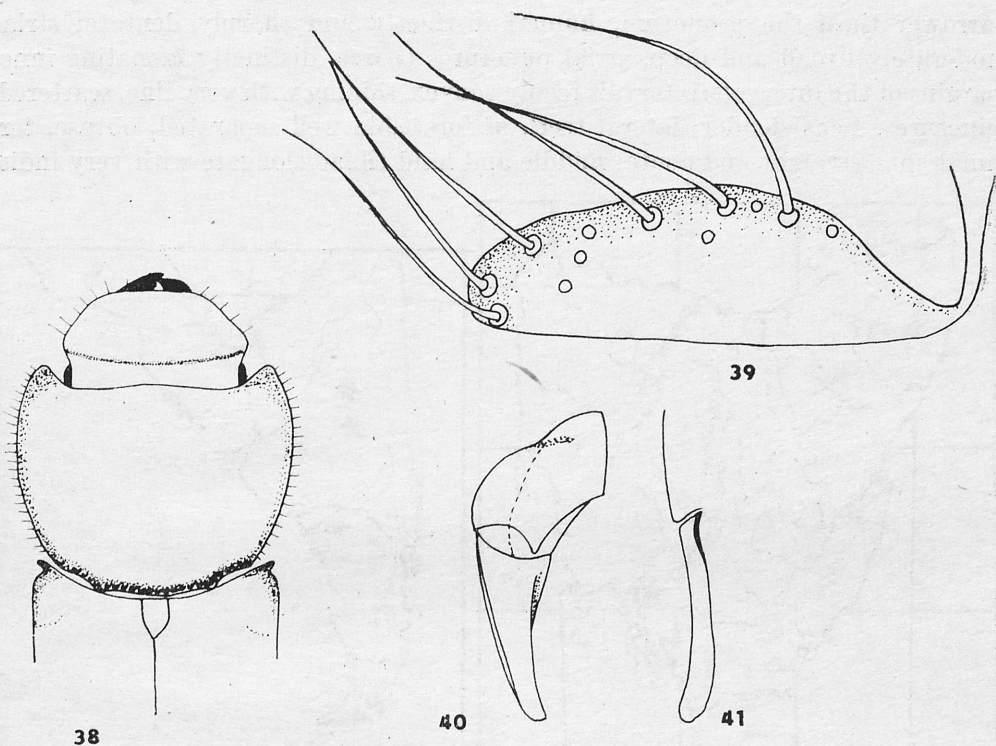
Saprus BLACKBURN, 1904: 150, 178—179; A. SCHMIDT, 1913: 5—6.

Type species: *A. (S.) griffithi* (BLACKBURN).

Description. Body elongate, elytra parallel. Terminal segment of maxillary palpus short, cylindrical, head finely punctate without granulae or rugae. Pronotum about half as long as elytra, posterior angles noticeable emarginate, basal marginal line entire, distinct. Elytral humeri dentate, legs and tibial spurs slender.

Distribution (Fig. 42). Tasmania.

Remarks. The subgenus includes exclusively a single species *A. griffithi* described by BLACKBURN in the separate genus *Saprus*, which can not be justified considering the taxonomical relations between species of the genus *Aegialia* LATR. Because of the considerable geographical isolation of *A. griffithi*, its distinct character should be, however, stressed, therefore author has placed it in a separate subgenus, retaining its traditional generic name.



Figs. 38—41. *Aegialia (Saprus) griffithi* (BLACKB.), 38 — fore body; 39 — stylus; 40 — aedeagus; 41 — paramera dorsally

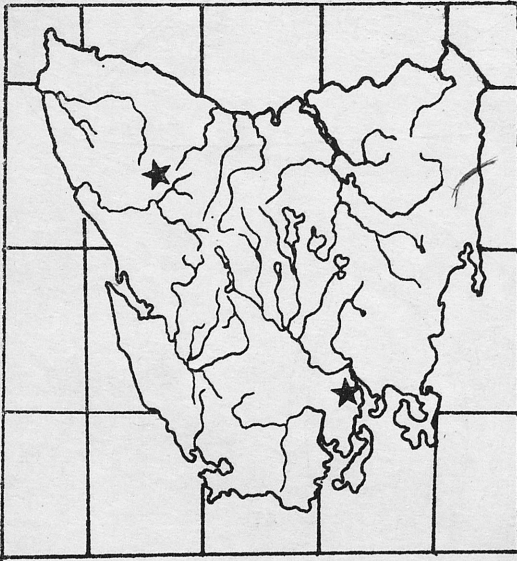
1. *Aegialia (Saprus) griffithi* (BLACKBURN) (comb. nov.)
(Figs. 38—42)

Saprus griffithi BLACKBURN, 1904: 150, 178—179.

Holotype (sex not examined): Tasmania (no exact locality), coll. BMNH. Paratype ♀ seen by the author: the same data as holotype, coll. SAM.

Description. Length 3.5—4.5 mm. Body slender, elongate, moderately convex, shining; color very dark brown varying to dark reddish brown, legs somewhat paler, antennal clubs yellow. Terminal segment of maxillary palpus rather short, cylindrical, mandibulae strongly sclerotized. Head moderately wide, flat, genae slightly prominent, clypeal edge very finely reflexed, indistinctly scarcely piliferous; frontal suture distinct: surface rather finely punctate, the punctures generally separated by slightly less than their diameters. Pronotum about half as long as elytra, widest just anteriorly, sides slightly arcuate and margined, basal marginal line entire, finely crenate; anterior angles acute, posterior angles noticeable emarginate; surface rather closely punctate, the punctures are coarse over central posterior disc, finer to anterior margin, laterally more uniform in

size and very close. Scutellum small, smooth, shining. Elytra parallel, weakly narrower than the pronotum, humeri distinctly and sharply dentate; striae moderately broad and deep, stria punctures coarse, distinctly crenating inner margins of the intervals; intervals feebly convex, shining with very fine, scattered, punctures. Legs slender; lateral teeth of fore tibia well separated, obtuse, terminal spur straight and acute; middle and hind tibiae elongate with very indis-



42



43

Fig. 42. Known distribution of *Aegialia (Saprus) griffithi* (BLACKB.) in Tasmania.

Fig. 43. Known distribution of *Aegialia (Aegialia) argentina* MART. PER. VULC. in Argentina

tinct, incomplete transverse ridges, terminal spurs slender and sharply pointed tarsi slender; hind tarsus almost as long as the tibia; upper spur of hind tibia first tarsal segment and following three segments combined equal in length Hind femora very slightly punctate, shining. Metasternum concave, with a few coarse punctures at middle, midline very feebly marked. Abdominal sterna with a row of fine punctures along anterior margins; surface rather nude, smooth, shining, pigidium shagreened, distinctly punctate, feebly alutaceous.

Male. Metasternum more concave than in female. Aedeagus narrow, elongate.

Female. Metasternum less concave than in male. Stylus widened, with six visible setae.

Biology unknown.

Remarks. The species is morphologically closely related to Nearctic species of the subgenus *Leptaegialia* BROWN, and, partially, to the Himalayan species of the subgenus *Silluvia* LAND.

Distribution (Fig. 42). Tasmania.

Material examined. The paratype and four specimens. Tasmania (no exact locality), (SAM); Waratah, Lea (SAM); Hobart (SAM).

E. Subgenus *Aegialia* s. str.

Type species: *A. (A.) arenaria* (FABRICIUS).

Description. Body oblong oval, usually distinctly wider behind, moderately to strongly convex; terminal segment of maxillary palpus cylindrical, surface of head distinctly granulate. Pronotum about one-third time as long as elytra, the edges not crenate, base with or without marginal line, never sinuate or oblique; surface near the broadly rounded posterior angles impunctate or very feebly punctate. Elytra oval, humeri rounded, not dentate, elytral intervals virtually impunctate, striae with distinct or indistinct punctures. Anterior tibiae moderately wide, lateral teeth often elongated; middle and hind tibiae stout or slender with more or less strong transverse ridges; terminal spurs slender or foliaceous, tarsi varying from moderately long to short. Sexual characters evident in the last abdominal segment.

Distribution (Fig. 43, 60, 67, 76, 91, 92, 122). Eurasia; North and South America.

Key to Species

1. Anterior tibiae with two lateral teeth. Apical spurs of middle tibiae foliaceous. Argentina *A. (A.) argentina* MART., PER., VULC.
- Anterior tibiae with three lateral teeth. Apical spurs of middle tibiae slender 2.
2. Basal marginal line of pronotum complete, strongly marked 3.
- Basal marginal line of pronotum feeble, incomplete laterally or wholly absent 10.
3. Apical spurs of posterior tibiae slender 4.
- Apical spurs of posterior tibiae foliaceous 7.
4. Pronotal surface finely, shallowly punctate. North America
. *A. (A.) blanchardi* HORN
- Pronotal surface strongly, coarsely punctate 5.
5. Disc of pronotum entire moderately coarsely punctate. East Asia
. *A. (A.) nitida* WATERH.
- Basal half of pronotum strongly, coarsely punctate 6.
6. Color black; clypeal emargination rather wide, deep. East Asia
. *A. (A.) comis* (LEWIS)
- Color reddish black or yellowish brown; clypeal emargination narrower, shallow. East Asia *A. (A.) hybrida* REITT.
7. Elytra strongly convex, sides strongly arcuate; striae fine, shallow, very indistinctly punctate. North America
. *A. (A.) convexa* FALL
- Elytra moderately convex, sides moderately arcuate; striae deeply impressed, distinctly punctate 8.

8. Elytra elongate-oval. Discal punctures of pronotum indistinct, surface slightly transversely wrinkled. North America *A. (A.) conferta* HORN
- Elytra oval. Discal punctures of pronotum distinct, surface not wrinkled 9.
9. Discal punctures of pronotum moderately coarse, distinctly evident also near the anterior margin. North America *A. (A.) cartwrighti* sp. n.
- Discal punctures of pronotum less coarse, almost completely lacking near the anterior margin. North America *A. (A.) punctata* BROWN
10. Basal marginal line of pronotum feeble, incomplete laterally; pronotal surface entire evenly coarsely punctate. Apical spurs of posterior tibiae slender. North America *A. (A.) latispina* LEC.
- Basal marginal line of pronotum wholly absent; discal punctures very fine or coarse, the latter confined to basal half. Apical spurs of posterior tibiae foliaceous 11.
11. Length less than 3.9 mm. North America *A. (A.) opifex* HORN
- Length more than 3.9 mm 12.
12. Disc of pronotum impunctate or sometimes with a few microscopic punctures. Europa, North America, Azores Isl., Japan *A. (A.) arenaria* (FABR.)
- Disc of pronotum with coarse punctures confined to basal half. North America *A. (A.) crassa* LEC.

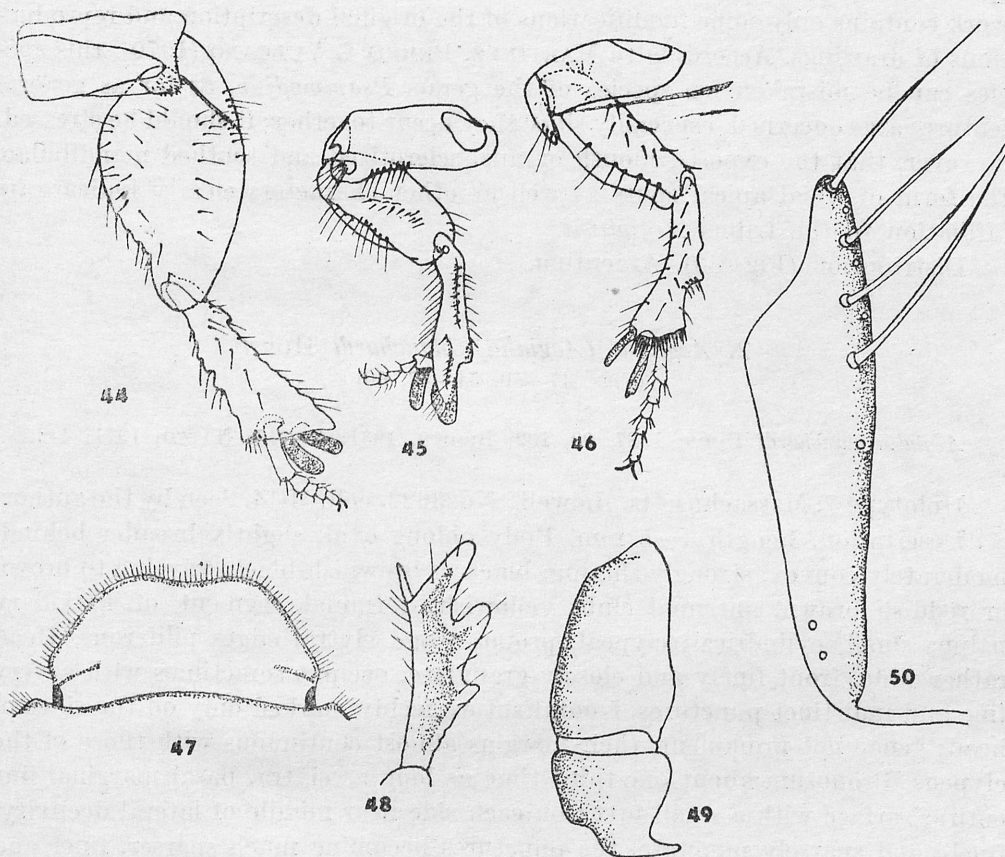
1. *Aegialia (Aegialia) argentina* MARTINEZ, PEREIRA, VULCANO
(Figs. 43—46)

Aegialia argentina MARTINEZ, PEREIRA, VULCANO, 1970: 336—341.

Holotype ♂: Argentina, Rio Negro, San Antonio Oeste, Playa Las Grutas, 10 I 1966, A. MARTINEZ, coll. MBR. Paratypes: 3 ♂♂, 10 ♀♀, the same data as holotype; 1 ♂, 2 ♀♀ La Rioja, Patquia (Guayapa), X 1957, A. MARTINEZ; 1 ♀, Catamarca, Santa Maria, 20 XII 1920, coll. MBR, IML and A. MARTINEZ. Not seen by the author.

Description (according to MARTINEZ, PEREIRA, VULCANO, 1970, somewhat modified). Length 4 mm. Body oblong oval, convex, moderately shining, reddish brown or yellowish brown. Antennae 9-segmented, mandibulae well sclerotized. Terminal segment of maxillary palpus cylindrical; the edges of clypeus, pronotum and elytra with yellow hairs. Head rather wide, half-round, clypeal margin finely reflexed; sides feebly arcuate to sharply rounded, right-angled genae; frontal suture distinct, arcuate, front slightly concave on the sides; surface irregular rugose, the punctures indistinct, anterior margin and concavity on the

sides impunctate. Pronotum convex, widest behind the middle, the sides and base margined, slightly crenulate; anterior angles acute, posterior angles obtusely rounded, surface with a flat, elongate wrinkle near anterior margin and with distinct fovea on each side near middle of lateral declivity; the punctures irregular, closer at middle, sparser and more indistinct on the sides of pronotum. Scutellum triangular, surface slightly rugose. Elytra convex, distinctly diverging



Figs. 44—46. *Aegialia (Aegialia) argentina* MART. PER. VULC. (according to MARTINEZ, PEREIRA, VULCANO, 1970), 44 — hind leg; 45 — fore leg; 46 — middle leg. Figs. 47—50. *A. (A.) blanchardi* HORN, 47 — head; 48 — right fore tibia; 49 — aedeagus; 50 — stylus

apically in basal two-thirds; humeri not dentate, elytral striae punctate, intervals with scattered, indistinct punctures. Legs stout, short; the two lateral teeth of fore tibia obtusely rounded, well separated, the first apical tooth elongate; terminal spur long, foliaceous, obtusely rounded at apex; middle tibiae with very strong, dentate transverse ridge, terminal spurs long, foliaceous, obtuse; hind tibiae robust with a few denticles on the sides, terminal spurs great, foliaceous, obtusely rounded; tarsi short. Hind femora great, flat. Metasternum shi-

ning, midline indistinct. Abdomen 6-segmented, piliferous. Sexual characters not evident.

Biology unknown.

Remarks. The original description of *A. argentina* is quite detailed, unfortunately, the authors gave too much attention to the secondary features and did not illustrate characters of the fundamental importance for the group of *Aegialiina* species. The author has not seen representatives of *A. argentina*, therefore this work contains only some modifications of the original description and reproductions of drawings. According to MARTINEZ, PEREIRA, VULCANO (1970), this species can be mistaken for species of the genus *Psammodius*, as far as general features are concerned, especially since they occur together; it should be stressed, however, that the exposed mouth organs, sclerotized and toothed mandibulae, the form of tibial apical spurs as well as other characters clearly indicate its affiliation to the tribus *Aegialiini*.

Distribution (Fig. 43). Argentina.

2. *Aegialia (Aegialia) blanchardi* HORN

(Figs. 47—50, 54—57, 60)

Aegialia blanchardi HORN, 1887: 99, 102; BROWN, 1931: 45—46; HATCH, 1971: 442.

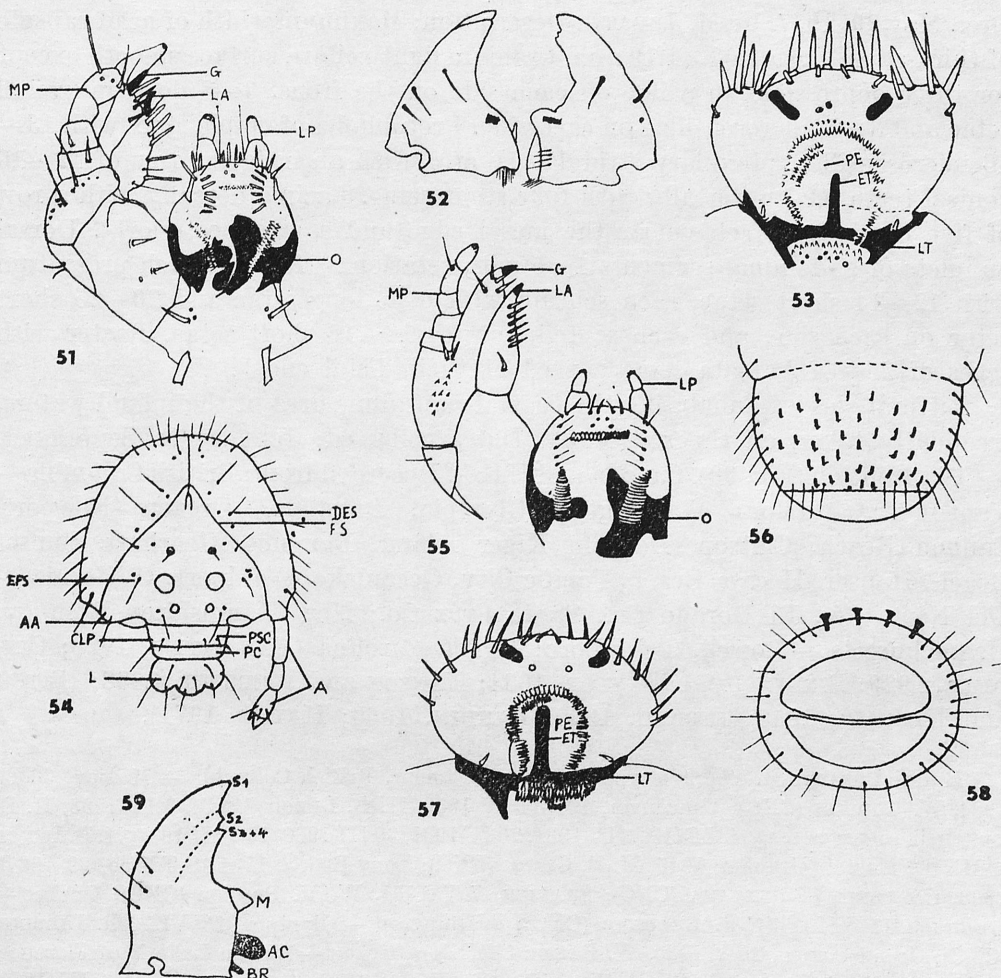
Holotype ♀: Massachusetts, Lowell, No. 3622, coll. MCZ. Seen by the author.

Description. Length 4—5 mm. Body oblong oval, slightly broader behind, moderately convex, strongly shining; black or brownish-black, varying to brown or reddish brown, antennal clubs yellowish, terminal segment of maxillary palpus small, cylindrical; clypeal, pronotal and elytral edges piliferous. Head rather wide, front finely and closely granulate, occiput sometimes with a very fine and indistinct punctures, frontal suture feebly marked only on the sides of head; genae not prominent, their margins almost continuous with those of the clypeus. Pronotum about one-third time as long as elytra, basal marginal line entire; surface with a small fovea on each side near middle of lateral declivity, finely and sparsely punctate, the punctures becoming much sparser, finer and indistinct on the lateral declivities and near anterior margin. Scutellum small, impunctate. Elytra rather convex, with fine moderately impressed striae, striae punctures fine, moderately close, slightly crenating inner margins of the intervals; intervals feebly convex, with a few indistinct, microscopic punctules. Legs slender; lateral teeth of fore tibia obtusely rounded, separated, terminal spur slender, acute; middle and hind tibiae slender with a very feeble transverse ridge at apical third; upper terminal spur of middle tibia very long; hind tibial spurs rather long, feebly flattened and feebly rounded at apex, upper spur and three tarsal segments combined equal in length; hind tarsus about one-third shorter than the tibia. Hind femora microscopically punctate, shining. Metasternum slightly alutaceous on the sides, impunctate, midline indistinct. Abdominal sterna alutaceous, with a few punctures bearing yellow hairs.

Male. Abdomen feebly convex, the last abdominal segment shorter than in female, very indistinctly concave at middle. Aedeagus normal.

Female. Abdomen strongly convex, the last abdominal segment longer than in male, without concavity. Stylus great, elongate, with four visible setae.

Larva and biology. JERATH and RITCHER, 1959; JERATH, 1960; RITCHER, 1966; CORNELL, 1967. Original description of larva according to JERATH, 1960:



Figs. 51—53. Larva of *Aegialia* (*Leptaegialia*) *browni* SAYL. (according to CORNELL, 1967), 51 — maxilla and hypopharynx: MP—maxillary palpus, G — galea, LP — labial palpus, O — onculus; 52 — mandibles; 53 — epipharynx: PE — pedium; ET — epitorma, LT — laeotorma. Figs. 54—57. Larva of *A. (Aegialia) blanchardi* HORN (according to JERATH, 1960). 54 — head: DES — dorsoepicranial seta, FS — frontal suture, EFS — exterior frontal seta, AA — seta of anterior frontal angle, L — labium, PSC — postclypeus, PC — preclypeus, A — antenna; 55 — maxilla and hypopharynx; 56 — venter of 10th abdominal segment; 57 — epipharynx. Figs. 58—59. Larva of *A. (Psammoporus) lacustris* LEC. (according to JERATH, 1960). 58 — caudal view of last abdominal segment; 59 — left mandible: S1—4 — scissorior teeth, M — molar area, AC — acia, BR — brustia

48—49. „One third-stage larva, associated with adults, collected under grass roots in sand dunes at Waldport, Ore., July 16, 1955, by P.O. RITCHER and M. JERATH (adults determined by O. L. CARTWRIGHT); 20 third-stage larvae and the cast skins of 10 third-stage larvae reared to the adult stage, being part of a large number collected under grass roots in sand dunes at Waldport, Ore., June 12, 1956 by P.O. RITCHER and M. JERATH; and 4 third-stage larvae, associated with adults, collected under grass roots in sand dunes at Waldport, Ore., May 29, 1957, by M. JERATH. Description: Maximum width of head capsule of third-stage larva 1.09×1.19 mm. Cranium light yellow, surface smooth except for three depressions in a line on each side on the frons, 6—8 dorsoepicranial setae and 3—5 microsensillae on each side. Protophoba of epipharynx with 13—16 microsensillae. Maxillary stridulatory area with an irregular row of 12—16 conical teeth. Galea dorsally with four stout setae. Lacinia dorsally with a row of five or six long setae near the mesal edge and a seta posteriorly. Dorsal annulets of abdominal segments 1—5 with setation as follows: each prescutum with 12—14 short setae, each scutum with 6—8 long setae and 20—25 short setae on each side, and each scutellum with 16—18 short setae. Raster with teges of 25—37 hamate setae curved at their distal ends”.

Littoral species, inhabiting the coastal sand dune area of the inland waters, frequently taken on the sea beach. Dates collected: January to September.

Distribution (Fig. 60). Canada and U.S.A. Recorded from: British Columbia—Vancouver, Mission; Washington—Olympia, Puyallup; Oregon—Newport, Cannon Beach, Clatsop, Dayton, Kiger Island, Florence, Gearhart, Sunset Beach, Hauser, Hecata Beach, Pacific City, Oceanlake, Waldport; California—Del Norte Co., El Dorado Co., Santa Cruz Co.; New Hampshire—Rumney; Massachusetts—Lowell, Tyngsboro; North Carolina (VAN DYKE, 1928; CRIDDLE, 1929; BROWN, 1931; SAYLOR, 1934; HANSON and WEBSTER, 1938; HATCH and KINCAID, 1958; JERATH, 1960; LANDIN, 1960; HATCH, 1971).

Material examined. The holotype and 220 specimens. British Columbia—Mission, 30 IV 1924, W. DOWNES (CNC); Vancouver, 10—11 IV 1930, H. B. LEECH (CNC), 6 IV 1933, H. B. LEECH, in rotten cabbage (AMNH), 3 IV 1931, 20 IV 1931, 30 III 1930, 19 VIII 1932, H. B. LEECH (AMNH); Massett Graham, 1945, M. E. CLARK (CNC); Long Beach, 12 mi S Tofino, 22—23 V 1968, CAMPBELL et SMETANA (CNC); SAANICH, 7 V 1931, W. H. PREECE (CNC); Quebec—Lanoraie, 11 VII 1934, J. BEAULNE (CNC); Washington—Olympia, 23 VI, coll. LIEBECK (CNC); Grand Coulee, 10 V 1930, W. BAKER (AMNH); Oregon—Sutton Lake N of Florence, 19 V 1938, H. B. LEECH (CNC); McMinnville, 15 III 1940, C. A. FROST (CNC), 4 III 1930, M. FENDER (FMNH); Woods, 7 IX 1938, C. A. FROST (CNC); Lane Co., Winchester Bay, 13 IV 1947, B. Malkin et IM. Newell (FMNH); Seio, 3 V 1931 (AMNH); Sunset Beach, 6 mi N Gearhart, in sand dunes, Gearhart 1/2 mi E beach, Pacific City, Old dunes 1/4 mi from ocean, 5 IX 1957, P. O. RITCHER et M. JERATH (OSU); Clatsop City, in sand dunes, 7 IV, 4 VII 1955, V. ROTH (OSU); Tillamook Co., Island Pk., 12 VIII 1960, P. F. TORCHIO (OSU); Neskowin, 24 VI 1950, F. M. BEER (OSU); Waldport, 11 VI 1936, S. E. CRUMB, 16 VII 1956, M. JERATH, 29 I 1955, P. O. RITCHER et M. JERATH (OSU); Hecata Beach, in sand dunes, 20 V 1954, P. O. RITCHER (OSU); Hauser, in sand dunes, 20 V 1954, P. O. RITCHER (OSU); Cannon Beach, 24 IV 1936, K. GRAY (OSU); Oceanlake, in sand dunes, 5 IX 1957, P. O. RITCHER et M. JERATH (OSU); 1/2 mi S Twin Rocks, in sand dunes, 29 VI 1938, K. GRAY et J. SCHUH (OSU); Bandon, in sand

dunes, 19 V 1954, P. O. RITCHER et M. MARTIN (OSU); Massachusetts — Lowell (CNC, AMNH); South Carolina — Clemson College, 10 IV 1949, D. FRECHIN (CNC); 10 II, 28 VII 1937, O. L. CARTWRIGHT (MCZ).

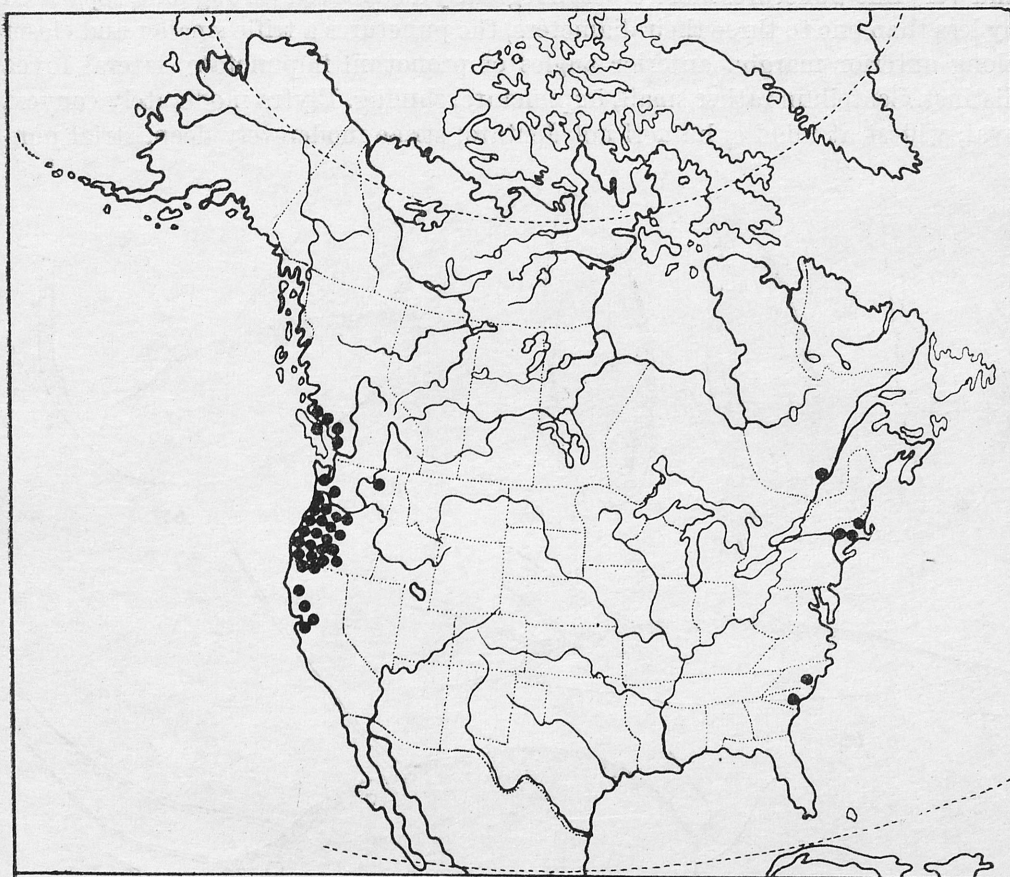


Fig. 60. Known distribution of *Aegialia (Aegialia) blanchardi* HORN in North America

3. *Aegialia (Aegialia) nitida* WATERHOUSE

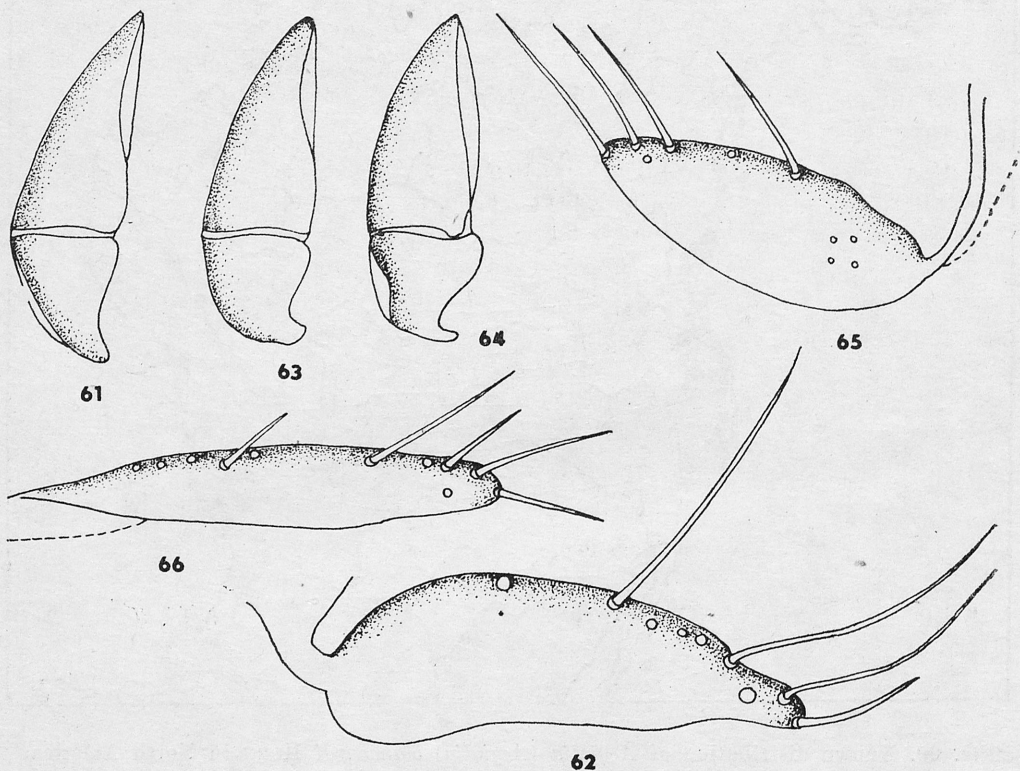
(Figs. 61—62, 67)

Aegialia nitida WATERHOUSE, 1875: 95; LEWIS, 1895: 385; NAKANE, 1961: 62.

Holotype (sex not recorded): North Japan, Hokkaido, Hakodate, coll. BMNH. Not seen by the author.

Description. Length 3.5—4.5 mm. Body oblong oval, convex, black, reddish black or yellowish brown, strongly shining, the legs reddish brown or yellowish brown, antennal clubs yellow; the edges of clypeus, pronotum and elytra piliferous. Terminal segment of maxillary palpus small, cylindrical. Head rather wide, front finely and closely granulate, occipital area impunctate, frontal suture indistinct; the edge of clypeus finely reflexed, genae not prominent, their margins

rather quite continuous with those of the clypeus. Pronotum about one-third time as long as elytra, anterior angles acute, posterior angles broadly rounded, sides and base margined, very minutely crenate; surface with mixed coarse and very fine punctures more or less irregularly distributed throughout, separated by less than one to three their diameters, the punctures a trifle smaller and closer along anterior margin, anterior angles of pronotum impunctate, lateral fovea distinct. Scutellum rather small, impunctate, shining. Elytra moderately convex, oval, widest at middle, humeri not dentate; striae moderately deep, striae pun-



Figs. 61—62. *Aegialia (Aegialia) nitida* WATERH. 61 — aedeagus; 62 — stylus. Fig. 63. *A. (A.) hybrida* REITT. — aedeagus. Figs. 64—65. *A. (A.) comis* (LEWIS). 64 — aedeagus; 65 — stylus. Fig. 66. *A. (A.) convexa* FALL — stylus

ctures distinct, slightly crenating inner margins of the weakly convex, impunctate intervals. Legs slender; the teeth of fore tibia well separated, terminal spur slender, sharply pointed; middle and hind tibiae with distinct, incomplete transverse ridges; upper terminal spur of middle tibia long, about equal in length to three segments combined; hind tibial spurs slender, feebly flattened, upper spur longer than the two first tarsal segments combined; hind tarsus approximately one-third shorter than the tibia. Hind femora shining, rather impunctate. Abdominal segments shagreened, moderately shining with a few fine punctures bearing yellow hairs.

Male. Abdomen slightly convex, the last abdominal segment shorter than in female, weakly concave at middle. Aedeagus normal.

Female. Abdomen strongly convex, the last abdominal segment longer than in male, not concave at middle. Stylus widened, great, with four visible setae.

Biology unknown.

Remarks. The holotype of *A. nitida* was verified by NAKANE (1972); a detailed distribution of that species is little known; related comments (in Japanese language only) are rather imprecise (NAKANE, 1961). The species is very similar to *A. comis* (LEWIS) and *A. hybrida* REITT. and differs from those species in the characters given in the key. Broader considerations concerning a possible individual variability of the mentioned species are difficult because of a small number of investigated specimens.

Distribution (Fig. 67). Japan. Recorded from: Hokkaido, Honshu, Kyushu (WATERHOUSE, 1975; NAKANE, 1961).

Material examined. Six specimens: Japan — Hokkaido, Sapporo, 16 V 1974, M. KYUCHI (EIHU).

4. *Aegialia (Aegialia) comis* (LEWIS) (comb. nov.)

(Figs. 64—65, 67)

Psammobius comis LEWIS, 1895: 384, SCHMIDT A., 1922: 471, 485; BALTHASAR, 1964: 530, 540 (?);

Psammoporus comis: NAKANE, 1972: 426;

Psammoporus freyi: PETROVITZ, 1961: 136;

Aegialia hybrida: NAKANE, 1955: 33, pl. 1, f. 10.

Holotype of *comis*: (sex not examined), Japan, Honshu, Nikko, coll. BMNH (see under „Remarks”);

Holotype of *freyi*: ♂, Japan, Hokkaido, Kotoni, II 1955, Y. NISHIA, coll. MGF. Paratype ♀ seen by the author: the same data as holotype, coll. MHNG.

Description. Length 2.8—4.5 mm. Body oblong oval, convex, black, strongly shining, the legs and clypeal edge reddish brown, antennal clubs yellowish brown; the edges of clypeus, pronotum and elytra with yellow hairs. Head rather wide, finely and closely granulate with a very small convexity on each side of indistinct frontal suture; clypeal margin finely reflexed, somewhat rounded each side of rather deep median emargination; genae slightly prominent, their margins not quite continuous with those of the clypeus. Pronotum about one-third time as long as elytra, anterior angles acute, posterior angles broadly rounded, sides and base distinctly margined; surface with small fovea on each side near middle of lateral declivity, punctures rather strongly impressed, mixed fine and coarse, rather irregularly distributed, confined to basal half. Scutellum small, impunctate, shining. Elytra rather strongly convex, widest at middle, humeri not dentate; elytral striae not very strong with fine, distant punctures; intervals moderately convex, rather impunctate, very feebly crenate along inner margins. Legs slen-

der; the teeth of fore tibia well separated and rounded, terminal spur slender and acute; middle and hind tibiae with distinct, incomplete transverse ridges; upper terminal spur of middle tibia very long, sharply pointed; hind tibial spurs rather long, feebly flattened, obtuse, upper spur longer than the two first tarsal seg-

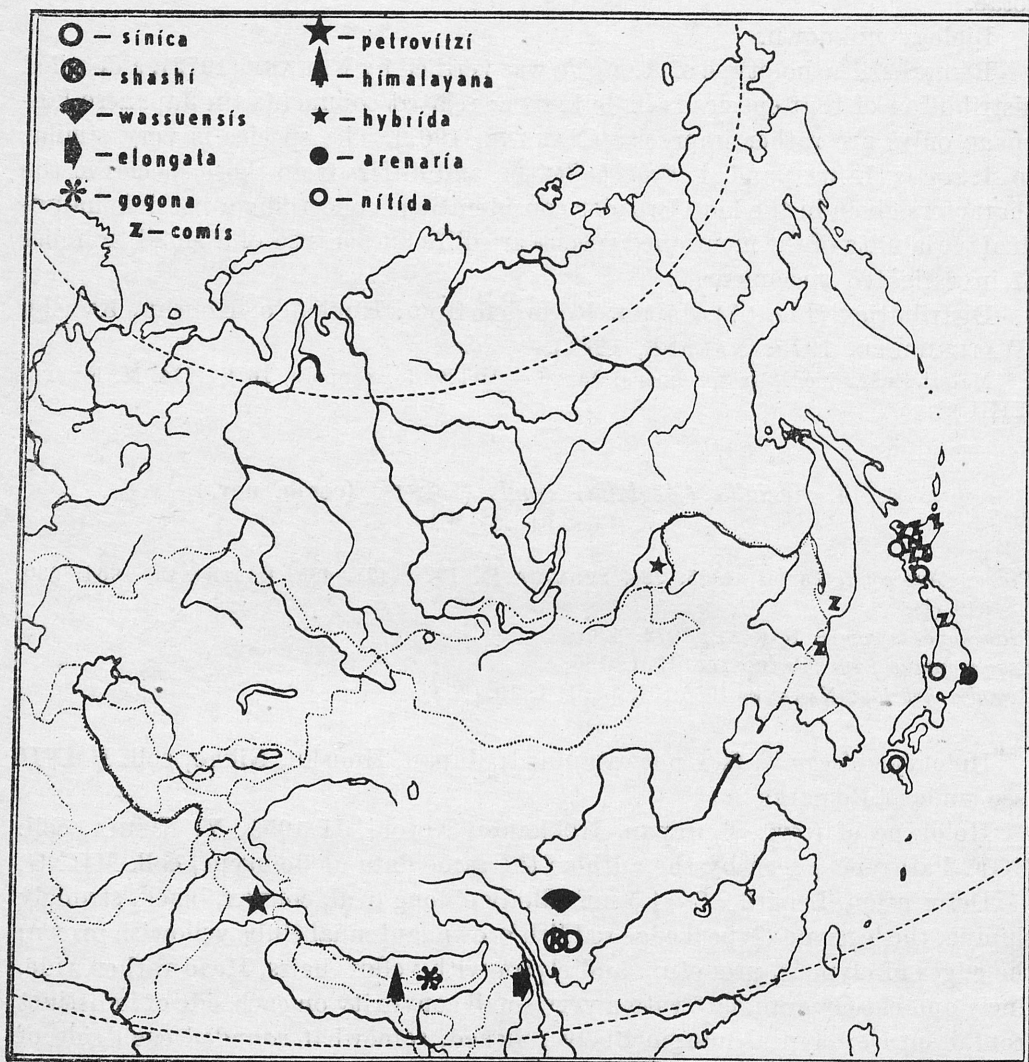


Fig. 67. Known distribution of *Aegialia (Silluvia) gogona* STEBN., *A. (S.) himalayana* (PETROV.), *A. (S.) petrovitzi* STEBN., *A. (S.) wassuensis* (PETROV.), *A. (S.) elongata* (LAND.), *A. (S.) sinica* sp. nov., *A. (S.) shashi* sp. nov., *A. (Aegialia) hybrida* REITT., *A. (A.) nitida* WATERH., *A. (A.) comis* (LEWIS) and *A. (A.) arenaria* (FABR.) in Asia

ments combined, hind tarsus approximately one-third shorter than the tibia. Hind femora shining, impunctate. Metasternum shining, impunctate, midline indistinct. Abdominal segments alutaceous on the sides, shining at middle, feebly piliferous.

Male. Abdomen feebly convex, the last abdominal segment shorter than in female, feebly concave at middle. Aedeagus normal.

Female. Abdomen strongly convex, the last abdominal segment longer than in male, not concave at middle. Stylus widened, rather great with four visible setae.

Biology unknown.

Remarks. The holotype of *A. comis* has not been investigated by the author; the comment is based on the informations presented by NAKANE (1972) who has studied holotypes of *comis* and *freyi*, determined the synonym of PETROVITZ (1961) and has corrected his own earlier error (NAKANE, 1955). The external morphological characters of *A. comis* as well as the shape of stylus in female determine the inclusion of that species to the subgenus *Aegialia* s. str. The general appearance of *A. comis* is very similar to the remaining Asian species of that subgenus and to the Nearctic *A. blanchardi* HORN.

Distribution (Fig. 67). U.S.S.R. — Primorskij Kraj, North Japan and North Korea. Recorded from Japan: Honshu — Nikko; Hokkaido — Sapporo, Kotoni, Bankei, Tokachi, Abashiri (LEWIS, 1895; NAKANE, 1955; PETROVITZ, 1961).

Material examined. The paratype and five specimens. U.S.S.R., Primorskij Kraj — Suputinka, 16 IV 1960, G. KABAKOV (CK); North Korea — Prov. Chongdžin-si, valley of river Susŏng-čhŏn, about 15 km NE Chongdžin, 22 V 1974, in litter, J. PAWŁOWSKI, A. SZEPTYCKI, Z. STEBNICKA (ISEZ).

5. *Aegialia (Aegialia) hybrida* REITTER

(Figs. 63, 67)

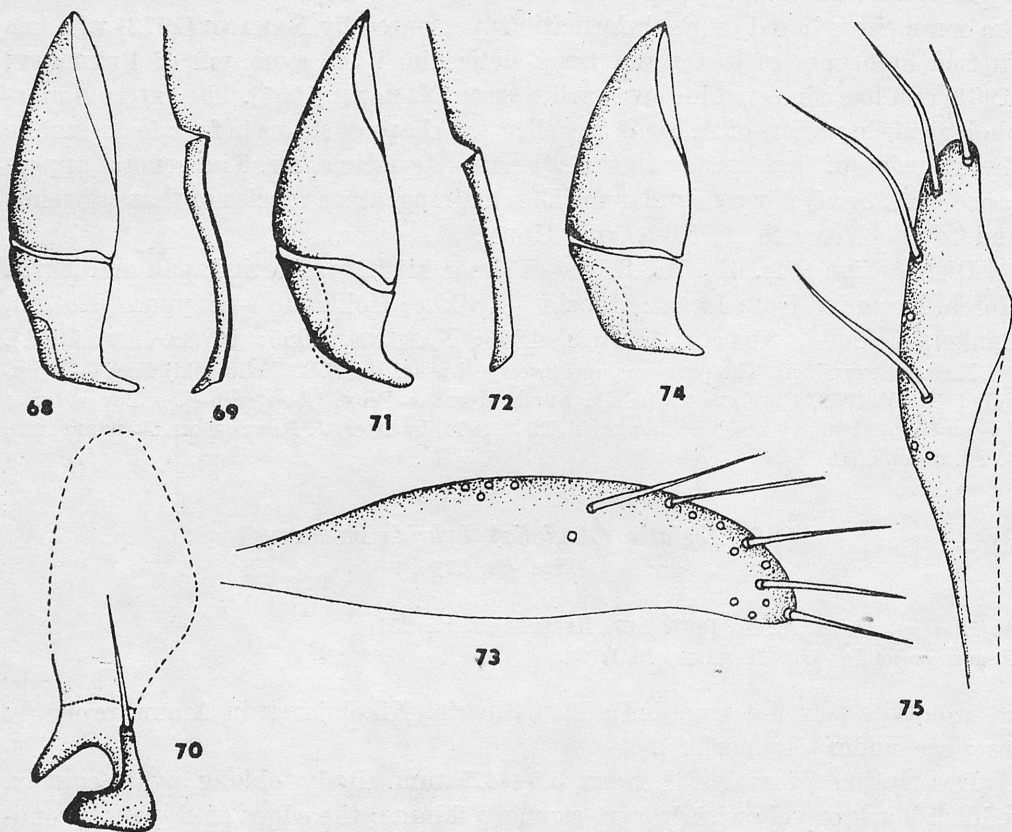
Aegialia hybrida REITTER, 1892: 113; REITTER, 1892: 251;

Psammoporus hybrida: NAKANE, 1961: 62.

Holotype (sex not recorded): East Siberia, Nikolajevsk in Amur (probably lost; see under „Remarks”).

Description of males. Length 3.5—4.5 mm. Body oblong oval, convex, reddish black or yellowish brown, strongly shining; the edges of clypeus, pronotum and elytra with yellow hairs. Terminal segment of maxillary palpus small, cylindrical. Head rather wide, front finely and closely granulate, occiput impunctate, frontal suture indistinct; clypeal margin finely reflexed, the sides of clypeus moderately arcuate to right-angled, feebly flattened, impunctate genae. Pronotum about one-third time as long as elytra, anterior angles acute, posterior angles broadly rounded, sides and base distinctly margined; surface with distinct fovea on each side near middle of lateral declivity, punctures strongly impressed, confined to basal half, fairly regular, separated by about their diameters, anterior median area with very fine, minute punctures, sides rather impunctate. Scutellum very small, without punctures. Elytra convex, oval, widest at middle, humeri not dentate; striae moderately strong, stria punctures deep, slightly crenating inner margins of the weakly convex intervals; intervals impunctate, shining. Legs slender; the teeth of fore tibia well separated, terminal spur slender,

sharply pointed; middle and hind tibiae with incomplete transverse ridges; upper terminal spur of middle tibia very long, about equal in length to four segments combined; hind tibial spurs slender, feebly flattened, upper spur longer than the first two segments combined, hind tarsus approximately one-third shorter than the tibia. Hind femora shining, impunctate. Metasternum shining, impunctate, midline indistinct. Abdominal segments shagreened, moderately



Figs. 68—70. *Aegialia* (*Aegialia*) *conferta* HORN. 68 — aedeagus; 69 — paramera dorsally; 70 — stylus. Figs. 71—73. *A. (A.) cartwrighti* sp. nov. 71 — aedeagus; 72 — paramera dorsally; 73 — stylus. Figs. 74—75. *A. (A.) punctata* BROWN. 74 — aedeagus; 75 — stylus.

shining with a few fine punctures bearing yellow hairs; the last abdominal segment slightly concave at middle.

Female not seen by the author.

Biology unknown.

Remarks. The author was not able to find a holotype of *A. hybrida* REITT. in the Hungarian Museum of Natural History in Budapest, where it was expected to be present in the collection, there were no other specimens of that species, either. The neotype, however, has not been determined since the author can not authoritatively state a disappearance of holotype. Description was based

on two males from the collection of the ZIL and on the original REITTER's text (1892), cited below: „Die hintersten Schienen ziemlich stark verbreitert, Flügeldecken ohne Humeraecken, Kopfschild von der Stirne nicht abgesetzt, gleichmäßig gekörnt, nur am Scheitelrande glatt. Halsschild vor der Mitte und an den Seiten glatt, vor der Basis punktirt, ohne Längsgrübchen, Flügeldecken verkehrt eiförmig, gewölbt, mit stark gekerbten, tiefen Punktstreifen, der zweite Streifen neben dem Seitenrande vorn mit dem ersten verschmolzen, der dritte vorn abgekürzt. Braunschwarz, glänzend, die Naht der Flügeldecken heller, Fühler und Taster gelb, die Beine rostbraun. Long. 3.5—4 mm.”

According to NAKANE (1972) a very similar species, *A. comis* (LEWIS) was erroneously identified as *A. hybrida* in some Japanese localities (NAKANE, 1955). The Tokyo collection has not been revised by the author; the museum of Sapporo University possess only a very small amount of Far-Eastern *Aegialiini*. It seems therefore that knowledge concerning the distribution of *A. hybrida* REITT. should be restricted as yet to the locus typicus reported by REITTER and to a locality presented below.

Distribution (Fig. 67). Eastern Siberia.

Material examined. Two males: U.S.S.R. — Čitinskaja Obl., Šilka, 20 VI 1927, leg. VULFION (ZIL).

6. *Aegialia (Aegialia) convexa* FALL (Figs. 66, 92)

Aegialia convexa FALL, 1932: 183.

Holotype (sex not examined): California, Los Angeles Co., probably in coll. NHM. Not seen by the author.

Description. Length 4—4.7 mm. Body oval, strongly convex and shining, distinctly broader behind; black, varying to brownish-black, reddish brown or yellowish brown, elytral suture sometimes narrowly paler, legs reddish brown, antennal clubs yellow. Terminal segment of maxillary palpus cylindrical; the edges of clypeus, pronotum and elytra with yellow hairs. Head wide, moderately convex, clypeal margin finely reflexed, broadly rounded each side of very weak median emargination; genae not prominent, their side margins quite continuous with those of the clypeus; surface very finely granulate, slightly transversely wrinkled, occiput impunctate, frontal suture well marked on the sides of head. Pronotum about one-third as long as elytra; anterior angles acute, posterior angles broadly rounded, sides and base margined, basal marginal line strong and entire; surface with very distinct, elongated fovea on each side near middle of lateral declivity, flattened at the front angles; punctures very fine, more distinct at middle, finer, sparser and indistinct on the sides. Scutellum small, sometimes slightly shagreened, impunctate. Elytra strongly convex, diverging apically in basal two-thirds; humeri not dentate, elytral striae fine, shallow, striae punctures very fine, indistinct; intervals slightly convex, impunctate. Lateral teeth of fore tibia obtusely rounded, well separated, under side without denticles,

terminal spur small, acute; middle tibiae short, rather stout, terminal spurs slender; hind tibiae stout, granulate, about two times as long as wide with distinct incomplete transverse ridge; hind tarsus about two-thirds as long as the tibia, spurs foliaceous, rather triangular, obtuse. Hind femora wide, shining, feebly and obtusely dentate at knee, surface with a few punctures bearing yellow hairs. Metasternum feebly concave, rather impunctate, shining, midline distinct. Abdominal segments slightly alutaceous, piliferous, pigidium shagreened.

Male. Abdomen more convex, the last abdominal segment shorter than in female.

Female. Abdomen less convex, the last abdominal segment longer than in male. Stylus elongated with five visible, short setae.

Biology unknown. The species is most probably littoral and occurs exclusively in sand dunes.

Remarks. *A. convexa* can be relatively easily identified, possessing characters intermediate between species from the groups *A. conferta* and *A. crassa*.

Distribution (Fig. 92). U.S.A. Recorded from: California — Los Angeles Co., Santa Monica, Redondo (FALL, 1932).

Material examined. Sixteen specimens. California — San Luis Obispo Co., 8 III 1937, E. ROSS, H. B. LEECH, M. CAZIER (MCZ), the same locality, 2 V 1938, F. W. NUNENMACHER (FMNH).

7. *Aegialia (Aegialia) conferta* HORN

(Figs. 68—70, 76)

Aegialia conferta HORN, 1871: 293—294; HORN, 1887: 99, 103; BLATCHLEY, 1910: 921; BROWN, 1931: 45—47; HATCH, 1971: 442;

Aegialia conferta subsp. *nigrella*: BROWN, 1931: 45, 47;

Aegialia conferta var. *nigrella*: HATCH, 1971: 442.

Holotype ♀: Illinois, No. 3623, coll. MCZ. Seen by the author.

Description. Length 3.6—4.2 mm. Body oblong, moderately convex, robust, shining, distinctly broader behind; black, varying to dark brown or medium reddish brown, elytral suture narrowly rufescent; legs reddish brown, antennal clubs yellow. Terminal segment of maxillary palpus cylindrical, the edges of clypeus, pronotum and elytra hairy. Head moderately convex, finely reflexed clypeal margin broadly rounded each side of moderate median emargination; genae not prominent, their side margins almost continuous with those of the clypeus; surface finely and closely granulate, occiput impunctate. Pronotum well one-third time as long as elytra; anterior angles acute, posterior angles broadly rounded, sides and base margined, basal marginal line strong and entire; disc with very distinct, elongated fovea on each side near middle of lateral declivity, flattened at the front angles; punctures slightly irregular at middle, somewhat wrinkled, sides with fine, sparse and very indistinct punctures. Scutellum small, impunctate. Elytra moderately convex, diverging apically in basal two-thirds; humeri not dentate, elytral striae fine with moderately deep, close punc-

tures feebly crenating the intervals; intervals flat, impunctate. Lateral teeth of fore tibia obtusely rounded, separated, the first apical tooth elongate; under side without denticles, terminal spur small, acute; middle tibia rather slender, terminal spurs slender; hind tibia stout, granulate, two and one-half as long as wide with a feeble, incomplete transverse ridge; hind tarsus two-thirds as long as the tibia; spurs foliaceous, rather triangular, obtuse. Hind femora wide,

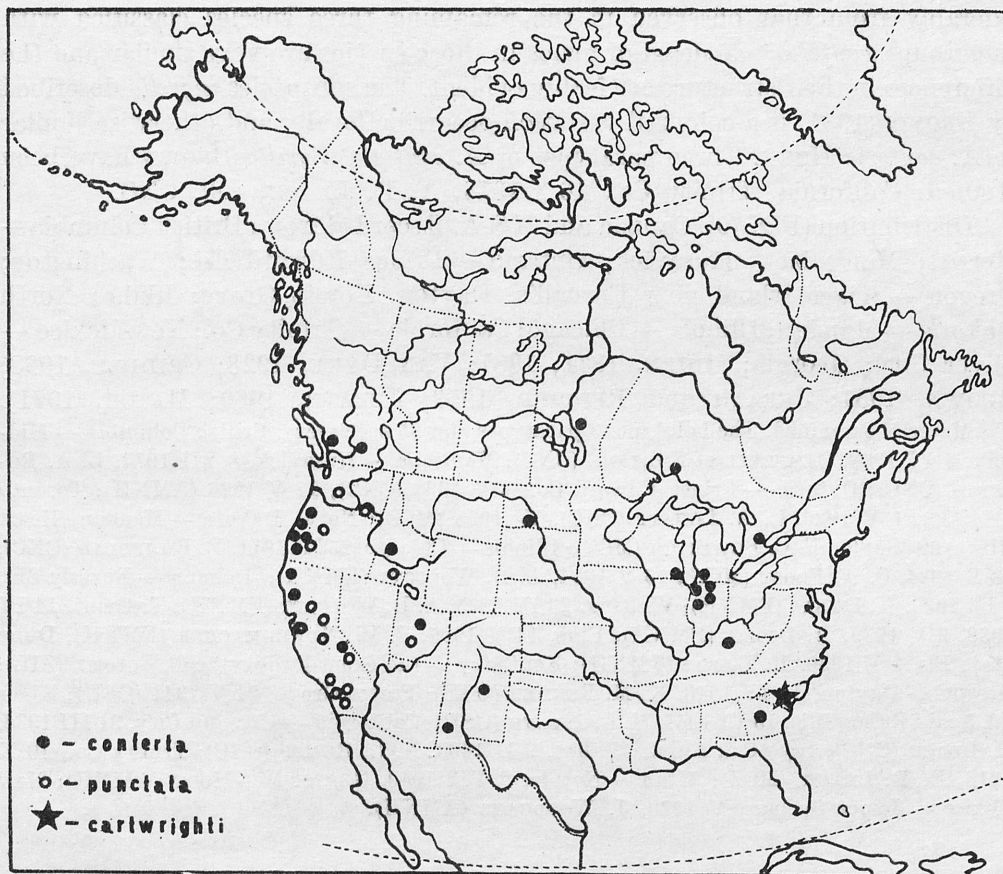


Fig. 76. Known distribution of *Aegialia (Aegialia) conferta* HORN, *A. (A.) punctata* BROWN and *A. (A.) cartwrighti* sp. nov. in North America

shining, posterior line short, feebly and obtusely dentate at knee, surface with a few punctures bearing yellow hairs. Metasternum very feebly concave, impunctate, midline indistinct. Abdominal segments slightly alutaceous, piliferous, pigidium shagreened.

Male. Abdomen more convex, the last abdominal segment shorter than in female. Aedeagus normal.

Female. Abdomen less convex, the last abdominal segment longer than in male. Stylus very small, vestigial, with one visible seta at apex.

Biology. Larva has not been described as yet. The species is probably littoral, psammophilic, occurring on sandy banks of inland waters: streams, lakes and rivers. Dates collected: February to July; October.

Remarks. *A. conferta* is very similar to *A. punctata*, *A. convexa* and *A. cartwrighti* sp. n. It can be distinguished (among others) from other species of *Aegialia* s. str. by different structure of female copulatory organs: the shape of stylus is typical for some species of the subgenus *Psammoporus* THOMS. but differs considerably from that observed in the remaining three species classified with the group „*conferta*”. Aedeagi of males in those species are very similar and the differences in their structure are feebly evident. The subspecies *nigrella* described by BROWN (1931) is a coloured variation occurring locally and otherwise similar to *A. conferta* HORN. Three paratypes of *A. conferta nigrella* BROWN have been studied: California, Trinity Co., 10 X 1918, A. R. LEACH, coll. CNC.

Distribution (Fig. 76). Canada and U.S.A. Recorded from: British Columbia—Merritt; Manitoba—Husavick; Ontario—Prince Edward Co.; Washington; Oregon—Kiger Island near Corvallis, Dayton, Forest Grove; Idaho; North Dakota—Mandan; Illinois—Chicago; California—Trinity Co.; New Mexico—Silver City; Georgia; (HORN, 1871; 1887; VAN DYKE, 1928; CRIDDLE, 1928; BROWN, 1931; JERATH and RITCHER, 1959; JERATH, 1960; HATCH, 1971).

Material examined. The holotype, 3 paratypes and 85 specimens. British Columbia—Midway, 6 VI 1968, CAMPBELL et SMETANA (CNC); Manitoba—Husavick, 8 VII.1917, L. A. ROBERTS (CNC); Ontario—Prince Edward Co., 2 V 1923 (CNC); 17 V 1926 (AMNH); Toronto (AMNH), 1 V 1926, C. A. LOVATT (CNC), IV 1928 (MCZ); North Dakota—Mandan, Heart River, 29 V 1890, F. C. BOWDITCH (MCZ); Illinois—Chicago, 25 III 1911, E. LILJEBLAD (CNC), 18 V 1924, C. A. FROST (MCZ), 15 V 1904, A. B. WOLCOTT (FMNH); Indiana—Beverly Sh., 9 IV 1933, H. DYBAS (FMNH); Whiting, 23 IV 1905, A. B. WOLCOTT (FMNH); Tremont, 14 IV 1938, 9 V 1939, H. DYBAS (FMNH); Pine, 14 V 1905, F. W. NUNENMACHER (FMNH); Dune State Pk, 9 V 1939, H. DYBAS (FMNH); Kentucky—(no exact locality), coll. SOLSKY (ZIL); Oregon—Dayton, 13 IV 1940, K. M. FENDER (OSU); Forest Grove, 21 V 1941 (OSU); Kiger Isl. 5 mi SE Corvallis, 15 VI 1957, M. L. JERATH (OSU); California—Crescent City, 31 III 1936, H. LEACH (CNC); Inyo Co., Eureka Valley, 9 II 1963, N. L. RUMPP (CNC); Trinity Co., 10 X 1918, E. R. LEACH (MCZ); Utah—Notom, 2 VII 1940, GERTSCH et HOOK (AMNH); New Mexico—Jemez Springs, V 1920, J. WOODGATE (AMNH).

8. *Aegialia (Aegialia) cartwrighti* sp. n.

(Figs. 71—73, 76)

Holotype ♂: South Carolina, Clemson College, 3 IV 1937, O. L. CARTWRIGHT, coll. FMNH. **Paratypes** ♀♀: the same data as holotype, 2 in coll. FMNH, 2 in coll. ISEZ.

Description. Length 4—4.3 mm. Body oblong, convex, robust, shining, distinctly broader behind; black, elytral suture narrowly brown, legs reddish brown, antennal clubs yellow. Terminal segment of maxillary palpus cylindrical; the edges of clypeus, pronotum and elytra with yellow hairs. Head moderately wide, clypeal margin distinctly reflexed, broadly rounded each side of moderate median emargination; genae not prominent, their side margins almost continuous

with those of the clypeus; surface coarsely and closely granulate, occiput impunctate. Pronotum about one-third as long as elytra, anterior angles acute, posterior angles broadly rounded, sides and base margined, basal marginal line entire, very strong at middle; surface with distinct, round fovea on each side near middle of lateral declivity, flattened at the front angles, anterior edge moderately concave on the sides; punctures distinct, coarse, closer toward anterior angles, finer and sparser on the sides, posterior angles very feebly punctate. Scutellum triangular, impunctate, shining. Elytra convex, diverging apically in basal two-thirds, humeri not dentate; elytral striae fine, moderately deep, stria punctures slightly crenating the intervals; intervals slightly convex, impunctate. Lateral teeth of fore tibia obtuse, the first apical tooth slightly elongated; under side without denticles, terminal spur small, acute; middle tibia rather slender, spurs slender; hind tibia stout, granulate, two and one-half as long as wide, with distinct incomplete transverse ridge, hind tarsus about two-thirds as long as the tibia; spurs foliaceous, rather triangular, obtuse. Hind femora wide, shining, posterior line short, obtusely dentate at knee; surface with a few punctures bearing yellow hairs. Metasternum feebly concave, impunctate, mid-line indistinct. Abdominal segments piliferous, slightly alutaceous on the sides, shining at middle, only last segment and pigidium entire shagreened.

Male. Abdomen more convex, the last abdominal segment shorter than in female. Aedeagus normal.

Female. Abdomen less convex, the last abdominal segment longer than in male. Stylus widened, rather great, with five visible setae.

Biology unknown.

Remarks. The species is named for O. L. CARTWRIGHT, one of the best coleopterologists who collected the specimens.

Distribution (Fig. 76). U.S.A.

9. *Aegialia (Aegialia) punctata* BROWN

(Figs. 74—76)

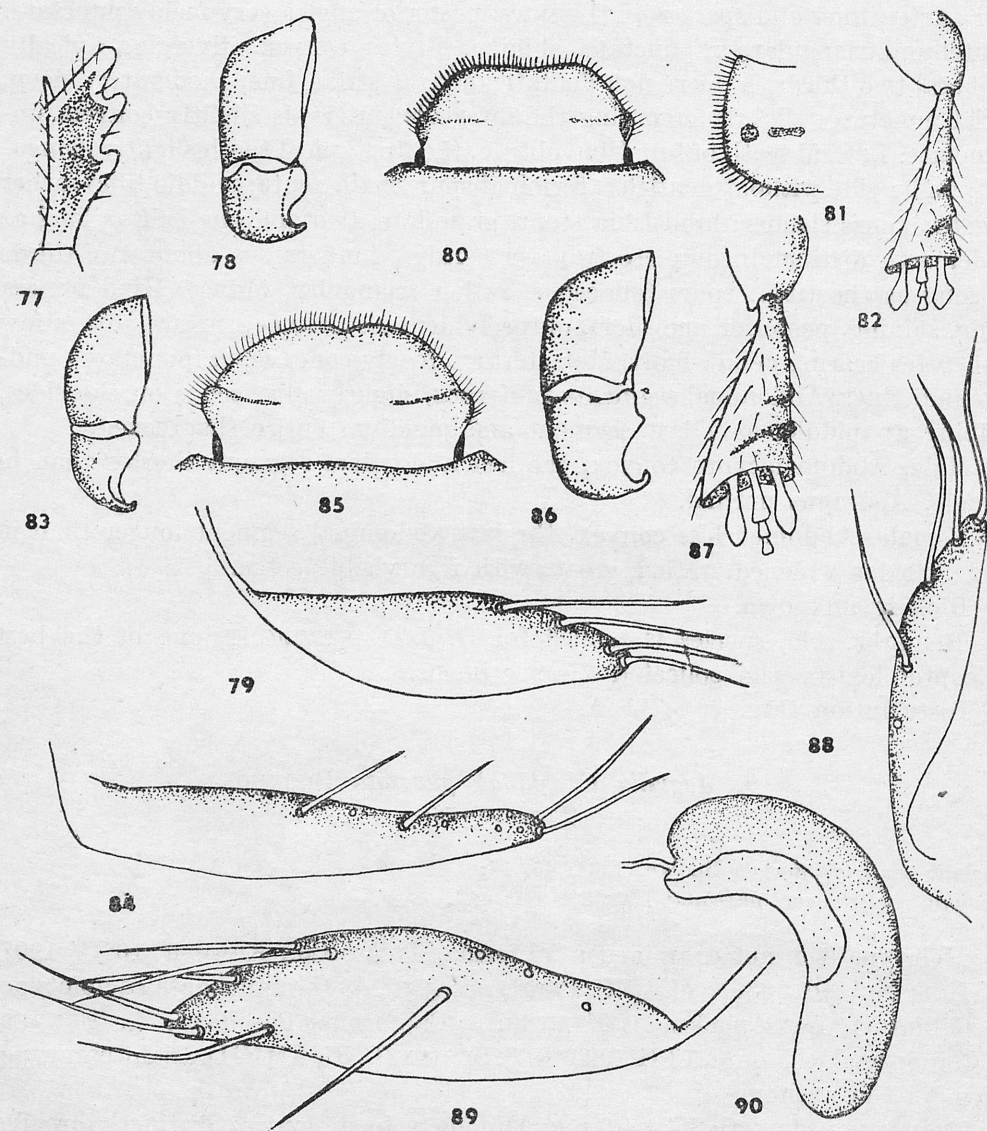
Aegialia conferta punctata BROWN, 1931: 45, 47;

Aegialia conferta var. *punctata*: HATCH, 1971: 442.

Holotype (sex not examined): California, Tulare Co., Kaweah, 10 IV 1907, R. HOPPING, No. 3086, coll. CNC. Paratypes ♂♂♀♀: 8 the same data as holotype; 9, California, Los Angeles, A. FENYES; 2, California, Pasadena, A. FENYES; 1, California, Del Monte, 18 II 1923, L. S. SLEVIN (CNC, AMNH). Eight paratypes seen by the author.

Description. Length 3.4—4.0 mm. Oblong, robust, convex, distinctly broader behind, shining; black, varying to dark brown, light brown or reddish brown, elytral suture narrowly paler; legs reddish or yellowish brown, antennal clubs yellow. Terminal segment of maxillary palpus cylindrical; the edges of clypeus, pronotum and elytra with yellow hairs. Head finely and closely granulate, occiput impunctate; clypeal margin broadly rounded each side of moderate

median emargination, genae not prominent. Pronotum about one-third as long as elytra, sides and base margined, basal marginal line strong and entire; disc with very distinct round fovea on each side, flattened at the front angles; punctures distinct, moderately coarse, closer toward anterior angles, finer and sparser on the sides, posterior angles rather impunctate. Elytra convex, diver-



Figs. 77—79. *Aegialia (Aegialia) latispina* LEC. 77 — right fore tibia; 78 — aedeagus; 79 — stylus. Figs. 80—84. *A. (A.) opifex* HORN, 80 — head; 81 — side of pronotum; 82 — hind tibia; 83 — aedeagus; 84 — stylus. Figs. 85—88. *A. (A.) crassa* LEC. 85 — head; 86 — aedeagus; 87 — hind tibia; 88 — stylus. Figs. 89.—90. *A. (A.) arenaria* (FABR.), 89 — stylus; 90 — spermatheca

ging apically in basal two-thirds, humeri not dentate; elytral striae fine, moderately deep, stria punctures slightly crenating the flat, impunctate intervals. Lateral teeth of fore tibia obtusely rounded, separated, the first apical tooth elongate, terminal spur small, acute; middle tibia rather slender, spurs slender; hind tibia stout, two and one-half as long as wide with a feeble, incomplete transverse ridge, hind tarsus almost two-thirds as long as the tibia; spurs foliaceous, obtuse. Hind femora wide, shining, posterior line short, strongly dentate at knee, surface with a few punctures bearing yellow hairs. Metasternum very feebly concave, impunctate, midline indistinct. Abdominal segments piliferous, slightly alutaceous on the sides, shining and impunctate at middle, only last segment and pigidium entire shagreened.

Male. Abdomen more convex, the last abdominal segment shorter than in female. Aedeagus normal.

Female. Abdomen less convex, the last abdominal segment longer than in male. Stylus slightly widened, rather great, with four visible setae.

Biology unknown. Dates collected: February to May; September.

Remarks. *A. punctata* BROWN is very closely related to *A. cartwrighti* sp. n. and resemble to *A. conferta* HORN. The species described by BROWN (1931) as a subspecies of *A. conferta* on the ground of differences in colouring, pronotum punctation and territorial separation. *A. punctata* is, however, an individual and distinct species differing from *A. conferta* in a number of morphological characters, though distributional areas of both species partially overlap.

Distribution (Fig. 76). U.S.A. Recorded from: Washington; Oregon — Fossil Lake („in the sand dunes during May 1957 fairly abundant”); California — Kaweah, Pasadena, Los Angeles, Del Monte, Modesto („in the debris washed up from the irrigation ditches”) (BROWN, 1931; SAYLOR, 1934; JERATH, 1960; HATCH, 1971).

Material examined. Eight paratypes and 47 specimens. Washington — Paterson, 26 III 1955, G. F. KRAFT (OSU); Wallula, 27 II 1949, in the sand dunes, C. A. FROST (MCZ); Oregon — Fossil Lake, 16 V 1957 (numerous), P. O. RITCHER (OSU); Idaho — Parma, 2 IV 1930, M. C. LANE (AMNH); California — (no exact locality) (MCZ); Santa Ana, 31 III 1928, A. C. DAVIS (CNC); Antioch, 10 IV 1937, H. LEECH (CNC); Los Angeles, II 1897 (CNC); Modesto, IV 1932 (CNC); Pom Mts, II 1922, coll. LIEBECK (MCZ); Pasadena, A. FENYES (FMNH); Tusunga, II 1937 (MCZ); Seal Beach, 19 III 1941, G. P. MACKENZIE (OSU); Utah—Kane Co., Coral Pink Sand Dunes, 14 mi S Mt Carmel, 6300ft, 29 IX 1962, N. L. RUMPF (CNC).

10. *Aegialia (Aegialia) latispina* LE CONTE

(Figs. 77—79, 92)

Aegialia latispina LE CONTE, 1878: 610—611; HORN, 1887: 103—104; BROWN, 1931: 48; HATCH, 1971: 442.

Holotype ♀: California, No. 3723, coll. MCZ. Seen by the author.

Description. Length 3.3—4.6 mm. Body oblong oval, moderately convex, very slightly broader behind, shining; color dark brown or reddish brown, elytral suture sometimes narrowly paler, the legs reddish brown, antennal clubs yellow.

wish. Terminal segment of maxillary palpus small, cylindrical, the edges of clypeus, pronotum and elytra with yellowish hairs. Head rather wide, clypeal margin finely reflexed, broadly rounded each side of moderate median emargination; genae small, distinctly prominent, slightly flattened; surface finely and closely granulate, occiput very feebly punctate. Pronotum about one-third as long as elytra; anterior angles acute, posterior angles obtusely rounded, margined; basal margin slightly sinuate each side of middle, basal marginal line fine, indistinct, evident only at middle; surface with very small, indistinct fovea on each side near middle of lateral declivity, flattened at the front angles, coarsely punctate, the punctures sparser at middle, closer and smaller on the sides. Scutellum very small, impunctate. Elytra moderately convex, slightly diverging apically in basal two-thirds; humeri not dentate, elytral striae fine with moderately coarse and close punctures, slightly crenating inner margins of the intervals; intervals weakly convex with a few very microscopic punctures or impunctate. Lateral teeth of fore tibia separated, obtusely rounded, terminal spur small, acute; middle tibiae rather stout, short, terminal spurs slender; hind tibiae slender, three times as long as wide, with a strong incomplete transverse ridge; hind tarsus about two-thirds as long as the tibia; spurs elongated, flattened, obtuse. Hind femora feebly dentate at knee, shining, surface with a few coarse punctures bearing yellow hairs. Metasternum shining, impunctate, midline indistinct. Abdominal segments slightly alutaceous, feebly piliferous; the last segment with more or less distinct transverse impression near anterior margin.

Male. The last abdominal segments shorter than in male. Aedeagus normal.

Female. The last abdominal segment longer than in male. Stylus widened with four evident, moderately long setae.

Biology unknown. This rare (JERATH, 1960), littoral species occurs on the banks of inland waters, most probably in the mountains. Dates collected: March to August.

Distribution (Fig. 92). U.S.A. Recorded from: Washington; Oregon — Kiger Island near Corvallis; California — Tulare Co., Sierra Nevada, „from Siskiyou to Los Angeles Co.”; Arizona — Prescott (VAN DYKE, 1928; BROWN, 1931; JERATH et RITCHER, 1959; JERATH, 1960; HATCH, 1971).

Material examined. The holotype and 34 specimens. Washington — Seattle, coll. LIEBECK (MCZ); Oregon — Corvallis, 13 IV 1920 (OSU); Kiger Island 5 mi SE Corvallis, 21 VI 1957, M. L. JERATH (OSU); Philomath, 19 IV 1950, V. ROTH (OSU); California — Tulare Co., Kaweah, 1000 ft (CNC); Sierra Nevada (CNC); Crescent City 31 III 1936, W. LEECH (CNC); Pasadena, R.C. CASSELBERRY (AMNH); Santa Barbara, J. G. GEHRING (MCZ); San Luis Obispo, 2 V 1938, F. W. NUNENMACHER (FMNH); Siskiyou Co., 15 VI 1941, F. W. NUNENMACHER (FMNH); Sierra Co., Downieville, 8 III 1952, M. CAZIER et W. GERTSCH (AMNH); Colorado — El Paso, 23 III 1914, coll. LIEBECK (MCZ); Arizona — Prescott, 6 VII 1894; New Mexico — Jemez Mts, IV 1920, J. WOODGATE (AMNH).

11. *Aegialia (Aegialia) opifex* HORN

(Figs. 80—84, 92)

Aegialia opifex HORN, 1887: 104; BROWN, 1931: 47—48.

Holotype ♂: Massachusetts, Lowell, No. 3624, coll. MCZ. Seen by the author.

Description. Length 3—3.8 mm. Body oblong, distinctly broader behind—moderately convex, strongly shining; blackish, very dark brown or reddish brown, elytral suture sometimes narrowly paler; the legs reddish brown, antennal clubs yellowish brown. Terminal segment of maxillary palpus cylindrical, the edges of clypeus, pronotum and elytra with yellow hairs. Head moderately convex, finely reflexed clypeal margin broadly rounded each side of moderate median emargination; genae rather distinctly angled, their margins not quite continuous with those of the clypeus; surface finely and closely granulate, occiput very feebly punctate. Pronotum about one-third as long as elytra; anterior angles acute, posterior angles obtusely rounded, sides margined, basal marginal line broadly interrupted at middle, evident only near the hind angles; surface with very distinct, transversely elongate fovea on each side near middle of lateral declivity, the median line usually feebly impressed near base; the punctures fine, closer at middle, gradually much finer and indistinct toward sides. Elytra moderately convex, slightly diverging apically in basal two-thirds; humeri not dentate, surface finely striate, the striae with rather coarse and close punctures distinctly crenating inner margins of the intervals; intervals moderately convex, impunctate or very feebly punctate. Lateral teeth of fore tibia obtusely rounded, well separated, terminal spur small, acute; middle tibiae slender, terminal spurs long, slender; hind tibiae slender, three times as long as wide with a strong, incomplete transverse ridge at apical third; hind tarsus about two-thirds as long as the tibia; spurs foliaceous, rather triangular. Hind femora shining with a few coarse punctures bearing yellow hairs. Metasternum shining without sculpture at middle. Abdomen alutaceous on the sides, shining at middle, scarcely piliferous, the last segment with more or less evident transverse impression near anterior margin.

Male. The last abdominal segment shorter than in female. Aedeagus normal.

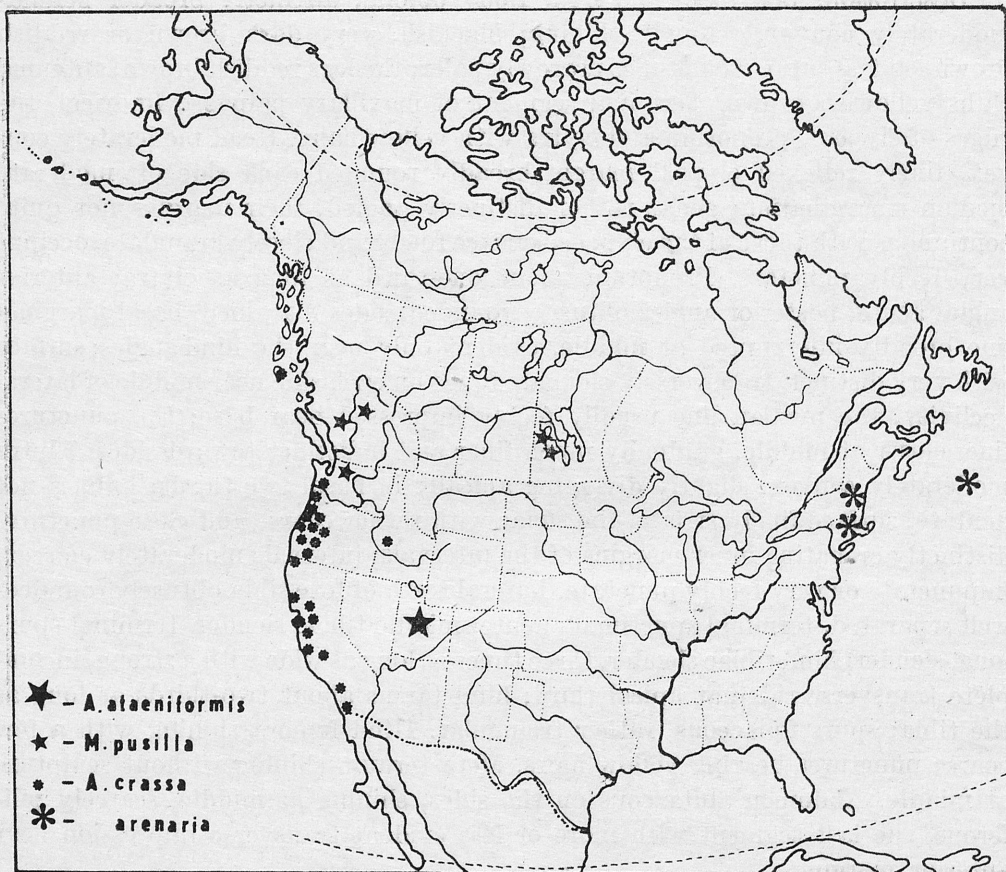
Female. The last abdominal segment longer than in male. Stylus elongated with four visible, moderately long setae.

Biology unknown. The littoral species, probably connected with banks of big reservoirs of inland waters. Dates collected: April to August.

Distribution (Fig. 92). Canada and U.S.A. Recorded from: Quebec — Kazubazua; Nova Scotia — Lawrencetown; New Hampshire — Rumney; Massachusetts — Ipswich, Lowell (HORN, 1887; BROWN, 1931).

Material examined. The holotype and 102 specimens. Ontario — Merivale, 1 V 1936, 23 V 1932, W. J. BROWN (CNC, AMNH); Quebec — Lanoraie, 4 VI 1936, J. J. BEAULNE (CNC); Wright, 17 V 1932, W. J. BROWN (CNC); Kazubazua, 28 V 1928, W. J. BROWN (CNC, AMNH). Rigaud, coll. LIEBECK (MCZ); Prince Edward Island — Green Gables, Cavendish Beech, 22 VII

1967, H. F. HOWDEN (CNC); Maine — Norway, S. J. SMITH (MCZ); Portland, F. BLANCHARD (MCZ); New Hampshire — Rumney, 14 VIII 1925, J. DARLINGTON (CNC); New York — Phillipsburg, 26 IV 1909, J. W. GREEN (AMNH); Massachusetts — Ipswich, 21 V 1926, on hot dune sand, J. DARLINGTON (CNC, AMNH); Tyngsboro, 25 IV 1901, F. C. BOWDITCH (MCZ); Nahant, 12 V 1926, J. DARLINGTON (MCZ); Pennsylvania — Easton, 25 IV 1909, J. W. GREEN (AMNH); Indiana — Elkhart, coll. LIEBECK (MCZ); Tremont, 19 V 1944, R. L. WENZEL (FMNH); Beverly Sh., 6 V 1934, H. DYBAS (FMNH).



Figs. 91. Known distribution of *Annegialia ataeniformis* HOWD., *Micraegialia pusilla* (HORN), *Aegialia (Aegialia) crassa* LEC., and *A. (A.) arenaria* (FABR.) in North America

12. *Aegialia (Aegialia) arenaria* (FABRICIUS)

(Figs. 2, 67, 89—91, 122)

Scarabaeus arenarius FABRICIUS, 1787: 11; HERBST, 1789: 291; FABRICIUS, 1792: 39;

Aphodius arenarius: FABRICIUS, 1801: 82; SCHÖNHERR, 1806: 88;

Psammodyus arenarius: GYLLENHAL, 1808: 6; GYLLENHAL, 1820: 6;

Aegialia arenaria: ERICHSON, 1848: 919; GUTFLEISCH, 1859: 319; JACQ. DU VAL, 1863: f. 40; THOMSON, 1863: 74; Mulsant et REY, 1871: 409; REDTENBACHER, 1872: 473; SEIDLITZ, 1891: 145; SEIDLITZ, 1891: 153; REITTER, 1892: 250; REITTER, 1892: 112; d'ORBIGNY,

- 1896: 256; EVERTS, 1901: 37; REITTER, 1909: 319, t. 72, f. 12; BEDEL, 1911: 94; KUHNT, 1913: 400; DARLINGTON, 1927: 98; PORTEVIN, 1931: 32; BROWN, 1931: 45, 49; PORTA, 1932: 397; PAULIAN, 1941: 153; JANSSENS, 1951: 19, f. 4; ENDRÖDI, 1956: 24—25, f. 14; LINDROTH, 1957, f. 26; TESAR 1957: 163—164, f. 94; JANSSENS, 1960: 135, f. 84; CORELLA, 1967: 207; MACHATSCHKE, 1969: 294; STEBNICKA, 1976: 54, f. 148.
- Scarabaeus globosus*: KUGELANN, 1794: 514; PANZER, 1797, f. 2; PANZER, 1805: 20;
- Aphodius globosus*: ILLIGER, 1801: 20; STURM, 1805: 171;
- Aegialia globosa*: LATREILLE, 1807: 97; LATREILLE, 1825: 359; STEPHENS, 1830: 213; CASTEL-NAU, 1840: 99;
- ab. *globosa*: MULSANT, 1842: 327; *globosus* var. β : ILLIGER, 1798: 20; *globosus* var. b: STURM, 1805: 172;
- ab. *rufoides* VERHOEFF, 1891: 23.

Lectotype (designated by LANDIN, 1956) (sex not recorded): „Suecia”, coll. ZMK. Not seen by the author (see under „Remarks”).

Description. Length 4.5—6.0 mm. Body oval, strongly convex, robust, distinctly broader behind; black, brown or yellowish, strongly shining. Terminal segment of maxillary palpus small, cylindrical; the edges of clypeus, pronotum and elytra with yellowish hairs. Head wide, clypeal margin finely reflexed, rounded, genae slightly prominent, their side margins not quite continuous with those of the clypeus; surface finely and closely granulate. Pronotum about one-third as long as elytra, anterior angles obtuse, posterior angles broadly rounded, sides moderately arcuate, margined, base without marginal line; surface with one or two very small, variable fovea on each side near middle of lateral declivity, for the most part impunctate, sometimes with a few microscopic punctures at middle. Scutellum very small, triangular, impunctate. Elytra considerably wider than the pronotum, oval; striae shallow, fine, with fine, distant, very indistinct punctures; intervals flat, impunctate. Lateral teeth of fore tibia obtusely rounded, separated, terminal spur slender, acute; middle and hind tibiae stout, with strong, complete transverse ridges at apical third; terminal spurs of middle tibia slender, obtusely pointed; hind tibiae two and one-half times as long as wide, terminal spurs foliaceous, oval; hind tarsus about half as long as the tibia. Middle and hind femora wide with a few punctures near the margins. Metasternum smooth at middle, alutaceous and punctate on the sides, midline indistinct. Abdominal segments alutaceous, punctate, scarcely piliferous, pigidium shagreened.

Male. The last abdominal segment somewhat shorter than in female. Aedeagus normal.

Female. The last abdominal segment somewhat longer than in male. Stylus widened, with seven evident, moderately long setae.

Biology unknown. The psammobiontic, halophilic species, living on the coasts of seas and oceans, in Europe occurring from March to September, probably as two generations, with imago wintering. Usually found in the sand dunes, under mouldering wood and plants, in the ex-water debris and very rarely in cattle faeces (in Poland).

Remarks. Lectotype has not been examined by the author, this comment is based on the LANDIN's paper (1956), who has considered in detail the taxono-

mic status of *A. arenaria*. The species is well known and rather frequently found, its distribution over European coasts is quite compact and has been marked on the map with a continuous line. Data concerning its occurrence on Adriatic coasts (Balkan peninsula) and in the Middle Europe far from the coasts have not been confirmed by the author.

Distribution (Fig. 2, 67, 91, 122). Europa; Canada, U.S.A., Azores Isl., Japan — introduced. Recorded from: Azores Isl.; Portugal; Spain — Lugo, Pon-

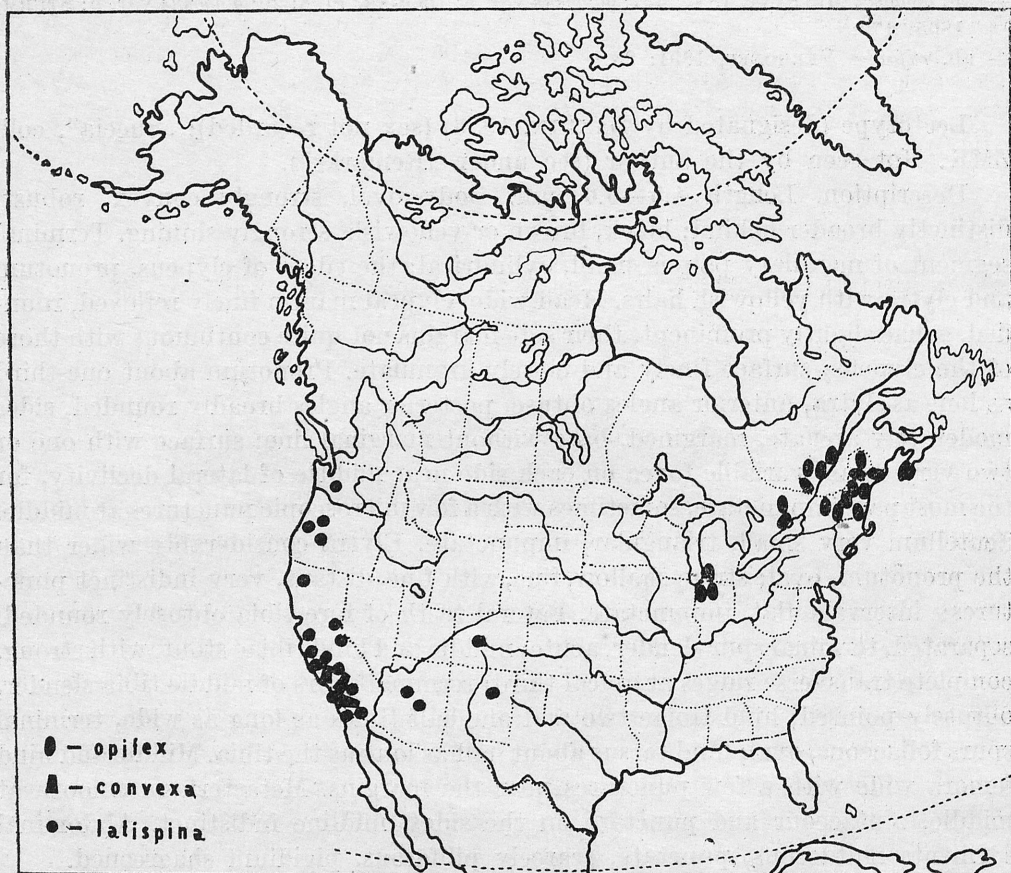


Fig. 92. Known distribution of *Aegialia (Aegialia) opifex* HORN, *A. (A.) convexa* FALL and *A. (A.) latispina* LEC. in North America

tevedra, Coruña, Santander; France; Ireland, Great Britain (to Scotland); Belgium; German Federal Republic; German Democratic Republic; Poland; Norway (to Bergen); coastal districts of Southern Sweden (to Uppland), Öland, Gotland, Gotska Sandön Isl.; Baltic coasts to Gulf of Finland; North America — Massachusetts, (DARLINGTON, 1927; HORION, 1958; LANDIN, 1960; CORELLA, 1967; STEBNICKA, 1976).

Material examined: 224 specimens. Europa: Italy — Napoli, coll. REITTER (NMP); France — coll. REITTER (ISEZ); Gironde (FMNH); Boulogne, coll. ROLLE (NMP); Calais, 2 X (ZIL); Belgium — (ISEZ, ZIL); German Federal Republic — Schleswig (ZIL); Elbe, coll. KOLTZE (NMP); Sylt Isl., 14 VI 1907, coll. OHAUS (NMP); German Democratic Republic — Mecklenburg (ZIL); Poland — Koszalin, coll. KALLERT (NMP), coll. LÜLLWITZ (NMP, ISEZ); Szczecin (ZIL); Gdańsk, 26 VIII 1922, coll. LGOCKI (ISEZ); Gdynia, 2 VIII 1931, S. STOBIECKI (ISEZ); Hel pen., Jastarnia, 22 VII 1927, S. STOBIECKI (ISEZ), 1—15 VI 1972, Z. STEBNICKA (ISEZ); Jurata, 1—15 VI 1972, in sand dunes, Z. STEBNICKA (ISEZ); Russian S.F.S.R. — Kaliningrad, 5, 14 VII 1958, O. L. KRYZHANOVSKIY (ZIL); Asia: Japan — Honshu, Kanazawa, Awagasaki, Shikawa, 24 IX 1946, coll. ENDRÖDI (HMNH); North America: Nova Scotia — Sable Isl., West Light, 12 VI 1966, H. F. HOWDEN et W. MASON (CNC); West End, 3—7 VII 1967, H. F. HOWDEN (CNC), 11—15 IX 1967, I. E. H. MARTIN (CNC); New Hampshire — Hampton Beach, 11 IX 1932, C. A. FROST (MCZ); Massachusetts — Ipswich, 4 IV 1925, 22 V 1936, crawling in storm beach, J. DARLINGTON (CNC).

13. *Aegialia (Aegialia) crassa* LE CONTE

(Figs. 85—88, 91)

Aegialia crassa LE CONTE, 1857: 42; HORN, 1871: 293—294, HORN, 1887: 100, 104; BROWN, 1931: 45, 48; HATCH, 1971: 442;

Aegialia crassa ssp. *insularis*: BROWN, 1931: 45, 49;

Aegialia crassa var. *insularis*: HATCH, 1971: 442.

Holotype ♀: California, San Francisco, No. 3724, coll. MCZ. Seen by the author.

Description. Length 4.0—4.8 mm. Oblong, strongly convex, robust, slightly broader behind, shining; black, varying to very dark brown, reddish brown or yellowish brown, elytral suture narrowly paler; legs and antennal clubs reddish brown. Terminal segment of maxillary palpus cylindrical, slightly and scarcely piliferous; the edges of clypeus, pronotum and elytra with moderately long, yellow hairs. Head wide, genae more or less prominent, clypeal margin distinctly reflexed, rounded each side of moderate median emargination, frontal suture feebly marked only on the sides of head; surface finely and closely granulate, occiput impunctate. Pronotum about one-third as long as elytra, widest just behind the middle, anterior angles acute, posterior angles broadly rounded and margined, basal margin arcuate without an impressed marginal line; surface with a small, indistinct fovea on each side near middle of lateral declivity, slightly flattened near the anterior angles; the punctures sparse, mixed minute and moderately coarse, confined to basal half, apical half and lateral declivities of pronotum very indistinctly punctate or impunctate. Scutellum small, impunctate, shining. Elytra strongly convex, feebly diverging apically in basal half, humeri not dentate; striae fine, shallow, with very indistinct punctures; intervals flat, impunctate. Anterior tibiae slender, lateral teeth obtuse, separate, terminal spur small and acute; middle tibiae stout, terminal spurs slender; hind tibiae stout, two and one-half times as long as wide with a strong transverse ridge at apical third, terminal spurs elongate oval, flattened; hind tarsus about two-thirds as long as the tibia. Hind femora wide, shining, posterior line short, obtusely

dentate at knee; surface with a few coarse punctures bearing yellow hairs. Metasternum flat, impunctate, midline indistinct. Abdominal segments alutaceous on the sides, moderately shining and feebly punctate at middle; the last segment with a large, shallow, transverse impression near front margin; pigidium distinctly punctate, moderately shining.

Male. The last abdominal segment shorter than in female. Aedeagus normal.

Female. The last abdominal segment longer than in male. Stylus elongated with four visible setae.

Biology unknown. The Pacific-littoral, psammophilic, probably halophilic species. Dates collected: February to November.

Remarks. *A. crassa* is closely related to *A. arenaria* (FABR.). The subspecies *insularis* described by BROWN (1931) is an aberration of *A. crassa* distinguished by a less pronounced punctation of pronotum, a character included in the range of the individual variability of *A. crassa*. In Oregon, U.S.A., *A. crassa* occurs together with ab. *insularis* BROWN. The morphology of the copulatory organs in males and females is identical in both variants. Five paratypes of *A. crassa insularis* BROWN examined by the author: Queen Charlotte Islands, coll. CNC, AMNH.

Distribution (Fig. 91). Canada and U.S.A. Recorded from: British Columbia — Queen Charlotte Isl.; Washington — Willapa Bay; Oregon — Cannon Beach, Hauser, Newport, Neskowin, Waldport; California — San Francisco, Alameda Co., Carmel (KEEN, 1895; KEEN, 1898; VAN DYKE, 1928; BROWN, 1929; CRIDDLE, 1929; BROWN, 1931; HATCH et KINCAID, 1958; JERATH, 1960; HATCH, 1971).

Material examined. The holotype, 5 paratypes and 181 specimens. Oregon — Waldport H. A. SCULLEN (CNC); Woods, 7 IX 1938, C. A. FROST (MCZ); Newport, 17 VII 1921, H. F. WICKHAM (MCZ); Coos Bay, 24 V 1957, B. MALKIN (FMNH); Curry Co., Pistol River, 18 IX 1950, B. MALKIN (FMNH); Lane Co., Glenada, 18 VI 1946, 14 IX 1941, B. MALKIN (FMNH); Honeyman St. Park, Cleawoks Lake, 4 mi S Florence, 22 IV 1956, 23 VI 1964, J. D. LATTIN (OSU); Winchester Bay, 13 IV 1947, B. MALKIN (FMNH); Eugene, 21 VI 1942, B. MALKIN (FMNH); Cannon Beach, 23 IV 1936, K. GRAY (OSU); Neskowin, 24 VI 1950, F. M. BEER, 17 III 1956, in sand dunes, J. D. LATTIN (OSU); Lincoln Co., 2, 5 mi S Waldport beach, 12 IX 1959, J. D. LATTIN (OSU); Idaho — Massett Graham, 1945, M. CLARK (MCZ); California — (no exact locality) (MCZ, AMNH, ZIL); San Francisco, 14 III 1919, 20 II 1937, E. R. LEACH (CNC), 8 II 1920, H. DIETRICH (AMNH), 11 VI 1910, N. S. EASTON (MCZ), 6 XI 1910, C. A. FROST (MCZ), 9 VIII 1898, 17 IV 1910, F. W. NUNENMACHER (FMNH); Alameda Co., (CNC); Monterey Co., 9 III 1937, E. R. LEACH (CNC), 16 VI 1940, F. W. NUNENMACHER (FMNH); Marin Co., 24 VI 1906, F. W. NUNENMACHER (FMNH); Drakes Bay, 18 IX 1957, C. W. O'BRIEN (MCZ); San Benito Co., 23 IV 1939, F. W. NUNENMACHER (FMNH); Mendocino Co., 24 IV 1941, F. W. NUNENMACHER (FMNH); Los Angeles Co., (AMNH); Sonoma, Co. R. S. CASSELBERRY (AMNH), Dillon Beach, 6 V 1935, (AMNH); San Diego, A. FORRER (AMNH).

F. Subgenus *Psammoporus* THOMSON

Psammoporus THOMSON, 1863: 72;

Dimalia: MULSANT et REY, 1871: 406 (partim).

Type species: *A. (P.) sabuleti* (PANZER).

Description. Body oblong, moderately convex; terminal segment of maxillary palpus cylindrical. Head wide, clypeus mostly distinctly granulate, front coarsely punctate. Pronotum about half time as long as elytra, sides and base margined, crenate, basal marginal line more or less sinuate; surface near the posterior angles always coarsely and closely punctate. Elytra oblong oval, humeri with distinct denticles or not dentate; striae deeply impressed, distinctly punctate. Anterior tibiae variable, always at least moderately wide; middle and hind tibiae slender, terminal spurs slender, acute, never foliaceous, tarsi slender; hind tibiae with distinct transverse ridges or denticles. Sexual characters evident in the anterior tibiae, in the posterior angles of pronotum and in the last abdominal segment.

Distribution (Fig. 104, 120—122, 137). Eurasia and North America.

Key to Species

1. Base of pronotum distinctly sinuate. Eurasian species 7.
- Base of pronotum less distinctly sinuate. North American species 2.
2. Elytra opaque, pronotum feebly shining; elytral striae rather wide, moderately deep, strial punctures shallow *A. (P.) opaca* BROWN
- Elytra and pronotum shining; elytral striae rather narrow, strongly impressed, strial punctures deep 3.
3. Surface of head finely, not closely punctate; discal area of pronotum with sparse punctures *A. (P.) terminalis* BROWN
- Surface of head coarsely, closely punctate and granulate, pronotum closely punctate throughout 4.
4. Punctures of pronotum and elytral striae very coarse; lateral striae as wide as the intervals *A. (P.) nana* BROWN
- Punctures of pronotum and elytral striae less coarse; lateral striae narrower than the intervals 5.
5. Elytral intervals virtually impunctate, elytra near the lateral and apical margins shining *A. (P.) lacustris* LEC.
- Elytral intervals more or less distinctly punctate, elytra near the lateral and apical margins feebly or strongly alutaceous 6.
6. Apex of elytra more broadly rounded; elytral intervals distinctly punctate, elytra near the lateral and apical margins feebly alutaceous *A. (P.) cylindrica* (ESCH.)

- Apex of elytra less broadly rounded; elytral intervals with a row of very fine punctures, elytra near the lateral and apical margins subopaque. *A. (P.) criddlei* BROWN
- 7. First segment of posterior tarsus as long as the following two segments combined; front shining. European species *A. (P.) sabuleti* (PANZ.)
- First segment of posterior tarsus longer or shorter than the following two segments combined; front subopaque. Asian species 8.
- 8. First segment of posterior tarsus shorter than the following two segments combined. Mongolia *A. (P.) abdita* (NIKR.)
- First segment of posterior tarsus longer than the following two segments combined. Siberia, Far East 9.
- 9. Front and pronotum with dense, coarse punctures. Paramerae of male aedeagus sharply pointed *A. (P.) kamtschatica* MOTSCH.
- Front and pronotum with less dense, less coarse punctures. Paramerae of male aedeagus obtusely pointed 10.
- 10. Stylus of female staminal, with one evident seta *A. (P.) friebi* BALTH.
- Stylus of female reniform, with three evident setae *A. (P.) sibirica* sp. n.

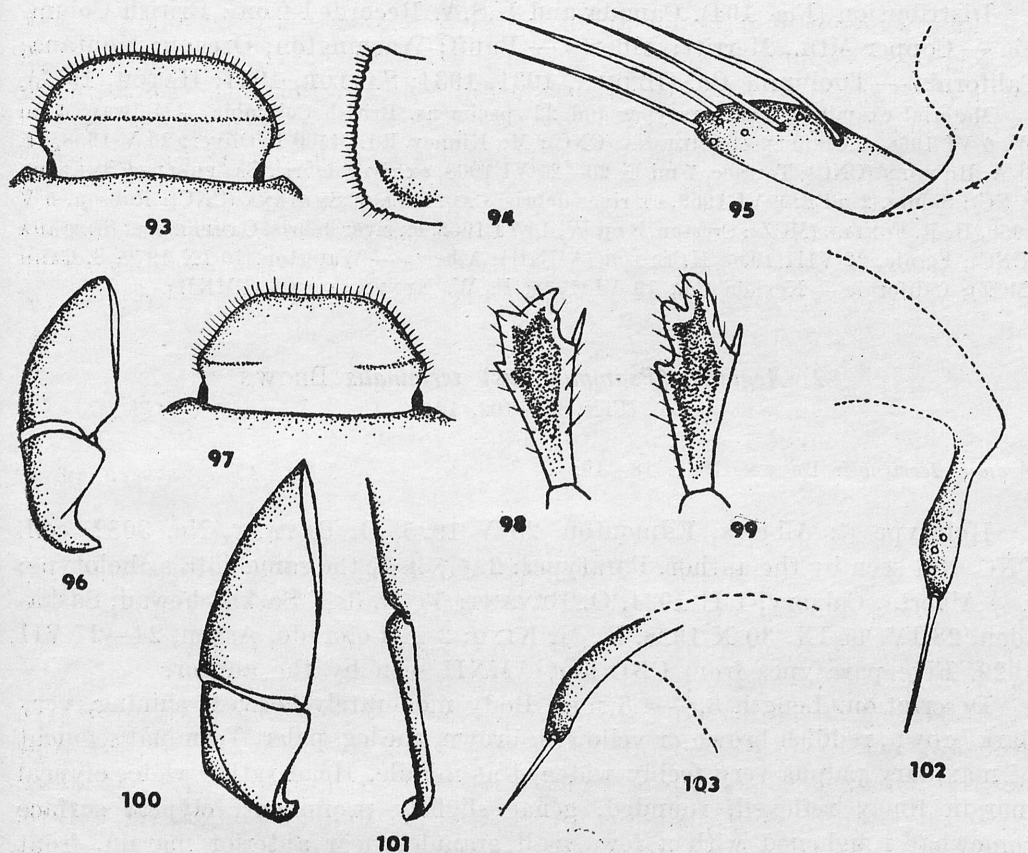
1. *Aegialia* (*Psammoporus*) *opaca* BROWN
(Figs. 93—96, 104)

Aegialia opaca BROWN, 1931: 17—18; HATCH, 1971: 441.

Holotype ♂: British Columbia, Copper Mtn., 3 V 1930, G. STACE SMITH No. 3081, coll. CNC. Not seen by the author. Paratypes: 9 ♂♂, 17 ♀♀, the same data as holotype; 1 ♀, British Columbia, Merritt, Midday Valley, 8 VII 1924, N. L. CUTLER; 1 ♂, 3 ♀♀, Alberta, Banff, Cascade Mts. 29 VI 1925, 22 V 1926, O. BRYANT. Six paratypes from CNC seen by the author.

Description. Length 3.8—4.8 mm. Body moderately convex, blackish or pale reddish brown, legs reddish; front and pronotum very feebly shining, elytra opaque, clypeus and venter shining. Terminal segment of maxillary palpus cylindrical. Head rather wide, clypeal margin finely reflexed, broadly rounded each side of very shallow median emargination; genae not prominent, their side margins quite continuous with those of the clypeus; clypeal surface finely and closely granulate, front coarsely, densely punctate, the punctures more or less confluent near the clypeus; frontal suture very feebly marked. Pronotum about half as long as elytra, the side margins subparallel in basal half, feebly arcuate anteriorly, strongly crenate; basal margin arcuate, slightly oblique and strongly crenate near posterior angles; surface with a feeble fovea on each side near middle of lateral declivity, slightly convex near hind angles, microscopically alutaceous; the punctures coarse, close, smaller and closer approaching anterior

margin. Scutellum triangular, shining. Elytra moderately convex, feebly diverging from base to middle, humeri moderately dentate, elytral suture narrowly shining; striae wide, moderately impressed, strial punctures rather shallow, distinctly crenating inner margins of the intervals; intervals feebly convex, densely and microscopically alutaceous with a few fine punctures. Legs slender;



Figs. 93—96. *Aegialia (Psammoporus) opaca* BROWN, 93 — head; 94 — side of pronotum; 95 — stylus; 96 — aedeagus. Figs. 97—102. *A. (P.) terminalis* BROWN, 97 — head; 98 — left fore tibia of male; 99 — left fore tibia of female; 100 — aedeagus; 101 — paramera dorsally; 102 — stylus. Fig. 103. *A. (P.) nana* BROWN — stylus

anterior tibiae moderately wide, terminal spur slender, lateral teeth well separated, obtusely rounded; middle and hind tibiae with incomplete transverse ridges, terminal spurs slender, sharp; first posterior tarsal segment shorter than the upper spur and subequal to following two segments combined; hind tarsus about two-thirds as long as the tibia. Hind femora microscopically punctate. Metasternum almost impunctate, distinctly tumid on each side of the midline just in front of the hind coxae. Abdominal segments alutaceous on the sides, moderately shining at middle, pigidium shagreened.

Male. The last abdominal segment broadly concave at middle, shorter than in female. Aedeagus normal.

Female. The last abdominal segment longer than in male, not concave at middle. Stylus small, scapular, with four visible setae.

Biology unknown. The species occurs on the banks of streams, probably exclusively in the mountains. Dates collected: May to September.

Distribution (Fig. 104). Canada and U.S.A. Recorded from: British Columbia — Copper Mtn., Merritt; Alberta — Banff; Washington; Oregon; Montana; California — Tuolumne Co. (BROWN, 1931, 1934; SAYLOR, 1934; HATCH, 1971).

Material examined. Six paratypes and 22 specimens. British Columbia — Midway, 4 mi W, 6 VI 1968, CAMPBELL et SMETANA (CNC); Mc Kinney Rd., 4500 ft Oliver, 26 V 1958, H. et A. HOWDEN (CNC); Terrace, 7 mi E, 26—27 VI 1968, ex river debris, CAMPBELL et SMETANA (CNC); Salmo, 2 mi S, 9 VI 1968, ex river debris, CAMPBELL et SMETANA (CNC); Robson, 5 V 1950, H. R. FOXLEE (MCZ); Creston, 8 mi W, 10 VI 1968, ex river debris, CAMPBELL et SMETANA (CNC); Fernie, 22 VIII 1935, H. LEECH (AMNH); Alberta — Waterton, 10 IX 1970, S. CANN (MCZ); California — Nevada Co., 19 VI 1938, F. W. NUNENMACHER (FMNH).

2. *Aegialia (Psammoporus) terminalis* BROWN

(Figs. 97—102, 104)

Aegialia terminalis BROWN, 1931: 18—19.

Holotype ♂: Alberta, Edmonton, 28 V 1925, O. BRYANT, No. 3082, coll. CNC. Not seen by the author. Paratypes: 2 ♂♂, 4 ♀♀ the same data as holotype; 1 ♂ Alberta, Calgary, 1 II 1924, O. BRYANT; 5 ♂♂, 3 ♀♀ Saskatchewan, Saskatoon, 28 IV, 11 IX, 30 X 1928, K. M. KING; 2 ♀♀ Colorado, Aspen, 24—27 VII 1929. Five paratypes from CNC and AMNH seen by the author.

Description. Length 3.8—4.5 mm. Body moderately convex, shining, very dark brown, reddish brown or yellowish brown, the legs paler. Terminal segment of maxillary palpus very feebly widened at middle. Head rather wide, clypeal margin finely reflexed, rounded, genae slightly prominent; clypeal surface somewhat roughened with a few small granules near anterior margin, front moderately coarsely and closely punctate, frontal suture very feebly marked. Pronotum about one-half as long as elytra, the side margins feebly and evenly arcuate, slightly crenate, sides and base margined, basal marginal line evenly arcuate; surface with a small, indistinct fovea on each side near middle of lateral declivity, the punctures moderately coarse, more numerous from halfway outward to sides, those of discal area less numerous, irregularly distributed, generally rather widely separated. Elytra moderately convex, oval, humeri rounded, not dentate; striae moderately impressed, striae punctures coarse, close, distinctly crenating inner margins of the intervals; intervals slightly convex, shining, sometimes with a few very indistinct, microscopic punctures. Legs slender; anterior tibiae wide, lateral teeth small, very acute, the emargination separating the two most apical teeth very shallow, terminal spur straight, slender; middle and hind tibiae with feeble traces of transverse ridges, tibial spurs slender, very

sharply pointed; first posterior tarsal segment shorter than the upper spur and subequal to following two segments combined; hind tarsus about two-thirds as long as the tibia. Hind femora with microscopic punctures. Metasternum rather impunctate, shining, midline distinctly impressed. Abdominal sterna alutaceous and finely punctate on the sides, shining at middle, pigidium shagreened.

Male. Lateral teeth of fore tibia strongly acute, the most apical tooth bent inward; last abdominal segment broadly concave at middle, shorter than in female. Aedeagus normal.

Female. Lateral teeth of fore tibia less acute, the most apical tooth straight; last abdominal segment longer than in male, not concave at middle. Stylus staminal, small, with one visible seta at apex.

Biology unknown. Dates collected: February; April to October.

Distribution (Fig. 104). Canada and U.S.A. Recorded from: Alberta — Calgary, Edmonton; Saskatchewan — Saskatoon; Newfoundland — Cooks Harbour; Colorado — Aspen (BROWN, 1931; LANDIN, 1960).

Material examined. Five paratypes and 17 specimens. Yukon Territory — Dawson City, 10 mi E, 11 VII 1968, CAMPBELL et SMETANA (CNC); Northwest Territories — Norman Wells, 8 VII 1949, S. D. HICKS (MCZ); British Columbia — Summit Lake, 4500 ft, 23—24 VI 1959, R. E. LEECH (CNC); Alberta — Mc Murray, 21 VI 1953, W. J. BROWN (CNC); Manitoba — Churchill, 4 VI 1952, J. G. CHILLCOTT (MCZ); Riding Mt. Pk, 4 VI 1938, W. J. BROWN (CNC); Colorado — Silver Plume, coll. LIEBECK (MCZ); Weston, IX 1894, (MCZ); New Hampshire — Mt Washington, 10 IX 1926, J. DARLINGTON (MCZ).

3. *Aegialia* (*Psammoporus*) *nana* BROWN

(Figs. 103, 120)

Aegialia nana BROWN, 1931: 19.

Holotype ♂: Massachusetts, Tyngsboro, Merrimack River Drift, 25 IV 1901, F. C. BOWDITH, No. 16377, coll. MCZ. Paratype ♂: the same data as holotype, No. 3083, coll. CNC. Both seen by the author.

Description. Length 3.4—3.5 mm. Body rather strongly convex, shining, dark reddish brown, the legs reddish; terminal segment of maxillary palpus cylindrical. Head rather wide, clypeal margin finely reflexed, rounded each side of moderate median emargination, genae not prominent; clypeal surface closely granulate, front coarsely, very densely punctate. Pronotum about half as long as elytra, side margins feebly arcuate, distinctly crenate, sides and base margined, basal margin feebly sinuate each side of middle; surface with a small fovea on each side near middle of lateral declivity and sometimes with short median line feebly impressed at base; the punctures very coarse, separated by their diameters on disc, gradually closer toward the sides. Elytra moderately convex, the sides scarcely arcuate in basal half, humeri feebly dentate; striae rather deep, stria punctures very coarse, almost equal to those of the pronotum, distinctly crenating inner margins of the intervals; intervals moderately convex, not alutaceous with a few fine, indistinct punctures. Legs slender; lateral teeth of fore

tibia well separated, obtusely rounded, terminal spur slender; middle and hind tibiae with incomplete transverse ridges, terminal spurs quite slender, sharply pointed; first posterior tarsal segment shorter than the upper spur and equal to length of the following two segments combined; hind tarsus about two-thirds as long as the tibia. Hind femora almost impunctate, shining. Metasternum shining, not tumid at middle in front of the hind coxae. Abdominal sterna aluta-

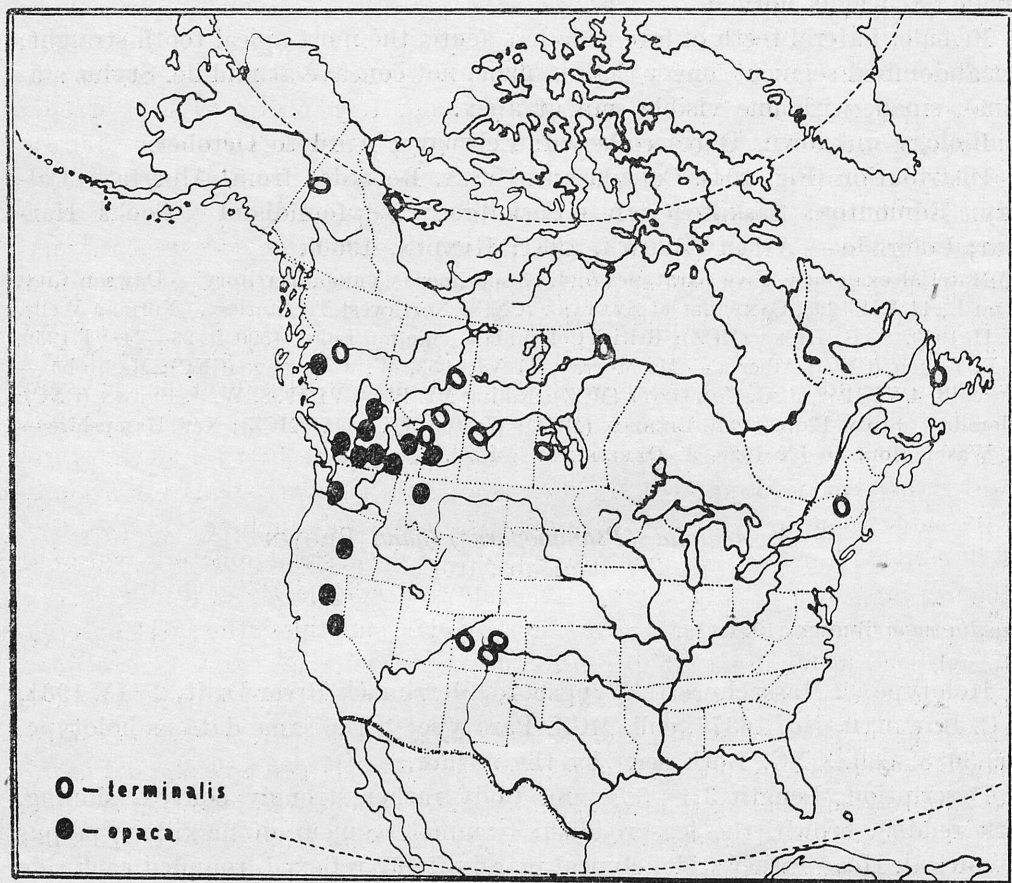


Fig. 104. Known distribution of *Aegialia* (*Psammoporus*) *opaca* BROWN and *A. (P.) terminalis* BROWN in North America

ceous, slightly punctate on the sides, shining at middle, pigidium shagreened.

Male. The last abdominal segment broadly concave at middle, shorter than in female.

Female. The last abdominal segment longer than in male, without concavity. Stylus small, staminal, with one short seta at apex.

Biology unknown. Rare species. Dates collected: April, May, July.

Distribution (Fig. 120). Canada and U.S.A. Recorded from: Massachusetts — Tyngsboro (BROWN, 1931).

Material examined. The holotype, paratype and 3 specimens. Quebec — Kazubazua, 25 VII 1938, W. J. BROWN (MCZ); New Hampshire — Mt Washington, 21 IV 1927, J. DARLINGTON (MCZ).

4. *Aegialia (Psammoporus) lacustris* LE CONTE

(Figs. 58—59, 105—109, 121)

Aegialia lacustris LE CONTE, 1850: 225; HORN, 1871: 293; HORN, 1887: 101; BROWN, 1931: 17, 44; HATCH, 1971: 441.

Holotype ♂: Lake Superior, No. 3722, coll. MCZ. Seen by the author.

Description. Length 3.6—5.3 mm. Body moderately convex, slightly broader behind, strongly shining; color very dark brown, reddish brown or reddish, legs reddish brown, antennal clubs yellowish. Terminal segment of maxillary palpus cylindrical. Head moderately convex, finely reflexed clypeal margin broadly rounded each side of moderate median emargination; genae not prominent, their side margins almost continuous with those of the clypeus; clypeal surface finely and closely granulate, front rather coarsely, closely punctate, frontal suture very indistinct. Pronotum about half as long as elytra, widest behind the middle; anterior angles obtuse, flattened, posterior angles obtusely rounded, sides and base distinctly margined, sides minutely crenate; surface with a small fovea on each side near middle of lateral declivity, the punctures close, rather coarse, separated by their diameters on disc, smaller and closer on the sides, sometimes the disc with narrow, impunctate midline. Elytra moderately convex, humeri finely dentate; striae fine, deep, strial punctures variable, often as coarse as those of the pronotum; intervals moderately or feebly convex, impunctate or sometimes with a few microscopic punctules; the most external intervals very feebly or not at all alutaceous. Legs slender; anterior tibiae moderately wide, lateral teeth well separated, rounded; middle and hind tibiae with distinct, incomplete transverse ridges, terminal spurs slender, very inconspicuously flattened; first posterior tarsal segment slightly enlarged apically and narrowed basally, about half as long as upper spur and subequal to following two segments combined; hind tarsus almost as long as the tibia. Hind femora with a few microscopic punctules. Metasternum very feebly tumid on each side of midline in front of the hind coxae; surface indistinctly shagreened, shining. Abdominal segments alutaceous on the sides, indistinctly punctate at middle, pigidium shagreened.

Male. The last abdominal segment broadly concave or flattened at middle, shorter than in female. Aedeagus normal.

Female. The last abdominal segment without concavity, longer than in male. Stylus staminal, small, setae not evident.

Larva and biology. JERATH et RITCHER, 1959; JERATH, 1960; RITCHER, 1966; CORNELL, 1967. Original description of larvae according to JERATH, 1960: 48. "Seven third-stage larvae reared to the adult stage, being a part of 30 larvae collected in soil under willows along the roadside toward Adel, Oreg., May 17,

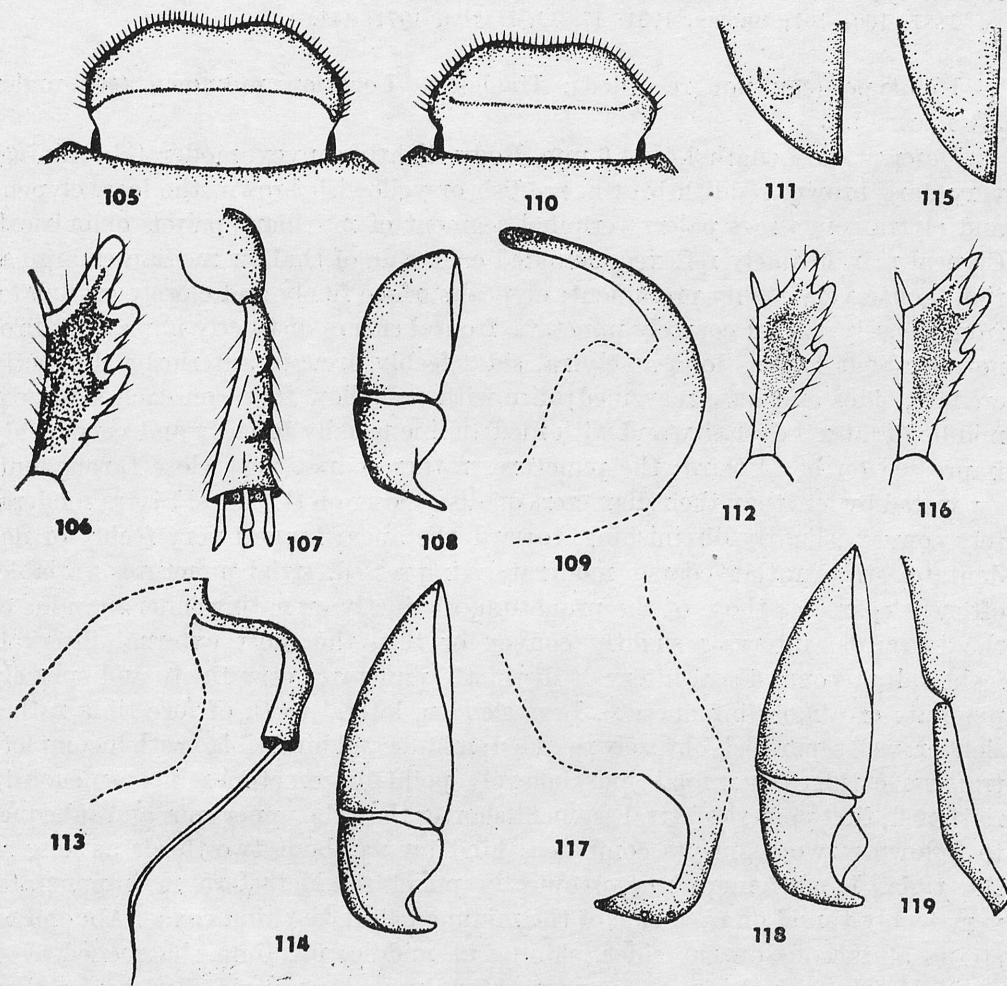
1957, by Paul O. RITCHER. Description: Maximum width of head capsule of third-stage larva 1.29—1.42 mm. Cranium yellowish white, surface smooth except for two small depressions on each side of the frons, five or six dorsoepicranial setae and three or four microsensillae on each side. Epipharynx with 15—17 microsensillae along the base of the protophoba. Maxillary stridulatory area with an irregular row of 15—20 conical teeth. Galea dorsally with five stout setae. Lacinia dorsally with a row of six long setae near the mesal edge and a single seta posteriorly. Abdominal segments 1—5 each with three dorsal annulets; each prescutum with 12 short setae, each scutum with 4—6 long setae and 12—14 short setae on each side, and each scutellum with 16 short setae. Raster with teges of 48—58 hamate setae curved at their distal ends."

Littoral species, inhabiting the coastal sandy areas of the inland waters, collected under the willows. Dates collected: January to August.

Distribution (Fig. 121). Canada and U.S.A. The species is spread over a fairly large area in North America. Recorded from: British Columbia — Terrace, Merritt; Alberta — Banff, Calgary, High River; Manitoba — „many localities”; Ontario — Minaki; Quebec — Magdalen Isl., Natashkwan, Kazubazua; Newfoundland — St. Davids, Stephenville Crossing, Deer Lake, Ha-Ha-Bay, Daniels Harbour, St. John Bay, Port au Choix, Cow Head, Hampden, Fogo, Tilting, Biscay Bay, Cinq Cerf River, Burgeo, Port aux Basques, Miquelon; Oregon — Adel, Kiger Isl. near Corvallis; Washington — Soda Springs; Colorado — Paris; California — Nevada Co. (VAN DYKE, 1928; CRIDDLE, 1928; CRIDDLE, 1929; BROWN, 1931; CLARK, 1956; JERATH, 1960; LANDIN, 1960).

Material examined. The holotype and 195 specimens. Yukon Territory — Rampart House, VIII 1951, J. E. MARTIN (CNC), 12 VIII 1951, C. C. LOAN (CNC); Dempster Hwy, mi 71, 3300 ft, 12 VII 1968, CAMPBELL et SMETANA (CNC); Northwest Territories — Great Slave Lake, Hay River, 20 VI 1949, W. J. BROWN (CNC); Rabbitskin R. 23 mi SE Fort Simpson, 12 VI 1972, A. SMETANA (CNC); Martin River, 10 mi NW Ft Simpson, 14 VI 1972, A. SMETANA (CNC); Hwy, 2 mi SE Ft Simpson, 15—17 VI 1972, A. SMETANA (CNC); British Columbia — Stanley, 24 VI 1932, K. GRAHAM (AMNH); Stickeen, coll. WICKHAM (AMNH, FMNH); 7 mi E Terrace, 26 VI 1968, CAMPBELL et SMETANA (CNC); 4 mi W Midway, 6 VI 1968, ex river debris, CAMPBELL et SMETANA (CNC); 10 mi E Rogers Pass, Glacier Nat. Pk, 17 VI 1968, CAMPBELL et SMETANA (CNC); Alberta — Calgary (CNC); McMurray, 6, 9 VI 1953, G. E. FALL (CNC); 4, 22 VI 1953, W. J. BROWN (CNC); Saskatchewan — Battleford, 2 V 1939, A. R. BROOKS (CNC); Manitoba — Aweme, 17 I 1904, N. CRIDDLE (CNC); Gillam, 5—30 VI 1950, W. J. BROWN (CNC); Riding Mt. Park, 9 VI 1937, W. J. BROWN, (CNC); Victoria Beach, 13 VI 1927, J. B. WALLIS (CNC); Cedar Lake, VII 1936 (MCZ); Ontario — Minaki, 1 VII 1924, L. B. CLARK (CNC); Ogoki, 2 VI 1952, J. B. WALLIS (CNC); Quebec — Natashkwan, 22 VI 1929, W. J. BROWN (CNC); Kazubazua, 6—10 VI 1927, W. J. BROWN (CNC); Bradore Bay, 9, 15 VII, 7 VIII 1930, W. J. BROWN (CNC); Thunder River, 13 VI 1930, W. J. BROWN (CNC); Cascapedia, 17 VIII 1938, W. J. BROWN (CNC); Newfoundland — Stephenville, 20 VI 1949, W. J. BROWN (CNC); Harmon Field, 30 V 1949, W. J. BROWN (CNC); Codroy, Little River, 10—18 VII 1907, P. G. BOLSTER (CNC); Humber River near Dear Lake, 24—26 VII 1907, P. G. BOLSTER (CNC); Magdalen Isl. — Grindstone Isl., 1 VII 1917, F. JOHANSEN (CNC); New Brunswick — Tabusintac, 20 VI 1939, W. J. BROWN (CNC); Nova Scotia — Halifax Co., NS Lawrencetown, 19—20 VII 1967, H. F. HOWDEN (CNC); Oregon — Forest Grove, 13 IV 1941, C. A. FROST (MCZ); Blodgett, 20 VI 1927, J. DARLINGTON (MCZ); Steens Mts, Fish Lake, 7500 ft, 22—26 VI 1951, B. MALKIN (FMNH); Kiger Isl. 5 mi SE Corvallis, 21 VI 1957, M. L. JERATH (OSU); McKenzie, Pass lava

beds, 27 VI 1954, under stones, R. L. NELSON (OSU); Idaho — Coeur d'Alene, VI, coll. WICKHAM (CNC); Utah — Park City (MCZ); Colorado — Mineral Co., Wolf Creek Pass, 13 VII 1968, E. C. BECKER (CNC); Summitville, 25 mi SW Del Norte, 3 VIII 1968, E. C. BECKER (CNC); Big Meadows, Res. 8 mi N Wolf Creek Pass, 8700 ft, E. C. BECKER (CNC); Mt Evans, Echo L.,



Figs. 105—109. *Aegialia (Psammoporus) lacustris* LEC. 105 — head; 106 — right fore tibia; 107 — hind tibia; 108 — aedeagus; 109 — stylus. Figs. 110—114. *A. (P.) cylindrica* (ESCH.), 110 — head; 111 — apex of elytra; 112 — right fore tibia; 113 — stylus; 114 — aedeagus. Figs. 115—119. *A. (P.) eriddlei* BROWN, 115 — apex of elytra; 116 — right fore tibia; 117 — stylus; 118 — aedeagus; 119 — paramera dorsally

10600 ft, M. MASON (CNC); Buena Vista, 7900—8000 ft, 1—6 VII 1896, H. F. WICKHAM (CNC); Garland, coll. BOWDITCH (MCZ); Mt Lincoln, 11—13000 ft, 13 VIII 1877 (MCZ); Michigan — Cheboygan Co., Douglas Lake, 9 VII 1920, M. H. HATCH (AMNH); Maine — Paris, 9 VII 1915, C. A. FROST (MCZ); Bethel, 2 I 1925, J. G. GEHRING (MCZ).

5. *Aegialia (Psammoporus) cylindrica* (ESCHSCHOLTZ)

(Figs. 110—114, 120)

Psammodius cylindricus ESCHSCHOLTZ, 1822: 11;

Oxyomus cylindricus: MANNERHEIM, 1843: 262;

Aegialia cylindrica: MANNERHEIM, 1853: 220; HORN, 1871: 293; LE CONTE, 1878: 610; HORN, 1887: 100—101; BROWN, 1931: 17, 43; HATCH, 1971: 441.

Holotype (sex not recorded): Unalaska. Location unknown (see under „Remarks”).

Description. Length 3.4—4.6 mm. Body slightly convex, moderately shining, very dark brown, reddish brown, reddish or yellowish brown, the legs, clypeus and elytra sometimes paler. Terminal segment of maxillary palpus cylindrical. Clypeal margin finely reflexed, rounded each side of shallow median emargination, genae very feebly prominent; clypeal surface finely and closely granulate, front densely, rather coarsely punctate, frontal suture distinctly impressed. Pronotum about half as long as elytra, sides feebly arcuate anteriorly, distinctly crenate, sides and base margined; disc with a shallow fovea on each side near middle of lateral declivity and with median line usually broadly and very feebly impressed on basal third; the punctures rather coarse, very close throughout, separated by less than their diameters on disc, closer on the sides. Elytra moderately convex, slightly diminishing toward the apex; humeri very feebly or not dentate; striae rather coarse, moderately impressed, stria punctures variable, often as coarse as those of the pronotum, distinctly crenating inner margins of the intervals; intervals slightly convex or flat, the most external intervals feebly alutaceous; discal intervals distinctly punctate, very finely and sparsely punctate or almost impunctate. Legs slender; lateral teeth of fore tibia rather slender, well separated, obtusely rounded; middle and hind tibiae with incomplete transverse ridges, terminal spurs sharply pointed, sometimes inconspicuously flattened; first posterior tarsal segment shorter than the upper spur and subequal to following two segments combined; hind tarsus about two-thirds as long as the tibia. Hind femora microscopically punctate. Metasternum impunctate, very feebly tumid on each side of the midline before the hind coxae. Abdominal sterna alutaceous on the sides, shining at middle, pigidium shagreened.

Male. The last abdominal sternum broadly concave at middle, shorter than in female. Aedeagus normal.

Female. The last abdominal sternum longer than in male, without concavity. Stylus vestigial with one very long seta at apex.

Biology unknown. The species is frigidophilic and littoral. Dates collected: April to August.

Remarks. The description of *A. cylindrica* has been revised several times. In his monography BROWN (1931) makes a following comment: „This species was described from Unalaska. The specimens in the collection at hand agree with a specimen in the LE CONTE collection which was taken at Sitka and evidently sent to LE CONTE by MANNERHEIM, as LE CONTE has written MANNER-

HEIM's name on the label. They also agree with an unlabeled specimen and a specimen from Washington Territory in the HORN collection. The National Collection series consists of nine males and eleven females from Edmonton, Alta., British Columbia, Queen Charlotte Islands and Ft. Wrangel, Alaska". It seems from that text, than the authors of all revisions have not in fact studied

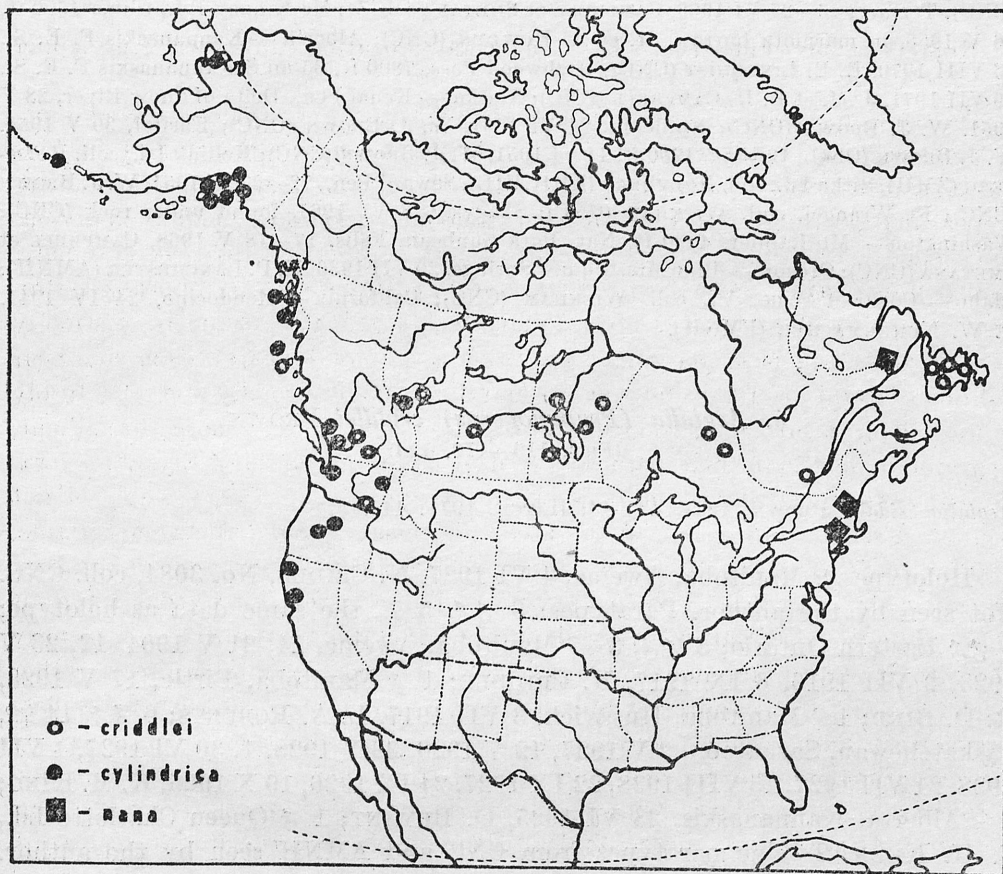


Fig. 120. Known distribution of *Aegialia (Psammoporus) criddlei* BROWN, *A. (P.) cylindrica* (ESCH.) and *A. (P.) nana* BROWN in North America

the original specimens of ESCHSCHOLTZ. Furthermore, it has not been determined, whether the holotype exists and where it can be found. Nevertheless, it seems that the taxonomical status of the species concerned is well grounded and rather certain. The species, very similar to *A. lacustris* and *A. criddlei*, is characterized by a considerable variability, especially as far as the density of the head and pronotum punctation, the sculpture of elytra intervals, the length of apical spurs of tibiae as well as the proportions of tarsal segments are concerned. The distributional data reported before BROWN's monography are not totally reliable, since they can concern also *A. criddlei* BROWN.

Distribution (Fig. 120). Canada and U.S.A. Recorded from: British Columbia — Queen Charlotte Isl.; Alberta — Edmonton; Unalaska; Alaska; Sitka; Washington; Oregon; Idaho (MANNERHEIM, 1853; WICKHAM, 1893; HAMILTON, 1894; KEEN, 1895; KEEN, 1898; FLETCHER et GIBSON, 1909; VAN DYKE, 1928; CRIDDLE, 1929; BROWN, 1931; HATCH, 1971).

Material examined. 85 specimens. British Columbia — Queen Charlotte Isl., J. H. KEEN (CNC); Terrace, 26—27 VI 1968, CAMPBELL et SMETANA (MCZ); Mc Kinney Rd., Oliver 4500 ft, 26 V 1958, in marmota burrow, H. et A. HOWDEN (CNC); Alberta — Kannanaskis F. E. S., 16 VIII 1970, E. E. LINDQUIST (CNC); Highwood Pass, 7800 ft, 35 mi S Kannanaskis F. E. S., 19 VII 1971, J. M. et B. H. CAMPBELL (CNC); Alaska — Kenai Pen., Delta of Snow River, 28 V 1951, W. J. BROWN (CNC); Ninilchik, 24 VI 1951, W. J. BROWN (CNC); Kasilof, 30 V 1951, W. J. BROWN (CNC); Lawing, 1200 ft, 11 VI 1951, W. J. BROWN (CNC); Kodiak Isl., coll. HOLMBERG (ZMH); Sitka Isl., coll. HOLMBERG (ZMH, ZIL); Seward Pen., 12—27 VI 1951, W. J. BROWN (CNC); Ft Wrangel, coll. WICKHAM (CNC); Skagway, 6 VI 1961, found under rock (CNC); Washington — Mt Rainier, 4000 ft, Nat. Park Sunbeam Falls, 17—18 V 1968, CAMPBELL et SMETANA (CNC); Oregon — Blue Mts., Squaw Springs, 20 VII 1936, H. P. LANCHESTER (AMNH); Idaho — Coeur d'Alene, VI, coll. WICKHAM (CNC); California — Mendocino, 24 IV 1941, F. W. NUNENMACHER (FMNH).

6. *Aegialia (Psammoporus) criddlei* BROWN

(Figs. 115—119, 120)

Aegialia criddlei BROWN, 1931: 42—43; HATCH, 1971: 441.

Holotype ♂: Manitoba, Aweme, 4 VI 1927, N. CRIDDLE, No. 3084, coll. CNC. Not seen by the author. Paratypes: 3 ♂♂, 5 ♀♀ the same data as holotype; 2 ♂♂ Eastern Ontario; 3 ♂♂, 3 ♀♀ Manitoba, Aweme, 14, 21 V 1904, 12, 23 V 1923, 2 VII 1916, 6 IX 1917, N. CRIDDLE; 1 ♂ Manitoba, Birtle, 17 V 1928, R. D. BIRD; 1 ♀ Manitoba, Husavick, 3 VII 1917, L. A. ROBERTS; 6 ♂♂, 14 ♀♀, Saskatchewan, Saskatoon, 2 V 1927, 12 V 1926, 22 V 1928, 1, 30 VI 1927, 4 VII 1928, 21 VII 1927, 15 VIII 1928, 22 IX 1927, 24 IX 1926, 19 X 1925, K. M. KING; 1 ♀ Alberta, Kannanaskis, 23 VI 1925, O. BRYANT; 1 ♂ Queen Charlotte Isl., J. H. KEEN. Twelve paratypes from CNC and AMNH seen by the author.

Description. Length 3.6—4.5 mm. Body moderately convex, shining, brown. reddish brown or blackish, the legs, clypeus and sometimes the elytra paler, Terminal segment of maxillary palpus cylindrical. Clypeal margin finely reflexed, rounded each side of shallow median emargination, genae very feebly prominent; front rather coarsely, closely punctate, clypeus finely, closely granulate, frontal suture distinct. Pronotum about half as long as elytra, sides feebly arcuate anteriorly, distinctly crenate, sides and base margined; disc with one or two small foveae on each side near middle of lateral declivity and with median line sometimes narrowly and very feebly impressed at base; the punctures rather coarse, close throughout, separated by their diameters or more, slightly closer on the sides. Elytra moderately convex, distinctly diminishing toward the apex, humeri feebly dentate; striae moderately impressed, coarse, strial punctures variable, often more coarse than those of the pronotum, distinctly crenating inner

margins of the intervals; intervals slightly convex with a row of very fine punctures; the two most external intervals and elytral apices alutaceous, subopaque. Legs slender; lateral teeth of fore tibia well separated, very acute, terminal spur slender; middle and hind tibiae with incomplete transverse ridges, terminal spurs sharply pointed; first posterior tarsal segment shorter than the upper spur and subequal to following two segments combined; hind tarsus about two-thirds

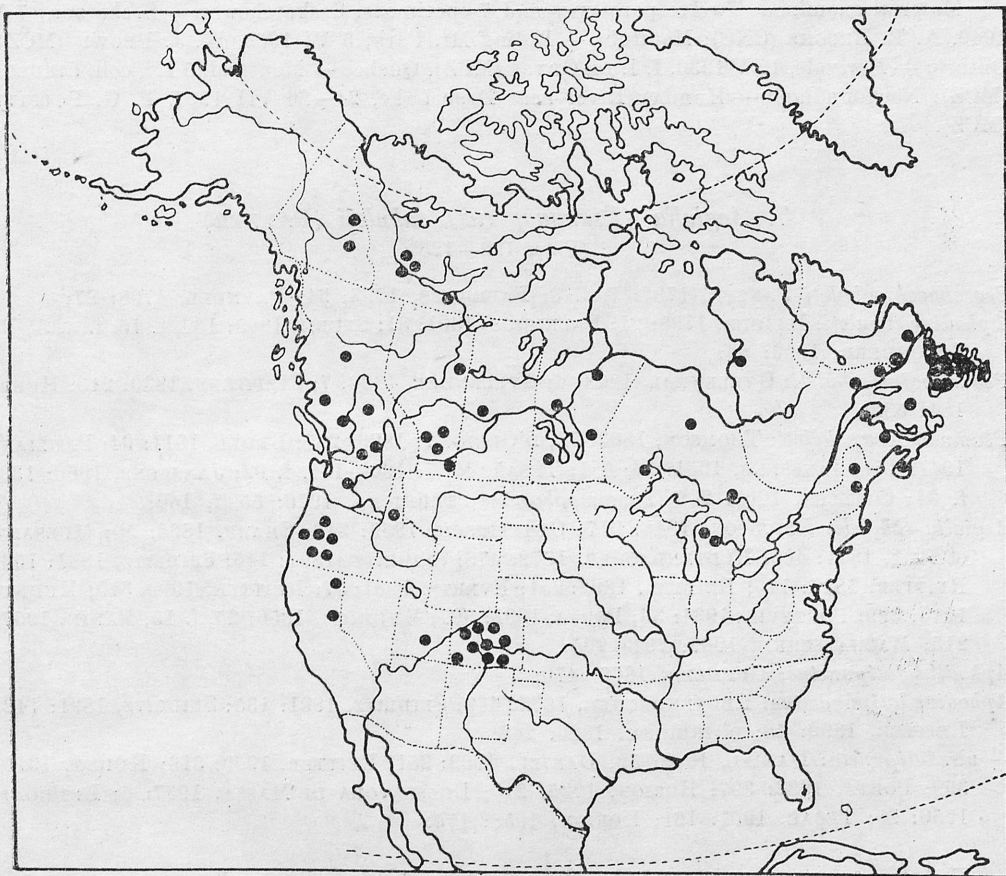


Fig. 121. Known distribution of *Aegialia (Psammoporus) lacustris* LEC. in North America

as long as the tibia. Hind femora very indistinctly punctate. Metasternum rather impunctate, slightly tumid on each side of the midline before the hind coxae. Abdominal segments distinctly alutaceous on the sides, moderately shining at middle, pigidium shagreened.

Male. The last abdominal segment broadly concave at middle, shorter than in female. Aedeagus normal.

Female. The last abdominal segment longer than in male, not concave at middle. Stylus vestigial, setae not evident.

Biology unknown. The species is frigidophilic and occurs on the banks of inland waters. Dates collected: April to October.

Distribution (Fig. 120). Canada and U.S.A. Recorded from: British Columbia — Hope, Trail, Queen Charlotte Islands; Alberta — Kannanaskis; Saskatchewan — Saskatoon; Manitoba — Aweme, Birtle, Husavick; Eastern Ontario; Newfoundland — Springdale, Badger (BROWN, 1931; 1934; LANDIN 1960; HATCH, 1971).

Material examined. Twelve paratypes and 7 specimens. Saskatchewan — Saskatoon, 7 V 1949, A. R. BROOKS (CNC); Manitoba — Riding Mt. Park, 5 VI 1958, W. J. BROWN (MCZ); Ontario — Merivale, 12 V 1930, I. I. DE GRUYSE (MCZ); Quebec — Montreal, 5 IX, coll. LIEBECK (MCZ); Newfoundland — Humber River near Dear Lake, 24—26 VII 1907, P. G. BOLSTER (MCZ).

7. *Aegialia (Psammoporus) sabuleti* (PANZER)

(Figs. 122—125)

Scarabaeus sabuleti PANZER, 1797:37, f. 3; FABRICIUS, 1798: 24; PAYKULL, 1798: 27;

Aphodius sabuleti: ILLIGER, 1798: 21; FABRICIUS, 1801: 81; STURM, 1805: 169, t. 15, f. a, A, B; SCHÖNHERR, 1806: 86;

Psammodius sabuleti: GYLLENHAL, 1808: 6; GYLLENHAL, 1820: 7; STEPHENS, 1830: 210; HEER, 1841:532;

Psammoporus sabuleti: THOMSON, 1863: 72; D'ORBIGNY, 1896: 257; BEDEL, 1911: 94; PAULIAN, 1941: 154; JANSSENS, 1951: 16, f. 1; TESAŘ, 1957: 160—161, f. 92; JANSSENS, 1960: 133, f. 81; CORELLA, 1967: 208 (*Psammophorus*); STEBNICKA, 1976: 55, f. 150;

Aegialia sabuleti: ERICHSON, 1848: 917; GÜTFLEISCH, 1859: 319; SHARP, 1866: 50; MULSANT et REY, 1871: 406; REDTENBACHER, 1872: 473; SEIDLITZ, 1891: 145; SEIDLITZ, 1891: 153; REITTER, 1892: 113; REITTER, 1892: 251; EVERTS, 1901: 37; REITTER, 1909: 319; KUHN, 1913: 399; PORTEVIN, 1931: 33; PORTA, 1932: 397; ENDRÖDI, 1956: 25, f. 15; PANIN, 1957: 215; MACHATSCHKE, 1969: 294—295;

Aphodius latipunctus: GREDLER, 1866: 470;

Aphodius latipunctatus: REDTENBACHER, 1872: 469; SEIDLITZ, 1891: 135; SEIDLITZ, 1891: 142; REITTER, 1892: 48; D'ORBIGNY, 1896: 208;

— *ab. latipuncta*: DANIEL, 1902: 52; DANIEL, 1903: 251; REITTER, 1909: 319; KUHN, 1913: 399; PORTA, 1932: 397; HORION, 1935: 213; BRASSAVOLA DI MASSA, 1937: 5; ENDRÖDI, 1956: 25; TESAŘ, 1957: 161; HORION, 1958: 175.

Holotype (sex not recorded); Terra typica? Location unknown (see under „Remarks”).

Description. Length 3—4 mm. Oblong oval, convex, shining, slightly broader behind; black, castaneous or rufous, elytra sometimes paler; legs reddish brown or blackish, antennal clubs yellowish. Terminal segment of maxillary palpus cylindrical; the edges of clypeus and pronotum with yellowish hairs. Head moderately convex, genae not prominent, clypeal margin finely reflexed, broadly rounded each side of shallow median emargination; clypeal surface shining, finely and closely granulate, somewhat wrinkled; frontal suture feebly impressed, frontal area microscopically alutaceous with moderately coarse punctures separated by about their diameters. Pronotum about half as long as elytra, anterior angles obtuse, posterior angles obtusely rounded, the weakly arcuate sides and

base margined, the edges moderately crenate, base sinuate; surface with distinct, densely punctate fovea on each side near middle of lateral declivity; discal punctures moderately coarse, rather closely distributed, separated by one to three times of their diameters, closer and more evenly spaced on the sides. Scutellum very small, triangular, shining. Elytra convex, slightly diverging apically in basal two-thirds, humeri feebly dentate; striae moderately deep with a row of coarse, distant punctures distinctly crenating inner margins of the slightly convex, moderately wide intervals; intervals microscopically alutaceous, impunctate, lateral part of shoulders impunctate, shining. Legs slender; lateral teeth of fore tibia well separated, obtuse, terminal spur small, acute; middle and hind tibiae with a few transverse denticles, terminal spurs slender, sharply pointed, almost equal in length; first posterior tarsal segment about one-third shorter than the upper spur, almost equal to following two segments combined; hind tarsus about two-thirds as long as the tibia. Hind femora shining with scattered punctures bearing yellow hairs. Metasternum feebly convex, very finely punctate, midline distinctly impressed. Abdominal sterna alutaceous, punctate, each sternum with a row of yellow hairs; pigidium shagreened.

Male. The sides of pronotum near posterior angles less arcuate, base more sinuate, last abdominal segment shorter than in female. Aedeagus normal.

Female. The sides of pronotum near anterior angles more arcuate, base less sinuate, last abdominal segment longer than in male. Stylus small, slightly widened, with four visible setae.

Biology unknown. The Boreal-mountainous species, occurring on the banks of inland waters, predominantly mountain streams. Its insular occurrence in the lowland parts of Middle Europe has been brought about by the mechanical transport along waterways leading from the mountains to the Baltic Sea. This phenomenon has been observed in Poland, where the species reaches as far as Warsaw. It can be found, mostly in the summer, in the piedmont regions and in the mountains, on sandy banks of rivers and streams, under the stones, mouldering wood and plants, as well as in ex-river debris. According to LANDIN (1961) the species gives two generations per year, with the imago wintering.

Remarks. The taxonomical status of that species is absolutely certain despite the lack of the type. In the description of his species PANZER sometimes has not reported the locus typicus; according to FABRICIUS (1798, 1801) *sabuleti* „habitat in Suecia". The species has been on frequent occasions illustrated and discussed in the European systematic and faunistic literature.

Distribution (Fig. 122). North and Central Europa. Recorded from: France — Vosges: Remiremont; Metz; Italy — Piemont; Switzerland — Val Entremont, Klausen, Nufenen, Matt, Reinwald; Great Britain — Northern Scotland; Denmark; German Federal Republic — Westfalen; Kassel; Rheinland: Overath; Franken: Nurnberg, Erlangen; Bayern: Burghausen, Simbach, Bernau; Württemberg: Reichenbach; German Democratic Republic — Thüringen: Eisenberg; Mittelbe: Eisleben; Austria — Steiermark: Admont, Enns, Oppenberg, Graz; Kärnten: Eisenkappel, Maria-Rein, Unterferlach, Villach; Salzburg: Lofer,

Nassfeld; Tirol: Inzing-Innufer, Wertachufer, Zillertal; Vorarlberg: Bregenz, Neuzing, Bludenz, Feldkirch; Poland — Silesia: Mała Panew; Tatry Mts.; Czechoslovakia — Těšín, Paskov, Turnov, Tatry Mts.; Rumania — Bucegi Mts., Căcoșu; Bulgaria — Samokov, Čamkoriye; Ukrainian S.S.R. — Černogora Mts.; Lithuanian S.S.R.; Latvian S.S.R. — Riga; Russian S.F.S.R. — Kola Pen., Kaliningrad Reg; Finland — Petsamo; Sweden — „from Scania to Lappland”;

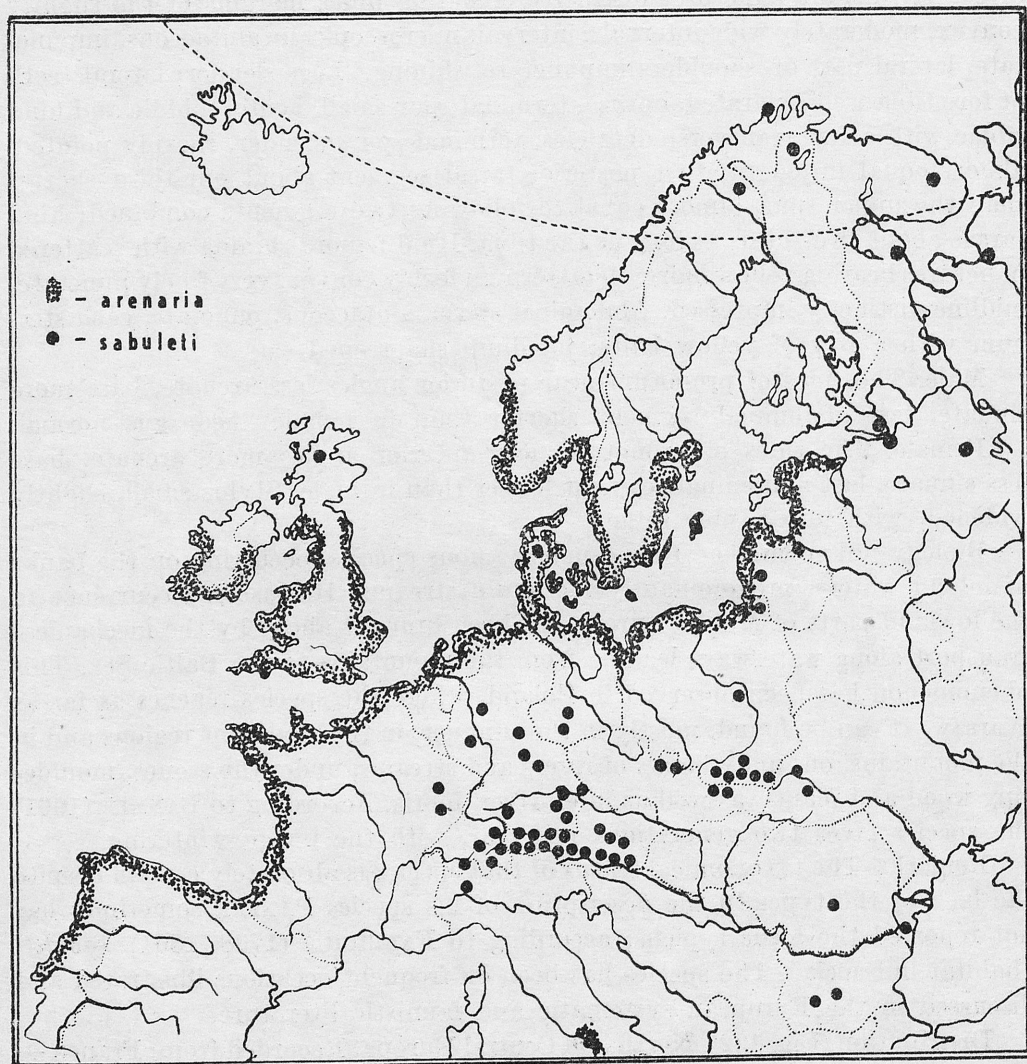


Fig. 122. Known distribution of *Aegialia* (*Aegialia*) *arenaria* (FABR.) and *A.* (*Psammoporus*) *sabuleti* (PANZ.) in Europe

Norway — Nordkapp (TESAŘ, 1957; PANIN, 1957; HORION, 1958; JANSSENS, 1960; LANDIN, 1961).

Material examined. 147 specimens. German Democratic Republic — Eisleben, 3 VI 1889, coll. REITTER (FMNH); Altenberg, coll. FRIEDRICH (NMP); Austria — Graz, coll. PENECKE ((NMP), Wien, coll. REITTER (NMP, ISEZ, ZIL); Czechoslovakia — Paskov, coll. REITTER

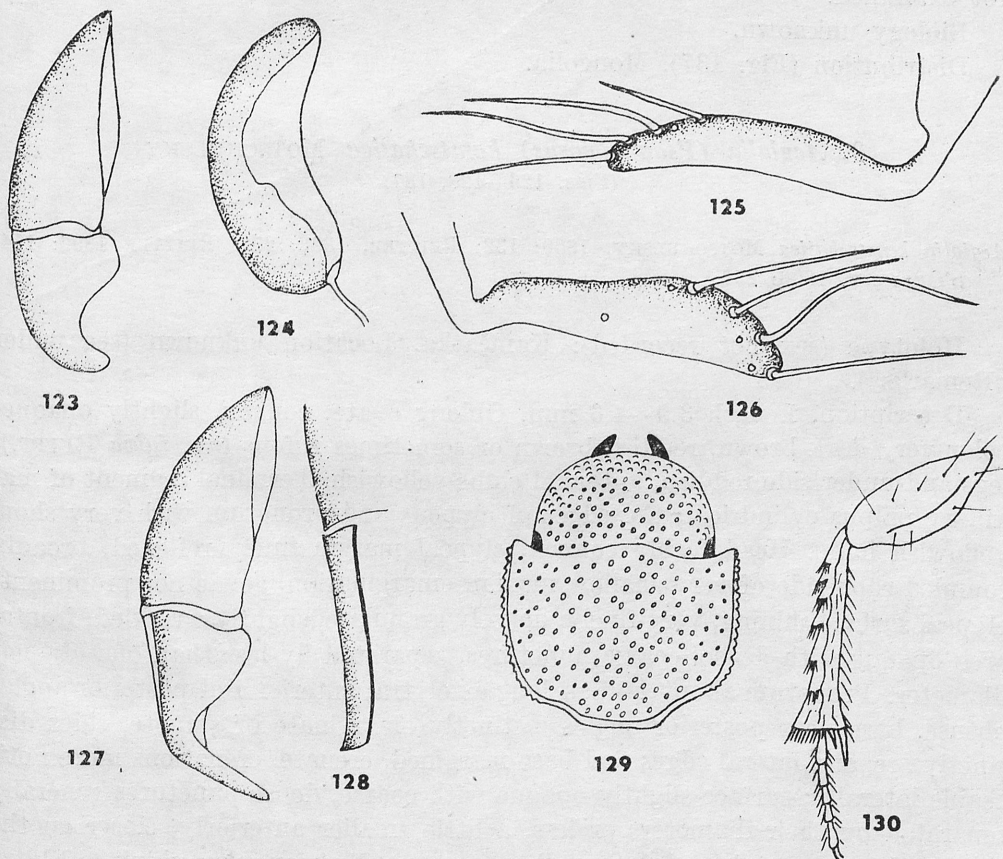
(ISEZ); Poland — Pieniny Mts: Sromowce, 26 VI 1973, Z. STEBNICKA (ISEZ), Krościenko, 1 VIII 1924, coll. TENENBAUM (ZIW), Czorsztyn, 17 VI 1972, Z. STEBNICKA (ISEZ); Tatry Mts: Zakopane, 1 VII 1910, M. RYBIŃSKI (ISEZ), Roztoka, 2, 6 VI 1976, M. GAŁUSZKA (ISEZ); Bieszczady Mts: Solina, 18 VII 1971, Z. STEBNICKA (ISEZ); Ukrainian S.S.R. — Černogora Mts: Howerla, 9 VI 1900, S. STOBIECKI (ISEZ); Prut River, 17 VII 1934, S. MARÓLSKI (ZIW); Russian S.F.S.R. — Leningrad, 1 V 1900, coll. OLSUFEV (ZIL), Šuvalovo, 9 V 1897, G. JACOBSON (ZIL), Kamenka, 4 VI 1899, coll. OLSUFEV (ZIL); Jaroslavskaja Obl., 17 VI 1896, B. JAKOVLEV (ZIL); Archangelsk, 24 VIII 1903 (ZIL); Estonian S.S.R. (ZIL); Karelian A.S.S.R. (ZIL); Sweden — Lappland, 3 VI 1889, coll. REITTER (NMP, ZMHU); Norway — Røros, 3 VI 1889, coll. REITTER (NMP); Kaafjord, 10—15 VII, E. STRAND (ZMHU).

8. *Aegialia (Psammoporus) abdita* (NIKritin) (comb. nov.)

(Figs. 129—130, 137)

Psammoporus abditus NIKRITIN, 1975: 108—109.

Holotype ♂: Mongolia, Chubsugul-aimak, 10—20 km NW Chatgal, 22—23 VII 1972, L. N. MEDVEDEV (probably in coll. ZIL). Not seen by the author.



Figs. 123—125. *Aegialia (Psammoporus) sabuleti* (PANZ.), 123 — aedeagus; 124 — spermatheca; 125 — stylus. Figs. 126—128. *A. (P.) kamtschatica* MOTSCH. 126 — stylus; 127 — aedeagus; 128 — paramera dorsally. Figs. 129—130. *A. (P.) abdita* (NIK.) (according to NIKRITIN, 1975), 129 — fore body; 130 — hind leg

Two paratypes (sex not recorded) the same data as holotype; location not recorded.

Description, (according to NIKRITIN, 1975, somewhat modified). Length 5.4—5.7 mm. Body elongate, black, mat. Head wide, semicircular, clypeus broadly rounded, genae not prominent, their side margins quite continuous with those of the clypeus; surface granulate, frontal suture absent. Pronotum moderately long; sides feebly arcuate, almost parallel, margined, distinctly crenate; base with strong marginal line, anterior angles produced, surface evenly coarsely punctate. Scutellum small. Elytra moderately convex, slightly broader behind; striae deep with a row of coarse punctures, intervals strongly convex. Legs slender; apical tooth of fore tibia great, separated; middle and hind tibiae with a few transverse denticles, terminal spurs slender, sharply pointed; first posterior tarsal segment about one-third shorter than the upper tibial spur, shorter than the following two segments combined; hind tarsus about two-thirds as long as the tibia. Hind femora moderately wide, fusiform. Sexual characters not examined.

Biology unknown.

Distribution (Fig. 137). Mongolia.

9. *Aegialia (Psammoporus) kamtschatica* MOTSCHULSKY

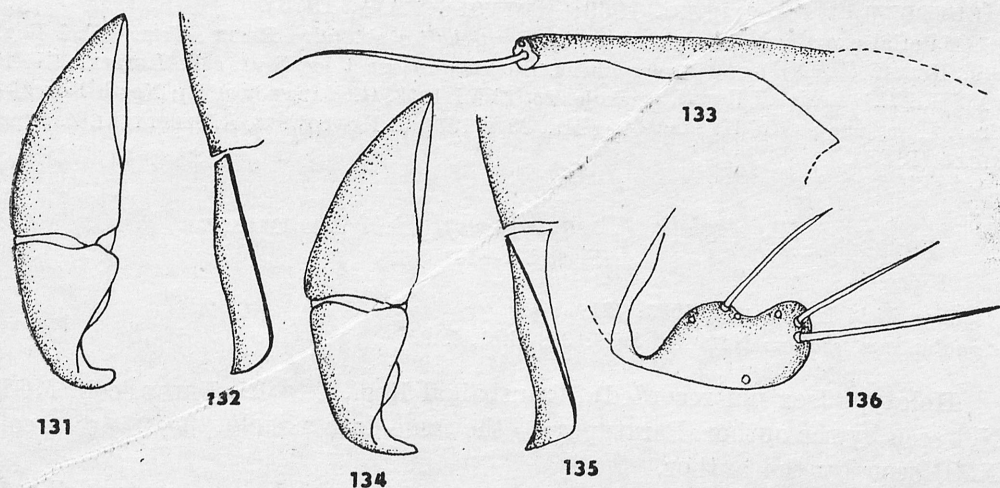
(Figs. 126—128, 137)

Aegialia kamtschatica MOTSCHULSKY, 1860: 132; REITTER, 1892: 252; REITTER 1892: 114; D'ORBIGNY, 1896: 257.

Holotype (sex not recorded): Kamčatka. Location unknown (see under „Remarks”).

Description. Length 3.9—4.6 mm. Oblong ovate, convex, slightly opaque; color very dark brown, reddish brown or sometimes rufous (ab. *fulva* REITT.); legs and under side reddish, antennal clubs yellowish. Terminal segment of maxillary palpus cylindrical; the edges of clypeus and pronotum with very short yellowish hairs. Head feebly convex, clypeal margin finely reflexed, broadly rounded each side of very shallow median emargination, genae not prominent; clypeal surface shining, very finely, densely granulate, slightly wrinkled; frontal area opaque with dense, coarse punctures, separated by less than one of their diameter. Pronotum about half as long as elytra; anterior and posterior angles obtuse, base near posterior angles distinctly emarginate or sinuate, sides distinctly arcuate, lateral edges and base margined, crenate, crenations more noticeable laterally; surface slightly opaque with coarse, dense punctures generally separated by their diameters or less, a little smaller anteriorly, closer on the sides and in pronotal angles. Scutellum very small, triangular, shining. Elytra moderately convex, sides subparallel, humeri moderately dentate; striae strong, striae punctures dense, coarse, slightly crenating inner margins of the slightly convex, rather narrow intervals; intervals with minute, scattered punctures,

lateral part of shoulders more distinctly punctate. Legs slender; lateral teeth of fore tibia well separated, obtuse, terminal spur small, acute; middle and hind tibiae with a few transverse denticles, terminal spurs slender, sharply pointed, almost equal in length; first posterior tarsal segment about one-third shorter than the upper spur, longer than the following two segments combined; hind tarsus about two-thirds as long as the tibia. Hind femora moderately shining with a few coarse punctures. Metasternum flat, very finely punctate, midline distinctly impressed. Abdominal sterna alutaceous, finely punctate, pigidium shagreened.



Figs. 131—133. *Aegialia (Psammoporus) friebi* BALTH. 131 — aedeagus; 132 — paramera dorsally; 133 — stylus. Figs. 134—136. *A. (P.) sibirica* sp. nov. 134 — aedeagus; 135 — paramera dorsally; 136 — stylus

Male. Base of pronotum near posterior angles more strongly emarginated, last abdominal segment shorter than in female. Aedeagus normal, paramerae sharply pointed.

Female. Base of pronotum near posterior angles less strongly emarginated, last abdominal segment longer than in male. Stylus small, slightly widened, with four visible setae.

Biology unknown.

Remarks. The specimens described by MOTSCHULSKY should be present in the collections of the Zoological Museum in Moscow or in Leningrad; although the author has not seen the holotype of *A. kamtschatica*, the investigations have been performed on 2 paratypes ab. *fulva* determined by REITTER, probably on the ground of the individuals described by MOTSCHULSKY. The existing reports concerning the distribution of *A. kamtschatica* are rather unreliable because of a number of erroneous identifications: according to KUWAYAMA (1967) the species was identified as *Aphodius pusillus* HERBST. It has been also

mistaken for *A. friebi* BALTH. and for other very similar species occurring on peripheries of Eastern Asia, including inter alia *A. sibirica* sp. n. The mentioned species show only small differences in their external morphological features, especially since both sexes of *A. kamtschatica* and *A. friebi* show a considerable individual variability. The occurrence of subspecies also can not be excluded in that case, unfortunately a more comprehensive elaboration of the East Palearctic fauna is not possible as yet due to a lack of suitable materials.

Distribution (Fig. 137). Far East. Recorded from: Baikal and Transbaikal Regions, Siberia (Daurija); Kamčatka Pen.; Sachalin; Kurile Isl.; Hokkaido; Honshu (REITTER, 1892; KONÓ, 1937; NAKANE, 1961; Kuwayama, 1967; MEDVEDEV et ERMOLENKO, 1969; KRYVOLUCKAJA, 1973).

Material examined. Two paratypes *A. kamtschatica* ab. *fulva* REITT., Transbaikal Reg., coll. REITER (HMNH) and 25 specimens. Siberia (no exact locality), coll. REITTER (NMP, FMNH, ZIL); Basin of Ussuri, Rirskoje, 20, 23 VI 1958, G. KABAKOV (CK); North Korea — Prov. Hamgjong-pukto, Kvanmo-bang Mt., 23 V 1974, J. PAWŁOWSKI, A. SZEPTYCKI. Z. STEB-NICKA (ISEZ).

10. *Aegialia* (*Psammoporus*) *friebi* BALTHASAR

(Figs. 131—123, 137)

Aegialia friebi BALTHASAR, 1935: 121;

Aegialia kamtschatica: NAKANE, 1955: 33, pl. 1, f. 9.

Holotype (sex not recorded): Transbaikal Reg., Čita, H. FRIEB, coll. MGF. Not seen by the author. Paratypes (5) the same data as holotype; 2 ♂♂ ex coll. NMP seen by the author.

Description. Length 3.5—4.5 mm. Body oblong oval, convex, very slightly broader behind; very dark brown, castaneous to piceous black, moderately shining; legs brown or reddish brown, antennal clubs yellowish. Terminal segment of maxillary palpus cylindrical, the edges of clypeus and pronotum with very short, yellow hairs. Head slightly convex, genae not prominent, clypeal margin finely reflexed, broadly rounded each side of very shallow median emargination; clypeal surface shining, densely finely granulate, somewhat wrinkled; frontal area slightly alutaceous with moderately coarse punctures, separated by about their diameters. Pronotum about half as long as elytra; anterior and posterior angles obtuse, base near posterior angles distinctly emarginate, sides distinctly arcuate, lateral edges and base margined, moderately strongly crenate; surface moderately coarsely, closely punctate, discal punctures irregularly spaced from one to three or more their diameters, smaller and closer along anterior margin, dense on the sides. Scutellum very small, triangular. Elytra moderately convex, feebly diverging apically in basal two-thirds, humeri moderately dentate; striae moderately deep, stria punctures not very coarse, slightly crenating inner margins of the weakly convex, minutely alutaceous, impunctate intervals; lateral intervals slightly more convex, lateral part of shoulders somewhat roughly punctate. Legs slender; lateral teeth of fore tibiae well separated, obtuse, terminal spur small, acute; middle and hind tibiae with a few transverse denti-

cles, terminal spurs slender, sharply pointed, almost equal in length; first posterior tarsal segment about one-third shorter than the upper spur, longer than the following two segments combined; hind tarsus about two-thirds as long as the tibia. Hind femora shining with a few moderately coarse punctures. Metasternum flat, very finely punctate, midline distinctly impressed. Abdominal sterna alutaceous, finely punctate, pigidium shagreened.

Male. Base of pronotum near posterior angles more strongly emarginated; last abdominal segment shorter than in female. Aedeagus normal, paramerae obtusely pointed.

Female. Base of pronotum near posterior angles less strongly emarginated; last abdominal segment longer than in male. Stylus staminal with one visible seta at apex.

Biology unknown.

Remarks. The species is very similar to *A. kamtschatica* and *A. sibirica* sp. n. The existing distributional data are untrustworthy.

Distribution (Fig. 137). Far East. Recorded from: Transbaikal Reg. — Čita; Sachalin; Kurile Isl.; Hokkaido; Honshu (BALTHASAR, 1935; NAKANE, 1955, 1972).

Material examined. Two paratypes and 17 specimens. Basin of Ussuri, Birskoje, 30 V, 15, 20 VI 1958, G. KABAKOV (CK); Amurskaja Obl., — Jankan Mts, Ol'doj river, 7 VI 1959, 9 VIII 1958, 20 VIII 1961, G. KABAKOV (CK); Uruša river, 3 VII 1960, G. KABAKOV (CK); Baikal Reg.— Eastern Sajon, Gutara, 10 VII 1960, G. KABAKOV (CK).

11. *Aegialia* (*Psammoporus*) *sibirica* sp. n.

(Figs. 134—137)

Holotype ♂: U.S.S.R., Čukotskij Nac. Okr., Kor'akskoje Nagorje, Majnie Lake, 28 VIII 1969, coll. ZIL. Paratype ♀: Kor'akskoje Nagorje, Ol'utorskij, 1 VIII 1962, leg. ILČENKO, coll. ISEZ.

Description. Length 4.2—4.6 mm. Body oblong oval, moderately convex, slightly broader behind, black, shining; legs and under side blackish, antennal clubs yellowish. Terminal segment of maxillary palpus cylindrical, the edges of clypeus and pronotum with very short yellowish hairs. Head slightly convex, genae not prominent, clypeal margin finely reflexed, broadly rounded each side of very shallow median emargination; clypeal surface shining, closely, finely granulate, somewhat wrinkled; frontal area moderately shining with moderately coarse punctures separated by about their diameters. Pronotum about half as long elytra; anterior and posterior angles obtuse, sides distinctly arcuate, lateral edges and base margined, moderately strongly crenate, base near posterior angles distinctly emarginated; surface with small, punctate fovea on each side near middle of lateral declivity; discal punctures moderately coarse, irregularly spaced from one to three of their diameters, a little smaller along anterior margin, close on the sides. Scutellum small, triangular, shining. Elytra moderately convex, strongly shining, feebly diverging apically in basal two-thirds, humeri moderately dentate; striae moderately deep, stria punctures contiguous the

same size as discal punctures of pronotum, feebly crenating inner margins of the intervals; discal intervals rather wide, very weakly convex, microscopically indistinctly punctate; lateral intervals more convex, lateral part of shoulders more distinctly punctate. Legs slender; lateral teeth of fore tibia well separated, obtuse, terminal spur straight, acute; middle and hind tibiae with a few transverse denticles, terminal spurs slender, sharply pointed, almost equal in length; first posterior tarsal segment about one-third shorter than the upper spur

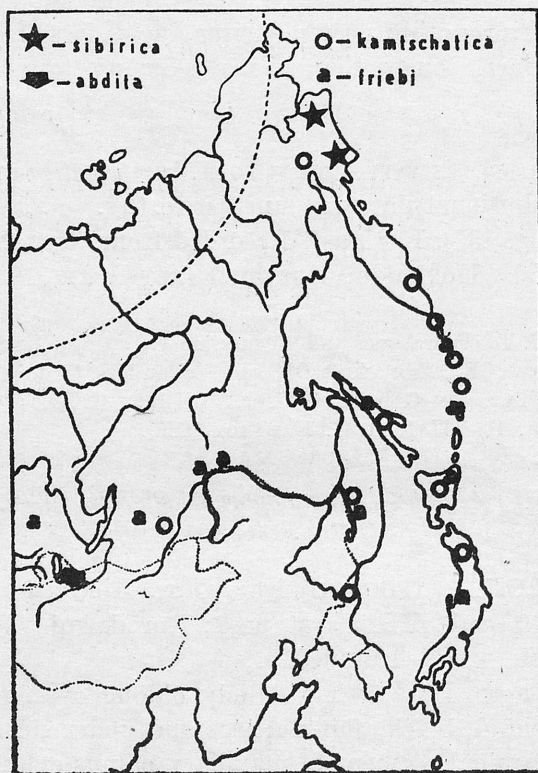


Fig. 137. Known distribution of *Aegialia (Psammoporus) sibirica* sp. nov., *A. (P.) abdita* (Nikr.), *A. (P.) kamtschatica* Motsch. and *A. (P.) friebi* Balth. in Asia

a little longer than the following two segments combined; hind tarsus about two-thirds as long as the tibia. Hind femora shining with two or three coarse punctures bearing yellow hairs. Metasternum slightly convex, microscopically alutaceous, very finely punctate, with distinctly impressed midline. Abdominal sterna shagreened, punctate, pigidium shagreened.

Male. Base of pronotum near posterior angles more distinctly emarginated, last abdominal segment shorter than in female. Aedeagus normal, paramerae obtusely pointed.

Female. Base of pronotum near posterior angles less distinctly emarginated,

last abdominal segment longer than in male. Stylus reniform, small, with three visible setae.

Biology unknown.

Distribution: Fig. 137.

12. Species incertae sedis

Aegialia (Psammoporus) exarata MANNERHEIM

Aegialia exarata MANNERHEIM, 1853: 219—220; HORN, 1887: 101 (nota); BROWN, 1931: 9 (nota).

Holotype (sex not recorded): Sitka. Location unknown (see under „Remarks”).

Original description: „Oblonga, modice convexa, subcylindrica, supra piceo-castanea, subtus rufescens; clypeo apice emarginato, margine rufo, crebre ruguloso; vertice subtiliter punctulato; thorace transverso, lateribus rotundato, ciliato, angulis anticis vix productis, rotundatis, disco punctis paucis majoribus irregulariter sparsis, versus latera magis congestis; elytris striis profunde exaratis, in fundo leviter crenulatis, interstitiis laevibus, humeris dente minuto acutiusculo armatis. Longit. 2.33 lin. Latit. 1 lin.

Habitat in insula Sitkha, sec. D. MÉNÉTRIÉS, qui hujus speciei individuum e Museo Acad. Imp. Petrop. as describendum mihi benevole transmisit”.

Remarks. The taxonomical status of *A. exarata* has not been, and probably will not be clarified completely: *exarata* is most likely a synonym of one of the Nearctic species, possibly *A. cylindrica* (ESCH.), but the evidence in that case is not really conclusive. The original description of MANNERHEIM holds good for most of the species of the subgenus *Psammoporus* THOMS. From the last sentence of that description it can be concluded, that the holotype of *A. exarata* should be present in the collection of ZIL (author has received similar information from Helsinki), where the author has found a few individuals with the label „Sitka”, provisionally designated as „*exarata*”, but without any additional documentation suggesting, that one of them is the MANNERHEIM's holotype. In fact, the individuals concerned belong to the species *A. cylindrica*, characterized by a considerable individual variability and similar to both, *A. lacustris* LEC. and *A. criddlei* BROWN. HORN (1887) has supposed, that *A. exarata* is a synonym of *A. lacustris*, but has not presented any evidence for it. On the other hand, MANNERHEIM knew both species, *lacustris* and *cylindrica*, since according to the literature he exchanged some individuals with LE CONTE and described the variability of *A. cylindrica* (MANNERHEIM, 1853). *A. exarata* MANNERH. has not been included to the key for the identification of species belonging to the subgenus *Psammoporus* THOMS.

Subtribus *Eremazina* (stat. nov.)I. Genus *Eremazus* Mulsant

Eremazus Mulsant, 1851: 139; Lacordaire, 1856: 126; Mulsant, 1860: 174; Fairmaire, 1879: 169—170; Reitter, 1892: 249, 252; Reitter, 1892: 111, 114; Semenov, 1893: 449—451; d'Orbigny, 1896: 198, 257—258; Clouët, 1897: 14—15; Clouët, 1897: 264—271; A. Schmidt, 1913: 6—8; Iablokoff-Khnzorian, 1967: 64;
Aegialia: Harold, 1869: 103; Fairmaire, 1870: 374;
Tolius: Sharp, 1875: 125—126; Fairmaire, 1879: 170;
Millingenia: Sharp, 1875: 123—125; Fairmaire, 1879: 170—171.

Type species: *E. unistriatus* Mulsant.

Description. Body oblong oval, moderately to strongly convex, shining, color yellowish varying to dark brown. Terminal segment of maxillary palpus cylindrical, the edges of clypeus, pronotum and elytra clearly and thickly piliferous. Head wide, labrum retuse, surface closely punctate. Pronotum about one-third time as long as elytra, sides and base margined, marginal line not crenate; surface more or less strongly punctate. Elytra nude, smooth, without striae or carinae, surface punctate. Legs rather short, robust, piliferous and setaceous; anterior tibiae with four or five lateral teeth, middle and hind tibiae distinctly dentate on the sides, tibial fringe with a row of short, thick setae, terminal spurs slender, sharply pointed; tarsal segments triangular, setaceous on the sides. Hind femora moderately wide; abdomen with five visible sterna, finely punctate and shortly piliferous. Sexual characters feebly evident in the last abdominal segment.

Distribution (Fig. 2, 159). Central Asia and North Africa.

Key to Species

1. Body moderately convex, elongate 2.
- Body strongly convex, oval 3.
2. Punctures of pronotum and elytra moderately strong, mixed very fine and coarse. Base of pronotum with very fine marginal line
E. unistriatus Muls.
- Punctures of pronotum and elytra strong, equal. Base of pronotum with strong marginal line
E. cribratus Sem.
3. Upper spur of middle tibia longer than the first tarsal segment; upper spur of hind tibia and first tarsal segment equal in length
E. sefrensis Clouët
- Upper spur of middle tibia and first tarsal segment equal in length; upper spur of hind tibia shorter than the first tarsal segment 4.
4. Elytra strongly widened in basal two-thirds, rounded toward the apex
E. punctatus (Har.)
- Elytra feebly widened in basal two-thirds, less rounded toward the apex
E. marmottani (Fairm.).

1. *Eremazus unistriatus* Mulsant

(Figs. 138—142, 147—148, 153—155)

Eremazus unistriatus Mulsant, 1851: 140; Mulsant, 1860: 175; Lacordaire, 1856: 127; Fairmaire, 1879: 169; Reitter, 1892: 252; Reitter, 1892: 114; Semenov, 1893: 449—450; d'Orbigny, 1896: 258; Clouët, 1897: 15; Clouët, 1897: 266—267; Olsufev, 1918: 30; 71; Iablokoff-Khnzorian, 1967: 64—65;

Eremazus cloueti: Semenov et Medvedev, 1938: 241—242; (syn. nov)

Tolius aeneus: Sharp, 1875: 126; Fairmaire, 1879: 170;

Tolius minor: Sharp, 1875: 126; Fairmaire, 1879: 170; Semenov, 1893: 449—450.

Holotype of *unistriatus* (sex not recorded): Algeria;

Holotype of *cloueti*, ♂: Iran, Kerman, Mekran, 2—3 IV 1901, N. Zarudnyj, coll. ZIL. Seen by the author (see under „Remarks”);

Holotype of *aeneus* (sex not recorded): Arabia — Jeddah;

Holotype of *minor*, ♀: Northern India.

Description. Length 3—4.8 mm. Body oblong, moderately convex, shining; color yellow varying to yellowish brown or dark brown, legs brown, antennal clubs yellow, mandibulae blackish; the edges of clypeus, pronotum and elytra clearly and thickly piliferous. Terminal segment of maxillary palpus cylindrical. Head rather wide, clypeal margin finely reflexed, weakly rounded, labrum retuse; genae not prominent, frontal suture feebly marked, blackish, surface closely, uniformly punctate. Pronotum about one-third as long as elytra, weakly widened just behind the middle; anterior angles acute, piliferous, sides feebly arcuate, posterior angles obtuse; sides and base with very fine marginal line, surface with small, impunctate area on each side near middle of lateral declivity; the punctures not very dense, mixed very minute and moderately coarse, the latter rather uniformly distributed, separated by about two diameters. Scutellum small, smooth, rounded at apex. Elytra oval, moderately convex, the surface entire covered the punctures which practically contiguous the same size as punctures of pronotum, but more distinct. Legs rather short, robust, piliferous; fore tibia with five lateral teeth, the two accessory very small, sometimes indistinct, terminal spur slender and acute; middle and hind tibiae moderately wide, slightly flattened, distinctly dentate on the sides, tibial fringe with a row of short, thick setae, terminal spurs sharply pointed; upper spur of middle tibia equal in length to first tarsal segment; upper spur of hind tibia distinctly shorter than the first tarsal segment; tarsal segments triangular, setaceous on the sides, hind tarsus as long as the tibia. Hind femora moderately wide, surface near posterior margin with a few punctures bearing yellow hairs. Metasternum very weakly concave, shining, impunctate, without midline. Abdominal sterna finely punctate, shortly piliferous, feebly shining, pigidium distinctly punctate.

Male. The last abdominal segment rounded at apex. Pars intermedia of aedeagus strongly sclerotized, setaceous, paramerae sharply pointed.

Female. The last abdominal segment with distinct emargination at middle of apex. Stylus elongate with numerous, moderately long, feathery setae.

Biology unknown. The species lives on desert and semidesert terrains, and

occasionally can be found near the water. Attracted by a light it usually comes to its source.

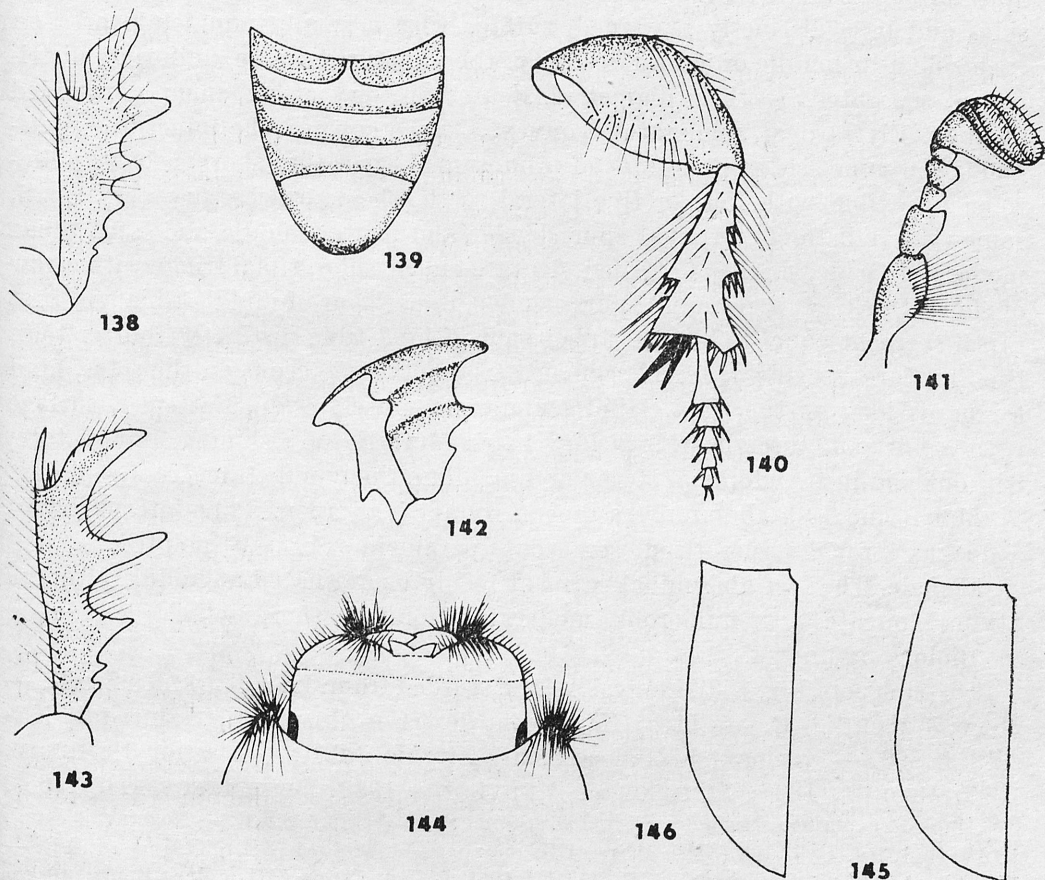
Remarks. Despite much effort, the author has not obtained informations concerning the site of holotypes of that species. According to catalogue data the individuals described by MULSANT, SHARP, FAIRMAIRE and CLOUËT (from the collection of R. OBERTHÜR) should be localized in part, at least, in MNHN — Paris or in other museums in France; it can not be excluded, however, that they were lost during World War II, being dispersed in private collections at that time. The present description has been based on a series of individuals, both designated and undesignated, coming from various museums, as well as on the CLOUËT's revision (1897) where the following passage can be found concerning the synonymies of *E. unistriatus*: „M. René OBERTHÜR a eu l'amabilité de m'offrir un type de *E. aeneus* SHARP et de me communiquer l'exemplaire unique de *E. minor* SHARP; sans aucun doute ces insectes sont identiques a *E. unistriatus* MULS.; le type de *E. minor* (long. 3 1/2 mill.) est une ♀ de cette dernière espèce; le dr SHARP dans sa brève description le dit de petite taille pour l'avoir probablement comparé à de très grands exemplaires de son *aeneus*: un des types d'*aeneus* que m'a offert M. OBERTHÜR, une ♀ également, est le plus grand représentant de l'espèce qu'il m'ait été donné de voir (près de 5 mill.): il provient d'Hedjaz; j'ai remarqué d'ailleurs que les exemplaires d'Arabie sont d'une taille généralement fort au dessus de la moyenne”.

In the ZIL collection there is a single individual of *E. cloueti* SEM. et MEDV. labelled with a card on which a pencil-written name: „*Eremazus cloueti* sp. n.” can be seen. That individual is presumably a holotype, because data given on the label, the sex and morphology are in accordance with SEMENOV's and MEDVEDEV's description, moreover, the species was described on the ground of a single individual („versimiliter ♂”). The morphology of the copulatory apparatus in that male is identical as in *E. unistriatus* MULS., the remaining features fall within the range of individual variability of the latter species.

Distribution (Fig. 159). North Africa, West and Central Asia. Recorded from: Algeria — Batna, Biskra; Mauritania — Atar, Chinguetti, Mollom-Har; United Arab Republic — Jeddah; Iraq — Rutba; Iran — Bampur, Sargad, Mekran; Armenian S.S.R.; Turkmen S.S.R. — Ašhabad, Repetek, Farab, Čardžou; Uzbek S.S.R. — Buchara, Chiva, Kyzylkum desert; Kazakh S.S.R.; Afghanistan — Shindan, Kandahar (CLOUËT, 1897; OLSUFEV, 1918, SEMENOV et MEDVEDEV, 1938; PETROVITZ, 1965; IABLOKOFF-KHNZORIAN, 1967; PETROVITZ, 1968).

Material examined. 185 specimens. Maroco — Fes, 14 VI 1937, coll. PEYERIMHOFF (MNHN); Mauritania — (no exact locality), XI 1942, coll. PEYERIMHOFF (MNHN); Algeria — (no exact locality), 1894, coll. REITTER (NMP, ZIL); Laghouat, J. DAYREM (NMP); M'Raiet et Bordj-de-Stile, D. MARTIN (NMP); Biskra (MNHN); Tin Tagart, 25 IV 1928, coll. PEYERIMHOFF (MNHN); Sidi Yahya, 1900, (MNHN), Aïn Sefra, coll. BOUCOMONT (MNHN), Tunisia — Gafsa, 29 III 1925, D. RAMBOUSEK (NMP); United Arab Republic — (North Sinai) El Kosseima, 23 V 1935, coll. ALFIERI (FMNH); Israel — Tel Aviv (Jaffa), 6 VI 1944, J. SAGAN (ISEZ); Turkey — Diyarbakir, 1932, V. Ajtai (HMNH); Iraq — Mosul (HMNH); Iran — Kopetdag (NMP); Germab, 1894, coll. HAUSER (NMP); Bampur, 10—12 IV 1901, N. ZARUDNYJ (ZIL); Turkmen S.S.R. —

Murgab, IV—V 1900, coll. HAUSER (NMP); Ašchabad, D. KALLERT (NMP), 5 V 1889, A. SEMENOV (ZIL), 5 VI 1903, G. JACOBSON (ZIL); Repetek, 1—4 VI 1902, G. SUMAKOV (ZIL), 4 VI 1889, A. SEMENOV (ZIL), 17—27 IV 1913, N. PLAVILŠČIKOV (ZIL), 19 V 1905, E. FISCHER (ZIL); Farab, 1 VI 1905, G. SUMAKOV (ZIL); Čardžou, 23 VI 1910, G. SUMAKOV (ZIL); Achčakujma, 4 VII 1934 (ZIL); Kizyl-Arwat, 11 V 1953 (ZIL); Džebel, 15 VII 1934 (ZIL); Uzbek S.S.R. — Buchará (NMP, FMNH, ZIL); Chiva, 2 V 1927, L. ZIMIN (ZIL); Kyzylkum desert — Kalma-tai, Aksur-kuduk (ZIL); Kazakh S.S.R. — Syrdarja (NMP); Afghanistan — Djelalabad, 24 I 1958, L. LINDBERG (HMNH), 15 km W Djelalabad, 700 m, G. KABAKOV (CK).



Figs. 138—142. *Eremazus unistriatus* MULS. 138 — right fore tibia; 139 — abdomen; 140 — hind leg; 141 — antenna; 142 — left mandible. Figs. 143—145. *E. punctatus* (HAR.), 143 — right fore tibia; 144 — head; 145 — left elytron. Fig. 146. *E. marmottani* (FAIRM.) — left elytron

2. *Eremazus cribratus* SEMENOV

(Figs. 149, 158, 159)

Eremazus cribratus SEMENOV, 1893: 449, 451; CLOUËT, 1897: 15; CLOUËT, 1897: 266, 268.

Holotype ♀: Kirghiz SSR, Ala-tau, Dshasyl-kul, 1873, coll. ZIL. Seen by the author.

Description. Length 3—3.5 mm. Body oblong, moderately convex, brown

or yellowish brown, strongly shining; legs brown, antennal clubs yellow, mandibulae blackish; the edges of clypeus, pronotum and elytra with yellow hairs. Terminal segment of maxillary palpus cylindrical. Head wide, clypeal margin finely reflexed, weakly rounded, labrum retuse; genae not prominent, frontal suture distinctly marked, blackish, surface closely, uniformly punctate. Pronotum about one-third as long as elytra, convex, weakly widened just behind the middle; anterior angles acute and piliferous, sides feebly arcuate, posterior angles obtuse; sides and base distinctly margined, surface with a small, impunctate area on each side near middle of lateral declivity; the punctures coarse, uniformly distributed, separated by their diameters. Scutellum very small, smooth, rounded at apex. Elytra oval, moderately convex, surface covered the punctures contiguous the same size as punctures of pronotum. Legs rather short, robust, piliferous; fore tibia with four or five lateral teeth, the two accessory very small, somewhat indistinct, terminal spur slender and acute; middle and hind tibiae moderately wide, slightly flattened, dentate on the sides, tibial fringe with a row of short, thick setae, terminal spurs slender; upper spur of middle tibia and first tarsal segment equal in length; upper spur of hind tibia distinctly shorter than the first tarsal segment; tarsal segments triangular, setaceous on the sides, hind tarsus as long as the tibia. Hind femora moderately wide, flattened, surface with a few punctures bearing yellow hairs. Metasternum shining, impunctate, without midline. Abdominal sterna and pigidium finely punctate, feebly shining.

Male. The last abdominal segment rounded at apex. Pars intermedia of aedeagus strongly sclerotized, setaceous, paramerae obtusely pointed.

Female. The last abdominal segment feebly emarginated at middle of apex. Stylus elongate with numerous, moderately long, feathery setae.

Biology unknown.

Distribution (Fig. 159). Central Asia. Recorded from: Iran; Turkmen S.S.R. — Merv; Uzbek S.S.R. — Chiva; Kyzylkum desert — Mussa-bai, Kalma-tai; Kazakh S.S.R. — Karmaktshi, Saksaul'skij; Kirghiz S.S.R. — Ala-tau (SEMENOV, 1893; CLOUËT, 1897; SEMENOV et MEDVEDEV, 1938; KRYZHANOVSKIJ, 1965).

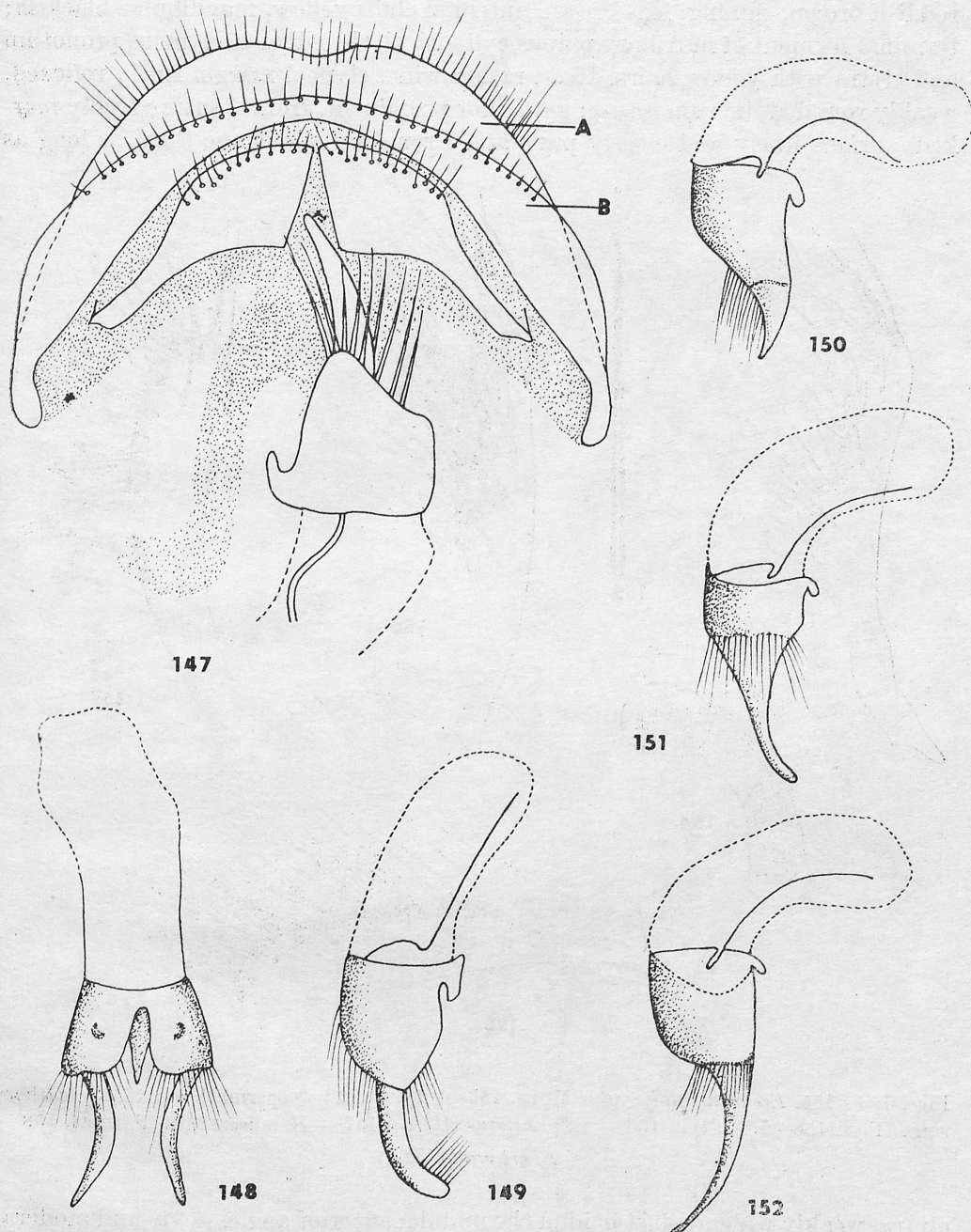
Material examined. The holotype and 96 specimens. Dagestan A.S.S.R. — Nogajskaja Step', 10 IV 1911, leg. UVAROVA (ZIL); shore of Kuma river, 14 VI 1914 (ZIL); Turkmen S.S.R. — Repetek, 6 IV 1905, E. FISCHER (ZIL), 11 III 1958, G. MEDVEDEV (ZIL); Kara Bogaz, 40 km N Kizyl-Arwat, 30 IV 1953, 16 IV 1952, under *Tamarix* and *Astragalus* (ZIL); Kirpili, 100 km NE Kizyl-Arwat, 12 V 1953, E. ARENS (ZIL); Achčakujma, 19 IV 1953 (ZIL); Uzboj, 30 IV 1952, O. KRYZHANOVSKIJ (ZIL); Uzbek S.S.R. — Kyzylkum desert, Kalma-tai, 1892, D. GLASUNOV (ZIL); Afghanistan — Farah, 900 m, 28 XI 1969, G. KABAKOV (CK).

3. *Eremazus sefrensis* CLOUËT

(Figs. 151, 159)

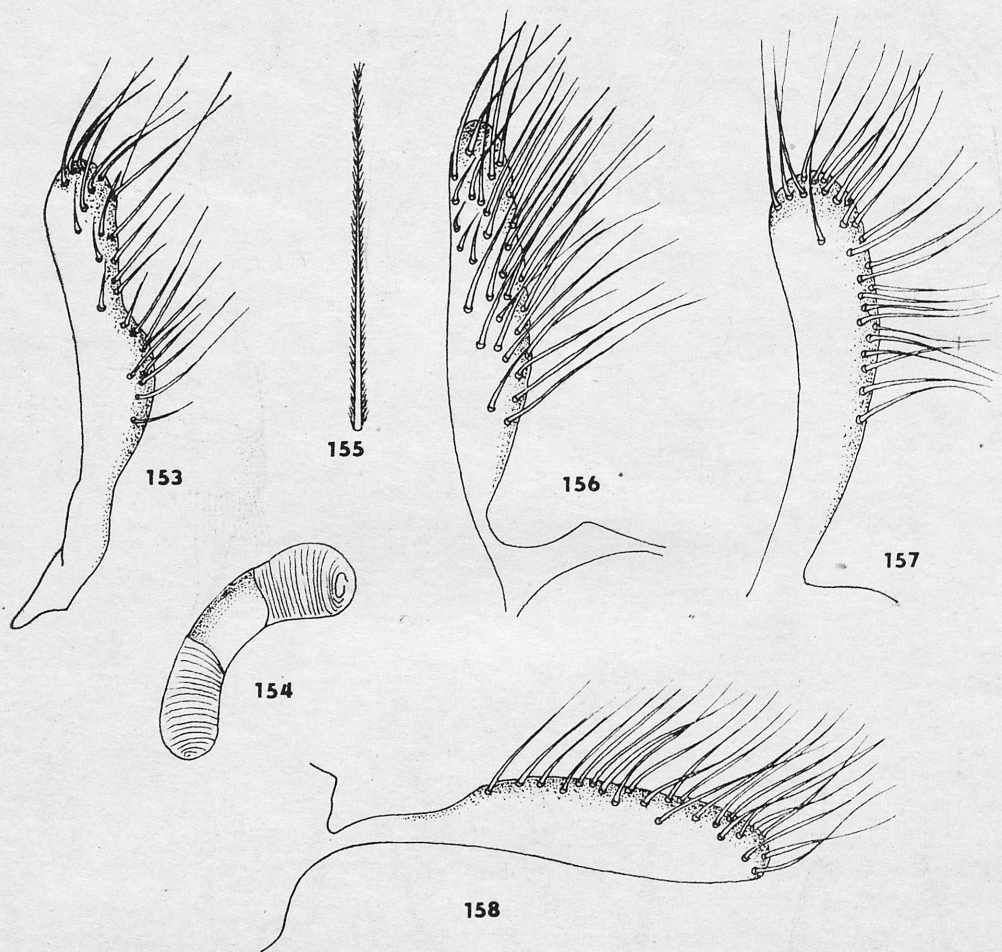
Eremazus sefrensis CLOUËT, 1897: 266, 267—268.

Holotype (sex not recorded): Algeria, Ain Sefra, V—VI 1896, leg. CHABAUT. Probably in coll. MNHN. Not seen by the author.



Figs. 147—148. *Eremazus unistriatus* MULS. 147 — genital apparatus: a — pigidium, b — ventral plate; 148 — aedeagus dorsally. Figs. 149—152. Aedeagi laterally. 149 — *E. cribratus* SEM.; 150 — *E. punctatus* (HAR.); 151 — *E. sefrensis* CLOUËT; 152 — *E. marmottani* (FAIRM.)

Description. Length 3.2 mm. Body oblong oval, rather strongly convex, reddish brown, shining; legs brown, antennal clubs yellow, mandibulae blackish; terminal segment of maxillary palpus cylindrical, the edges of clypeus, pronotum and elytra with yellow hairs. Head rather wide, clypeal margin finely reflexed, weakly rounded, labrum retuse; genae not prominent, frontal suture feebly marked, surface finely and closely punctate. Pronotum about one-third as long as



Figs. 153—155. *Eremazus unistriatus* MULS. 153 — stylus; 154 — spermatheca; 155 — feathery seta. Figs. 156—158. Styli. 156 — *E. punctatus* (HAR.); 157 — *E. marmottani* (FAIRM.); 158 — *E. cribratus* SEM.

elytra, weakly widened just behind the middle; anterior angles acute and moderately piliferous, sides feebly arcuate, margined, posterior angles obtuse; basal marginal line very fine, indistinct; surface with a small, impunctate area on each side near middle of lateral declivity, the punctures fine, scattered, irregularly distributed. Scutellum small, rounded at apex. Elytra oval, moderately convex, surface throughout with close, quite evenly distributed, mixed moderate and

very minute punctures. Legs rather short, robust, piliferous; fore tibia with four teeth, the fourth very small, indistinct, terminal spur slender and acute; middle and hind tibiae moderately wide, slightly flattened, feebly dentate on the sides; tibial fringe with a row of short setae, terminal spurs sharply pointed; upper spur of middle tibia distinctly longer than the first tarsal segment; upper spur of hind tibia equal in length to first tarsal segment; tarsal segments triangular, setaceous on the sides, hind tarsus as long as the tibia. Hind femora moderately wide, shining, finely punctate. Metasternum flat, alutaceous, without midline. Abdomen shortly piliferous, feebly shining.

Male. The last abdominal segment rounded at apex. Pars intermedia of aedeagus strongly sclerotized, setaceous, paramerae sharply pointed.

Female not seen by the author.

Biology unknown.

Remarks. Original description according to CLOUËT (1897): „*E. punctato* HAR. proxime affinis sed minor. Elongatulus, ovalis ♂♀, nonnihil depressus, nitidissimus, ferrugineo-subaenescens, tenue et sparsissime bifarium punctatus. Caput antice asperatum, fronte laxe punctata, vertice laevi, sutura frontali ad verticum incurvata, apice utrinque fusca; clypeus antice late marginatus. Prothorax omnino tenuissime punctulatus, praeter discum et latera medio punctis majoribus adpersus, antice angustatus, bisubsinuatus, lateribus et angulis posticis marginatis, basi non marginata valde rotundata. Scutellum cordiforme, apice rotundatum, laeve. Elytra pronoti latitudine, sparsissime punctata, interdum versus suturam vage subseriatim, paeterea subtilissime sat crebre punctulata: sutura fusca. Tibiae anticea tridentatae, basi unidenticulatae. Tibiarum intermediarum calcar apicale articulo primo tarsorum longius, posticarum articulo primo aequale. Metasternum ♂ medio impressum, ♀ late explanatum. Corpus insuper visum longe flavo ciliatum, angulis anticis pronoti pilis decumbentibus; subtus et crures longe flavo-pubescencia.—Long. 3 mill.”

Distribution (Fig. 159). Algeria.

Material examined. Two specimens ♂♂: Algeria, Aïn Sefra, coll. REITTER (HMNH, MNHN).

4. *Eremazus punctatus* (HAROLD)

(Figs. 143—145, 150, 156)

Aegialia punctata HAROLD, 1869: 103—104;

Millingenia punctata: D'ORBIGNY, 1896: 257;

Eremazus punctatus: CLOUËT, 1897: 15; CLOUËT, 1897: 269—270;

Millingenia fossor: SHARP, 1875: 125; FAIRMAIRE, 1879: 171.

Holotype of *punctatus* (sex not recorded): Egypt, Isma'iliya. Not seen by the author (see under „Remarks”);

Holotype of *fossor* (sex not recorded): the same locality.

Description. Length 3.7—4.5 mm. Body strongly convex, robust, shining; color yellow varying to yellowish brown or dark brown, legs brown, antennal clubs yellow, mandibulae blackish; the edges of clypeus, pronotum and elytra

clearly and very thickly piliferous. Terminal segment of maxillary palpus small, cylindrical. Head rather wide, clypeal margin distinct, finely reflexed, rounded each side of moderate median emargination, labrum deeply retuse; genae not prominent, frontal suture blackish, distinctly marked, surface rather closely, uniformly punctate. Pronotum about one-third as long as elytra, weakly widened behind the middle; anterior angles acute and piliferous, sides feebly arcuate, posterior angles obtuse, sides and base distinctly margined; surface with a small, impunctate area on each side near middle of lateral declivity and with vertical impunctate midline; the punctures close, mixed very minute and coarse, the latter uniformly distributed, separated by their diameters. Scutellum very small, smooth, apically acute. Elytra oval, rather strongly convex, diverging apically in basal two-thirds, rounded toward the apex; surface entire covered the punctures practically contiguous the same size as punctures of pronotum, but more distinct. Legs short, robust, piliferous; fore tibia with five lateral teeth, the two accessory very small, sometimes indistinct, terminal spur slender and acute; middle and hind tibiae wide, rather flattened, distinctly dentate on the sides; tibial fringe with a row of short, thick setae, terminal spurs sharply pointed; upper spur of middle tibia equal in length to first tarsal segment; upper spur of hind tibia distinctly shorter than the first tarsal segment; tarsal segments triangular, setaceous on the sides, hind tarsus as long as the tibia. Hind femora wide, surface near posterior margin with fine punctures bearing yellow hairs. Metasternum flat, feebly alutaceous, finely punctate, without midline. Abdominal sterna and pigidium punctate, shortly piliferous.

Male. The last abdominal segment rounded at apex. Pars intermedia of aedeagus strongly sclerotized, setaceous, paramerae recurved, sharply pointed.

Female. The last abdominal segment with distinct emargination at middle of apex. Stylus elongate with very numerous, long, feathery setae.

Biology unknown. The species occurs on the sandy, desert terrains.

Remarks. The types of *E. punctatus* (HAR.), *E. fossor* (SHARP) and *E. marmottani* (FAIRM.) have not been investigated by the author for reasons given in the comment to *E. unistriatus*. The materials obtained from MNHN contained a single individual of *E. punctatus* designated as „*Millingenia fossor* M. S. Ind. typ., ex coll. SHARP 1890”, unfortunately no data were given concerning the site of its discovery. Other two individuals, labelled in the same manner and coming from Egypt are localized in the collection of ZIL; they probably belong to the typical series of *E. fossor*, as the abbreviation Ind. typ. present on the original SHARP's labels can indicate. Considering the synonymies of the mentioned species CLOUËT (1897) wrote as follows: „*E. fossor* SHARP avait été réuni par M. FAIRMAIRE (1879) à *E. Marmottani* FAIRM. L'erreur m'a été très justement signalée par M. R. OBERTHÜR et de la comparaison faite par moi-même des types du Dr SHARP et de von HAROLD, il résulte que *E. fossor* est bien identique à *E. punctatus* HAR.”. In further considerations CLOUËT has made a supposition, that the errors in the determination must have been a result of a misidentification of the sexual dimorphism characters; the latters, according to CLOUËT's

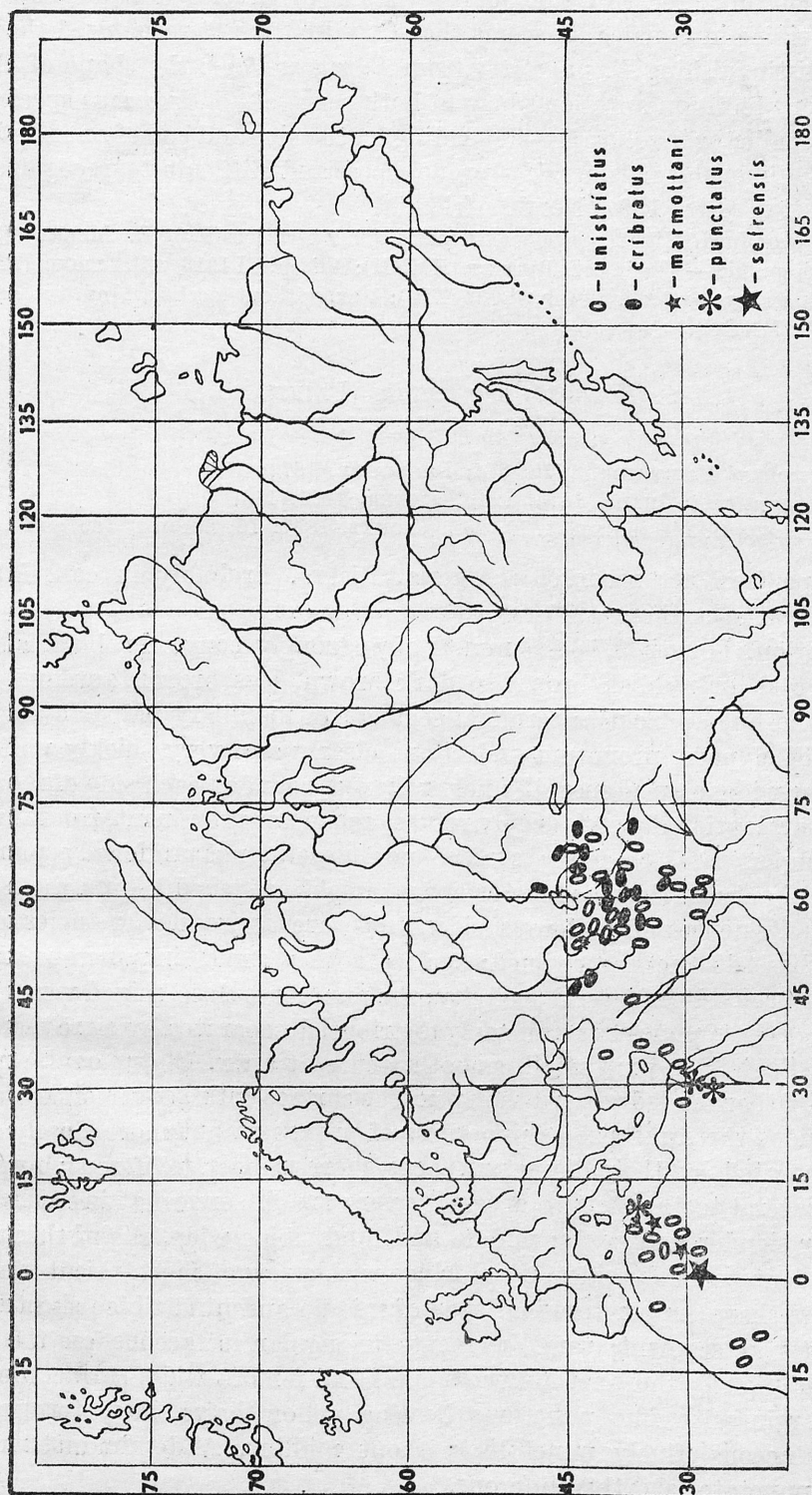


Fig. 159. Known distribution of the genus *Eremazus* in Palearctica

opinion, occur in a form of the poorly visible, or involuted additional teeth of anterior tibiae in females. It seems that CLOUËT has not recognized the main character distinguishing *E. punctatus* from *E. marmottani*: the shape of elytra. The accessory teeth on anterior tibiae in both sexes of all *Eremazus* species can be bigger, smaller or involuted — depending on the size and age of an individual. The sexual dimorphism is weakly pronounced and difficult to recognize.

Distribution (Fig. 159). North Africa.

Material examined. Eight specimens. Tunisia (no exact locality), *E. MERKL* (NMP); United Arab Republic — Khair, coll. REITTER (HMH); Ghizeh, 1 I 1913, coll. ALFIERI (FMNH); 2 ex. „Egypt, ser. typ. ex coll. SHARP, 1890” (ZIL); 1 ex. without locality, „Ind. typ., ex coll. SHARP, 1890” (MHN).

5. *Eremazus marmottani* (FAIRMAIRE)

(Figs. 146, 152, 157, 159)

Aegialia marmottani FAIRMAIRE, 1870: 374; FAIRMAIRE, 1879: 170;

Millingenia marmottani: SHARP, 1875: 123; REITTER, 1894: 188;

Eremazus marmottani: D'ORBIGNY, 1896: 257; CLOUËT, 1897: 15; CLOUËT, 1897: 270.

Holotype (sex not recorded): Algeria, Biskra. Probably in coll. MNHN. Not seen by the author.

Description. Length 3.7—4.5 mm. Body strongly convex, robust, shining; color yellowish or reddish brown to dark brown, legs brown, antennal clubs yellow, mandibulae blackish; terminal segment of maxillary palpus cylindrical, the edges of clypeus, pronotum and elytra clearly and very thickly piliferous. Head rather wide, clypeal margin finely reflexed, rounded each side of moderate median emargination, labrum deeply retuse; genae not prominent, frontal suture distinct, impunctate, blackish; surface not closely, not uniformly punctate. Pronotum about one-third as long as elytra, weakly widened behind the middle; anterior angles acute and piliferous, sides feebly arcuate, posterior angles obtuse, sides and base distinctly margined; surface with a small, impunctate area on each side near middle of lateral declivity; the punctures close, mixed very minute and coarse, coarse punctures uniformly distributed, separated by more than their diameters. Scutellum very small, smooth, acute at apex. Elytra oval, strongly convex, slightly rounded toward the apex; the surface entire covered the punctures contiguous the same size as punctures of pronotum but more closely distributed, separated by their diameters. Legs short, robust, piliferous; fore tibia with five lateral teeth, the two accessory very small, somewhat indistinct, terminal spur slender and acute; middle and hind tibiae wide, slightly flattened, distinctly dentate on the sides; tibial fringe with a row of short, thick setae, terminal spurs sharp; upper terminal spur of middle and hind tibiae shorter than the first tarsal segment; tarsal segments triangular, setaceous on the sides, hind tarsus slightly shorter than the tibia. Hind femora wide, surface near posterior margin with fine punctures bearing yellow hairs. Metasternum flat, feebly alutaceous, finely punctate, without midline. Abdominal sterna and pigidium punctate, shortly piliferous.

Male. The last abdominal segment feebly convex, rounded at apex. Pars intermedia of aedeagus strongly sclerotized, setaceous, paramerae very long, recurved, sharply pointed.

Female. The last abdominal segment flat, with distinct emargination at middle of apex. Stylus elongate with very numerous, moderately long, feathery setae.

Biology unknown. The species probably occurs on the sands of deserts, similarly to other species of this genus.

Distribution (Fig. 159). North Africa.

Material examined. Nine specimens. Algeria — Biskra (HMNH, MNHN); Oued Sadouri, 12 III 1947, coll. PEYERIMHOFF (MNHN); 2 ex. without locality (ZIL).

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ERRATA

Page	Line	Should be
398	between lines 35—36	NHM — Natural History Museum, Los Angeles, Calif.
409	Fig. 2, in the legend	Distribution area of <i>Eremazina</i> shaded

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Z. Stebnicka

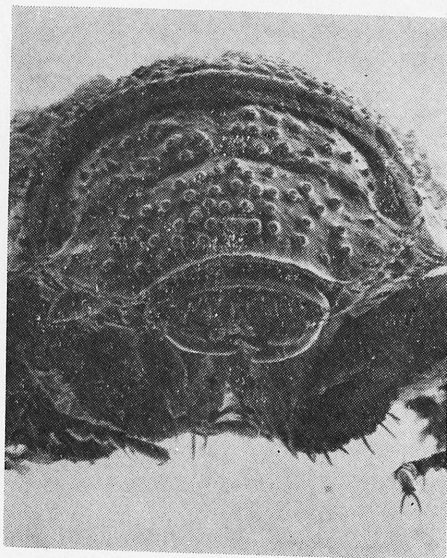
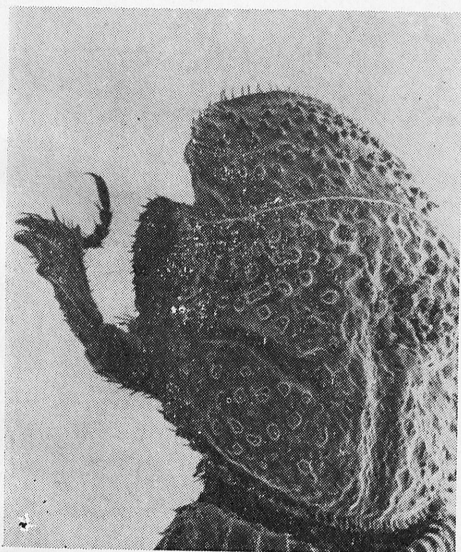
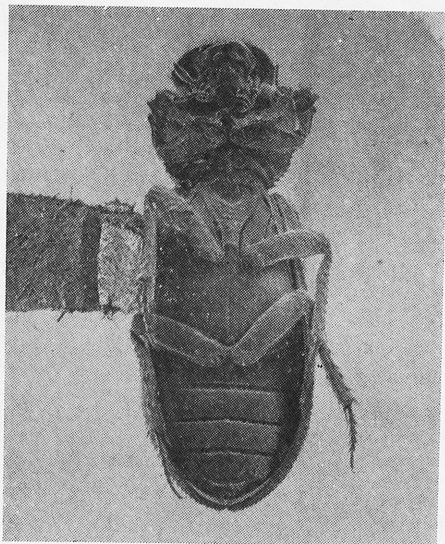
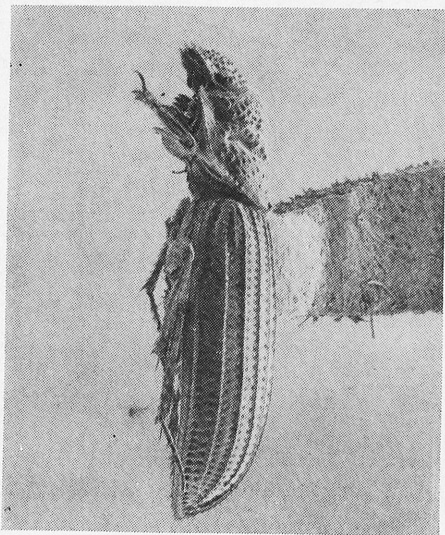
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STRESZCZENIE

Praca zawiera rewizję światowych gatunków plemienia *Aegialiini* z omówieniem ich morfologii, taksonomii, bionomii i rozsiedlenia, klucze do oznaczania oraz syntezę zoogeograficzną i filogenetyczną nawiązującą do trzeciorzędu i czwartorzędu. W oparciu o wyniki badań nad morfologią narządów kopulacyjnych samic, potraktowanych po raz pierwszy w tak szerokim zakresie, autorka przedstawia wnioski filogenetyczne, opracowuje nowy system rodowy *Aegialiini* i opisuje cztery nowe gatunki.

Plate XXIII

Annegialia ataeniformis HOWDEN (Holotype)



Redaktor zeszytu: prof. dr W. Szymczakowski

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