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Estimates of global biodiversity and costs of biodiversity research revisited, with a review of Sabah *Scaphisoma* Leach and descriptions of 56 new species (Coleoptera: Staphylinidae: Scaphidiinae)

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Abstract: Estimates of species richness and of costs of descriptions are popular, in disregard of their divergences and uncertainty. A review of the Sabah, Malaysia species of *Scaphisoma* provides hard data that question these estimates and highlight incongruities impacting studies of faunal richness. The present review is based on extensive collections that yielded the following 56 species described below as new: *S. adami* sp. nov., *S. affectuosum* sp. nov., *S. affluens* sp. nov., *S. alesi* sp. nov., *S. alternum* sp. nov., *S. amicale* sp. nov., *S. ancoroides* sp. nov., *S. assingi* sp. nov., *S. atavum* sp. nov., *S. bihamatum* sp. nov., *S. brevistyle* sp. nov., *S. burckhardti* sp. nov., *S. caudatulum* sp. nov., *S. ciampori* sp. nov., *S. constrictum* sp. nov., *S. cornutum* sp. nov., *S. crassum* sp. nov., *S. cursitor* sp. nov., *S. danum* sp. nov., *S. dichroum* sp. nov., *S. distortum* sp. nov., *S. ernsti* sp. nov., *S. immotum* sp. nov., *S. jankoi* sp. nov., *S. kalabitoides* sp. nov., *S. kecil* sp. nov., *S. keciloides* sp. nov., *S. klausnitzeri* sp. nov., *S. lescheni* sp. nov., *S. majale* sp. nov., *S. makar* sp. nov., *S. makkul* sp. nov., *S. malam* sp. nov., *S. malaysianum* sp. nov., *S. mediale* sp. nov., *S. melas* sp. nov., *S. memar* sp. nov., *S. meritum* sp. nov., *S. mirandoides* sp. nov., *S. mujur* sp. nov., *S. newtoni* sp. nov., *S. obsoletum* sp. nov., *S. omissum* sp. nov., *S. onerosum* sp. nov., *S. oxurum* sp. nov., *S. pallidulum* sp. nov., *S. panas* sp. nov., *S. parakalabitum* sp. nov., *S. paratrox* sp. nov., *S. pennatum* sp. nov., *S. placibile* sp. nov., *S. ruficoloroides* sp. nov., *S. setifer* sp. nov., *S. setigerum* sp. nov., *S. setosum* sp. nov., *S. tajam* sp. nov., *S. wagneri* sp. nov. *Scaphisoma laminatum* Löbl, 1972 is placed in synonymy of *Scaphisoma malaccanum* (Pic, 1915a). *Scaphisoma rufipenne* (Pic, 1916b), described from "Borneo" though coming from Banggi Island, is fixed by lectotype designation and is placed in synonymy of *S. ruficolle* (Pic, 1915b). The species is redescribed. The aedeagus of *S. lineatopunctatum* (Pic, 1916b) is illustrated for the first time. Fourteen species are reported from Sabah for the first time: *S. caudatoides* Löbl & Ogawa, 2016, *S. chujoi* Löbl, 1982, *S. complicans* Löbl, 1982, *S. jacobsoni* Löbl, 1975, *S. javanum* Löbl, 1979, *S. luteomaculatum* Pic, 1915, *S. malaccanum* (Pic, 1915), *S. malayanum* Löbl, 1986, *S. mindanaosum* Pic, 1926, *S. nigrum* Löbl, 1986, *S. obliquemaculatum* Motschulsky, 1863, *S. quadrimaculatum* Pic, 1922, *S. solutum* Löbl, 1990, and *S. surigaosum* (Pic, 1926). A key to the Sabah species of *Scaphisoma* and a checklist of the Bornean Scaphidiinae are also provided.

Keywords: Species-richness - estimates - impediments - shining fungus beetles - taxonomy - Borneo.

INTRODUCTION

The present paper provides a review of the species of the genus *Scaphisoma* Leach, 1815 from Sabah, Malaysia. World-wide, nearly 800 species and subspecies of *Scaphisoma* are currently recognized as valid (Löbl 2018a and subsequent papers), but only a few of them are known from Sabah. Obviously, the small Scaphisomatini, though quite common, have been often overlooked by workers of the 19th and the first half of the 20th centuries. Unlike the larger and often varicoloured members of Scaphidiini Latreille, 1806, only three *Scaphisoma* species have been described from Sabah prior to my studies, all from Banggi Island and incorrectly assigned (published as *Pseudoscaphosoma ruficolle* Pic, 1915, *P. rufipenne* Pic, 1916 and *Amalocera suturalis* Achard, 1920). Besides, two varieties, *Pseudoscaphosoma ruficolle* var. *maculipenne* Achard, 1920 and *P. nianese* var. *distinctipenne* Pic, 1920, also based on specimens from Banggi Island, have been placed already in synonymy of *P. ruficolle* by Löbl (1975). While Sabah members of most of the genera of Scaphisomati Casey,

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1893 and the Cyparini Achard, 1924 have been dealt with in Löbl (1982b); Löbl & Tang (2013); Ogawa & Löbl (2016); Löbl *et al*. (2020); Löbl (2021b); Löbl & Smetana (2021); Löbl (2022b) and Löbl & Cosandey (2023), only ten *Scaphisoma* species have been described or reported from Sabah in modern times (Löbl 1975, 1981a, 1987). Currently, collections of the species-rich genera of Scaphidiini, *Scaphisoma* and *Scaphobaeocera* Csiki, 1909, still await adequate study. The present paper fills the gap for *Scaphisoma* and raises the number of known species of this genus from Sabah to 84. The results of the study are undoubtedly biased by idiosyncrasies such as collecting efforts, specific habitat preferences, choice of sampling methods, seasonality, and by aleatory factors such as weather conditions. The bulk of the examined specimens was collected only at a few sites and in the last decades of the 20th century. The latter feature is notable, repeatedly highlighted by studies of megadiverse insects like poorly known aleocharine beetles (e.g., Pace, 2002, 2014). The unbalance of collecting biases also calls into question current estimates of global species richness and financial costs of species descriptions. The available hard data point to erroneous or doubtful analyses, some of which potentially reinforce impediments in the study of the megadiverse taxa.

The family Staphylinidae (rove beetles) numbers 66,603 extant species (as of January 16, 2023, A.F. Newton, pers. comm.) and is globally about twice as species rich as all extant birds and mammals combined (Zhang, 2013). Hammond (1984) published a checklist of the 444 staphylinids recorded from Borneo and estimated the species richness being "1397+ to 2237+" (considering only subfamilies at that time placed within the family and overlooking the Scaphidiinae). According to his estimate, the number of Bornean Staphylinidae species would exceed 1.4 to 2.3 times the number of Staphylinidae known to occur on the British Isles. The mycophagous and myxomycetophagous Scaphidiinae are small beetles, usually about one to ten mm, and inadequately sampled and documented. Thus, the 180 Bornean species recorded at present are likely only a fraction of the total. Nevertheless, they exceed now already 30 times the number of British species. Interestingly, the much larger and xylophagous Lucanidae (stag beetles) with 105 Sabah species (P. Schoolmeesters, pers. comm.) exceed 26 times the number of British species. Alone these data point to uncertainties provided by estimates based on relationships, such as proxies based on ratios between different taxa or body size approaches (e.g., Stork *et al*., 2015). The core of the problem is rooted in the impossibility to test estimates of inadequately known terrestrial arthropods, irrespective of the statistic tools used. In the following sections I discuss costs, time investment, and regulatory impacts on taxonomic research with specific examples regarding the Bornean fauna.

Cost of taxonomic expertise

Wilson (2000) estimated the global species richness to be about ten million, while Radulovici *et al*. (2010) considered the number of marine species only to exceed ten million. Wilson (2000) stated there are 3000 Ph.D.-level researchers in the USA and about 3000 additional researchers elsewhere involved in exploring and describing the world fauna. He suggested that 5 billion US$ would be necessary to achieve the work, i.e., about 600 US$ for each of the undescribed species. Carbayo & Marques (2011) estimated that about 27.1 billion US$ would be necessary to assess the Brazilian fauna alone and 263.1 billion for the global fauna. Their data derived from a survey of 44 professional Brazilian taxonomists with an academic education, considering the respective costs of salaries, maintaining laboratories, training students, and grants for field work. On average, each Brazilian taxonomists describes 24.8 species during her/his career, i.e., less than one per year. Assuming that the number of 6,000 active taxonomists is correct and that 15,000-16,000 new species are described annually, an average taxonomist would describe two to three species per year. Surveys of megadiverse insect groups corroborate a low alpha-taxonomic production of professionals. Twenty-four active European professionals have described 519 taxa of Palaearctic rove beetles from 2000 to the end of 2014, i.e., each 1.44 per year, while 44 non-professionals, including retired professionals, have described 3,467 taxa, i.e., each 5.25 per year in the same period (Löbl, 2015c). Pearson & Wiesner (2022) provided similar numbers for the more popular tiger beetles: 24 non-professionals described 885 new species during the last two decades whereas 26 professionals described only 89 species. The reality is that non-professionals produce high quality studies and may describe over twenty new species per year, sometimes significantly more (Volker Puthz described about 2,849 species, i.e. 51 per year from 1964 through 2020 (pers. comm.); Volker Assing described 2,677 new species, i.e. over 86 per year from 1992 to the end of 2022 (Schülke, 2022). These data may suggest that many professionals avoid work. In truth, they lack impetus for assessing species diversity and address other issues, or/and are hindered to work on alpha-taxonomy due to complex institutional projects that include teaching, seeking grants, creating public displays and providing public or professional service. However, the relation of no-costs and high alpha-taxonomic productivity versus high-costs and low alpha-taxonomic productivity is a concern. The fact that some professionals remain highly productive alpha-taxonomists (among coleopterists, e.g., Lee H. Herman, Pawel Jałoczyński, Stanisław A. Ślipiński, Zi-Wei Yin) poorly affects the general trend (personal observation).

Professional time investment

Assessing the extant biodiversity is recognized as a priority as most species may have become extinct in the near future (Wheeler, 2020). The extinction rates of currently unknown species notably affect members of megadiverse groups, such as insects. This fact is alarming as the knowledge of species is the foundation to studies of the whole living environment (Wilson, 2000). No doubt, actions are needed. Paradoxically, while the rhetoric of politicians, heads of institutes and media recognizes the importance of assessing species richness, the practise in institutions often suggests the opposite. In fact, professional researchers spend most of their time on non-taxonomic or even non-scientific topics. According to Nelson (2016), 77% of New Zealand taxonomists surveyed had only 25% of their work on taxonomy, while two thirds of Brazilian taxonomists address non-taxonomic matters (Carbayo & Marques, 2011). An increasing shortage in technical personnel is an accompanying feature. Being in "business" for over half a century, my personal experience confirms the trend. In addition, taxonomy is at present not taught anymore in many universities. The low contribution of professional taxonomists in efforts to assess species diversity is likely due to the following factors:

- Humans are captivated by new technologies. In zoology, many researchers are lured into possibilities provided by studies of genomes and by bioinformatic, shifting away from taxonomy and as a by-product, spend less time achieving metric scores.
- Large-sized and spectacular species attract more attention than small, inconspicuous, or cryptic ones. Researchers focusing on large-sized species have the advantage of being members of a larger community that attracts amateurs. The relatively rare opportunity to discover new species is offset by new findings that are acknowledged by a wider body of researchers excited about new finds. Consequently, expertise is unevenly spread in favour of vertebrates while absent in many invertebrate groups, irrespective of the fact that there are millions of invertebrate species versus at best thousands of vertebrate species remaining to be discovered. For mammals, 95% of extant species are estimated to have been discovered (Fisher *et al*., 2018).
- The financial grant system usually relies on publishing metrics. It spreads over the world in expectation of enhancing science whereas it induces problems due to exponentially increasing numbers of proposals. As an example, researchers in 2012 lost about 400 years of research time in writing unsuccessful proposals for the Australian National Health and Medical Research Council (Herbert *et al*., 2013). Besides, the system discourages long-term studies of megadiverse taxa. The peer reviewing, paralleled with inflation of scientific publications, turns into an additional burden that decreases the time for research.
- Museums, a source of major progress in assessing biotic diversity for generations, often turn to prioritising public services and an "all-encompassing" digitalisation that consumes huge resources, including positions that could otherwise go to scientists. Digitalisation of animals, unlike artefacts, is potentially useful only when considered as such by experts, and it may be counter-productive if identifications are uncertain or the species-specific characters are not exhibited clearly enough. In addition, the tasks employed to digitalise are entrusted to individuals unfamiliar with handling and manipulating highly fragile specimens. Thus, it carries the risk of irreparable damage to specimens, especially types.

The metric evaluation of scientific work produces a preposterous system that distorts and perverts its values (e.g., Albers, 2013; Shekman, 2013). One of its effects on organismal biology is the shift from descriptions, which are an integral part of taxonomic work. The distortions are relevant enough to incentivise students to address issues free of detailed descriptive work and to increase academic scores. In museums, more and more people turn to fields that can be realised elsewhere and neglect unique possibilities offered by collection-based work. Despite the DORA declaration (San Francisco Declaration on Research Assessment) and opinions of leading scientists, metrics usually continue to be promulgated (although for Switzerland see Strinzel *et al*., 2022). They are likely maintained because they are an easy-to-use tool and are believed to warrant correct evaluation, in any scientific field by any individual, and to provide basis for fair funding. In some countries the perversion due to metrics parallel absurdities described in the famous work by Franz Kafka "The Trial".

Non-professionals, including retired professionals, do not need to care for scores and fundings, nor are forced to digitalise collections, and they are not overloaded by manuscript or grant reviewing requests. Most have their evenings, holidays, and weekends available to work on taxonomy. Nevertheless, as far as assessing species-richness is concerned, many non-professionals are more productive than active professionals in megadiverse staphylinoids.

The unsatisfying present state of taxonomy may be highlighted by innumerable examples, such as these three: 1- taxonomy in Great Britain has declined over the last half a century, with the numbers of papers and authors decreased by the year 2000 to a level similar to that of the second World War (Hopkins & Freckleton 2002); 2- the Hungarian taxonomists cover only 23.6% of their fauna, i.e. 8,410 species (B. Páll-Gergely, pers. comm.); 3- beetles sampled 36 years ago by the staff of the Natural History Museum (London) in Sulawesi are at present only 25% identified, and many other insect groups even less so (M.V.L. Barclay, pers. comm.).

Fontaine *et al*. (2012) found that it takes an average of 21 years from the discovery of specimens in the field to

the publication of formal descriptions. This time span is often significantly longer, as for the Bornean *Scaphisoma* (present paper), 63 years for some New Zealand alpine beetles (Buckley *et al*. 2022), or nearly two centuries for a specimen of *Baeocera darwini* Löbl, 2018 collected by Charles Darwin on Chiloe and awaiting study in the Natural History Museum of London. Speeding taxonomic descriptions has been proposed as a solution by many authors (e.g., Riedel *et al*., 2013). However interesting, their protocols are not universally applicable, especially for species that cannot be diagnosed without dissections or detailed study of chaetotaxy. Furthermore, the descriptions are not the most time-consuming tasks taxonomists encounter. Neither does taxonomy require quick publications, but seriously detailed ones (Dubois *et al*., 2015). Sharkey *et al*. (2021) promoted speedy production by a parochial approach, limited to a 2% distance between barcodes, therefore ignoring the absence of a universal threshold in this respect. Their acts upgrade a single section of mitochondrial DNA to a tool providing means for discrimination and identifications (see Goldstein & DeSalle, 2010; Engel *et al*., 2021), disregarding semiotics and problems with mitochondrial DNA introgression, heteroplasmy or pseudogenes, low successes in some taxa (see Meier *et al*., 2006), and para- and polyphyly in DNA barcodes (Mutanen *et al*., 2016). In fact, barcodes became popular years ago already (e.g., Krishnamurthy & Francis, 2012). They are potentially powerful in identifying species and remains of bodies of well-known taxa (Alfonsi *et al*., 2013), can be used to associate life stages, may be relevant in detecting hidden (cryptic) species (Hebert & Gregory, 2005; Hebert *et al*., 2009) and in distinguishing taxa lacking reliable species-specific morphological characters. Nevertheless, their promotion as a universal identification tool is doubtful (Goldstein & DeSalle, 2010), just as their practical justification ignores the huge number of well-known species that may be identified at first look. In addition to technical problems, the limits for reliable barcode identifications are given by the need to obtain correct calibrations (correctly identified voucher specimens) a task resting on the shoulders of the vanishing population of experts. Not surprisingly, only a minute fraction of the described species has been barcoded, in contrast to the belief of Hebert *et al*. (2003); for beetles see Bouchard *et al*. (2017). At the current rate of barcoding, three centuries would be needed to accomplish the task for beetles, presuming no new species are discovered, and for the South African insects the end of the tunnel may be foreseen at best in the next millennium (Da Silva & Willows-Munro, 2016). Thus, predicting that barcode technology will fail as a universal identification tool is likely not false. Notable also is the fact that costs of identifications are negatively correlated with the decreasing taxonomic expertise and depend on other factors. For example, European stag beetles may be reliably identified by under-graduate students while the Himalayan stag beetles by experts only. As an expert, I can identify *Scaphisoma* species coming from well-studied areas within a few seconds to an hour, while weeks to months of work would be needed to identify any of the unrevised Afrotropical or Neotropical congeners.

Impact of regulations

Virtually every sample of tropical forest floor litter my colleagues and I have extracted contained unknown species, often quite common and widespread, and many of them (e.g., *Awas giraffa* Löbl, 1994, *Cerapeplus siamensis* Löbl & Burckhardt, 1988, *Colylodion incredibilis* Besuchet, 1991, *Dasycerus cornutus* Löbl, 1977, *Geodessus besucheti* Brancucci, 1979, *Loebliorylon carinatum* Ślipiński, 1990, *Sarothrias crowsoni* Löbl & Burckhardt, 1988, *Strabocephalium mroczkowskii* Löbl, 1997) having spectacular morphological characters allowing them to be recognized as new in the field, with naked eyes. At present, none of them (as most of the species described in the present paper) would have been discovered due to field-work restrictions worldwide. This counter-productive outcome is magnified by inadequate or flawed efforts in assessing faunal diversity in many countries (Paknia *et al*., 2015), notably in countries which are in the frontline of habitat destructions and species extinctions. How administrative burden impacts study and distorts data on species richness may be exhibited by Bornean taxa, comparing the numbers of assessed Sabah and Kalimantan species. Here are a few insightful examples:

- Elmidae comprise 68 Bornean species in 17 genera; 38 species are recorded from Sabah and only 6 from Kalimantan (J. Kodada, pers. comm.).
- Lomechusini comprise 65 species from Sabah, but none from Kalimantan (Hlaváč *et al*., 2011).
- Pselaphinae. 60 Kalimantan species are currently recognized as valid, all but one discovered and described in the 19th Century (Newton, 2022), whereas the 38 species known from Sabah come from recent field work.
- Psylloidea. This economically important group comprising pests has 34 species documented from Sabah, 15 of them published after 1982 while only 19 species are known from Kalimantan, all sampled and published a century ago (D. Burckhardt, pers. comm.).
- Scaphidiinae. 30 species have been reported from Kalimantan, 24 of them sampled and described before 1927, seven only described or recorded in modern times (Löbl, 2015b). The number of Scaphidiinae known from Sabah is increased to 142 at present, not including additional unidentified species of *Scaphobaeocera* Csiki, 1909 present in the MHNG and OUMNH, all collected after 1980.
- Scarabaeoidea. 690 species are reported from Sabah and 261 only from Kalimantan (P. Schoolmeesters,

pers. comm.), although this is one of the most studied insect groups.
- Steninae. 54 species are known from Borneo; 26 only from Sabah, 4 only from Kalimantan (L. Tang, pers. comm.).

The cost and time needed to obtain administrative requirements being in the past less burdensome in Sabah have not or only slightly discouraged research, unlike the situation in Kalimantan. Consequently, the knowledge of the Sabah fauna progressed significantly faster. At present, the rules changed. Only professionals may obtain permits to sample and export specimens, while non-professionals, irrespective to their competences, are dismissed. Issued permits are often restricted to members of a single taxon and thus limit possibilities to fill gaps in knowledge of megadiverse terrestrial animals. The export of specimens collected by unselective sampling methods, such as fogging, light, Malaise and intercept traps, sweeping vegetation or extracting forest floor litter, may be prohibited even though the specimens are usually impossible to study in situ. If export permits are issued, the collections may fall victims of a vicious circle of impediments produced by the lack of technical support to mount, label, and sort out specimens individually. These technical endeavours are disconnected from efforts to achieve short-term scores imposed by metric evaluation, and thus side-lined. As a result, a significant part of field-collected material remains inaccessible to the active experts and ultimately to the wider community, including people in the home countries.

The unforeseen side-effects of the inadequate and widely misunderstood Nagoya Protocol (Prathapan *et al*., 2018; Muller *et al*., 2021) are possibly the strongest impediment to taxonomic studies. Combined with hindered cooperation by raising bio-nationalisms, subsequent to the 1992 Rio Conference, these international initiatives reinforce the silent extinctions of innumerable species. They undermine the wish of leading scientists (e.g., Wheeler *et al*., 2012) to explore and document Earth's species richness, and downgrade analyses based on hard data to barely effective rhetoric. Though being well-meant they are complicit in the irreparable loss of taxonomic and biodiversity knowledge.

The efforts to describe and make known faunal richness is impeded at several levels. For sure, more taxonomists are needed to advance taxonomic work. Nevertheless, reconsidering paradigms in research, acknowledging the unique value of natural history collections, softening administrative overloads, and restoring freedom in field-work would be effective and cost-free actions and lead to critical data needed for biodiversity conservation.

MATERIAL AND METHODS

The material studied is deposited in the following collections:

BPBM Bernice P. Bishop Museum, Honolulu, Hawaii, USA
EUMJ Entomological Laboratory, Faculty of Agriculture, Ehime University, Matsuyama, Japan
MHNG Muséum d'histoire naturelle, Geneva, Switzerland
NHML Natural History Museum, London, UK
NMPC National Museum, Prague, Czech Republic
OUMNH Oxford University Museum of Natural History, Oxford, UK
SMNS Staatliches Museum für Naturkunde, Stuttgart, Germany

The label data of the primary types are reproduced verbatim, data from different labels are separated by a slash. The country names Malaysia and Sabah are not repeated under the locality data of paratypes and specimens in the sections "Material examined"; the acronym MHNG given in sections "Paratype/s" and "Material examined" is not repeated for specimens deposited in the same collection.

Specimens collected by D. Burckhardt, A. Smetana and the author are from sieved moist forest litter extracted in Moczarski-Winkler devices.

The body length is measured from the anterior pronotal margin to the posterior inner angles of elytra. The widths are measured at the widest points of the respective body parts. The length/width ratios of antennomeres are measured on slide-mounted antennae at the same magnification. The length/width of the mesepimera refer to their exposed part. Statements about metaventral punctation do not refer to punctures margining sub-mesocoxal lines and statements about abdominal micro-sculpture do not refer to intersegmental membranes. The sides of the aedeagi refer to their morphological sides with the ostium situated dorsally, while it is in resting position rotated 90°. The dissected body parts are embedded in Euparal or Canada balsam and fixed on a separate card on the same pin as the respective specimen.

Primary references are given for all taxa dealt with; for those of other scaphidiine taxa mentioned in the present paper see Löbl (2018b) and subsequently published data in Löbl (2021b; Löbl & Smetana, 2021; Löbl, 2022b; Löbl & Cosandey, 2023).

All Sabah species have fully developed hind wings and may be more widely distributed. Notable is that only two species of *Scaphisoma* have been found at higher altitudes on Mount Kinabalu while many congeners are known from high elevations on Asian continental mountains.

TAXONOMY

Scaphisoma Leach is world-widely distributed and comprises 774 species and subspecies currently valid. The genus appears notably rich in Asia. However, the lack of reviews of the Afrotropical and Neotropical

Scaphisoma may be distorting. At present, only 13 species have been described or reported from Sabah, including Banggi Island. Several species groups are recognized, based on male genital characters. Species possessing plesiomorphic aedeagal characters are to a large part not assigned to groups, awaiting analysis of additional characters. For practical reasons, the groups are given below in alphabetical order. Many species are syntopic and may be reliably distinguished by their male genital characters only; therefore, the respective females remain unassociated.

Key to *Scaphisoma* of Sabah

1 Elytron with sutural stria extended along basal margin to form basal stria 2
- Elytron lacking basal stria 8
2 Pronotum with uninterrupted anterior margin bead. Ventrite I lacking submetacoxal areas ..... *S. setosum* sp. nov.
- Pronotum with broadly interrupted anterior margin bead. Ventrite I with submetacoxal areas 3
3 Antennomere IV very short, about as long as antennomere III, and as long as about fourth to third of antennomere V 4
- Antennomere IV much longer than antennomere III and as long as antennomere V 5
4 Body 1.80-1.95 mm long. Elytron ochraceous with darkened margins ..... *S. dichroum* sp. nov.
- Body 1.10-1.25 mm long. Elytron unicolorous ..... *S. cornutum* sp. nov.
5 Antennomere XI shorter than antennomere X. Metaventrite with strigulate microsculpture ..... *S. mirandoides* sp. nov.
- Antennomere XI longer than antennomere X. Metaventrite lacking microsculpture 6
6 Submesocoxal area much longer than submetacoxal area 7
- Submesocoxal area shorter than submetacoxal area. Aedeagus symmetrical, with apical process of median lobe wide in dorsal view, lacking flagellum (Fig. 152) ..... *S. malam* sp. nov.
7 Aedeagus symmetrical, with apical process of median lobe not notably narrow, lacking flagellum (Fig. 142) ..... *S. danum* sp. nov.
- Aedeagus asymmetrical, with apical process of median lobe very narrow and with flagellum (Fig. 139) ..... *S. tajam* sp. nov.
8 Elytron with sutural stria starting posteriad of scutellar tip, not curved and not angulate near base 9
- Elytron with sutural stria starting at or anteriad of scutellar tip, often curved or angulate near base 31
9 Elytral punctation not in rows, lacking conspicuously coarse punctures 10
- Elytral punctation forming rows usually consisting of conspicuously coarse punctures 14
10 Pronotum blackish, elytron with large yellowish area surrounded by dark bands ..... *S. majale* sp. nov
- Pronotum ochraceous or reddish-brown, elytra lacking dark basal and lateral bands 11
11 Aedeagus asymmetrical 12
- Aedeagus symmetrical 13
12 Elytra dark brown with apical fourth yellowish, sutural stria starting in basal fourth of sutural length, discal punctures nearly as large as puncture intervals ..... *S. renominatum* Löbl
- Pronotum and most of elytra ochraceous, apical fourth of elytra lighter. Elytron with sutural stria starting posteriad of sutural mid-length, discal punctures much smaller than puncture intervals ..... *S. memar* sp. nov.
13 Body about 1.2 mm long. Thorax and elytra evenly reddish-brown. Metaventrite with microsculpture ..... *S. alternum* sp. nov.
- Body 1.5-1.6 mm long. Thorax ochraceous, elytra light reddish-brown, with darkened subapical band. Metaventrite lacking microsculpture ..... *S. crassum* sp. nov.
14 Pronotal punctation nearly even, lacking distinct antebasal stripe of coarser punctures 15
- Pronotum with antebasal stripe of coarse punctures, or in middle much more finely punctate than near base ... 20
15 Elytron with coarse punctation covering at least anterior two thirds of disc 16
- Elytron with coarse punctation limited to anterior half of disc, or only shortly extending along sutural stria posteriad of elytral mid-length 18
16 Aedeagus with apical third to two fifths of parameres narrow, parameral lobes short, about third of parameral length 17
- Aedeagus with parameres broad throughout, parameral lobes long, reaching parameral apical fourth ..... *S. spiniger* Löbl
17 Internal sac of aedeagus with pair of narrow proximal sclerotized rods, spinose in middle. Body length usually below 1.4 mm, apical fourth of elytra rufous ..... *S. rouyeri* Pic

- Internal sac of aedeagus lacking sclerotized rods, entirely spinose (Fig. 101). Body length exceeding 1.5 mm, elytra usually darkened near apical margins ..... *S. alesi* sp. nov.

18 Elytra with outer puncture rows arcuate. Pronotum and elytra evenly rufous to yellowish ..... *S. sakaiorum* Löbl
- Elytra with outer puncture rows straight, in elytral axis or oblique. Elytra bicolorous 19

19 Elytra darkened anterior of apical third. Apicodorsal branches of median lobe narrow and sinuate; ventral branch evenly curved and gradually narrowed ..... *S. kinabaluum* Löbl
- Elytra not darkened anterior of apical third. Apicodorsal branches of median lobe triangular with broad bases; ventral branch abruptly narrowed and sinuate near tip (Figs 120, 121) ..... *S. placibile* sp. n.

20 Elytra evenly brown 21
- Elytra with bicolorous pattern 23

21 Aedeagus with truncate tip of median lobe, parameres abruptly widened apically, internal sac with two large spines longer than half of median lobe (Fig. 103) ..... *S. burckhardti* sp. nov.
- Aedeagus with tip of median lobe obtuse or acute, parameres not widened apically, or gradually so, internal sac with small spines, or lacking spines 22

22 Aedeagus with internal sac conspicuously long, convoluted proximally, bearing rows of fine spine-like structures ..... *S. surigaosum* (Pic)
- Aedeagus with internal sac not notably long and not convoluted, bearing two admesal spinous tufts (Fig. 114) ..... *S. panas* sp. nov.

23 Elytral puncture rows shortened, reaching mid-length on outer half of disc, extended to apical third of disc on inner half of disc ..... *S. rufescens* (Pic)
- Elytral puncture rows long, reaching at least to apical fourth of disc 24

24 Aedeagus with ventral branch of apical process extended posteriad of level of parameral tip, parameres each bearing small apical lobe (Fig. 116) ..... *S. parakalabitum* sp. nov.
Aedeagus with ventral branch of apical process not extended posteriad of level of parameral tip, parameres each bearing mesal lobe 25

25 Aedeagus with parameres narrow, weakly sinuate in dorsal view, each bearing minute membranous lobe situated at parameral mid-length (Figs 109, 111) ..... *S. mediale* sp. nov.
- Aedeagus with parameres widened, not sinuate in dorsal view, each with large mesal lobe 26

26 Dorsal branches of apical process of median lobe conspicuously large, overlapping and extending posteriad of tip of ventral branch, internal sac with two pairs of spine-like sclerites (Fig. 105) ..... *S. jankoi* sp. nov.
- Dorsal branches of apical process of median lobe conspicuously small, much shorter than, and not overlapping ventral branch 27

27 Apical halves of parameres arcuate in dorsal view; internal sac with one or two apicomesal pairs of spine-like sclerites (Fig. 118) ..... *S. paratrox* sp. nov.
- Contours of parameres irregular in dorsal view, internal sac lacking pair/s of spine-like sclerites 28

28 Ventral branch of apical process of median lobe nearly as long as basal bulb, reaching apical fourth of parameral length (Fig. 107) ..... *S. kalabitoides* sp. nov.
- Ventral branch of apical process of median lobe much shorter than basal bulb, hardly reaching parameral mid-length 29

29 Internal sac with bilobed sclerite, lacking spines. Apices of parameres not widened ..... *S. kalabitum* Löbl
- Internal sac with proximal spine-bunch, lacking bilobed sclerite. Apices of parameres widened (Fig. 112) ..... *S. meritum* sp. nov.

30 Elytra with adsutural areas conspicuously wide near base, strongly narrowed apically, sutural striae usually angulate near base, not curved outward along pronotal lobe 31
- Elytra with adsutural areas moderately wide near base and not narrowed apically, or weakly so, sutural striae not angulate, usually curved outward along pronotal lobe 41

31 Elytron with coarse puncture rows parallel with sutural stria, irregularly and very finely punctate on outer half and apical part of disc ..... *S. lescheni* sp. nov.
- Elytral punctation different 32

32 Pronotum ochraceous, usually lighter than elytral bases 33
- Pronotum usually darker than elytral bases, if ochraceous not lighter than elytral bases 35

33 Elytral with sutural striae angulate near base, not conspicuously punctate, ventrite I with convex submetacoxal area 34
- Elytra with sutural striae not angulate, conspicuously punctate, ventrite I with parallel submetacoxal area ..... *S. lineatopunctatum* (Pic)

34 Body 1.50-2.05 mm long. Elytral disc distinctly punctate at 20 times magnification. Aedeagus asymmetrical ..... *S. chujoi* Löbl

- Body about 1.30-1.40 mm long. Elytral disc appearing impunctate at 20 times magnification. Aedeagus symmetrical ..... *S. dohertyi* Pic
35 Punctation near pronotal base coarser than that on centre of elytral disc. Metaventrite with two admesal grooves 36
- Punctation near pronotal base about as fine or finer than that on centre of elytral disc. Metaventrite without admesal grooves 36
36 Internal sac of aedeagus with two large admesal denticles, lacking proximal rows of spines .... *S. jacobsoni* Löbl
- Internal sac of aedeagus with two large apical denticles and proximal rows of spines (Fig. 148) .... *S. klausnitzeri* sp. nov.
37 Large species, 1.84 mm long. Elytron with sharply delimited light apical fourth. Metanepisterna not narrowed anteriad, with strigulate microsculpture ..... *S. ciampori* sp. nov.
- Smaller species, less than 1.80 mm long. Elytron with apical area narrower or not clearly delimited. Metanepisterna narrowed anteriad 38
38 Aedeagus with broad, lobed parameres; apical process of median lobe bifid ..... *S. ruficolle* (Pic)
- Aedeagus with narrow, unlobed parameres; apical process of median lobe trifid 39
39 Aedeagus with parameres about two times as long as basal bulb (Fig. 26) ..... *S. assingi* sp. nov.
- Aedeagus with parameres shorter than or about as long as basal bulb 40
40 Elytra with sutural striae not angulate near bases. Internal sac of aedeagus with few spine-like sclerites, parameres gradually narrowed apically ..... *S. obliquemaculatum* Motschulsky
- Elytra with sutural striae angulate near bases. Internal sac of aedeagus with complex mesal scale-like structures, parameres widened at apices ..... *S. mindanaosum* Pic
41 Elytra with patch of conspicuously coarse punctures on small area near pronotal lobe. Ventrite I lacking microsculpture and with reduced submetacoxal areas ..... *S. ineptum* Löbl
- Elytral punctation different. Ventrite I usually with microsculpture and distinct submetacoxal areas 42
42 Body length 0.75-0.90 mm 43
- Body length at least 1.0 mm, usually exceeding 1.10 mm 44
43 Elytral punctures distinctly enlarging apically. Aedeagus with flagellum (Fig. 1) ..... *S. kecil* sp. nov.
Elytral punctures extremely fine. Aedeagus lacking flagellum (Fig. 146) ..... *S. keciloides* sp. nov.
44 Elytron with humeral area appearing impunctate followed by larger, coarsely and very densely punctate area 45
- Elytral punctation different 48
45 Coarse elytral punctures in part forming oblique rows. Antennomere IV hardly longer than antennomere III. Mesepimera distinct ..... *S. murutum* Löbl
- Coarse elytral punctures not forming oblique rows. Antennomere IV more than two times longer than antennomere III 46
46 Mesepimera distinct. Ventrite I with strigulate microsculpture 47
- Mesepimera fused. Ventrite I lacking microsculpture ..... *S. melas* sp. nov.
47 Metaventrite coarsely punctate; submetacoxal area shorter than submesocoxal area ..... *S. omissum* sp. nov.
- Metaventrite finely punctate; submetacoxal area longer than submesocoxal area ..... *S. dusunum* Löbl
48 Pronotal and elytral punctation similar, coarse. Elytron with two weakly delimited reddish spots. Antennomere IV only slightly longer than antennomere III ..... *S. quadrimaculatum* Pic
- Pronotal and elytral punctation dissimilar, or very fine. Antennomere IV usually much longer than antennomere III 49
49 Elytron blackish, with reddish spot covering large part of basal half of disc and yellowish on apical fourth. Body length about 1.9 to 2.1 mm ..... *S. pennatum* sp. nov.
- Elytron colour pattern different. Body-length usually inferior to 1.7 mm 50
50 Aedeagus with median lobe asymmetrical, parameres symmetrical or asymmetrical 51
- Aedeagus with median lobe and parameres symmetrical 58
51 Antennomere IV very short, about as long as antennomere III 52
- Antennomere IV elongate, 1.5 to 3 times as long as antennomere III 53
52 Abdomen with punctulate microsculpture ..... *S. adami* sp. nov.
Abdomen with strigulate microsculpture ..... *S. solutum* Löbl
53 Elytral punctation distinctly coarser than pronotal punctation. Median part of metaventrite densely punctate. Abdomen with strigulate microsculpture 54
- Elytral punctation about as fine as or finer than pronotal punctation. Median part of metaventrite lacking patch of coarse punctures 55
54 Body 1.0 to about 1.30 mm long, metaventrite lacking microsculpture, mesoventrite coarsely punctate. Aedeagus with flagellum (Fig. 143) ..... *S. ernsti* sp. nov.

- Body 1.55 mm long, median part of metaventrite with strigulate microsculpture, mesoventrite impunctate. Aedeagus lacking flagellum (Fig. 13) ..... *S. distortum* sp. nov.
55 Aedeagus with parameres uneven and strongly asymmetrical, internal sac with flagellum. Elytron lacking light subapical band ..... *S. ruficoloroides* sp. nov.
- Aedeagus with parameres evenly narrow and nearly symmetrical, internal sac with robust rod 56
56 Elytron with well delimited light subapical band. Aedeagus with parameres arcuate 57
- Elytron lacking light band. Aedeagus with parameres sinuate (Fig. 68) ..... *S. cursitor* sp. nov.
57 Aedeagus with tip of median lobe hook-like, internal sac with proximally thickened rod ..... *S. taylori* Löbl
- Aedeagus with oblique tip of median lobe, internal sac with rod not thickened proximally (Fig. 66) .... *S. amicale* sp. nov.
58 Aedeagus with flagellum extruded in repose 59
- Aedeagus lacking flagellum 62
59 Aedeagus with setose parameres 60
- Aedeagus with asetose parameres 61
60 Aedeagus with parameres slightly widened apically, internal sac bearing apical rows of teeth-like structures (Fig. 8) ..... *S. setigerum* sp. nov.
- Aedeagus with inner margin of apical part of parameres concave, internal sac lacking apical rows of teeth-like structures (Fig. 6) ..... *S. setifer* sp. nov
61 Aedeagus with parameres not narrowed apically, internal sac with rows of teeth-like structures .... *S. caudatoides* Löbl & Ogawa
- Aedeagus with parameres narrowed apically, internal sac lacking teeth-like structures (Fig. 3) .... *S. caudatulum* sp. nov.
62 Aedeagus with parameres conspicuously short, about two thirds as long as basal bulb (Fig. 76). Mesanepisterna and metanepisterna with strigulate microsculpture ..... *S. brevistyle* sp. nov.
- Aedeagus with parameres as long as, or longer than basal bulb. Mesanepisterna and metanepisterna usually lacking microsculpture 63
63 Aedeagus with apical process of median lobe trifid, dorsal branches usually sclerotized 64
- Aedeagus with apical process of median lobe bifid, or with dorsal valve simple or in part split and usually weakly sclerotized 79
64 Aedeagus with parameres not expanded ventrally and lacking membranous lobes 65
- Aedeagus with parameres strongly expanded ventrally and/or dorsally, or with membranous ventral lobes 72
65 Aedeagus with median lobe abruptly constricted posteriad of basal bulb (Fig. 32) ..... *S. constrictum* sp. nov.
- Aedeagus with median lobe gradually narrowed apically 66
66 Aedeagus with internal sac bearing mesal row of triangular scale-like sclerites; parameres narrowed anterior apical section and at apex, with inner margin sinuate in apical section ..... *S. luteomaculatum* Pic
- Aedeagus with internal sac lacking mesal row of triangular scale-like sclerites 67
67 Aedeagus with parameres sinuate in dorsal view and narrowed in apical half 68
- Aedeagus with parameres not sinuate, not narrowed in apical half 70
68 Aedeagus with apical process of median lobe denticulate laterally, internal sac with pair of apicomesal cluster of rods, appearing each as simple rod ..... *S. malayanum* Löbl
- Aedeagus with apical process of median lobe not denticulate, internal sac lacking apicomesal cluster of rods . 69
69 Ventral process of median lobe sinuate and with subapical denticle (Fig. 15)..... *S. affectuosum* sp. nov.
- Ventral process of median lobe arcuate, lacking denticle (Fig. 58) ..... *S. wagneri* sp. nov.
70 Aedeagus with parameres ventrally angulate, internal sac with large hook-like sclerites (Fig. 29) .... *S. bihamatum* sp. nov.
- Aedeagus with parameres not angulate, internal sac lacking large hook-like sclerites 71
71 Aedeagus with apical process short, not reaching level of parameral mid-length; parameres evenly and weakly curved in dorsal view (Fig. 49) ..... *S. newtoni* sp. nov.
- Aedeagus with apical process long, reaching level of apical third to fourth of parameres; parameres unevenly curved in dorsal view (Fig. 17) ..... *S. affluens* sp. nov
72 Aedeagus with parameres strongly expanded dorsally ..... *S. malaccanum* (Pic)
- Aedeagus with parameres not expanded dorsally 73
73 Tip of apical process of median lobe abruptly curved dorsally, anchor-like (Fig. 23). Elytra ochraceous to yellowish, with base, adsutural areas, and often also lateral margins dark brown to blackish ..... *S. ancoroides* sp. nov.
- Tip of apical process of median lobe obtuse or acute, not hook-like 74
74 Aedeagus with apex of dorsal branches of apical process curved ventrally and acute, apical section of ventral branch abruptly narrowed (Figs 61, 65) ..... *S. malaysianum* sp. nov.

- Aedeagus with apex of dorsal branches of apical process not curved ventrally and not acute, apical section of ventral branch gradually narrowed 75
75 Aedeagus with parameres notched near apices (Fig. 45) ..... *S. mujur* sp. nov.
- Aedeagus with parameres not notched near apices 76
76 Internal sac of aedeagus with finely sclerotized, minute scale-like or denticle-like structures, lacking strongly sclerotized teeth 77
- Internal sac of aedeagus with strongly sclerotized teeth 78
77 Inner margin of parameres lacking incision, internal sac with dense bunch of apical teeth (Figs 41, 43) .... *S. makkul* sp. nov.
- Inner margin of parameres with subapical incision, internal sac with two rows of apical teeth (Fig. 37) .... *S. makar* sp. nov.
78 Aedeagus with parameres strongly narrowed posteriad of mid-length ..... *S. javanum* Löbl
- Aedeagus with parameres widened posteriad of mid-length (Figs 51, 53) ..... *S. obsoletum* sp. nov.
79 Aedeagus with parameres simple, lacking membranous lobes 80
- Aedeagus with parameres bearing membranous lobes 82
80 Apex of parameres notably widened, about twice as wide as in middle (Fig. 95) ..... *S. pallidulum* sp. nov.
- Apex of parameres not or hardly widened 81
81 Apical half of parameres evenly narrow, internal sac convoluted proximally (Fig. 88) ..... *S. onerosum* sp. nov.
- Parameres gradually narrowed apically, proximal section of internal sac not convoluted (Fig. 72) .... *S. atavum* sp. nov.
82 Parameral lobes expanded and overlapping apical process of median lobe; internal sac with complex of robust proximal sclerites ..... *S. complicans* Löbl
- Parameral lobes not expanded and not overlapping apical process of median lobe; proximal part of internal sac lacking sclerites 83
83 Lobes attached posteriad of parameral mid-length, tip apical process of median lobe expanded in lateral view .... *S. angulatum* Löbl
- Lobes attached anterior or at parameral mid-length, tip of apical process of median lobe not expanded 84
84 Aedeagus with internal sac bearing large, in part diverging spine-like denticles, ventral branch of apical process of median lobe sinuate, not inflexed ventrally (Fig. 91) ..... *S. oxurum* sp. nov.
- Aedeagus with internal sac lacking large denticles, ventral branch of apical process of median lobe not sinuate, inflexed ventrally 85
85 Tip of ventral branch of apical process in dorsal view obtuse, apical half of parameres nearly evenly broad (Fig. 85) ..... *S. immotum* sp. nov.
- Tip of ventral branch of apical process in dorsal view acute, parameres widened apically ..... *S. nigrum* Löbl

Scaphisoma aequatum species group

The group was established for four Melanesian and one Philippine species (Löbl & Ogawa, 2016). They share the internal sacs of the aedeagi with a flagellum and the parameres lobed apically.

Scaphisoma kecil sp. nov.

Fig. 1

Holotype: MHNG; male; SABAH, Sandakan Residency Sepilok: Kabili-Sepilok Forest Reserve 22.IV.1982 leg. B. Hauser.

Paratypes: MHNG; 1 female; with same data but 3.V.1982. 1 male; same data but 30 m, 18.III.1983. – 1 male, 3 females; Poring Hot Spring, 500 m, 6.V.1987, D. Burckhardt & I. Löbl. – 2 males, 1 female; same data but 550-600 m, 9.V.1987.

Diagnosis: Body minute; antennomere IV slightly longer than antennomere III; elytra lacking basal striae; metaventrite lacking microsculpture and antecoxal puncture row; ventrite I with submetacoxal areas about as long as half of shortest interval between its margin and apical margin of ventrite; aedeagus symmetrical with apical process of median lobe short and acute at tip, parameres long and lobed at apices, internal sac with long, very narrow flagellum.

Etymology: The species epithet is a Malay word meaning small.

Description: Length 0.75-0.85 mm, width 0.53-0.59 mm. Head and most of body light reddish-brown to dark brown, apex of abdomen yellowish; femora and tibiae light reddish-brown, tarsi and antennae yellowish. Length/width ratios of antennomeres as: III 6/4: IV 8/4: V 15/5: VI 15/5: VII 22/9: VIII 14/6: IX 22/9: X 25/8: XI 36/9. Pronotum and elytra lacking

microsculpture. Pronotum with anterior margin bead broadly interrupted; lateral margins slightly arcuate; lateral margin stria concealed in dorsal view, impunctate; discal punctation dense and extremely fine, hardly visible at 100 times magnification. Tip of scutellum exposed. Elytron strongly narrowed apically, with lateral margin arcuate, lateral margin stria concealed, impunctate; apical margin rounded, lacking distinct crenulation; inner apical angle at level of outer angle; sutural margin not raised; sutural stria starting at side of pronotal lobe, shallow, parallel with suture; adsutural area flat, about 0.04 mm wide shortly posteriad of scutellar tip, with single puncture row; punctation about like pronotal on basal third of disc, becoming coarser posteriad of basal third and consisting of fairly well delimited punctures, with puncture intervals mostly about three to four times as large as puncture diameters. Hypomeron and mesanepisternum smooth. Mesoventrite impunctate. Mesepimeron nearly four times as long as wide and distinctly longer than interval between its tip and mesocoxa. Metaventrite lacking microsculpture, in middle slightly convex, lacking impressions, punctation extremely fine and sparse, hardly visible at 100 times magnification; antecoxal puncture rows absent; submesocoxal area about 0.02 mm long, as long as third of shortest interval between its margin and metacoxa; submesocoxal line convex, impunctate. Metanepisternum lacking obvious microsculpture, flat, narrowed anteriad, suture somewhat impressed, oblique, hardly rounded at posterior angle. Tibiae straight. Exposed tergites and ventrites lacking microsculpture and with sparse, extremely fine punctation. Ventrite I with submetacoxal area 0.03 mm long, about as long as half of shortest interval between its margin and apical margin of ventrite I; submetacoxal line convex, finely punctate.

Male. Protarsomeres I to III hardly widened. Aedeagus (Fig. 1) 0.17-0.18 mm long.

Comments: This species externally resembles *S. minutissimum* Champion. It differs however conspicuously by the aedeagal characters, notably by the parameres that are not expanded apically. It may be readily distinguished by its minute body size from other members of the *S. aequatum* group as from its Bornean congeners, *S. keciloides* described below excepted.

Distribution: Malaysia: Sabah.

Scaphisoma binaluanum species group

Within this group Löbl & Ogawa (2016) proposed to place species having symmetrical aedeagi with a distinct articular process, a narrow apical process of the median lobe, unlobed parameres, and an internal sac lacking flagellum and sclerotized pieces. As these characters appear to be plesiomorphic, many species have been included here only tentatively. This is also the case of the single Sabah species sharing these characters.

Scaphisoma quadrimaculatum Pic, 1922

Scaphosoma quadrimaculatum Pic, 1922: 1.
Scaphisoma quadrimaculatum; Löbl, 1981b: 105.
Scaphisoma quadrimaculatum; Löbl & Ogawa, 2016: 1377.

Material examined: MHNG; 1; Sepilok, Kabili-Sepilok Forest Reserve, 30 m, 18.III.1983, B. Hauser.

Distribution: India; Indonesia; Laos; Malaysia: Sabah; Philippines; Vietnam.

Scaphisoma binhanum species group

The group was proposed for two Asian species, *S. binhanum* (Pic, 1922) and *S. atronotatum* Pic, 1920 (see Löbl, 1979a). They possess symmetrical aedeagi with the dorsal side of the basal bulb expanded apically and overlapping the apical process, parameres widened and the internal sac complex. *Scaphisoma dohertyi* Pic, 1915 also possesses these characters.

Scaphisoma dohertyi Pic, 1915

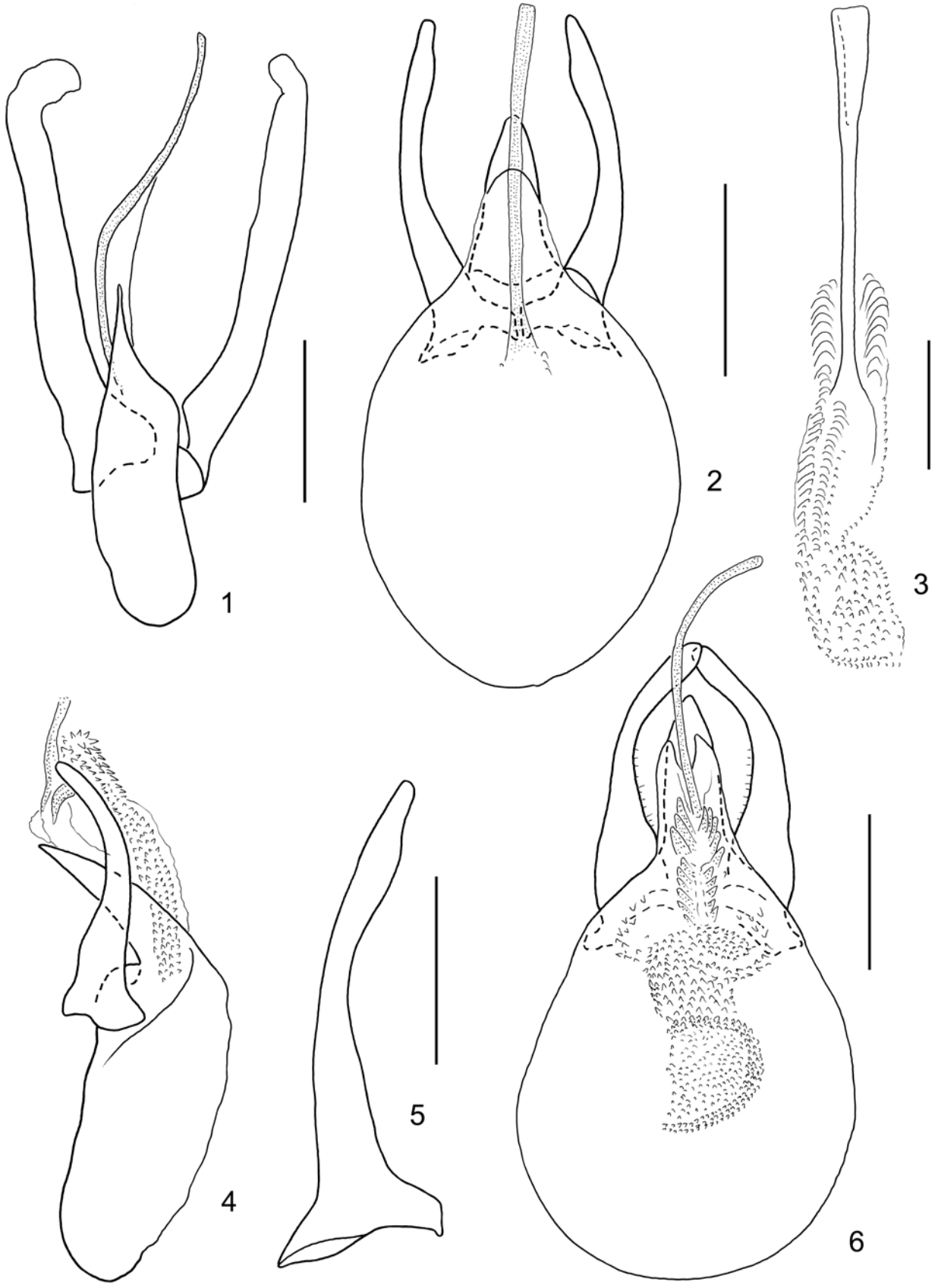
Scaphosoma dohertyi Pic, 1915a: 24.
Scaphosoma dohertyi; Löbl, 1981b: 107.

Material examined: MHNG; 2; Crocker Range, Gunung Emas, 23.V.1998, J. Kodada & F. Čiampor. – 10; Batu Punggul Resort env., 24.VI.-1.VII.1996. – 1; Gunung Antulai, ca 5 km South Sapulut, 2.VII.1996. – 1; Sepilok, Kabili-Sepilok Forest Reserve, 30 m, 18.III.1983, B. Hauser. – 2; Sabalangan River env., ca 25 km SE Sapulut, 26.VI.1998, J. Kodada & F. Čiampor. – 1; Banggi Island.

Distribution: China: Yunnan; India: Meghalaya, West Bengal (Darjeeling District); Indonesia: Java, Bali, Sumbawa; East Malaysia, West Malaysia; Thailand; Vietnam.

Scaphisoma caudatum species group

Löbl & Ogawa (2016) proposed the group to accommodate two species, *S. caudatum* Löbl, 1975 and *S. caudatoides* Löbl & Ogawa, 2016. They possess symmetrical aedeagi with simple, not lobed parameres, a dorsal valve of the apical process of the median lobe weakly sclerotized and the internal sac complex, with a long flagellum extruded in repose. Three additional members of the group are present within the studied collections.



Figs 1-6. *Scaphisoma* spp., genital characters. (1) *S. kecil* sp. nov., aedeagus in dorsal view, scale = 0.05 mm. (2-5) *S. caudatulum* sp. nov. (2) aedeagus in dorsal view, scale = 0.2 mm. (3) ditto, internal sac, scale = 0.1 mm. (4) ditto, aedeagus in lateral view. (5) ditto, paramere in ventral view, scale 0.2 mm. (6) *S. setifer* sp. nov., aedeagus in dorsal view, scale = 0.2 mm.

Saphisoma caudatoides Löbl & Ogawa, 2016

Saphisoma caudatoides Löbl & Ogawa, 2016: 1362.

Material examined: MHNG; 1 male; Mount Kinabalu, 1550 m, 23.IV.1987, D. Burckhardt & I. Löbl; – MHNG; 1 male; Mount Kinabalu, Silau-Silau trail, 24.IV.1987, D. Burckhardt & I. Löbl. – 2 males; Crocker Range, around km 56 of road Kota Kinabalu-Tambunan, Sunsuron Waterfall env., 1100-1200 m, 8.VI.1996.

Remarks: The species was based on a single specimen 1.20 mm long. The Sabah specimens are respectively 1.60 to 1.80 mm long and have strongly widened protarsomeres and mesotarsomeres I to III, while their aedeagi are similar to that of the holotype. Consequently, their association is tentative.

Distribution: Philippines: Palawan; Malaysia: Sabah.

Scaphisoma caudatulum sp. nov.

Figs 2-5

Holotype: MHNG; male; SABAH (Borneo) Sepilok: KSFR, 30 m 18.3.1983, B. Hauser 83/29.

Paratypes: MHNG; 2 males; with same data as holotype. 1 male; Poring Hot Spring, 500 m, 13.V.1987, D. Burckhardt & I. Löbl.

Diagnosis: Small species with reddish-brown body; antennomere IV much longer than antennomere III; elytra lacking basal striae; metaventrite lacking microsculpture, with two impressed apicomedian puncture rows; ventrite I with submetacoxal areas about as long as third of shortest interval between its margin and apical margin of ventrite; aedeagus symmetrical, with apical process long, unsplit dorsal valve and large basal bulb, parameres asetose, narrowed posteriad of mid-length and at apices, proximal part of internal sac tubular, with nearly evenly small scale-like structures.

Etymology: The species epithet is a Latin adjective meaning small tail.

Description: Length 1.20-1.35 mm, width 0.76-0.90 mm. Head, most of body, femora and tibiae reddish-brown, elytra somewhat lighter near apices, apical abdominal segments, tarsi and antennae yellowish. Length/width ratios of antennomeres as: III 10/7: IV 32/6: V 42/7: VI 37/8: VII 42/10: VIII 35/8: IX 45/8: X: 43/8: XI 60/10. Pronotum and elytra lacking microsculpture. Pronotum with anterior margin bead broadly interrupted; lateral margins slightly arcuate; lateral margin stria exposed in dorsal view, impunctate; discal punctation dense and very fine, consisting of well delimited punctures, with puncture intervals usually about three to four times as large as puncture diameters. Tip of scutellum exposed. Elytron weakly narrowed apically, with lateral margin evenly arcuate, lateral margin stria exposed, impunctate; apical margin slightly rounded, crenulate at inner angle; inner apical angle situated posteriad of level of outer angle; sutural margin not raised; sutural stria starting at side of pronotal lobe, shallow, parallel with suture; adsutural area flat, about 0.05 mm wide shortly posteriad of scutellar tip, with single puncture row; discal punctation fine, coarser than pronotal punctation, consisting of well delimited punctures, with puncture intervals mostly about two to four times as large as puncture diameters. Hypomeron smooth. Mesoventrite finely punctate. Mesanepisternum very finely punctate, lacking microsculpture. Mesepimeron about four times as long as wide and distinctly longer than interval between its tip and mesocoxa. Metaventrite lacking microsculpture, in middle slightly convex, with two impressed apicomedian rows of distinct punctures, punctation very fine and sparse; antecoxal puncture rows absent; submesocoxal area 0.06 mm long, about as long as two thirds of shortest interval between its margin and metacoxa; submesocoxal line convex, impunctate. Metanepisternum lacking obvious microsculpture, flat, strongly narrowed anteriad, suture somewhat impressed, oblique, rounded at posterior angle. Tibiae straight. Exposed tergites and ventrites bearing distinct strigulate microsculpture and sparse, very fine punctation. Ventrite I with submetacoxal area 0.05 mm long, about long as third as long as shortest interval between its margin and apical margin of ventrite I; submetacoxal line convex, finely punctate.

Male. Protarsomeres I to III slightly widened. Aedeagus (Figs 2-5) 0.50-0.55 mm long.

Comments: This species shares most diagnostic characters with *S. caudatum* Löbl, 1975 and *S. caudatoides* Löbl & Ogawa, 2016. It differs from *S. caudatum* by the submesocoxal areas slightly longer than the submetacoxal areas and is reliably distinguished from *S. caudatum* and *S. caudatoides* by the tubular internal sac bearing nearly evenly minute scale-like structures.

Distribution: Malaysia: Sabah.

Scaphisoma setifer sp. nov.

Figs 6, 7

Holotype: MHNG; 1 male; Malaysia, Sabah, Crocker Range, around km 56 of road Kota Kinabalu-Tambunan, Sunsuron Waterfall env., 1100-1200 m a.s.l. 8.VI.1996. 5d.

Paratypes: MHNG; 3 males; with same data as holotype.

Diagnosis: Fairly large species with reddish-brown body; antennomere IV much longer than antennomere

III; elytra lacking basal striae; metaventrite lacking microsculpture, with two elongate apicomedian impressions; ventrite I with submetacoxal area about as long as third shortest interval between its margin and apical margin of ventrite; aedeagus symmetrical, with apical process long, dorsal valve split, basal bulb large, parameres setose, gradually narrowed toward apical third, proximal part of internal sac with nearly evenly small scale-like and denticle-like structures followed by two rows of large denticles.

Etymology: The species epithet is a Latin noun meaning bearing setae.

Description: Length 1.80-1.92 mm, width 1.15-1.24 mm. Head, most of body, femora and tibiae reddish-brown, elytra somewhat lighter near apices, apical abdominal segments, tarsi and antennae yellowish. Length/width ratios of antennomeres as: III 14/10: IV 48/8: V 60/8: VI 50/10: VII 57/14: VIII 49/10: IX 60/13: X: 57/14: XI 75/16. Pronotum and elytra lacking microsculpture. Pronotum with anterior margin bead broadly interrupted; lateral margins slightly arcuate; lateral margin stria exposed in dorsal view, punctate; discal punctation dense and very fine, consisting of well delimited punctures, with puncture intervals usually about three to five times as large as puncture diameters. Tip of scutellum exposed. Elytron weakly narrowed apically, with lateral margin evenly arcuate, lateral margin stria exposed, impunctate; apical margin slightly rounded, crenulate at inner angle; inner apical angle situated posteriad of level of outer angle; sutural margin not raised; sutural stria starting at side of pronotal lobe, shallow, parallel with suture; adsutural area flat, about 0.05 mm wide shortly posteriad of scutellar tip, with single puncture row; discal punctation fine, coarser than pronotal punctation, consisting of well delimited punctures, with puncture intervals mostly about two to four times as large as puncture diameters. Hypomeron smooth. Mesoventrite impunctate. Mesanepisternum very finely punctate, lacking microsculpture. Mesepimeron about three times as long as wide and distinctly longer than interval between its tip and mesocoxa. Metaventrite lacking microsculpture, in middle slightly convex, with two elongate apicomedian impressions; punctation all over very fine and sparse; antecoxal puncture rows absent; submesocoxal area 0.05 mm long, nearly as long as third of shortest interval between its margin and metacoxa; submesocoxal line convex, finely punctate. Metanepisternum lacking obvious microsculpture, flat, narrowed anteriad, suture somewhat impressed, oblique, rounded at anterior angle. Tibiae straight. Exposed tergites and ventrites bearing distinct strigulate microsculpture and sparse, very fine punctation. Ventrite I with submetacoxal area 0.06-0.07 mm long, about as long as third shortest interval between its margin and apical margin of ventrite I; submetacoxal line convex, finely punctate.

Male. Protarsomeres and mesotarsomeres I to III strongly widened, protarsomere I wider than apex of protibiae. Lobe of ventrite VI triangular, about 0.07 mm long. Aedeagus (Figs 6, 7) 0.77-0.86 mm long.

Comments: The aedeagal parameres are usually asetose in Scaphidiinae. The exceptions are rare, as in members of *Baeoceroxidium* Ogawa & Löbl, 2013, the enigmatic *Baeocera subaenea* (Fauvel, 1903) or in *S. setosum* described below. Thus, *S. setifer*, along with *S. setigerum* described below, may be readily distinguished from their Asian congeners. *Scaphisoma setigerum* is in external characters very similar to other species of the *S. caudatum* group, except for its body size.

Distribution: Malaysia: Sabah.

Scaphisoma setigerum sp. nov.

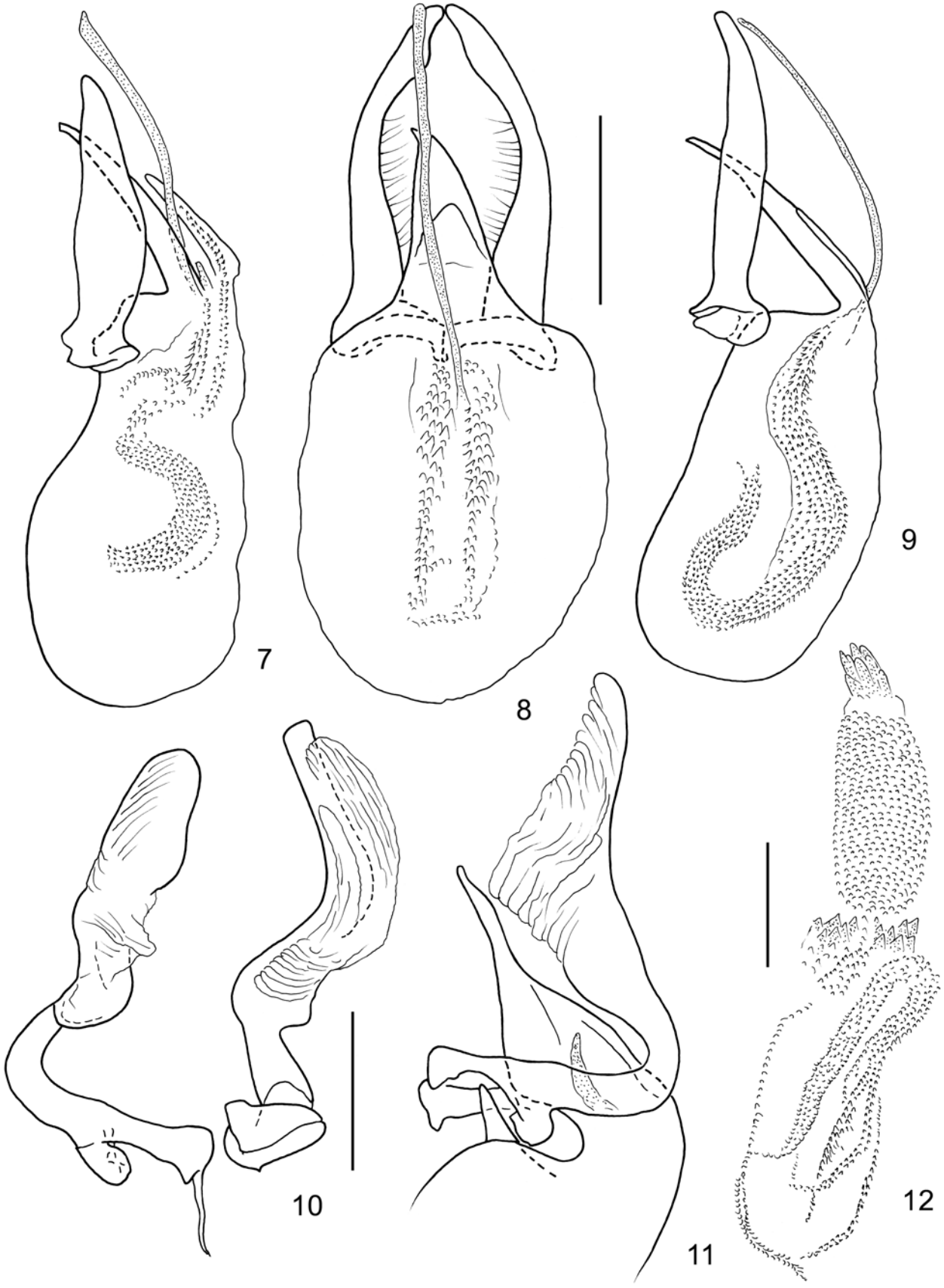
Figs 8, 9

Holotype: MHNG; male; BORNEO Sabah Mount Kinabalu Nt[ional]. P[ar]k. H[ead]Q[uarters] Liwagu Riv. 1490 m 5.VIII.[19]88 A. Smetana (B84).

Diagnosis: Medium large species with blackish-brown body; antennomere IV much longer than antennomere III; elytra lacking basal striae; metaventrite lacking microsculpture, with two elongate apicomedian impressions; ventrite I with submetacoxal area about as long as third as shortest interval between its margin and apical margin of ventrite; aedeagus symmetrical, with apical process long, dorsal valve not split, basal bulb large, parameres setose, gradually narrowed toward apical fourth, in apical fourth widened and in dorsal view with concave inner margins, proximal part of internal sac tubular, with nearly evenly small scale-like and denticle-like structures.

Etymology: The species epithet is Latin, meaning carrying setae.

Description: Length 1.64 mm, width 1.10 mm. Head and most of body blackish-brown, basal ventrites reddish-brown, apical abdominal segments, tibiae, tarsi and antennae yellowish, femora reddish-brown. Length/width ratios of antennomeres like that of *S. setifer*. Pronotum and elytra lacking microsculpture. Pronotum with anterior margin bead broadly interrupted; lateral margins arcuate; lateral margin stria exposed in dorsal view, punctate; discal punctation dense and very fine, consisting of well delimited punctures, with puncture intervals usually about two to five times as large as puncture diameters. Tip of scutellum exposed. Elytron weakly narrowed apically, with lateral margin evenly arcuate, lateral margin stria exposed, punctate; apical margin slightly rounded, apical crenulation indistinct; inner apical angle situated slightly posteriad of level of outer angle; sutural margin not raised; sutural stria



Figs 7-12. *Scaphisoma* spp., genital characters. (7) *S. setifer* sp. nov., aedeagus in lateral view. (8) *S. setigerum* sp. nov., aedeagus in dorsal view, scale 0.2 mm. (9) ditto, aedeagus in lateral view. (10) *S. distortum* sp. nov., parameres in ventral view, scale = 0.2 mm. (11) aedeagus in lateral view, without proximal part of basal bulb. (12) ditto, internal sac, scale = 0.1 mm.

starting at side of pronotal lobe, shallow, parallel with suture; adsutural area flat, about 0.05 mm wide shortly posteriad of scutellar tip, with single puncture row; discal punctation fine, coarser than pronotal punctation, consisting of well delimited punctures, with puncture intervals mostly about two to three times as large as puncture diameters. Hypomeron smooth. Mesoventrite impunctate. Mesanepisternum very finely punctate, lacking microsculpture. Mesepimeron about three times as long as wide and nearly two times as long as interval between its tip and mesocoxa. Metaventrite lacking microsculpture, in middle slightly convex, with two elongate apicomedian impressions; punctation all over very fine and sparse; antecoxal puncture rows absent; submesocoxal area 0.05 mm long, as long as fourth of shortest interval between its margin and metacoxa; submesocoxal line convex, finely punctate. Metanepisternum lacking obvious microsculpture, flat, narrowed anteriad, suture impressed, oblique, rounded at anterior angle. Tibiae straight. Exposed tergites and ventrites bearing distinct strigulate microsculpture and sparse, very fine punctation. Ventrite I with submetacoxal area 0.05 mm long, about as long as third shortest interval between its margin and apical margin of ventrite I; submetacoxal line convex, finely punctate.
Male. Protarsomeres and mesotarsomeres I-III widened, slightly narrower than apices of respective tibiae. Lobe of ventrite VI triangular, about 0.05 mm long. Aedeagus (Figs 8, 9) 0.73 mm long.

Comments: This species is very similar to *S. setifer*. It appears to be somewhat smaller and has darker thorax and elytra. It may be readily distinguished from *S. setifer* by the shape of the parameres, notably by the concave contours of their inner apical margins, the longer parameral setae, and the internal sac lacking apical rows of teeth-like structures.

Distribution: Malaysia: Sabah.

Scaphisoma distortum species group

The group is here proposed for a single new species possessing highly derived aedeagal characters. The basal bulb of the median lobe is voluminous and weakly sclerotized and bears a spine-like process below the basis of the parameres while lacking a parameral process, the apical process of the median lobe is slightly asymmetrical and abruptly narrowed apically, with the dorsal valve unsplit above the ostium and strongly sclerotized, and the parameres bear strongly asymmetrical membranous lobes.

Scaphisoma distortum sp. nov.

Figs 10-13

Holotype: OUMNH; male; SABAH: Lahad Datu Ulu Segama For. Res. Danum Valley For. Centre N04°57.9' E117°48.1' / 450 m, 01.xi.2005 prim. forest, D. Mann, E. Slade & J. Villanueva lgt. Lowland mix. Dipterocarp / forest Nature trail area, for. Inferior, Malaise trap for. Clearing OUMNN.

Diagnosis: Medium large species with dark brown body and elytra darkened subapically; antennomere IV much longer than antennomere III; elytra lacking basal striae; metaventrite flattened on mesal area and with microsculpture only on apicolateral surface; ventrite I with submetacoxal area about as long as two thirds of shortest interval between its margin and apical margin of ventrite; aedeagus asymmetrical, with apical process long, abruptly narrowed apically in lateral view, dorsal valve unsplit, basal bulb large, with oblique spine-like process, parameres strongly asymmetrical, narrow in basal sections, incurved and bearing long membranous lobes, internal sac tubular, with small scale-like and denticle-like structures and bunches of denticles in middle and at apex.

Etymology: The species epithet is a Latin adjective meaning distorted.

Description: Length 1.55 mm, width 1.04 mm. Head and most of body dark brown with reddish shine, elytra somewhat darkened on subapical area and with lighter apical margins; apical abdominal segments and appendages light brown to yellowish. Length/width ratios of antennomeres as: III 15/7: IV 25/6: V 50/8: VI 39/8: VII 57/10: VIII 44/8: IX 58/8: X 53/8: XI 65/12. Pronotum and elytra not microsculptured. Pronotum with anterior bead broadly interrupted; lateral margins evenly rounded in dorsal view; lateral margin carinae visible in dorsal view; lateral margin striae punctate; discal punctation fine and dense, consisting of well delimited punctures visible at 20 times magnification; punctures on prevailing surface rather sparse, much smaller than puncture intervals, on basal third dense and less fine, in part as large as puncture intervals. Tip of scutellum exposed. Elytra weakly narrowed apically, with lateral margins arcuate; lateral margin carina entirely visible in dorsal view; lateral margin striae punctate; apical margin truncate, with hardly visible crenulation at inner angle; inner apical angle situated posteriad of level of outer apical angle; sutural margin not raised; adsutural area flat, with single puncture row; sutural striae parallel, except near apices, hardly curved at base, not extended laterally to form basal striae; discal punctation dense, near base about as fine as on basal part of pronotum, on prevailing surface denser and coarser, with puncture intervals about twice as large as puncture diameters. Hypomeron smooth. Mesanepisternum very finely punctate. Mesoventrite

impunctate. Mesepimeron four times as long as wide and about 1.5 times long as shortest interval to mesocoxa. Metaventrite slightly convex between mesocoxa, flattened on apicomesal area, lacking impressions, with strigulate microsculpture; punctation fine and dense on mesal area, punctures about as large as puncture diameters on apicomesal area; lateral areas very finely and sparsely punctate, with microsculpture only near apical margins; submesocoxal area 0.02 mm long, about as long as seventh of shortest interval to metacoxa; submesocoxal line parallel, finely punctate; antecoxal puncture rows absent. Metanepisternum lacking obvious microsculpture, flat, hardly narrowed anteriad, suture straight, not impressed, impunctate. Tibiae straight. Abdomen with strigulate microsculpture, very finely punctate. Ventrite I with submetacoxal line convex; submetacoxal area 0.08 mm long, about as long as two thirds of shortest interval between its margin and apical margin of ventrite; punctation dense on areas between submetacoxal areas.

Male. Protarsomeres I to III distinctly widened, protarsomere I nearly as wide as apex of protibia. Mesotarsomeres I and II distinctly widened. Aedeagus (Figs 10-13) 1.04 mm long.

Comments: In external characters this species may be confused with many other species having a similar body size, colour pattern, parallel sutural striae of the elytra, punctation and strigulate abdominal microsculpture. However, the metaventral sides with strigulate microsculpture limited to a narrow stripe along the apical margin, in combination with the parallel submesocoxal lines and the large submetacoxal areas may be used to discriminate the species.

Distribution: Malaysia: Sabah.

Scaphisoma haemorrhoidale species group

This group is species rich in the Asian tropics and subtropics, and with 22 species present in Sabah. It is characterized by the aedeagi with symmetrical median lobe and parameres, trifid median lobe possessing two split dorsal branches and a ventral branch, and a complex internal sac. The known species have a strigulate abdominal microsculpture and the elytra lacking basal striae (see Löbl, 1970b; Löbl & Ogawa, 2016).

Scaphisoma affectuosum sp. nov.

Figs 14-16

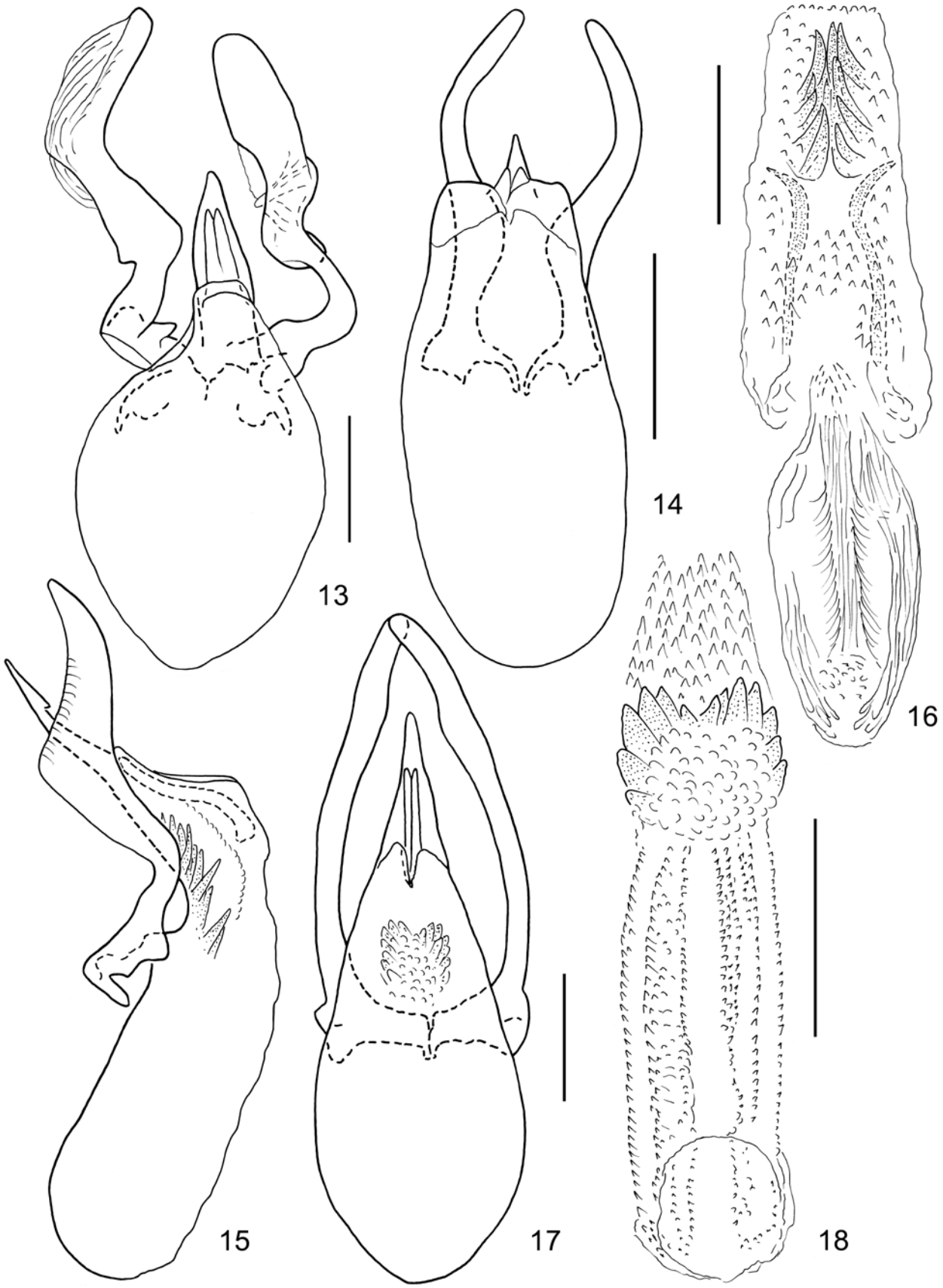
Holotype: MHNG; male; BORNEO Sabah Mount Kinabalu Nat[ional]. P[ar]k. Poring Hot Sp[rin]gs 495 m 24.VIII.[19]88, A. Smetana [B147].

Paratypes: MHNG; 1 male; same data as holotype. – 1 male; Crocker Range, Tenom env., Kalang Waterfall env., 18.VI.1998, J. Kodada & F. Čiampor.

Diagnosis: Rather small species with dorsum of body ochraceous to yellowish; antennomere IV much longer than antennomere III; elytra lacking basal striae; metaventrite with strigulate microsculpture and antecoxal puncture rows; ventrite I with submetacoxal areas somewhat longer than half of shortest interval between its margin and apical margin of ventrite; aedeagus symmetrical, with apical process appearing short in dorsal view, denticulate subapically (lateral view), basal bulb elongate, parameres strongly sinuate, widest posterior mid-length, lacking membranous lobes, internal sac with pair of long, spine-like subapical sclerites and apical bunch of larger denticles.

Etymology: The species epithet is a Latin adjective meaning kind.

Description: Length 1.37-1.40 mm, width 0.93-0.96 mm. Head, pronotum and most of elytra ochraceous to yellowish, elytra becoming somewhat lighter near apices. Venter of thorax as pronotum or darker and brown. Abdomen and appendages yellowish, or femora slightly darkened. Length/width ratios of antennomeres as III 11/6: IV 24/5: V 42/8: VI 36/8: VII 45/12: VIII 40/10: IX 44/10: X 41/10: XI 58/12. Pronotum and elytra lacking microsculpture. Pronotum with anterior margin bead broadly interrupted; lateral margins arcuate; lateral margin stria in dorsal view exposed, except near anterior angles, punctate; discal punctation dense and very fine, consisting of shallow, poorly delimited punctures, with puncture intervals usually about two to four times as large as puncture diameters. Tip of scutellum exposed. Elytron moderately narrowed apically, with lateral margin evenly arcuate, lateral margin stria exposed, punctate; apical margin slightly rounded, crenulated near inner angle; inner apical angle at level of outer angle; sutural margin not raised; sutural stria starting at side of pronotal lobe, shallow, parallel with suture on posteriad of level of scutellum, slightly converging to suture apically; adsutural area flat, about 0.05 mm wide shortly posteriad of scutellar tip, with single puncture row; discal punctation fine, coarser than pronotal punctation, consisting of poorly delimited punctures, with puncture intervals mostly about as large to twice as large as puncture diameters. Hypomeron smooth. Mesoventrite impunctate. Mesanepisternum very finely punctate, lacking microsculpture. Mesepimeron about five times as long as wide and two times as long as interval between its tip and mesocoxa. Metaventrite with strigulate microsculpture and slightly convex in middle, flattened on apicomesal area, lacking impressions; punctation very fine, apicomesal area excepted, lateral areas lacking microsculpture and very finely punctate; antecoxal puncture rows present, distinct;



Figs 13-18. *Scaphisoma* spp., genital characters. (13) *S. distortum* sp. nov., aedeagus in dorsal view, scale = 0.2 mm. (14) *S. affectuosum* sp. nov., aedeagus in dorsal view, scale = 0.2 mm. (15) ditto, aedeagus in lateral view. (16) ditto, internal sac, scale = 0.1 mm. (17) *S. affluens* sp. nov., aedeagus in dorsal view, scale = 0.1 mm. (18) ditto, internal sac, scale = 0.1 mm.

submesocoxal area 0.05 mm long, nearly half as long as shortest interval between its margin and metacoxa; submesocoxal line convex, punctate. Metanepisternum lacking obvious microsculpture, flat, slightly narrowed anteriad, suture not impressed, hardly rounded near angles, oblique in middle section. Tibiae straight. Exposed tergites and ventrites bearing distinct strigulate microsculpture and sparse, very fine punctation. Ventrite I with submetacoxal area 0.05 mm, somewhat longer than half of shortest interval between its margin and apical margin of ventrite I; submetacoxal line convex, finely punctate; punctation on mesal area dense, less fine than on lateral areas.
Male. Protarsomeres I to III slightly widened, narrower than apices of tibiae. Apex of ventrite VI gradually narrowed, forming 0.10-0.15 mm long triangle. Aedeagus (Figs 14-16) 0.68-0.76 mm long.

Comments: The aedeagal characters suggest a relationship with *S. spissum* Löbl, 1990. The internal sac of the latter species has a long spine-like apicomedian sclerite, absent in *S. affectuosum*. The new species is characterized by the internal sac possessing a pair of narrow, curved admesal spine-like sclerites. This new species is also notably lighter and smaller than *S. spissum*.

Distribution: Malaysia: Sabah.

***Scaphisoma affluens* sp. nov.**
Figs 17, 18

Holotype: MHNG; male; SABAH Mount Kinabalu, 1550 m, 29.V.1987 Burckhardt – Löbl.

Paratype: MHNG; 1 male; with same data as holotype. – 1 male; Crocker Range, 1550-1650 m, Kota Kinabalu-Tambunan, *Lithocarpus-Castanopsis* forest, 16.V.1987, Burckhardt – Löbl.

Diagnosis: Rather small species with dorsum of body ochraceous; antennomere IV much longer than antennomere III; elytra lacking basal striae; metaventrite with strigulate microsculpture and antecoxal puncture rows; ventrite I with submetacoxal areas about as long as half of shortest interval between its margin and apical margin of ventrite; aedeagus symmetrical, with apical process gradually narrowed apically, dorsal branches elongate and narrow, basal bulb elongate, parameres evenly narrow and slightly arcuate between bases and apical third, slightly widened subapically, lacking membranous lobes, internal sac tubular, with subapical bunch of larger denticles.

Etymology: The species epithet is Latin meaning plentiful, abundant.

Description: Length 1.32-1.36 mm, width 0.86-0.92 mm. Head, pronotum and hypomere ochraceous. Elytra ochraceous, becoming lighter near apices. Ventral side of mesothorax and metathorax light brown. Abdomen and appendages ochraceous to yellowish. Length/width ratios of antennomeres similar to those of *S. affectuosum* and related members of the group. Pronotum and elytra lacking microsculpture. Pronotum with anterior margin bead broadly interrupted; lateral margins arcuate; lateral margin stria exposed in dorsal view, punctate; discal punctation dense and very fine, consisting of shallow, poorly delimited punctures, with puncture intervals usually about two to four times as large as puncture diameters. Tip of scutellum exposed. Elytron moderately narrowed apically, with lateral margin arcuate, lateral margin stria exposed, finely punctate; apical margin slightly rounded, crenulate near inner angle; inner apical angle situated posteriad of level of outer angle; sutural margin not raised; sutural stria starting at side of pronotal lobe, shallow, parallel with suture on posterior in anterior two thirds, slightly converging to suture apically; adsutural area flat, about 0.05 mm wide shortly posteriad of scutellar tip, with single puncture row; discal punctation fine, much coarser than pronotal punctation, consisting of poorly delimited punctures, with puncture intervals mostly about as large as to three times as large as puncture diameters. Hypomeron smooth. Mesoventrite impunctate. Mesanepisternum very finely punctate, lacking microsculpture. Mesepimeron about three times as long as wide and 1.5 times as long as interval between its tip and mesocoxa. Metaventrite with strigulate microsculpture, in middle slightly convex, lacking impressions; punctation rather coarse and dense on apical half of median area, very fine between mesocoxae and on lateral areas; antecoxal puncture rows present; submesocoxal area 0.03-0.04 mm long, about as long as fourth of shortest interval between its margin and metacoxa; submesocoxal line convex, punctate. Metanepisternum lacking obvious microsculpture, flat, slightly narrowed anteriad, suture not impressed, rounded near angles, oblique in middle section. Tibiae straight. Exposed tergites and ventrites bearing distinct strigulate microsculpture and sparse, very fine punctation. Ventrite I with submetacoxal area 0.06 mm long, about as long as half of shortest interval between its margin and apical margin of ventrite I; submetacoxal line convex, finely punctate.
Male. Protarsomeres I to III distinctly widened, protarsomere I narrower than apex of protibia. Lobe of ventrite VI triangular, about 0.07 mm long. Aedeagus (Figs 17, 18) 0.61-0.63 mm long.

Comments: The aedeagus with a strongly elongate median lobe, long and narrow dorsal branches of the apical process and long and narrow parameres suggest relationships with *S. sapitense* Pic, 1920, *S. angulare* Löbl, 2015, and *S. alternum* described below. The new species may be easily distinguished by its body size,

the colour pattern of the elytra, the inner margin of the parameres lacking crenulation, and the internal sac bearing a subapical bunch of denticles.

Distribution: Malaysia: Sabah.

Scaphisoma alternum sp. nov.

Figs 19-21

Holotype: MHNG; male; Sabah: Poring Hot Springs, 550-600 m 9.V.1987 #18a Burckhardt – Löbl.

Diagnosis: Small species with dorsum of body reddish-brown; antennomere IV much longer than antennomere III; elytra lacking basal striae and with sutural striae shortened; mesanepisterna with microsculpture; metaventrite with strigulate microsculpture and antecoxal puncture rows; ventrite I with submetacoxal areas about half as long as shortest interval between its margin and apical margin of ventrite; aedeagus symmetrical, with apical process gradually narrowed apically and curved, dorsal branches elongate and narrow, basal bulb oval, parameres nearly evenly narrow and arcuate in apical third, lacking membranous lobes, internal sac with oval proximal part, two large, proximally diverging subapical sclerites and two bunches of apically diverging stalk-like sclerites.

Etymology: The species epithet is a Latin adjective meaning alternative.

Description: Length 1.18 mm, width 0.80 mm. Head and most of body reddish-brown, apical abdominal segments and appendages yellowish. Length/width ratios of antennomeres like those of *S. affectuosum* and related members of the group. Pronotum and elytra lacking microsculpture. Pronotum with anterior margin bead broadly interrupted; lateral margins slightly arcuate; lateral margin stria exposed in dorsal view, punctate; discal punctation dense and very fine on prevailing surface, consisting of rather well delimited punctures, with puncture intervals usually about two to four times as large as puncture diameters; punctation on basomedian area coarser, with puncture intervals mostly about as large to twice as large as puncture diameters. Tip of scutellum exposed. Elytron moderately narrowed apically, with lateral margin evenly arcuate, lateral margin stria exposed, punctate; apical margin slightly rounded, crenulate near inner angle; inner apical angle situated slightly posteriad of level of outer angle; sutural margin not raised; sutural stria very shallow, shortened, starting posteriad of basal sixth of sutural length, parallel with suture; adsutural area flat, about 0.04 mm wide, with single puncture row; discal punctation coarse, much coarser than pronotal punctation, consisting of well delimited punctures, with puncture intervals mostly about as large to three times as large as puncture diameters. Hypomeron smooth. Mesoventrite punctate. Mesanepisternum very finely punctate, with strigulate microsculpture. Mesepimeron conspicuously large, about four times as long as wide and nearly four times as long as interval between its tip and mesocoxa. Metaventrite with strigulate microsculpture, in middle slightly convex, lacking impressions, with few distinct punctures near metacoxal process; antecoxal puncture rows present, remaining punctation very fine and sparse; submesocoxal area nearly 0.03 mm long, about as long as fourth of shortest interval between its margin and metacoxa; submesocoxal line convex, punctate. Metanepisternum lacking obvious microsculpture, somewhat convex, slightly narrowed anteriad, impressed along suture; suture oblique, slightly rounded near anterior angle. Tibiae straight. Exposed tergites and ventrites bearing distinct strigulate microsculpture and sparse, very fine punctation. Ventrite I with submetacoxal area 0.05 mm long, about as long as half of shortest interval between its margin and apical margin of ventrite I; submetacoxal line convex, finely punctate.

Male. Protarsomeres I to III slightly widened, much narrower than apex of protibia. Aedeagus (Figs 19-21) 0.53 mm long.

Comments: Members of the *S. haemorrhoidale* group rarely have the elytra with shortened sutural striae. Thus, this new species may be readily distinguished from most of the other species of the group. In addition, it is characterized by the coarse elytral punctation, the small body and the microsculptured mesanepisterna, in combination. The aedeagal characters suggest a relationship with *S. affluens*.

Distribution: Malaysia: Sabah.

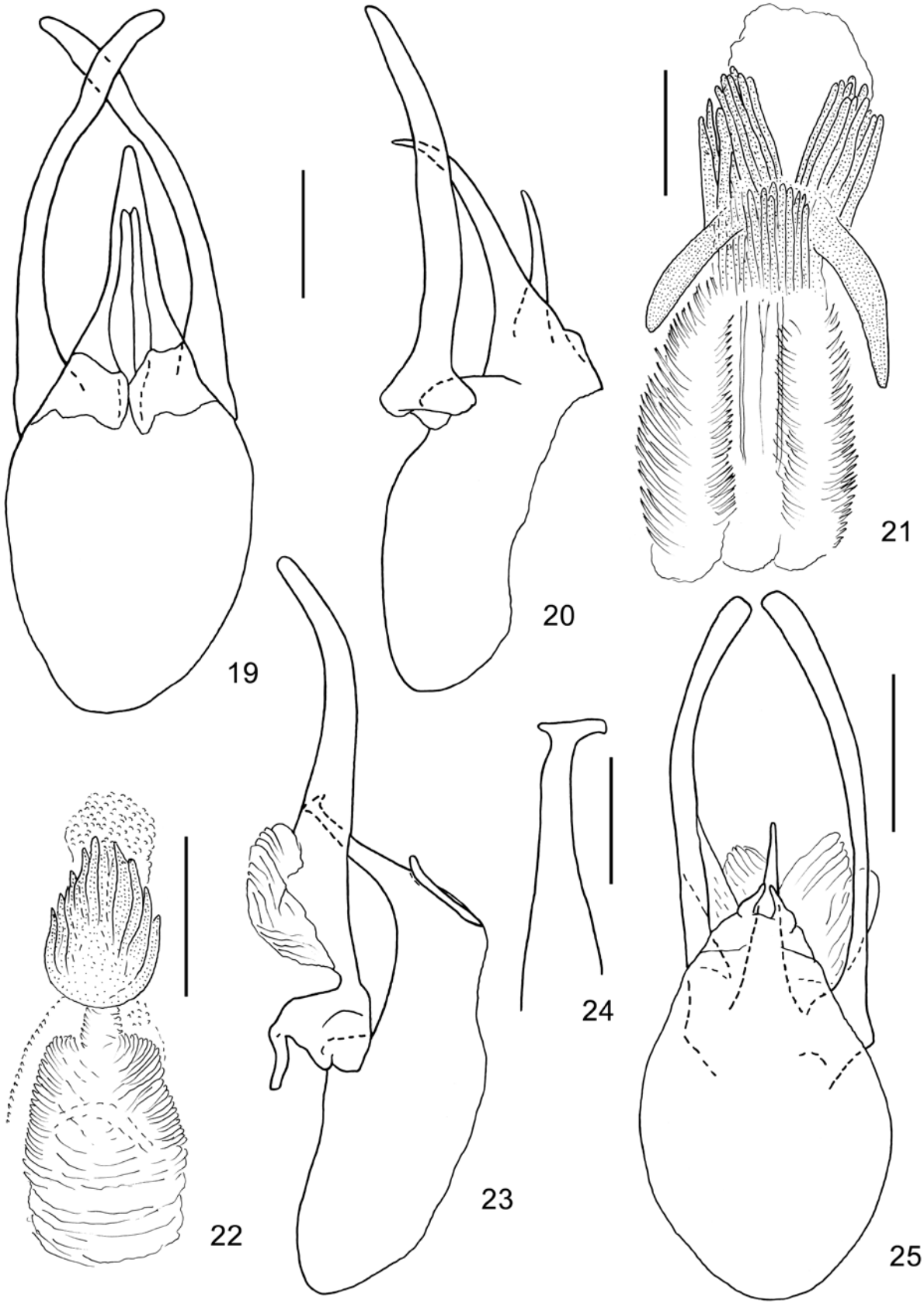
Scaphisoma ancoroides sp. nov.

Figs 22-25

Holotype: MHNG; male; Sabah Mount Kinabalu 2600 m, 1.V.1987 Burckhardt – Löbl.

Paratypes: MHNG; 1 male; with same data as holotype. – 4 males, 4 females; Mount Kinabalu Nat. Park, below Layang Layang, 2590 m, 1.V.1987, A. Smetana.

Diagnosis: Rather large species with pronotum ochraceous in males, blackish in females, elytra with bicolorous pattern; antennomere IV much longer than antennomere III; elytra lacking basal striae; mesanepisterna with microsculpture; metaventrite with strigulate microsculpture and antecoxal puncture rows; ventrite I with submetacoxal areas about as long as third of shortest interval between its margin and apical margin of ventrite; aedeagus symmetrical, with apical ventral branch of process gradually narrowed apically and expanded at tip, apex anchor-like, dorsal branches



Figs 19-25. *Scaphisoma* spp., genital characters. (19) *S. alternum* sp. nov., aedeagus in dorsal view, scale = 0.1 mm. (20) ditto, aedeagus in lateral view. (21) ditto, internal sac, scale = 0.05 mm. (22) *S. ancoroides* sp. nov., internal sac, scale = 0.2 mm. (23) ditto, aedeagus in lateral view. (24) apex of median lobe in lateral view, scale = 0.1 mm. (25) ditto, aedeagus in dorsal view, scale = 0.3 mm.

short and narrowed apically, basal bulb oval, parameres with membranous lobes, nearly evenly narrow and slightly arcuate in apical halves, internal sac finely striate basally, with subapical bunch of large teeth followed by membranes bearing very finely scale-like structures.

Etymology: The species epithet refers to the anchor-like shape of the tip of the median lobe, seen in lateral view.

Description: Length 2.0-2.10 mm, width 1.35-1.45 mm. Head, pronotum and hypomere ochraceous in male, blackish in female. Elytra ochraceous to yellowish, with dark brown to blackish base and adsutural areas, often also with dark lateral margins. Ventral side of mesothorax, metathorax and basal ventrites dark brown to blackish. Apical abdominal segments and appendages ochraceous to yellowish. Length/width ratios of antennomeres similar to those of *S. affectuosum* and related members of the group. Pronotum and elytra lacking microsculpture. Pronotum with anterior margin bead broadly interrupted; lateral margins slightly arcuate; lateral margin stria not visible or hardly so in dorsal view, punctate; discal punctation dense and very fine, consisting of shallow, poorly delimited punctures, with puncture intervals usually about two to four times as large as puncture diameters. Tip of scutellum exposed. Elytron moderately narrowed apically, with lateral margin arcuate in basal third, nearly oblique posteriad of basal third, lateral margin stria exposed, finely punctate; apical margin slightly rounded, lacking obvious crenulation near inner angle; inner apical angle at level of outer angle; sutural margin raised posterior elytral mid-length; sutural stria starting at side of pronotal lobe, shallow, mostly parallel with suture, slightly converging to suture apically; adsutural area flat, about 0.04 mm wide shortly posteriad of scutellar tip, with single puncture row; discal punctation fine, much coarser than pronotal punctation, consisting of poorly delimited punctures, with puncture intervals mostly about as large to twice as large as puncture diameters. Hypomeron smooth. Mesoventrite impunctate. Mesanepisternum very finely punctate, with strigulate microsculpture. Mesepimeron about five times as long as wide and nearly two times as long as interval between its tip and mesocoxa. Metaventrite with strigulate microsculpture, in middle slightly convex, lacking impressions; punctation very fine, dense on median area, sparse on lateral areas; antecoxal puncture rows present, hardly visible; submesocoxal area 0.03 mm long, about as long as seventh of shortest interval between its margin and metacoxa; submesocoxal line parallel, impunctate. Metanepisternum lacking obvious microsculpture, flat, slightly narrowed anteriad, suture not impressed, rounded near angles, oblique in middle section. Protibiae and metatibiae straight, mesotibiae curved. Exposed tergites and ventrites bearing distinct strigulate microsculpture and sparse, very fine punctation, mesal area of ventrite I excepted. Ventrite I with submetacoxal area 0.07 mm, about as long as third of shortest interval between its margin and apical margin of ventrite I; submetacoxal line convex, finely punctate; punctation on mesal area dense, less fine that on lateral areas.
Male. Protarsomeres and mesotarsomeres I strongly widened, nearly as wide as apices of tibiae, following two tarsomeres moderately widened. Apex of ventrite VI gradually narrowed, forming 0.10-0.15 mm long triangle. Aedeagus (Figs 22-25) 1.35-1.49 mm.

Comments: This species may be easily distinguished from most members of the group by the colour pattern of the body, which resembles that of *S. heishuense* Löbl, 2000, *S. paravarium* Löbl, 2000, *S. pseudovarium* Löbl, 2000 and *S. varium* Löbl, 1986. The long, narrow parameres and the narrow ventral branch of the apical process of the median lobe are like those of *S. heishuense*. The basally lobed parameres and anchor-like shape of the apex of the ventral branch of the median lobe, as seen in lateral view, are similar to those of *S. amabile* Löbl, 1984 and *S. ochropenne* Löbl, 2016, and unusual in members of the *S. haemorrhoidale* group.

Distribution: Malaysia: Sabah. Possibly restricted to higher altitudes of Mount Kinabalu.

Scaphisoma assingi **sp. nov.**

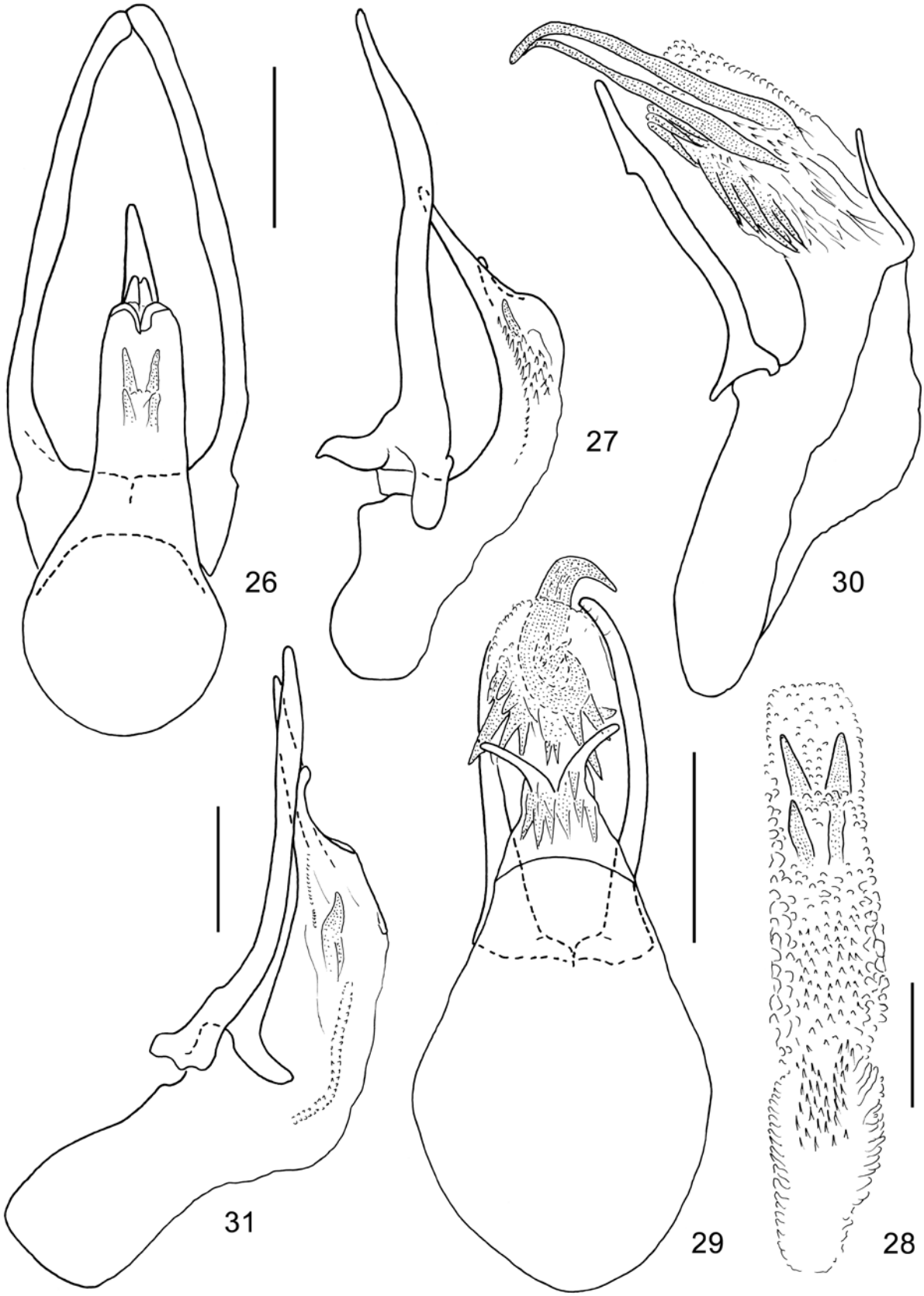
Figs 26-28

Holotype: MHNG; male; Malaysia, Sabah, Batu Punggul Resort env., 24.VI.-1.VIII.1996, 11c. vegetation debris and forest floor litter accumulated around large trees near river.

Paratype: MHNG; 1 male; Mount Kinabalu, Liwagu Trail, 1500 m, 22.V.1987, D. Burckhardt & I. Löbl.

Diagnosis: Body rather small, ochraceous; antennomere IV much longer than antennomere III; elytra lacking basal striae, sutural striae strongly oblique near base; mesanepisterna lacking microsculpture; metaventrite with strigulate microsculpture and antecoxal puncture rows; ventrite I with submetacoxal areas about as long as half of shortest interval between its margin and apical margin of ventrite; aedeagus symmetrical, with ventral branch of apical process gradually narrowed apically, dorsal branches short and hardly narrowed apically, basal bulb small, parameres lacking membranous lobes, nearly evenly narrow and slightly arcuate posteriad of bases, internal sac tubular, bearing membranous spines and denticles, and two pairs of large subapical teeth.

Etymology: The species is named in honour of the late Volker Assing, one of the most prolific rove beetle taxonomists.



Figs 26-31. *Scaphisoma* spp., genital characters. (26) *S. assingi* sp. nov., aedeagus in dorsal view, scale = 0.2 mm. (27) ditto, aedeagus in lateral view. (28) ditto, internal sac, scale = 0.1 mm. (29) *S. bihamatum* sp. nov., aedeagus in dorsal view, internal sac extruded, scale = 0.2 mm. (30) ditto, aedeagus in lateral view. (31) *S. constrictum* sp. nov., aedeagus in lateral view, scale = 0.2 mm.

Description: Length 1.40 mm, width 0.96 mm. Head, body and appendages light ochraceous. Length/width ratios of antennomeres as in related members of the group. Pronotum and elytra lacking microsculpture. Pronotum with anterior margin bead broadly interrupted; lateral margins arcuate; lateral margin stria visible in dorsal view, impunctate; discal punctation very fine, consisting of shallow, poorly delimited punctures, with puncture intervals usually about two to four times as large as puncture diameters. Tip of scutellum exposed. Elytron moderately narrowed apically, with rounded lateral margin, lateral margin stria exposed, well visible, finely punctate; apical margin slightly rounded, crenulate near inner angle; inner apical angle at level of outer angle; sutural margin raised posterior elytral mid-length; sutural stria starting at side of pronotal lobe, strongly oblique near base, gradually converging to suture apically; adsutural area flat, 0.10 mm wide shortly posteriad of scutellar tip, with two puncture rows in basal third, single puncture row in apical half; discal punctation fine, much coarser than pronotal punctation, consisting of poorly delimited punctures, with puncture intervals mostly about as large to three times as large as puncture diameters. Hypomeron and mesanepisternum lacking microsculpture, smooth. Mesoventrite impunctate. Mesepimeron about four times as long as wide and two times as long as interval between its tip and mesocoxa. Metaventrite with strigulate microsculpture, in middle slightly convex, lacking impressions; punctation distinct, irregular on apicomedian area, very fine and sparse on lateral areas and between mesocoxae; antecoxal puncture rows present; submesocoxal area 0.03 mm long, about as long as sixth of shortest interval between its margin and metacoxa; submesocoxal line convex, punctate. Metanepisternum lacking obvious microsculpture, flat, slightly narrowed anteriad, with suture impressed, rounded near angles, oblique in middle section. Tibiae straight. Exposed tergites and ventrites bearing distinct strigulate microsculpture, and sparse and extremely fine punctation. Ventrite I with submetacoxal area 0.06 mm long, about as long as half of shortest interval between its margin and apical margin of ventrite I; submetacoxal line convex, finely punctate.

Male. Protarsomeres I to III widened, protarsomere I narrower than apex of protibia. Apical margin of ventrite VI concave. Aedeagus (Figs 26-28) 0.85 mm long.

Comments: This species may be easily distinguished from its congeners possessing elytra with strongly convergent sutural striae by its aedeagus with the parameres elongate and narrow, about two times as long as the basal bulb. The aedeagal characters suggest a relationship with *S. affluens*. However, the parameres of *S. assingi* are significantly longer and not sinuate apically, and the sclerites of the internal sac are distinctive.

Distribution: Malaysia: Sabah.

Scaphisoma bihamatum sp. nov.

Figs 29, 30

Holotype: MHNG; male; [E. Malaysia] Poring Hot Spring (alt. 600 m) Sabah, Is. Borneo 20-26.iii.1993 Ueno leg.

Diagnosis: Small species with reddish-brown body; antennomere IV much longer than antennomere III; elytra lacking basal striae, sutural striae strongly oblique near base; mesanepisterna lacking microsculpture; metaventrite with strigulate microsculpture and lacking antecoxal puncture rows; ventrite I with submetacoxal areas about as long as half of shortest interval between its margin and apical margin of ventrite; aedeagus symmetrical, with ventral branch of apical process gradually narrowed apically, dorsal branches long, not narrowed apically, basal bulb voluminous, parameres lacking membranous lobes, nearly evenly narrow and slightly arcuate posteriad of bases, with ventral margins angulate subapically, internal sac compact, densely denticulate and with two large hooks.

Etymology: The species epithet is a Latin adjective meaning two-hooked.

Description: Length 1.25 mm, width 0.84 mm. Head and most of body dark reddish-brown, venter of thorax lighter than pronotum or elytra, apical abdominal segments and appendages yellowish. Length/width ratios of antennomeres as in related members of the group. Pronotum and elytra lacking microsculpture. Pronotum with anterior margin bead broadly interrupted; lateral margins arcuate; lateral margin stria concealed in dorsal view, punctate; discal punctation dense and very fine, consisting of well delimited punctures distinct at 30 times magnification, with puncture intervals about three to five times as large as puncture diameters. Tip of scutellum exposed. Elytron moderately narrowed apically, with lateral margin arcuate, lateral margin stria concealed, punctate; apical margin rounded, crenulate at inner angle; inner apical angle at level of outer angle; sutural margin not raised; sutural stria starting near basal margin at side of pronotal lobe, deep, parallel with suture; adsutural area flat, with single puncture row; discal punctation dense, coarser than pronotal punctation, consisting of well delimited punctures, with puncture intervals mostly somewhat longer to three times as long as puncture diameters. Hypomeron and mesanepisternum lacking microsculpture, smooth. Mesoventrite impunctate. Mesepimeron about five times as long as wide, 1.5 times as long as interval between its tip and

mesocoxa. Metaventrite with strigulate microsculpture, in middle slightly convex, lacking impressions; punctation extremely fine, hardly visible at 100 times magnification and sparse; antecoxal puncture rows absent; submesocoxal area 0.03 mm long, nearly as long as fourth of shortest interval between its margin and metacoxa; submesocoxal line convex, appearing impunctate. Metanepisternum lacking obvious microsculpture, flat, narrowed anteriad, with suture hardly impressed, rounded near angles, oblique in middle section. Protibiae and metatibiae straight, mesotibiae curved. Exposed tergites and ventrites with distinct strigulate microsculpture and sparsely, extremely finely punctate. Ventrite I with submetacoxal area 0.05 mm long, about as long as half of shortest interval between its margin and apical margin of ventrite I; submetacoxal line convex, very finely punctate.
Male. Protarsomere I to III distinctly widened, protarsomere I somewhat narrower than apex of protibia. Aedeagus (Figs 29, 30) 0.66 mm long.

Comments: The species resembles *S. dusunum*, except for its punctation. The shape of the ventrally angulate parameres, seen in lateral view, is unique. *Scaphisoma bihamatum* may also be distinguished by the internal sac with two long, robust hooks incurved basally and distally.

Distribution: Malaysia: Sabah.

Scaphisoma constrictum sp. nov.

Figs 31, 32

Holotype: MHNG; male; Malaysia, Sabah, Sabalangan river env., ca 25 km SE Sapulut, 26.06.1998, J. Kodada & F. Čiampor Lgt.

Diagnosis: Body medium-large, reddish-brown; antennomere IV much longer than antennomere III; elytra lacking basal striae, sutural striae strongly oblique near base; venter of thorax extremely finely punctate; mesanepisterna lacking microsculpture; metaventrite with strigulate microsculpture and lacking antecoxal puncture rows; ventrite I with submetacoxal areas about as long as half of shortest interval between its margin and apical margin of ventrite; aedeagus symmetrical, with base of apical process conspicuously narrowed in dorsal view, deeply emarginate in lateral view, dorsal branches long, slightly narrowed apically, ventral branch tuberculate dorsally, basal bulb oval, parameres lacking membranous lobes, nearly evenly narrow and slightly arcuate posteriad of bases, curved at apices, internal sac bearing minute scale-like structures, with few larger apical sclerites.

Etymology: The species epithet is a Latin adjective meaning constricted.

Description: Length 1.70 mm, width 1.16 mm. Head and body evenly reddish-brown, apex of abdomen somewhat lighter, appendages yellowish. Length/width ratios of antennomeres as in related members of the group. Pronotum and elytra lacking microsculpture. Pronotum with anterior margin bead broadly interrupted; lateral margins arcuate; lateral margin stria exposed in dorsal view, impunctate; discal punctation dense and very fine, consisting of well delimited punctures distinct at 50 times magnification, with puncture intervals about twice to four times as large as puncture diameters. Tip of scutellum exposed. Elytron moderately narrowed apically, with lateral margin arcuate, lateral margin stria exposed, impunctate; apical margin rounded, distinctly crenulate at inner angle; inner apical angle situated posteriad of level of outer angle; sutural margin raised; sutural stria starting at basal margin at side of pronotal lobe, deep, slightly converging to suture apically; adsutural area flat, with single puncture row; discal punctation dense, coarser than pronotal punctation, consisting of well delimited punctures, with puncture intervals mostly about twice as large to three times as large as puncture diameters. Hypomeron and mesanepisternum lacking microsculpture, smooth. Mesoventrite impunctate. Mesepimeron about four times as long as wide, slightly longer than interval between its tip and mesocoxa. Metaventrite with strigulate microsculpture, in middle hardly convex, lacking impressions; punctation extremely fine, hardly visible at 100 times magnification and sparse; antecoxal puncture rows absent; submesocoxal area 0.06 mm long, nearly as long as half of shortest interval between its margin and metacoxa; submesocoxal line convex, appearing impunctate. Metanepisternum lacking obvious microsculpture, flat, narrowed anteriad, with suture hardly impressed, rounded near angles, oblique in middle section. Protibiae and metatibiae straight, mesotibiae curved. Exposed tergites and ventrites bearing distinct strigulate microsculpture and sparse, extremely fine punctation. Ventrite I with submetacoxal area 0.08 mm long, about half as long as shortest interval between its margin and apical margin of ventrite I; submetacoxal line convex, very finely punctate.
Male. Protarsomeres I to III and mesotarsomeres I and II strongly widened, protarsomere I slightly narrower than apex of protibia. Aedeagus (Figs 31, 32) 1.05 mm long.

Comments: The constricted median lobe of the aedeagus is a unique feature. This species may be distinguished also by its extremely finely punctate thoracic venter from other members of the *S. haemorrhoidale* group possessing similar parameres and an elongate median lobe with narrow dorsal branches.

Distribution: Malaysia: Sabah.

Scaphisoma crassum sp. nov.

Figs 33, 34

Holotype: MHNG; male; Malaysia, Sabah, Baku Punggul Resort env., 24.VI.-1.VII.1996, 11c. vegetation debris and forest floor litter accumulated around large trees.

Paratype: MHNG; 1 female; with same data as holotype.

Diagnosis: Body medium-large with pronotum ochraceous, elytra with light brown subapical band; antennomere IV much longer than antennomere III; elytra lacking basal striae, sutural striae shortened; mesanepisterna and metaventrite lacking microsculpture, metaventrite lacking antecoxal puncture rows; ventrite I with submetacoxal areas nearly as long as half of shortest interval between its margin and apical margin; aedeagus symmetrical, with ventral branch of apical process strongly inflexed in lateral view and with blunt apex in dorsal view, dorsal branches short, basal bulb elongate, parameres arcuate posteriad of bases, slightly widened apically, each with large membranous lobe, apical half of internal sac bearing two rows of denticles.

Etymology: The species epithet is a Latin adjective meaning robust.

Description: Length 1.50-1.60 mm, width 1.02-1.06 mm. Head, pronotum and most of apical fourth of elytra ochraceous, anterior three fourth of elytra somewhat darker and reddish-brown, elytra with light brown subapical band; venter of thorax and ventrites I to III reddish-brown, following abdominal segments and appendages yellowish. Length/width ratios of antennomeres as in related members of the group. Pronotum and elytra lacking microsculpture. Pronotum with anterior margin bead broadly interrupted; lateral margins arcuate; lateral margin stria exposed in dorsal view, punctate; discal punctation dense and fine, consisting of well delimited punctures visible at 20 times magnification, with puncture intervals about twice to three times as large as puncture diameters on prevailing surface, punctation coarser and denser, with punctures about as large as puncture intervals on mediobasal area. Tip of scutellum exposed. Elytron moderately narrowed apically, with lateral margin arcuate, lateral margin stria exposed, punctate; apical margin rounded, distinctly crenulate at inner angle; inner apical angle at level of outer angle; sutural margin hardly raised; sutural stria shortened, starting posterior basal fifth of sutural length, slightly converging to suture apically; adsutural area flat, with single puncture row; discal punctation dense and coarse, much coarser than pronotal punctation, consisting of well delimited punctures, with puncture intervals mostly as large to two times as large as puncture diameters. Hypomeron and mesanepisternum lacking microsculpture, smooth. Mesoventrite impunctate. Mesepimeron nearly four times as long as wide, two times as long as interval between its tip and mesocoxa. Metaventrite lacking microsculpture, in middle slightly convex, lacking impressions; punctation coarse on median area and between meso- and metacoxae, very fine on lateral areas; antecoxal puncture rows absent; submesocoxal area 0.04 mm long, as long as fifth of shortest interval between its margin and metacoxa; submesocoxal line convex, coarsely punctate. Metanepisternum lacking obvious microsculpture, flat, narrowed anteriad, with suture impressed, rounded near angles, oblique in middle section. Protibiae and metatibiae straight, mesotibiae curved. Exposed tergites and ventrites bearing distinct strigulate microsculpture. Ventrite I with submetacoxal area 0.05 mm long, nearly as long as half of shortest interval between its margin and apical margin; submetacoxal line convex, coarsely punctate; median area of ventrite I rather coarsely punctate, its lateral areas and following ventrites and exposed tergites very finely punctate.

Male. Protarsomeres I to III and mesotarsomeres I and II slightly widened, protarsomere I narrower than apex of protibia. Aedeagus (Figs 33, 34) 0.95 mm long.

Comments: The species shares with *S. alternum* elytra with shortened sutural striae. It differs notably from the latter in several external characters, such as the body size and colour, punctation and microsculpture. The aedeagal characters suggest a relationship with *S. affluens*, although the parameres are lobed and the apex of the median lobe is broad.

Distribution: Malaysia: Sabah.

Scaphisoma dusunum Löbl, 1987

Scaphisoma dusunum Löbl, 1987: 104.

Material examined: MHNG; 1 male; Poring Hot Spring, 550-600 m, 9.V.1987, D. Burckhardt & I. Löbl.

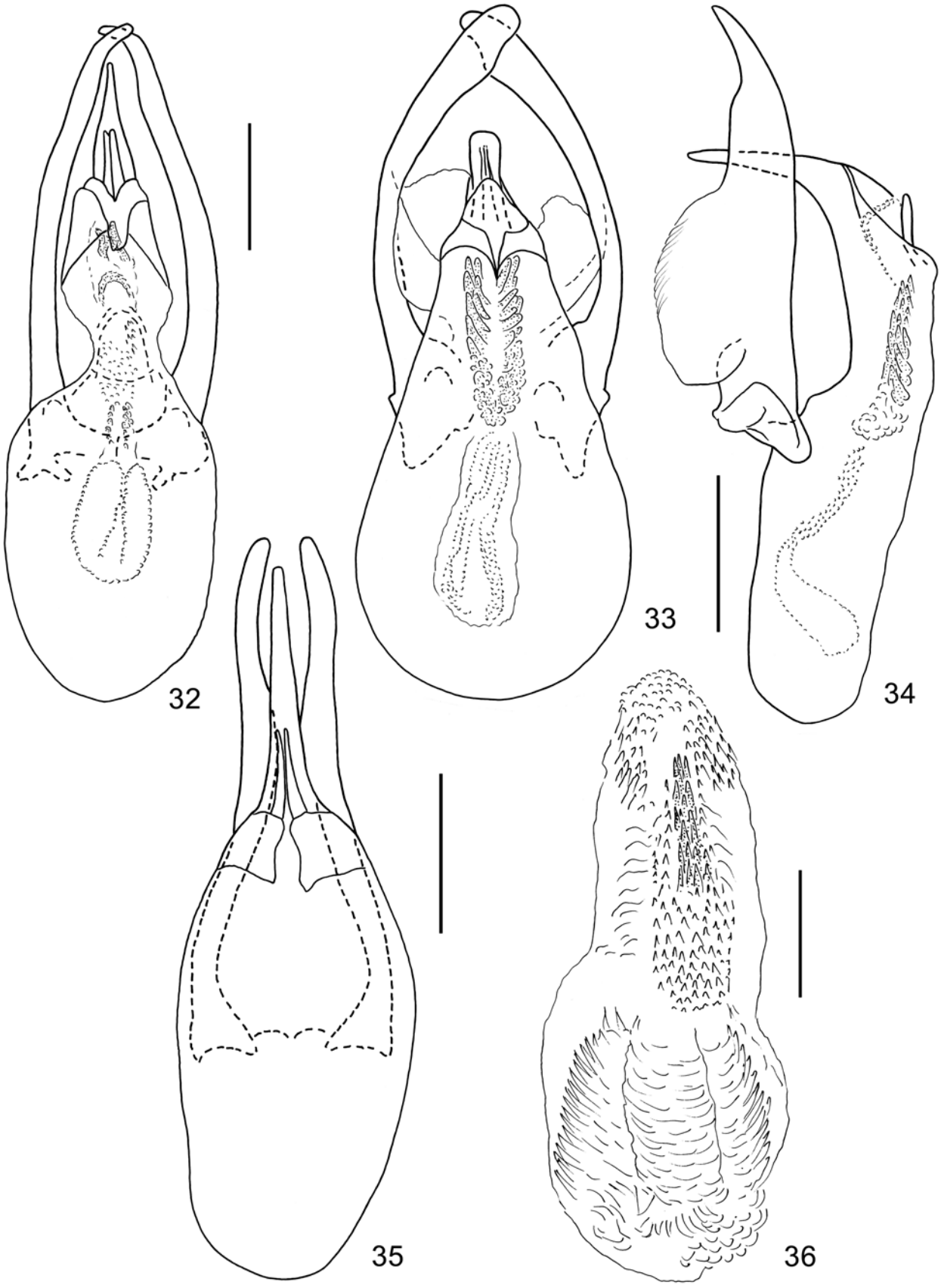
Comments: The species was based on a single specimen from Mount Kinabalu National Park.

Distribution: Malaysia: Sabah.

Scaphisoma javanum Löbl, 1979

Scaphisoma javanum Löbl, 1979b: 326.
Scaphisoma javanum; Löbl, 1982a: 5.

Material examined: MHNG; 4; Poring Hot Spring, 500 m, 6.V.1987, D. Burckhardt & I. Löbl. – 14; Batu Punggul Resort env., 24.VI.-1.VII.1996. – 3; Crocker Range, around km 56 of road Kota Kinabalu-Tambunan, Sunsuron Waterfall env., 1100-1200 m, 8.VI.1996. – 1; Crocker Range, Gunung Emas, 23.V.1998, J. Kodada & F. Čiampor.



Figs 32-36. *Scaphisoma* spp., genital characters. (32) *S. constrictum* sp. nov., aedeagus in dorsal view, scale = 0.2 mm. (33). *S. crassum* sp. nov., aedeagus in dorsal view. (34) ditto, aedeagus in lateral view, scale = 0.2 mm. (35) *S. majale* sp. nov., aedeagus in dorsal view, scale = 0.2 mm. (36) ditto, internal sac, scale = 0.1 mm.

Comments: The parameral setae observed on the types are lacking in subsequently examined specimens.

Distribution: Indonesia: Java; Malaysia: Sabah, Sarawak; Philippines: Leyte, Luzon, Mindanao, Palawan; Thailand.

Scaphisoma luteomaculatum Pic, 1915

Scaphosoma luteomaculatum Pic, 1915b: 5.
Scaphosoma sapitense var. *infasciatum* Achard, 1920: 131.
Scaphisoma dansalanense Löbl, 1972: 95.
Scaphisoma luteomaculatum; Löbl, 2015a: 111.

Material examined: MHNG; 1, Sabalangan River env., ca 25 km SE Sapulut, 26.VI.1998, J. Kodada & F. Čiampor. – 2; Crocker Range, Tenon env., Kalang Waterfall env., 18.VI.1998, J. Kodada & F. Čiampor.

Distribution: Malaysia: Sabah; Indonesia: Bali, Buru, Java, Lombok, Sumatra, Sumbawa; Myanmar; Philippines: Leyte, Luzon, Mindanao, Palawan.

Scaphisoma majale sp. nov.

Figs 35, 36

Holotype: MHNG; male; SABAH Mount Kinabalu 1450-1550 m 23.V.1987 Burckhardt – Löbl.

Paratypes: MHNG; 1 male; 3 females; with same data as holotype. – 1 male; same data but 1430 m, 22.V.1987. EUMJ; 1 female; Mount Kinabalu, Headquarters, 5.V.1980, M. & S. Sakai.

Diagnosis: Body rather large with blackish pronotum, elytra bicolorous, on prevailing surface yellowish; antennomere IV much longer than antennomere III; elytra lacking basal striae, sutural striae slightly shortened; mesanepisterna lacking microsculpture; metaventrite with strigulate microsculpture and antecoxal puncture rows; ventrite I with submetacoxal area long as third to nearly half of shortest interval between its margin and apical margin; aedeagus symmetrical, with ventral branch of apical process long, narrow, truncate at apex, dorsal branches long and narrow, basal bulb oval, parameres lacking lobes, nearly evenly narrow and sinuate, internal sac bulbous basally and bearing oblique denticles, with tubular apical part and denticles pointing apically.

Etymology: The species epithet refers to the month of May.

Description: Length 1.76-2.03 mm, width 1.27-1.37 mm. Head, pronotum and venter of thorax blackish, elytra yellowish on prevailing surface of disc, blackish along basal and lateral margins, blackish or dark brown on broad stripe along anterior two third of suture, narrowly darkened on apical third of adsutural areas and along apical margin. Abdomen dark reddish-brown with light apical segments, appendages yellowish. Length/width ratios of antennomeres as in related members of the group. Pronotum and elytra lacking microsculpture. Pronotum with anterior margin bead broadly interrupted; lateral margins nearly oblique; lateral margin stria exposed in dorsal view, punctate; discal punctation dense and coarse, consisting of well delimited punctures distinct at ten times magnification, with puncture intervals in part about as large as puncture diameters. Tip of scutellum exposed. Elytron moderately narrowed apically, with lateral margin arcuate near base and apex, oblique in middle, lateral margin stria exposed, rather coarsely punctate; apical margin rounded, lacking distinct crenulation; inner apical angle at level of outer angle; sutural margin not raised; sutural stria starting posteriad of level of scutellar tip, shallow, slightly converging to suture apically; adsutural area flat, with single puncture row; discal punctation dense, coarser than pronotal punctation, consisting of well delimited punctures, with puncture intervals mostly about as large as to three times as large as puncture diameters. Hypomeron and mesanepisternum lacking microsculpture, smooth. Mesoventrite punctate. Mesepimeron about four times as long as wide and about two times as long as interval between its tip and mesocoxa. Metaventrite with strigulate microsculpture, slightly convex in middle, flattened on apicomedian area, lacking impressions and with dense and rather fine punctation, very finely punctate on lateral areas and between mesocoxae; antecoxal puncture rows present; submesocoxal area 0.04 mm long, about as long as sixth of shortest interval between its margin and metacoxa; submesocoxal line slightly convex, punctate. Metanepisternum lacking obvious microsculpture, flat, narrowed anteriad, with suture somewhat impressed, rounded near angles, oblique in middle section. Tibiae straight. Abdomen with strigulate microsculpture, very finely and sparsely punctate. Ventrite I with submetacoxal line convex, finely punctate; submetacoxal area 0.08 to 0.12 mm long, as long as third to nearly as long as half of shortest interval between its margin and apical margin of ventrite.

Male. Protarsomeres I to III moderately widened, tarsomere I narrower than apex of protibia. Lobe of ventrite VI triangular, about 0.08 mm, with obtuse tip. Aedeagus (Figs 35, 36) 0.89-1.12 mm long.

Comments: This species may be easily distinguished from other members of the group by the colour pattern of the elytra, combined with shortened sutural striae. It is characterized also by its conspicuous pronotal and elytral punctations. The aedeagal characters suggest relationships with *S. angulare* Löbl, 2015 and *S. sapitense* Pic, 1915, while the structure of the internal sac is diagnostic.

Distribution: Malaysia: Sabah.

Scaphisoma makar sp. nov.

Figs 37-40

Holotype: MHNG; male; Sabah: Poring Hot Spring, 550-600 m, 9.V.1987, #18a Burckhardt – Löbl.

Paratypes: MHNG; 1 male; with same data as holotype but 500 m, 8.V.1987. – 1 male; Poring Hot Spring, Langanan Falls, 900-950 m, 12.V.1987, D. Burckhardt & I. Löbl. – 1 male; above Poring Hot Spring, 520 m, 5.VIII.1988, A. Smetana. – 1 male; Sabalangan River env., ca 25 km SE Sapulut, 26.VI.1998, J. Kodada & F. Čiampor. – 1 male; Interior Residency, Road Kimanis, 10 mi from Keningau, 1150 m, 13.V.1982, B. Hauser.

Diagnosis: Body small, ochraceous; antennomere IV much longer than antennomere III; elytra lacking basal striae; metaventrite with strigulate microsculpture and antecoxal puncture rows; ventrite I with submetacoxal areas as long as half of shortest interval between its margin and apical margin; aedeagus symmetrical, with ventral branch of apical process strongly inflexed, appearing short in dorsal view, dorsal branches short and wide, basal bulb large and oval, parameres lobed, each with subapical notch and widened apically, internal sac bulbous basally and with complex pattern of denticles, its apical part tubular and bearing two rows of large sclerites.

Etymology: The species epithet is a Malay word meaning hard.

Description: Length 1.20-1.38 mm, width 0.82-1.03 mm. Head and most of body ochraceous, abdominal apex and appendages yellowish. Length/width ratios of antennomeres as in related members of the group. Pronotum and elytra lacking microsculpture. Pronotum with anterior margin bead broadly interrupted; lateral margins slightly arcuate; lateral margin stria visible in dorsal view, punctate; discal punctation dense and fine, consisting of well delimited punctures, with puncture intervals usually about as large to three times as large as puncture diameters. Tip of scutellum exposed. Elytron moderately narrowed apically, with lateral margin arcuate, lateral margin stria exposed, finely punctate; apical margin rounded, with distinct crenulation near inner angle; inner apical angle at level of outer angle; sutural margin not raised; sutural stria starting at side of pronotal lobe, shallow, converging to suture apically; adsutural area flat, about 0.06 mm wide shortly posteriad of scutellar tip, with two puncture rows near base and single puncture row posteriad of basal third; discal punctation coarser than pronotal punctation, consisting of well delimited punctures, with puncture intervals about as large to three times as large as puncture diameters. Hypomeron and mesanepisternum lacking microsculpture, smooth. Mesoventrite impunctate. Mesepimeron about five times as long as wide and nearly 1.5 times as long as interval between its tip and mesocoxa. Metaventrite with strigulate microsculpture evanescent on anteriolateral areas, convex in middle, lacking impressions, flattened, densely and rather coarsely punctate on apicomedian area, very finely punctate on lateral areas and between mesocoxae; antecoxal puncture rows present; submesocoxal area 0.02 mm long, about as long as sixth of shortest interval between its margin and metacoxa; submesocoxal line parallel, punctate. Metanepisternum lacking obvious microsculpture, flat, narrowed anteriad, with suture somewhat impressed, rounded near angles, oblique in middle section. Tibiae straight. Abdomen with strigulate microsculpture and very finely and sparsely punctate. Ventrite I with submetacoxal line convex, finely punctate; submetacoxal area 0.05 mm long, as long as half of shortest interval between its margin and apical margin of ventrite.

Male. Protarsomeres I to III weakly widened. Aedeagus (Figs 37-40) 0.58-0.75 mm long.

Comments: This species may be distinguished from its Bornean congeners with a similar habitus by a subapical parameral notch in combination with the internal sac of the aedeagus possessing a mesal row of denticles rather strongly sclerotized and two subapical rows of larger denticles.

Distribution: Malaysia: Sabah.

Scaphisoma makkul sp. nov.

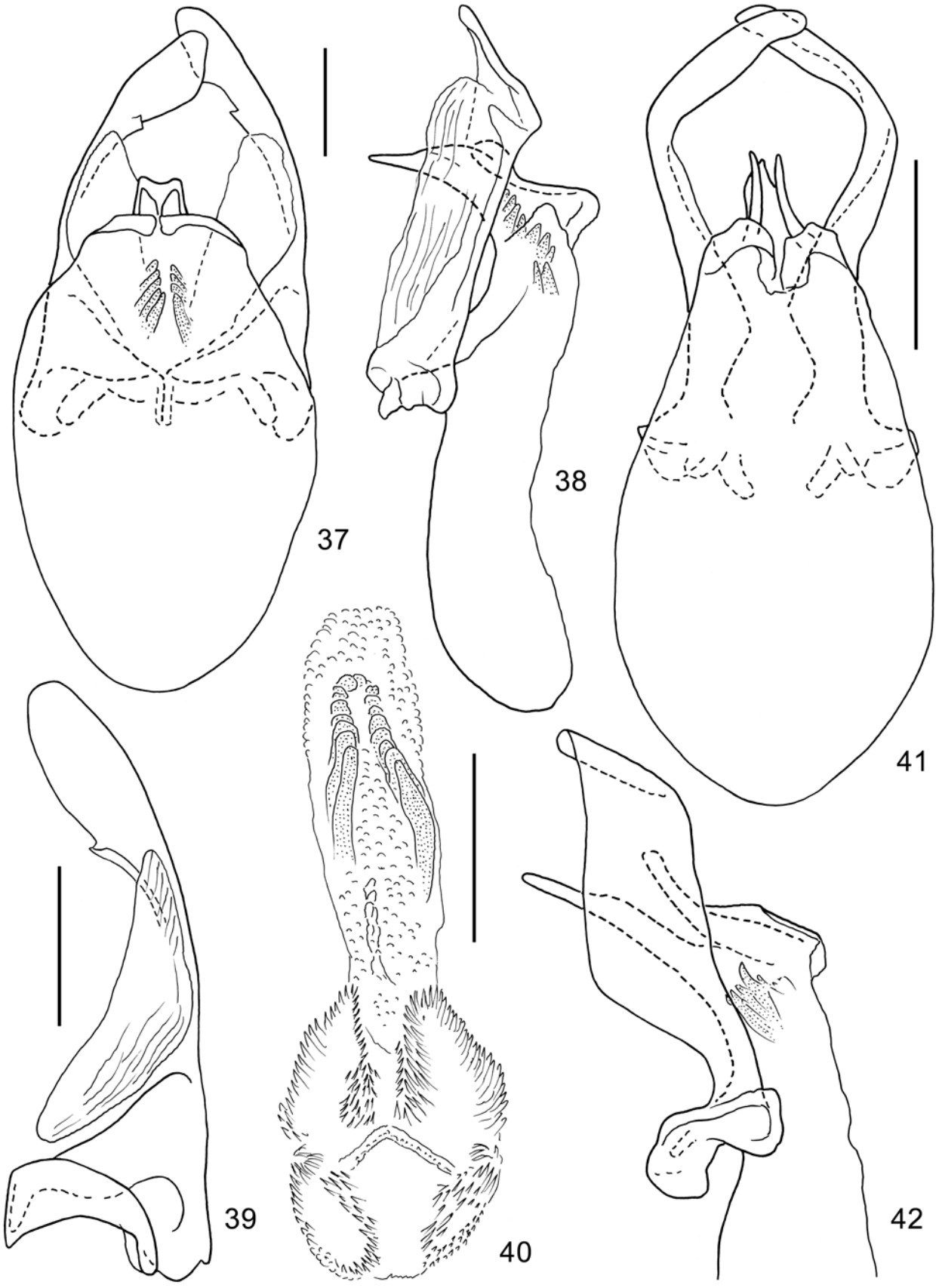
Figs 41-44

Holotype: MHNG; male; MALAYSIA, Sabah, Crocker Range, Tenom env., Kalang Waterfall env. 18.VI.1998, J. Kodada & F. Čiampor lgt.

Diagnosis: Medium-large species with bicolorous elytra; antennomere IV much longer than antennomere III; elytra lacking basal striae; metaventrite with strigulate microsculpture and antecoxal puncture rows; ventrite I with submetacoxal areas as long as half of shortest interval between its margin and apical margin; aedeagus symmetrical, with ventral branch of apical process long, moderately inflexed, dorsal branches long and narrow, basal bulb large and oval, parameres expanded ventrally, with apical third incurved mesally, internal sac with complex pattern of denticles, scale-like structures and larger teeth forming compact apical bunch.

Etymology: The species epithet is a Malay word meaning reasonable.

Description: Length 1.55 mm, width 1.04 mm. Head, pronotum, anterior two thirds of elytra, venter of thorax, femora, and most of abdomen nearly evenly light brown. Apical third of elytra, apex of abdomen, tibiae, tarsi, and antennae yellowish. Length/width ratios of antennomeres as in related members of the group.



Figs 37-42. *Scaphisoma* spp., genital characters. (37) *S. makar* sp. nov., aedeagus in dorsal view, scale = 0.1 mm. (38) ditto, aedeagus in lateral view. (39) ditto, paramere in ventral view, scale = 0.1 mm. (40) ditto, internal sac, scale = 0.1 mm. (41) *S. makkul* sp. nov., aedeagus in dorsal view, scale = 0.2 mm. (42) ditto, aedeagus in lateral view, without proximal part of basal bulb.

Pronotum and elytra lacking microsculpture. Pronotum with anterior margin bead broadly interrupted; lateral margins slightly arcuate; lateral margin stria exposed in dorsal view, impunctate; discal punctation dense and very fine, consisting of well delimited punctures, with puncture intervals usually about two to four times as large as puncture diameters. Tip of scutellum exposed. Elytron moderately narrowed apically, with lateral margin arcuate, lateral margin stria exposed, finely punctate; apical margin truncated, with distinct crenulation near inner angle; inner apical angle situated posteriad of level of outer angle; sutural margin not raised; sutural stria starting at side of pronotal lobe, shallow, slightly converging to suture apically; adsutural area flat, about 0.05 mm wide shortly posteriad of scutellar tip, with single puncture row; discal punctation near base about as fine as pronotal punctation, in middle much coarser than pronotal punctation, consisting of poorly delimited punctures, with puncture intervals mostly about two to four times as large as puncture diameters. Hypomeron and mesanepisternum lacking microsculpture, smooth. Mesoventrite impunctate. Mesepimeron about three times as long as wide and about 1.5 times as long as interval between its tip and mesocoxa. Metaventrite with strigulate microsculpture, hardly convex between mesocoxae, flattened on apicomedian area, lacking impressions and with dense and rather fine punctation, very finely punctate on lateral areas and between mesocoxae; antecoxal puncture rows present; submesocoxal area 0.05 mm long, about as long as half of shortest interval between its margin and metacoxa; submesocoxal line convex, punctate. Metanepisternum lacking obvious microsculpture, flat, narrowed anteriad, with suture somewhat impressed, rounded near angles, oblique in middle section. Tibiae straight. Abdomen with strigulate microsculpture, very finely and sparsely punctate. Ventrite I with submetacoxal line convex, finely punctate; submetacoxal area 0.08 mm long, as long as half of shortest interval between its margin and apical margin of ventrite.

Male. Protarsomeres I to III strongly widened, tarsomere I nearly as wide as apex of protibia; mesotarsomeres I and II distinctly widened. Lobe of ventrite VI narrow, about 0.13 mm long, with obtuse tip. Aedeagus (Figs 41-44) 0.85 mm long.

Comments: This species may be easily distinguished by its elytral coloration. In addition, it differs from other members of the group by the ventrally expanded parameres and the internal sac bearing dense bunch of strongly sclerotized teeth, in combination.

***Scaphisoma malayanum* Löbl, 1986**

Scaphisoma malayanum Löbl, 1986: 99.

Material examined: OUMNH; 1 male, Lahad Datu Ulu Segame Forest Reserve, Danum Valley Forest Centre, N 04°57.9' E 117°48.1', 200 m, lowland mixed Dipterocarp forest, 22-23.XI.2005, D. Mann, E. Slade & J. Villanueva, OUMNH 2006-051.

Comments: Until now, the only known specimen of this species was the holotype, from Sungei Buloh, Selangor.

Distribution: Malaysia: Sabah, West Malaysia.

***Scaphisoma mindanaosum* Pic, 1926**

Scaphosoma mindanaosum Pic, 1926: 2.
Scaphosoma mindanaosum; Löbl, 1972: 107.
Scaphisoma mindanaosum; Löbl, 1981b: 108.
Scaphisoma mindanaosum; Löbl, 2015b: 134.
Scaphisoma mindanaosum; Löbl & Ogawa, 2016: 1429.

Material examined: MHNG; 2; Mount Kinabalu, 1500 m, 25 and 30.IV.1987, D. Burckhardt & I. Löbl. – 1; Mount Kinabalu Nat. Park, X.1990, G. de Rougemont. – 1; Kinabalu Nat. Park, Headquarters, at Liwagu River, 1500 m, 16.V.1987, A. Smetana. – 1; Poring Hot Spring, 550-600 m, 9.V.1987, D. Burckhardt & I. Löbl. – 1; Kinabatangan River env., 3-6.VI.1998, J. Kodada & F. Čiampor. – 1; East Mount Kinabalu, road Ranau-Kota Kinabalu, 1150 m, 24.V.1987, D. Burckhardt & I. Löbl. – 1; Crocker Range, 1200 m, km 63 road Kota Kinabalu-Tambunan, 19.V.1987, D. Burckhardt & I. Löbl. – 10, Crocker Range, Tenom env., Kalang Waterfall env., 18.VI.1998, J. Kodada & F. Čiampor. – 45, Crocker Range, Gunung Emas, 23.V.1996, J. Kodada & F. Čiampor. – 15, Sabalangan River env., ca 25 km SE Sapulut, 26.VI.1998, J. Kodada & F. Čiampor. – 2; Sepilok, Kabili-Sepilok Forest Reserve, 30 m, 18.III.1983, B. Hauser. – 5, Batu Punggul Resort env., 24.VI.-1.VII.1996. – SMNS; 3, Crocker Range, NW Kenlugau, 900-1200 m, 16-20. XI.1996, W. Schawaller.

Distribution: Indonesia: Kalimantan, Sumatra; Laos; Malaysia: Sabah; Philippines: Luzon, Mindanao, Palawan; Vietnam.

***Scaphisoma mujur* sp. nov.**

Figs 45-48

Holotype: MHNG; male; Malaysia, Sabah, Crocker Range, Gunung Emas, 23.V.1996, J. Kodada & F. Čiampor Lgt.

Paratypes: MHNG; 3 males; Mount Kinabalu National Park, Headquarters at Liwagu River, 1510 m, 13.VIII.1988, A. Smetana.

Diagnosis: Medium large species with dorsum of body brown; antennomere IV much longer than antennomere III; elytra lacking basal striae; metaventrite with strigulate microsculpture and antecoxal puncture rows; ventrite I with submetacoxal areas as long as half of shortest interval between its margin and apical margin; aedeagus symmetrical, with ventral branch of apical process short and oblique, moderately inflexed, dorsal branches long and narrow, basal bulb large and oval, parameres expanded dorsally and ventrally, lobed, in dorsal view curved and widened apically, internal sac bearing complex pattern of denticles, and two apical rows of long sclerites.

Etymology: The species epithet means fortunate in Malay.

Description: Length 1.52-1.74 mm, width 1.05-1.15 mm. Head, pronotum, elytra, venter of thorax and most of abdomen nearly evenly brown. Apical abdominal segments and appendages light brown to yellowish. Length/width ratios of antennomeres as in related members of the group. Pronotum and elytra lacking microsculpture. Pronotum with anterior margin bead broadly interrupted; lateral margins slightly arcuate; lateral margin stria exposed in dorsal view, punctate; discal punctation dense and very fine, consisting of well delimited punctures, with puncture intervals usually about two to four times as large as puncture diameters. Tip of scutellum exposed. Elytron moderately narrowed apically, with lateral margin arcuate, lateral margin stria exposed, finely punctate; apical margin truncated, lacking distinct crenulation near inner angle; inner apical angle at level of outer angle; sutural margin not raised; sutural stria starting at side of pronotal lobe, shallow, parallel to suture near base, slightly converging in apical two thirds; adsutural area flat, about 0.05 mm wide shortly posteriad of scutellar tip, with single puncture row; discal punctation all over much coarser than pronotal punctation, consisting of well delimited punctures, with puncture intervals about as large as to three times as large as puncture diameters. Hypomeron and mesanepisternum lacking microsculpture, smooth. Mesoventrite impunctate. Mesepimeron about four to five times as long as wide and two times as long as interval between its tip and mesocoxa. Metaventrite with strigulate microsculpture evanescent on lateral areas, slightly convex between mesocoxae, impressed on apicomedian area, very finely punctate; antecoxal puncture rows present; submesocoxal area 0.04 mm long, about as long as fourth of shortest interval between its margin and metacoxa; submesocoxal line convex, punctate. Metanepisternum lacking obvious microsculpture, flat, narrowed anteriad, with suture somewhat impressed, rounded near angles, oblique in middle section. Protibiae and metatibiae straight, mesotibiae slightly curved. Abdomen with strigulate microsculpture, very finely and sparsely punctate. Ventrite I with submetacoxal line convex, finely punctate; submetacoxal area 0.06-0.07 mm long, about as long as half of shortest interval between its margin and apical margin of ventrite.

Male. Protarsomeres I to III distinctly widened, tarsomere I narrower than apex of protibia; mesotarsomeres I to III distinctly widened. Lobe of ventrite VI triangular, 0.08 mm long. Aedeagus (Figs 45-48) 0.91-0.96 mm long.

Comments: This new species may be distinguished from other members of the *S. haemorrhoidale* group by the aedeagal characters, notably by the shape of the parameres as seen in ventral view, and by the structures of the internal sac with long, apically diverging narrow teeth in combination with the presence of a narrow mesal sclerite.

Distribution: Malaysia: Sabah.

Scaphisoma newtoni sp. nov.

Figs 49, 50

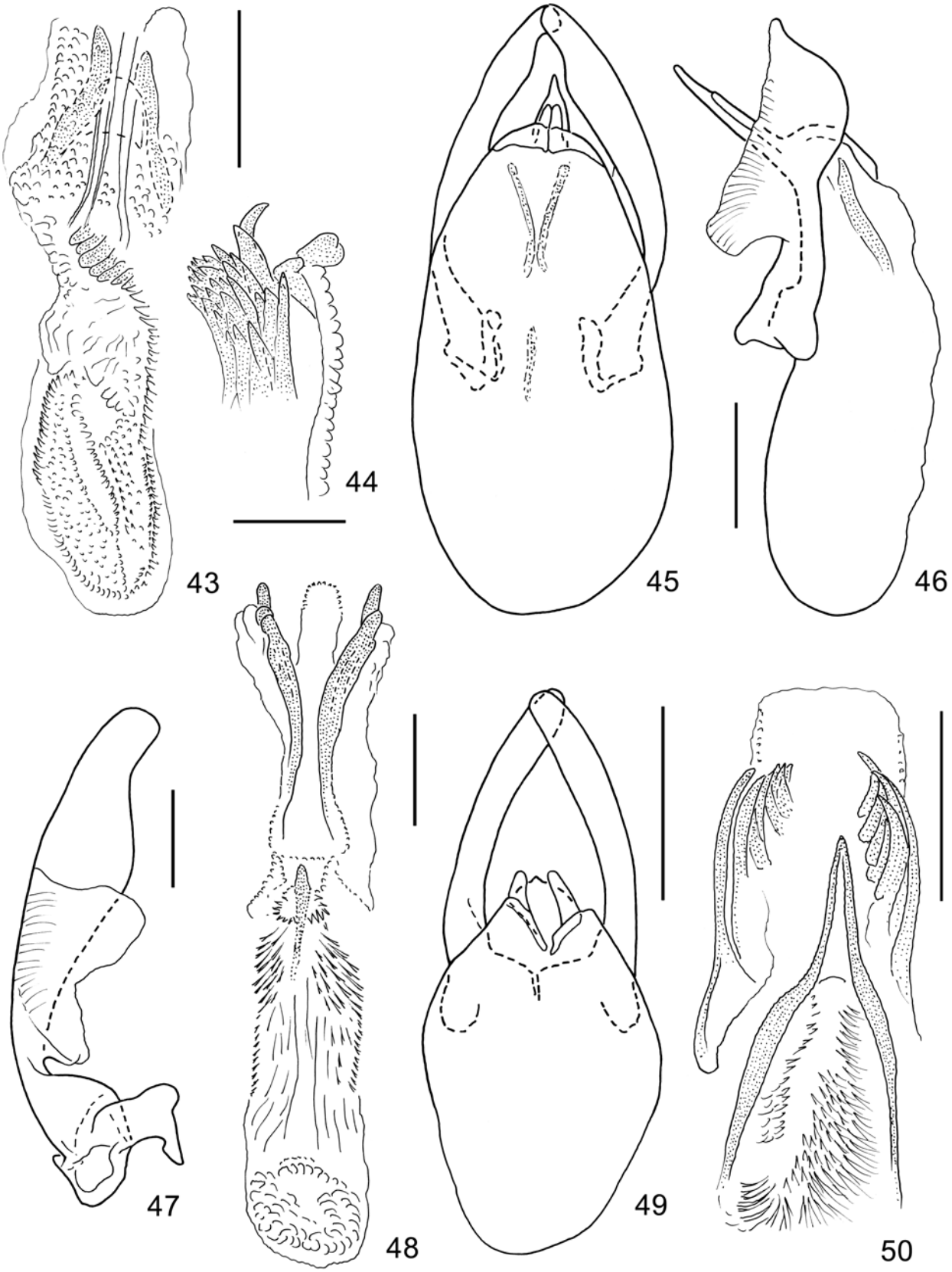
Holotype: MHNG; male; SABAH: Crocker Ra. 1350 m, km 60 Kota Kinabalu-Tambunan 17.V.1987 Burckhardt – Löbl.

Paratype: MHNG; 1 male; Tamis, Hwy A1 10 km NW Kinabalu Park entry, 1100 m, 24.V.1987, A. Smetana.

Diagnosis: Small species with dorsum of body reddish-brown; antennomere IV much longer than antennomere III; elytra lacking basal striae; metaventrite with strigulate microsculpture, antecoxal puncture rows absent; ventrite I with submetacoxal areas about as long as half of shortest interval between its margin and apical margin; aedeagus symmetrical, with ventral branch of apical process short, dorsal branches short and comparatively wide, basal bulb large and oval, parameres throughout evenly wide, lacking lobes, internal sac bearing bunch of fine spine-like structures delimited by lateral branches of bifid mesal sclerite, and with two apical rows of long, spine-like sclerites.

Etymology: The species is named in honour of Alfred F. Newton of Chicago, Illinois, USA.

Description: Length 1.28-1.30 mm, width 0.90 mm. Head, pronotum, elytra, venter of thorax and most of abdomen nearly evenly dark reddish-brown. Apical abdominal segments and appendages light brown to yellowish. Length/width ratios of antennomeres as in related members of the group. Pronotum and elytra lacking microsculpture. Pronotum with anterior margin bead broadly interrupted; lateral margins slightly arcuate; lateral margin stria exposed in dorsal view, impunctate; discal punctation dense and fine, consisting of rather well delimited punctures, with puncture



Figs 43-50. *Scaphisoma* spp., genital characters. (43) *S. makkul* sp. nov., internal sac, scale = 0.1 mm. (44) ditto, apical part of internal sac in lateral view, scale = 0.05 mm. (45) *S. mujur* sp. nov., aedeagus in dorsal view, scale = 0.2 mm. (46) ditto, aedeagus in lateral view. (47) ditto, paramere in ventral view, scale = 0.1 mm. (48) ditto, internal sac, scale = 0.1 mm. (49) *S. newtoni* sp. nov., aedeagus in dorsal view, scale = 0.2 mm. (50) ditto, internal sac, scale = 0.1 mm.

intervals usually about as large to twice as large as puncture diameters. Tip of scutellum exposed. Elytron moderately narrowed apically, with lateral margin arcuate, lateral margin stria exposed, finely punctate; apical margin rounded, crenulation near inner angle present; inner apical angle at level of outer angle; sutural margin raised; sutural stria starting at side of pronotal lobe, shallow, parallel to suture near base, slightly converging in apical two thirds; adsutural area flat, about 0.06 mm wide shortly posteriad of scutellar tip, with single puncture row; discal punctation all over coarser than pronotal punctation, consisting of dense, well delimited punctures, with puncture intervals about as large to twice as large as puncture diameters. Hypomeron and mesanepisternum lacking microsculpture, smooth. Mesoventrite punctate. Mesepimeron about four times as long as wide and as long as interval between its tip and mesocoxa. Metaventrite with strigulate microsculpture, slightly convex between mesocoxae, weakly impressed on apicomedian area, very finely punctate; antecoxal puncture rows absent; submesocoxal area 0.02 mm long, about as long as eighth of shortest interval between its margin and metacoxa; submesocoxal line slightly convex, punctate. Metanepisternum lacking obvious microsculpture, flat, slightly narrowed anteriad, with suture somewhat impressed, rounded near angles, oblique in middle section. Tibiae straight. Abdomen with strigulate microsculpture, very finely and sparsely punctate. Ventrite I with submetacoxal line convex, finely punctate; submetacoxal area 0.06 mm long, about as long as half of shortest interval between its margin and apical margin of ventrite.

Male. Protarsomeres I to III distinctly widened, narrower than apices of protibiae. Mesotarsomeres I and II slightly widened. Aedeagus (Figs 49, 50) 0.52 mm long.

Comments: This species may be distinguished from other members of the *S. haemorrhoidale* group by the evenly wide and arcuate parameres in combination with the short and separated dorsal branches of the apical process of the median lobe, and the internal sac with a bifid mesal sclerite and two apical bunches of long, curved teeth.

Distribution: Malaysia: Sabah.

Scaphisoma obliquemaculatum Motschulsky, 1863

Scaphisoma obliquemaculatum Motschulsky, 1863: 435.
Pseudoscaphosoma atrithorax Pic, 1916b: 7.
Scaphosoma rufomaculatum Pic, 1921: 5.
Scaphosoma luteoapicale Pic, 1923a: 17.
Scaphisoma obliquemaculatum; Löbl, 1971: 984.
Scaphisoma obliquemaculatum; Löbl, 1975: 273.
Scaphisoma obliquemaculatum; Löbl, 2015b: 135.

Material examined: MHNG; 4; Sabalangan River env., ca 25 km SE Sapulut, 26.VI.1998, J. Kodada & F. Čiampor. – MHNG; 1; Crocker Range, Gunung Emas, 23.V.1998, J. Kodada & F. Čiampor.

Distribution: Indonesia: Java, Kalimantan, Sulawesi, Sumatra, Sumbawa; Malaysia: Sabah, Sarawak; Mascarene Archipelago; Sri Lanka; Thailand; Vietnam.

Scaphisoma obsoletum sp. nov.

Figs 51-53

Holotype: MHNG; male; Malaysia, Sabah, Batu Punggul Resort env., 24.VI.-1.VII.1996, 11c. vegetation debris and forest floor litter accumulated around large trees near river.

Paratypes: MHNG; 6 males; with same data as holotype.

Diagnosis: Small species with dorsum of body reddish-brown; antennomere IV much longer than antennomere III; elytra lacking basal striae; metaventrite with strigulate microsculpture, antecoxal puncture rows absent; ventrite I with submetacoxal areas about as long as half of shortest interval between its margin and apical margin; aedeagus symmetrical, with ventral branch of apical process short, dorsal branches short and comparatively wide, basal bulb large and oval, parameres gradually narrowed from bases to mid-length, with large oblique lobes and expanded in apical halves, internal sac lacking sclerites, with very fine and dense scale-like structures.

Etymology: The species epithet is a Latin adjective meaning unclear.

Description: Length 1.21-1.25 mm, width 0.80-0.83 mm, Head, pronotum, elytra, venter of thorax and most of abdomen nearly evenly dark brown. Apical abdominal segments and appendages light brown to yellowish. Length/width ratios of antennomeres as in related members of the group. Pronotum and elytra lacking microsculpture. Pronotum with anterior margin bead broadly interrupted; lateral margins arcuate; lateral margin stria exposed in dorsal view, impunctate; discal punctation dense and very fine, consisting of rather well delimited punctures, with puncture intervals usually about two to four times as large as puncture diameters. Tip of scutellum exposed. Elytron moderately narrowed apically, with lateral margin evenly arcuate, lateral margin stria exposed, finely punctate; apical margin rounded, crenulation near inner angle present; inner apical angle at level of outer angle; sutural margin not raised; sutural stria starting at side of pronotal lobe, shallow, parallel to suture near base, slightly converging in apical two thirds; adsutural area flat, about 0.04 mm wide shortly posteriad of scutellar tip, with single puncture row; discal punctation coarser than pronotal punctation, consisting of rather dense, well delimited punctures, with puncture intervals mostly about two to

three times as large as puncture diameters. Hypomeron and mesanepisternum lacking microsculpture, smooth. Mesoventrite punctate. Mesepimeron about five times as long as wide and two times as long as interval between its tip and mesocoxa. Metaventrite with strigulate microsculpture evanescent on anteriolateral areas, slightly convex between mesocoxae, weakly impressed on apicomedian area, very finely punctate; antecoxal puncture rows present; submesocoxal area 0.02 mm long, about as long as sixth of shortest interval between its margin and metacoxa; submesocoxal line parallel, punctate. Metanepisternum lacking obvious microsculpture, flat, slightly narrowed anteriad, with suture somewhat impressed, rounded near angles, oblique in middle section. Tibiae straight. Abdomen with strigulate microsculpture, very finely and sparsely punctate. Ventrite I with submetacoxal line convex, finely punctate; submetacoxal area 0.04.0.05 mm long, about as long as third of shortest interval between its margin and apical margin of ventrite.
Male. Protarsomeres I to III slightly widened. Aedeagus (Figs 51-53) 0.48-0.50 mm long.

Comments: This species is in external characters very similar to *S. javanum*. It may be readily distinguished by its aedeagal characters, notably by the shape of the parameres and the structures of the internal sac.

Distribution: Malaysia: Sabah.

***Scaphisoma pennatum* sp. nov.**
Figs 54-56

Holotype: MHNG; male; [E. Malaysia] Kinabalu P[ark]. H.Q. [Headquarters] (alt. 1500 m) Sabah Is. Borneo 19.III.1993 T. Ueno leg.

Paratype: MHNG; 1 male; with same data as holotype.

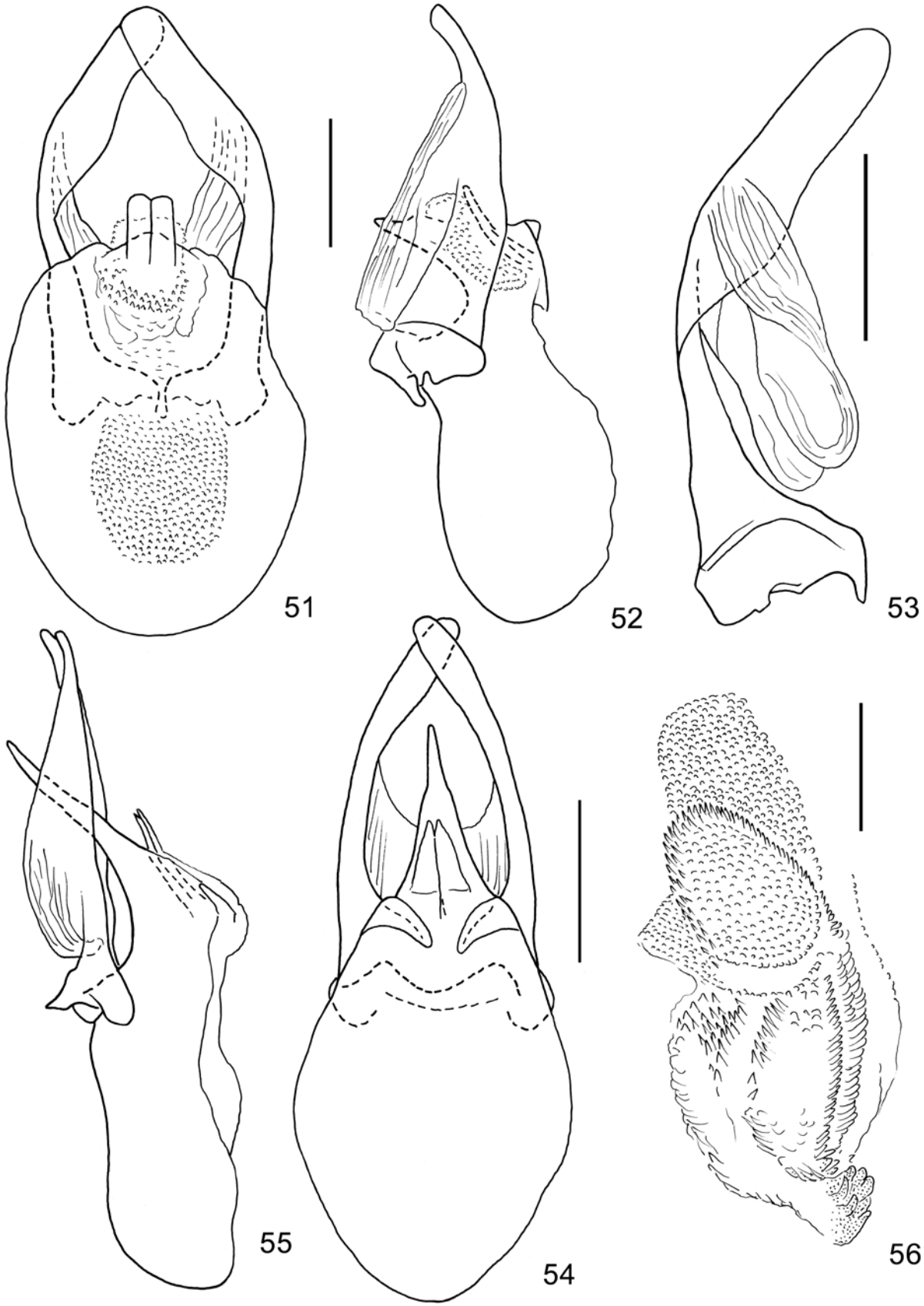
Diagnosis: Rather large species with thorax blackish and elytra with distinctive colour pattern; antennomere IV much longer than antennomere III; elytra lacking basal striae, sutural striae converging; metaventrite with strigulate microsculpture evanescent anteriad, antecoxal puncture rows present; ventrite I with submetacoxal areas nearly as long as half of shortest interval between its margin and apical margin; aedeagus symmetrical, with ventral branch of apical process long, acute, dorsal branches long, gradually narrowed, basal bulb large and oval, parameres lobed, slightly curved and narrowed in middle section, internal sac lacking sclerites, with complex pattern of fine and dense scale-like and denticle-like structures, and with few larger proximal teeth.

Etymology: The species epithet is an adjective derived from the Latin *penna* meaning wing.

Description: Length 1.88-2.10 mm, width 1.33-1.40 mm. Head and thorax blackish. Elytron blackish-brown along basis, suture and lateral margin up to apical fourth, and on transverse band anterior apical fourth; with large reddish spot posteriad of dark basal area reaching to or slightly posteriad of elytral mid-length, apical fourth yellowish. Abdomen dark reddish-brown, with yellowish apical segments. Appendages yellowish to ochraceous. Length/width ratios of antennomeres as in related members of the group. Pronotum and elytra lacking microsculpture. Pronotum with anterior margin bead broadly interrupted; lateral margins arcuate; lateral margin stria concealed in dorsal view, punctate; discal punctation dense and very fine, consisting of well delimited punctures, with puncture intervals mostly two to four times as large as puncture diameters. Tip of scutellum exposed. Elytron weakly narrowed apically, with lateral margin arcuate, lateral margin stria exposed, finely punctate; apical margin truncated, crenulation near inner angle present; inner apical angle situated posteriad of level of outer angle; sutural margin not raised; sutural stria starting at side of pronotal lobe, deep, converging apically; adsutural area flat, about 0.08-0.09 mm wide shortly posteriad of scutellar tip, with two puncture rows in basal third to half, single puncture row in apical half; discal punctation all over distinctly coarser than pronotal punctation, consisting of well delimited punctures, with puncture intervals mostly twice to four times as large as puncture diameters. Hypomeron and mesanepisternum lacking microsculpture, smooth. Mesoventrite impunctate. Mesepimeron about three to four times as long as wide and about 1.5 times as long as interval between its tip and mesocoxa. Metaventrite with strigulate microsculpture evanescent on mesocoxal process and on anterior parts of lateral areas; slightly convex in middle, lacking impressions, very finely punctate; antecoxal puncture rows present; submesocoxal area 0.04 mm long, about as long as sixth of shortest interval between its margin and metacoxa; submesocoxal line convex, punctate. Metanepisternum lacking obvious microsculpture, flat, slightly narrowed anteriad, with suture somewhat impressed, rounded near angles, oblique in middle section. Tibiae straight. Abdomen with strigulate microsculpture, very finely and sparsely punctate. Ventrite I with submetacoxal line convex, finely punctate; submetacoxal area 0.05 mm long, nearly as long as half of shortest interval between its margin and apical margin of ventrite.
Male. Protarsomeres I to III distinctly widened, narrower than apices of protibiae. Aedeagus (Figs 54-56) 1.05-1.07 mm long.

Comments: This new species may be readily distinguished from other members of the *S. haemorrhoidale* group that also possess lobed parameres by its body size in combination with the colour pattern of the elytra.

Distribution: Malaysia: Sabah.



Figs 51-56. *Scaphisoma* spp., genital characters. (51) *S. obsoletum* sp. nov., aedeagus in dorsal view, scale = 0.1 mm. (52) ditto, aedeagus in lateral view. (53) ditto, paramere in ventral view, scale = 0.1 mm. (54) *S. pennatum* sp. nov., aedeagus in dorsal view, scale = 0.2 mm. (55) ditto, aedeagus in lateral view. (56) ditto, internal sac, scale = 0.1 mm.

Scaphisoma wagneri sp. nov.

Figs 57-59

Holotype: MHNG; male; Malaysia, Sabah, Batu Punggul Resort env. 24.VI-1.VII.1996, 1f, intercept trap.

Diagnosis: Medium large species with body reddish-brown; antennomere IV much longer than antennomere III; elytra lacking basal striae; metaventrite with strigulate microsculpture evanescent on lateral areas, antecoxal puncture rows present; ventrite I with submetacoxal areas about as long as half of shortest interval between its margin and apical margin; aedeagus symmetrical, with apical process short, strongly inflexed, acute at tip, dorsal branches robust, separated at basis, basal bulb large and oval, parameres lacking lobes, slightly sinuate in dorsal view, narrowed posteriad of mid-length and somewhat widened at apices, internal sac with median row of denticles and complex pattern of fine and dense scale-like and denticule-like structures.

Etymology: The species is named in honour of William B. Wagner, Chandler, AZ, USA, with whom I had the pleasure to collaborate on a study of the scaphidiines of Arizona.

Description: Length 1.64 mm, width 1.08 mm. Head, pronotum, elytra, venter of thorax and femora nearly evenly dark reddish-brown. Abdomen, tibiae, tarsi and antennae light brown. Length/width ratios of antennomeres as III 12/8: IV 16/7: V 27/8: VI 50/12: VII 55/14: VIII 46/10: IX 56/14: X 65/12: XI 90/13. Pronotum and elytra lacking microsculpture. Pronotum with anterior margin bead broadly interrupted; lateral margins arcuate; lateral margin stria exposed in dorsal view, punctate; discal punctation dense and fine, consisting of rather well delimited punctures, with puncture intervals mostly three to five times as large as puncture diameters. Tip of scutellum exposed. Elytron moderately narrowed apically, with lateral margin arcuate, lateral margin stria exposed, finely punctate; apical margin rounded, crenulation near inner angle present; inner apical angle at level of outer angle; sutural margin not raised; sutural stria starting at side of pronotal lobe, shallow, parallel to suture near base, slightly converging in apical two thirds; adsutural area flat, about 0.05 mm wide shortly posteriad of scutellar tip, with single puncture row; discal punctation all over coarser than pronotal punctation, consisting of dense, well delimited punctures, with puncture intervals mostly twice to three times as large as puncture diameters. Hypomeron and mesanepisternum lacking microsculpture, smooth. Mesoventrite punctate. Mesepimeron about four times as long as wide and about two times as long as interval between its tip and mesocoxa. Metaventrite with strigulate microsculpture evanescent on lateral areas, convex between mesocoxae, flattened on apicomedian area, very finely punctate; antecoxal puncture rows present; submesocoxal area 0.04 mm long, about as long as fourth of shortest interval between its margin and metacoxa; submesocoxal line convex, punctate. Metanepisternum lacking obvious microsculpture, flat, slightly narrowed anteriad, with suture somewhat impressed, rounded near angles, oblique in middle section. Tibiae straight. Abdomen with strigulate microsculpture, very finely and sparsely punctate. Ventrite I with submetacoxal line convex, finely punctate; submetacoxal area 0.07 mm, long as half of shortest interval between its margin and apical margin of ventrite.

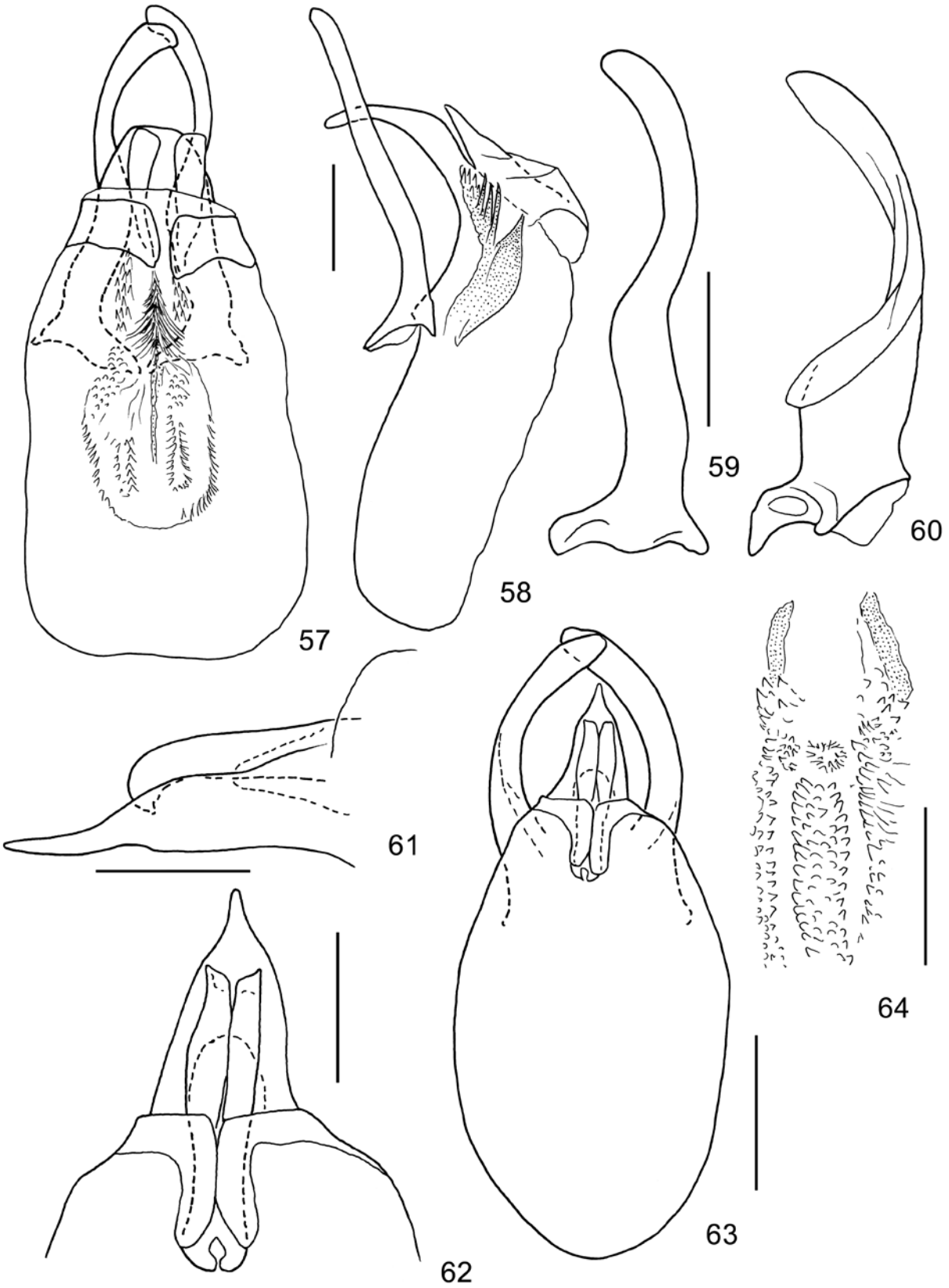
Male. Protarsomeres I to III distinctly widened, narrower than apices of protibiae. Aedeagus (Figs 57-59) 0.59 mm long.

Comments: This species resembles *S. newtoni* in most external characters. It may be easily distinguished by its aedeagal characters, notably by the internal sac bearing a mesal row of denticles and lacking a bifurcate sclerite.

Distribution: Malaysia: Sabah.

Scaphisoma malaccanum species group

Löbl & Ogawa (2016: 1407) established the species group *S. laminatum* for *S. malaccanum* (Pic, 1915), *S. laminatum* Löbl, 1972 and *S. operosum* Löbl, 1990. The group is characterized by the aedeagus having a trifid median lobe with the dorsal branches strongly sclerotized, robust and parallel in repose, proximally joined to the valves of the basal bulb and in part overlapped. The dorsal branches are completely exposed and diverging when the internal sacs are extruded. In addition, these species share expanded and lobed parameres, and lack basal and median sclerotized structures in the internal sacs. The shape of the ventrally pointed apices of the dorsal branches of the median lobe provides a unique feature linking these species. *Scaphisoma hawkeswoodi* Prokofiev, 2013, described from Vietnam, shares these characters and is to be included in the group as suggested by Prokofiev (2013). The latter also considered *S. pocsi* Löbl, 1981 to be closely related while it is a member of the *S. haemorrhoidale* group (Löbl 1981b). All members of the *S. malaccanum* group have parameres bearing an elongate ventral lobe. *Scaphisoma laminatum* was based on a single specimen from the Philippine Island of Panay and was reported subsequently from other Philippine islands (Löbl & Ogawa, 2016: 1407). The specimens from Sabah exhibit considerable variations in several aedeagal characters. Therefore, *S. laminatum* cannot be reliably distinguished from *S. malaccanum* and is placed in synonymy, and the informal group is re-named *malaccanum*.



Figs 57-64. *Scaphisoma* spp., genital characters. (57) *S. wagneri* sp. nov., aedeagus in dorsal view, scale = 0.1 mm. (58) ditto, aedeagus in lateral view. (59) ditto, paramere in ventral view, scale = 0.1 mm. (60) *S. malaysianum* sp. nov., paramere in ventral view, scale = 0.1 mm. (61) ditto, apical part of median lobe in lateral view, scale = 0.1 mm. (62) ditto, apical part of median lobe in dorsal view, scale = 0.1 mm. (63) ditto, aedeagus in dorsal view, scale 0.2 mm. (64) ditto, apical part of internal sac, scale 0.1 mm.

Scaphisoma malaccanum (Pic, 1915)

Baeocera malaccana Pic, 1915a: 32.
Scaphisoma laminatum Löbl, 1972: 97, **syn. nov.**
Scaphisoma malaccanum; Löbl, 1973: 155.
Scaphisoma laminatum; Löbl & Ogawa, 2016: 1407.
Scaphisoma laminatum; Löbl, 2018b: 99.
Scaphisoma laminatum; Löbl, 2021a: 270.

Material examined (only males, in MHNG except otherwise indicated). NHML. – 1; 1, 5 km S Mount Trus Madi, 1800 ft., 18-28.VIII.1977, M. E. Bacchus. – NHML; 1; Sarawak, 4th Division, Gunung Mulu Nat. Park, near Camps, P.M. Hammond & J.E. Marshall, V-VIII.1978. – NHML; 1; Sarawak, 5th Division, Gunung Mulu Nat. Park, Camp 5 Kerangas, IV.1978, N.M. Collins. – 1; Sarawak, Balaga Distr., Long Linau, 19.III.90, A. Riedel. – 27; Mount Kinabalu Nat. Park, Poring Hot Spring, 500 m and 550-600 m, 3. 6. 7. 8. 9. 11.13.V.1987, D. Burckhardt & I. Löbl. – 2; Mount Kinabalu Nat. Park, Poring Hot Spring, Langanan Falls, 900-950 m, 12.V.1987, D. Burckhardt & I. Löbl. – 3; Mount Kinabalu Nat. Park, Poring Hot Spring, nr Bat Cave, 600 m, 10.V.1987, D. Burckhardt & I. Löbl. – 1; Mount Kinabalu Nat. Park, Poring Hot Spring, 480 m, 8.V.1987, A. Smetana. – 1; Mount Kinabalu Nat. Park, Poring Hot Spring, 480 m, 25.viii.1988, A. Smetana. – 2; Mount Kinabalu Nat. Park, Poring Hot Spring, 495 m, 21.VIII.1988, A. Smetana. – 1; Mount Kinabalu Nat. Park, Poring Hot Spring, 510 m, 30.VIII.1988, A. Smetana. – 12; Mount Kinabalu Nat. Park, Poring Hot Spring, 520 m, 15.VIII.1988, A. Smetana; 3; Mount Kinabalu Nat. Park, Poring Hot Spring, area Eastern Ridge Trail, 850 m, 28.viii.1988, A. Smetana. – 2; Mount Kinabalu Nat. Park, Poring Hot Spring, area Eastern Ridge Trail, 1030 m, 17.VIII.1988, A. Smetana. – 3; Poring Hot Spring, Kipungit Creek 2, 490 m, 14.VIII.1988, A. Smetana. – 1; Poring Hot Spring, 9.III.1990, G. de Rougemont. – 3; East Mount Kinabalu, road Ranau-Kota Kinabalu, 1150 m, 24.V.1987, D. Burckhardt & I. Löbl. – 2; Crocker Range, 1200 m, km 63 road Kota Kinabalu-Tambunan, 19.V.1987, Burckhardt & I. Löbl. – 6, Crocker Range, Temon env., Kalang Waterfall env. 18.VI.1988, J. Kodada & F. Čiampor. – 2; Crocker Range, Mawar Waterfalls env., 31.V.1998, J. Kodada & F. Čiampor. – 1; Sepilok Forest Res. near Sandakan, 8.V.68, R.W. Taylor. – 10, Sabalangan River env., ca 25 km SE Sapulut, 26.VI.1998, J. Kodada & F. Čiampor; 28, Batu Punggul Resort env., 24.VI.-1.VII.1996.

Comments: These records are the first from Borneo. Löbl (1973) redescribed and recognized the relationship with *S. laminatum*. He placed it in the *S. pictum* group, based on the shape of the expanded parameres. Two species, *S. malaccanum* and *S. operosum*, have parameres strongly expanded apicodorsally, unlike those of *S. malaysianum* and *S. hawkeswoodi*. However, *S. operosum* may be readily distinguished from *S. malaccanum* by the basomedian area of the ventrite I coarsely punctate, the male ventrite V bearing a fold and a macroseta at each side of the apical process, the acute tip of the ventral branch of the median lobe, and the internal sac with robust apical sclerites.

Distribution: Malaysia: Sabah, Sarawak; West Malaysia, Philippines.

Scaphisoma malaysianum sp. nov.

Figs 60-65

Holotype: MHNG; male: SABAH Mount Kinabalu, 1550 m, 23.IV.1987 Burckhardt – Löbl.

Paratypes: MHNG, except otherwise indicated; all males; 10, with same data but 28.IV. – 10, same data but 29.IV. – 8, same data but 30.IV. – 1; same data but 1550-1650 m, 24.IV. – MHNG; 1; same data but 1450-1550 m, 23.IV. – 2; same data but 1430 m, 22.V. – MHNG; 1; Mount Kinabalu Nat. Park, X.1990, leg. G. de Rougemont. – MHNG; 9, Mount Kinabalu, Liwagu Trail, 1500 m, 22.IV.1987, D. Burckhardt & I. Löbl. – MHNG; 1; Mount Kinabalu, Liwagu River, 1490 m, 3.IX.1988, A. Smetana. – MHNG; 18, same data but 5.VIIII. – MHNG; 1; same but 1500 m, 4.VIII. – MHNG; 2; same but 1520 m, 12.VIII. – MHNG; 1; same but 10.VIII. – MHNG; 2; same but 1500-1550 m, 27.IV.87. – MHNG; 2; same but 1500 m, 18.V.87. – 1; Mount Kinabalu, Silau-Silau Trail, 1550-1650 m, 24.IV.1987, D. Burckhardt & I. Löbl. – 1; Poring Hot Spring, 500 m, 7.V.1987, D. Burckhardt & I. Löbl. – 1 same data but 6.V.; same but 520 m, 9.V.87 A. Smetana. – 1; same data but area Kipungit Creek 2; 490 m, 14.VIII.1988. – 17, Crocker Range, 1600 m, km 51 road Kota Kinabalu-Tambunan, 18.V.1987, D. Burckhardt & I. Löbl. – 2; same data but 1270 m, km 60 road Kota Kinabalu-Tambunan, 17.V. – 2; same data but km 63 road Kota Kinabalu-Tambunan 19.V. – 2; Crocker Range, 1600-1800 m, km 52 of road Kota Kinabalu-Tambunan, 2-5.VII.2002, S. Kurbatov & S. Zimina. – 2; Crocker Range, around km 56 of road Kota Kinabalu-Tambunan, Sunsuron Waterfall env., 1100-1200 m, 8.VI.1996. – 1; Crocker Range, about km 56 road Kota Kinabalu-Tambunan, Mawar Waterfall env., 17.VI.1996. – 4; Crocker Range, Tenom env., Kalang Waterfall env., 18.VI.1998, J. Kodada & F. Čiampor. – 14; Crocker Range, Gunung Emas, 23.V.1998, J. Kodada & F. Čiampor. – 2; Sabalangan River env., ca 25 km SE Sapulut, 26.VI.1998, J. Kodada & F. Čiampor. – 1; Batu Punggul Resort env., 24.VI.-1.VII.1996. – EUMJ; 1; 10 miles from Keningau, 7.III.1993, T. Ueno. – OUMNH; 1; Lahad Datu Ulu Segama For. Res., Coupe 88 logging area, N 04°59.738' E 117°50.165', 250 m, III-IV.2005, FIT no 2, selectiv. logged Dipterocarp forest, Yayasan Sabah Logging Concession, OUMNH 2005-062, E. Slade & J. Villanueva.

Diagnosis: Body size variable, 1.5 to 2.0 mm long, dorsum reddish-brown; antennomeres IV much longer than antennomere III; elytra lacking basal striae; most of metaventrite bearing strigulate microsculpture, antecoxal puncture rows present; ventrite I with submetacoxal areas about as long as half of shortest interval between its margin and apical margin of ventrite; aedeagus symmetrical, median lobe trifid with dorsal branches parallel, robust, at apices acute ventrally, apex of ventral branch acute in lateral view, parameres wide, lacking distinct ventral lobe, expanded dorsally, internal sac covered by fine denticle-like structures and bearing apical plates.

Etymology: The species epithet is derived from Malaysia, the country of origin.

Description: Length 1.55-2.0 mm, width 1.10-1.40 mm (holotype 1.90 mm long, 1.20 mm wide). Head and body light to rather dark reddish-brown, mesoventrite and metaventrite often darkened, elytra in dark specimens often lighter near apices or on entire apical fourth, sometimes somewhat lightened on humeral areas. Legs and antennae usually yellowish. Length/width ratios of antennomeres as in *S. malaccanum*. Pronotum and elytra lacking microsculpture. Pronotum with anterior margin bead broadly interrupted; lateral margins oblique or nearly oblique in basal halves, rounded anteriad; lateral margin stria visible in dorsal view, impunctate; punctation fine, irregular, consisting of shallow, poorly delimited punctures in middle of disc, with puncture intervals usually about two to three times as large as puncture diameters, punctation near basomedian margin denser and consisting usually of well delimited punctures. Tip of scutellum exposed. Elytron narrowed apically, with rounded lateral margin, lateral margin stria exposed, well visible, finely punctate; apical margin slightly rounded, inner apical angle situated posteriad of level of outer angle; sutural margin not raised, sutural stria starting at side of pronotal lobe, curved at base, not extending along basal margin, gradually weakly converging to suture apically; adsutural area flat, with single puncture row; discal punctation fairly coarse, much coarser than pronotal punctation, consisting of poorly delimited punctures, with puncture intervals mostly about as large to three times as large as puncture diameters. Hypomeron and mesanepisternum lacking microsculpture, very finely punctate. Mesepimeron about four times as long as wide and longer than interval between its tip and mesocoxa. Metaventrite with punctation very fine and sparse on prevailing surface, dense and less fine on apicomedian area; with strigulate microsculpture on entire median and apicolateral areas; antero-lateral areas lacking microsculpture; antecoxal puncture rows present; submesocoxal area 0.05-0.06 mm long, about as long as third to fourth of shortest interval between its margin and metacoxa; submesocoxal line convex, punctate. Metanepisternum lacking obvious microsculpture, flat, narrowed anteriad, with suture rounded near angles, oblique in middle section. Protibiae and metatibiae straight, mesotibiae weakly curved. Exposed tergites and ventrites bearing distinct strigulate microsculpture, very finely punctate. Ventrite I with submetacoxal area 0.06-0.08 mm long, about as long as half of shortest interval between its margin and apical margin of ventrite; submetacoxal line convex, distinctly punctate.
Male. Protibiae and mesotibiae slightly curved in larger males, straight or nearly straight in small males. Protarsomeres I to III strongly widened, protarsomere I about as wide as apex of protibia; mesotarsomeres I and II distinctly widened. Metaventrite impressed and with patch of long setae on apicomedian area in large specimens, flattened and with short pubescence in small specimens. Lobe of ventrite V narrowly rounded. Aedeagus (Figs 60-65) 0.78-1.23 mm long.

Comments: This species is conspicuously variable in size and sexual features, like *S. malaccanum*. It may be distinguished from the allied *S. malaccanum*, *S. operosum* and *S. hawkeswoodi* by the parameres not expanded dorsally and possessing a small ventral lobe, in combination. Unlike *S. malaccanum*, the parameres of the new species lack a lateral antebasal denticle and the tip of the ventral branch of the median lobe is acute. These two characters are shared with *S. hawkeswoodi*. In addition to the aedeagal characters this new species differs from *S. operosum* by the finely punctate basomedian area of ventrite I and the male ventrite V lacking folds and macrosetae on each side of the apical lobe. Nearly all specimens of *S. malaysianum* have been found in sites above 1000 m in altitude on Mount Kinabalu and the Crocker Range, while nearly all specimens of *S. malaccanum* come from samples taken at altitudes below 1000 m.

Distribution: Malaysia: Sabah.

Scaphisoma mirandum species group

This informal group is here proposed for six Asian species, *S. amicale* sp. nov., *S. cippum* Löbl, 1980, *S. cursitor* sp. nov., *S. cursor* Löbl, 1975, *S. foveatum* Löbl, 1987, *S. mirandoides* sp. nov. and *S. mirandum* Löbl, 1990. They have an asymmetrical aedeagus with the dorsal plate of the apical process reduced, forming a valve in part covering the ostium, and they possess a simple internal sac bearing a robust rod surrounding the ejaculatory duct.

Scaphisoma amicale sp. nov.

Figs 66, 67

Holotype: MHNG; male; BORNEO Sabah Mount Kinabalu N[ational]. P[ark]. Por[ing]. H[ot]. S[ring].

area Eastern Ridge Tr[ail]. 790 m 17.8.[19]88 A. Smetana [B119].

Paratypes: MHNG; 8 males, 5 females; with same data as holotype. – 1 male, 1 female; same data but 1000 m, 28.8.88. – 1 female; same data but 850 m, 24.8.88. – 1 female; Poring Hot Spring, 500 m, 6.V.1987, D. Burckhardt & I. Löbl. – 1 female; Sabalangan River env., ca 25 km SE Sapulut, 26.VI.1998, J. Kodada & F. Čiampor.

Diagnosis: Medium large species with body reddish-brown to blackish; antennomere IV much longer than antennomere III; elytra lacking basal striae; metaventrite lacking microsculpture and antecoxal puncture rows, with foveiform impression; ventrite I with submetacoxal areas about as long as fourth of shortest interval between its margin and apical margin of ventrite; aedeagus asymmetrical, with apical process strongly inflexed, gradually narrowed in lateral view and acute at tip, basal bulb comparatively small, parameres in dorsal view arcuate and evenly narrow, sinuate in lateral view, internal sac with robust rod angulate in basal section (lateral view) and expanded apically.

Etymology: The species epithet is a Latin adjective meaning friendly.

Description: Length 1.40-1.56 mm, width 0.96-1.05 mm. Head and thorax dark reddish-brown to blackish, most of elytra as thorax or somewhat lighter, apical fourth of elytra with yellowish transverse band extended nearly to apical margins. Abdomen dark brown with yellowish apical segments. Femora and tibiae reddish-brown, tarsi and antennae yellowish. Length/width ratios of antennomeres as: III 11/8: IV 33/7: V 48/7: VI 42/7: VII 47/12: VIII 36/8: IX 45/12: X 40/13: XI 47/13. Antennomeres VI to XI with sparse long setae. Pronotum and elytra not microsculptured. Pronotum with anterior bead broadly interrupted; lateral margins evenly rounded in dorsal view; lateral margin carinae concealed or hardly visible in dorsal view; lateral margin striae punctate; discal punctation extremely fine and sparse, hardly visible at 40 times magnification. Tip of scutellum exposed. Elytra notably narrowed apically, with lateral margins arcuate; lateral margin carina distinct in dorsal view; lateral margin striae punctate, apical margin truncated, apical crenulation absent, apical inner angle at level of outer apical angle; sutural margin not raised; adsutural area flat, with single puncture row; sutural striae converging apically, curved along pronotal lobe, evanescent laterad of pronotal lobe, basal striae absent; discal punctation shallow, irregular, dense and very fine, punctures in part similar to pronotal punctures, puncture intervals much larger than puncture diameters. Hypomeron smooth. Mesoventrite and mesanepisternum with few extremely fine punctures. Mesepimeron about four times as long as wide and two times as long as shortest interval to mesocoxa. Metaventrite lacking microsculpture, weakly convex between mesocoxae, with foveiform impression in centre followed by impressed subtriangular area bearing a few distinct punctures; remaining punctation of metaventrite very fine and sparse; antecoxal puncture rows absent; submesocoxal line weakly convex, margined by distinct punctures not extended laterally along mesepimera; submesocoxal area about 0.06 mm, slightly longer than half of shortest interval to metacoxae. Metanepisternum lacking obvious microsculpture, flat, weakly narrowed anteriad, with suture impressed, slightly sinuate. Tibiae straight. Abdomen, ventrite I excepted, with punctulate microsculpture, and very finely punctate. Ventrite I lacking microsculpture, with submetacoxal line convex, distinctly punctate; submetacoxal area 0.05 mm long, about as long as fourth of shortest interval between its margin and apical margin of ventrite.

Male. Protarsomeres I to III moderately widened, narrower than apex of protibiae. Mesotarsomeres not modified. Ventrite VI with apical lobe notched, about 0.10 mm long. Aedeagus (Figs 66, 67) 0.55-0.64 mm long.

Comments: The species may be easily distinguished by its elytral colour pattern in combination with the very fine elytral punctation. Its metaventral characters are also diagnostic. The aedeagal characters suggest a close relationship with *S. cursor* and *S. cippum*.

Distribution: Malaysia: Sabah.

***Scaphisoma cursitor* sp. nov.**

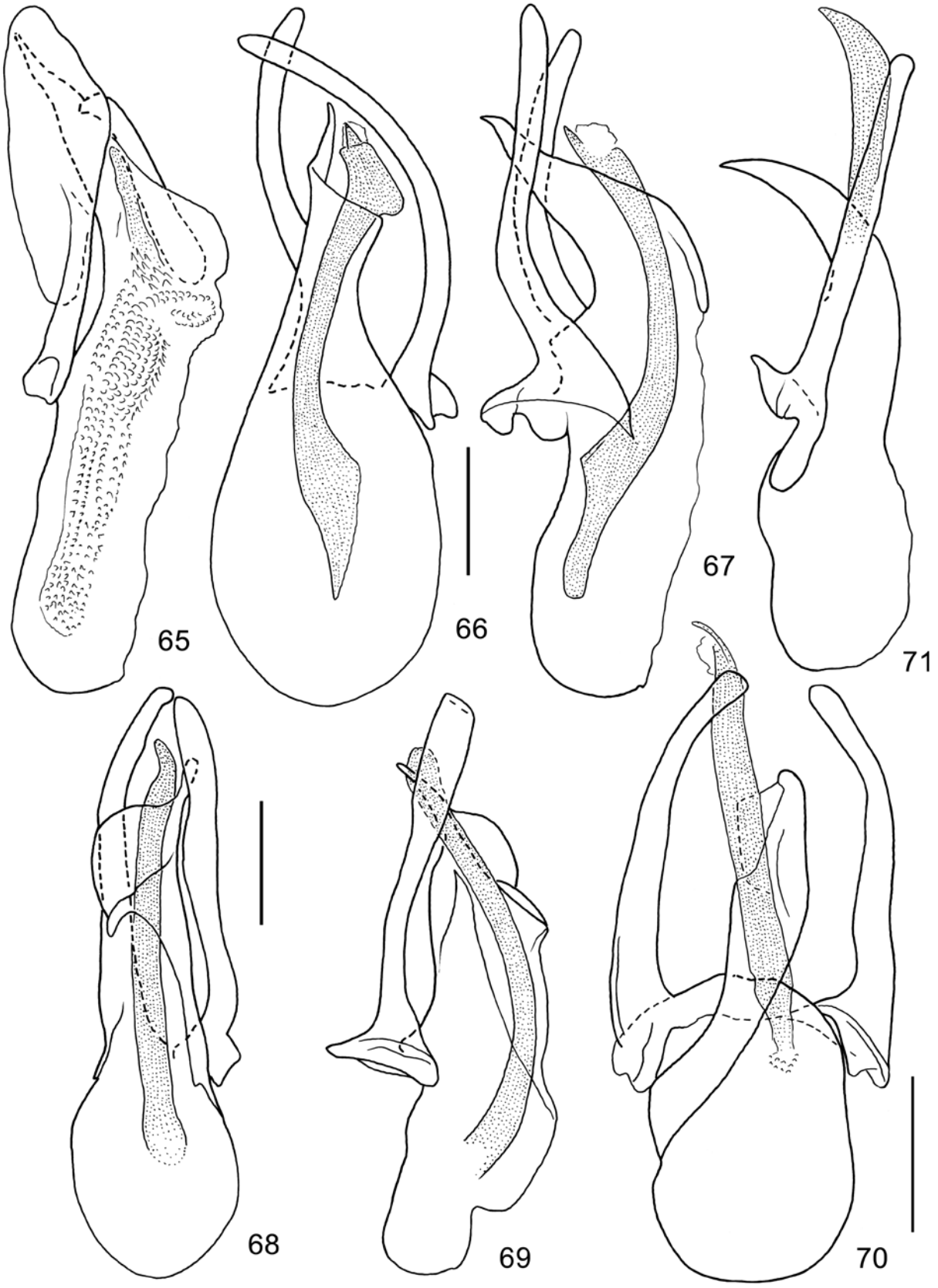
Figs 68, 69

Holotype: MHNG; male; Malaysia, Sabah, Sabalangan river env., ca. 25 km SE Sapulut, 26.06.1998 J. Kodada & F. Čiampor lgt.

Paratypes: MHNG; 2 males; with same data as holotype. – 1 male, 5 females; Batu Punggul Resort env., 24.VI-1.VII.1996.

Diagnosis: Medium-large species with blackish body; antennomere IV much longer than antennomere III; elytra lacking basal striae; metaventrite lacking microsculpture and antecoxal puncture rows, with median fovea; ventrite I with submetacoxal areas about as long as third of shortest interval between its margin and apical margin of ventrite; aedeagus asymmetrical, with apical process not inflexed, abruptly narrowed near acute tip, basal bulb small, parameres in dorsal view sinuate and uneven, weakly curved in lateral view, internal sac with rod nearly evenly robust, narrowed near tip.

Etymology: The species epithet is a Latin noun meaning runner.



Figs 65-71. *Scaphisoma* spp., genital characters. (65) *S. malaysianum* sp. nov., aedeagus in lateral view, scale = 0.1 mm. (66) *S. amicale* sp. nov., aedeagus in dorsal view, scale = 0.1 mm. (67) ditto, aedeagus in lateral view. (68) *S. cursitor* sp. nov., aedeagus in dorsal view, scale = 0.1 mm. (69) ditto, aedeagus in lateral view. (70) *S. mirandoides* sp. nov., aedeagus in dorsal view, scale = 0.2 mm. (71) ditto, aedeagus in lateral view.

Description: Length 1.35-1.50 mm, width 0.91-1.02 mm. Head and thorax blackish, elytra about as thorax or somewhat lighter, with reddish shine. Abdomen reddish-brown with yellowish apical segments. Femora reddish-brown, tibiae, tarsi and antennae yellowish. Length/width ratios of antennomeres as: III 9/7: IV 30/6: V 44/6: VI 33/6: VII 44/10: VIII 36/8: IX 48/12: X 42/13: XI 47/15. Antennomeres VI to XI with sparse long setae. Pronotum and elytra not microsculptured. Pronotum with anterior bead broadly interrupted; lateral margins evenly rounded in dorsal view; lateral margin carinae concealed in dorsal view; lateral margin striae punctate; discal punctation extremely fine and sparse, hardly visible at 40 times magnification. Tip of scutellum exposed. Elytra notably narrowed apically, with lateral margins arcuate; lateral margin carina distinct in dorsal view; lateral margin striae punctate, apical margin truncated, not crenulate at inner angle; inner apical angle at level of outer apical angle; sutural margin not raised; adsutural area flat, with single puncture row; sutural striae converging apically, curved along pronotal lobe, evanescent laterad of pronotal lobe, basal striae absent; discal punctation shallow, irregular, dense and very fine, punctures in part similar to pronotal punctures, puncture intervals mostly much larger than puncture diameters. Hypomeron smooth. Mesanepisternum with few extremely fine punctures. Mesepimeron about three times as long as wide and 1.5 times as long as shortest interval to mesocoxa. Metaventrite lacking microsculpture, weakly convex between mesocoxae, with foveiform impression in centre followed by weakly impressed subtriangular area bearing a few distinct punctures; remaining punctation very fine and sparse; antecoxal puncture rows absent; submesocoxal line weakly convex, margined by distinct punctures not extended laterally along mesepimera; submesocoxal area about 0.04 mm, slightly longer than half of shortest interval to metacoxae. Metanepisternum lacking obvious microsculpture, flat, weakly narrowed anteriad, with suture weakly rounded. Tibiae straight. Abdomen with punctulate microsculpture, very finely punctate. Ventrite I with submetacoxal line convex, distinctly punctate; submetacoxal area 0.05 mm long, about as long as third of shortest interval between its margin and apical margin of ventrite.

Male. Protarsomeres I to III moderately widened, narrower than apex of protibiae. Mesotarsomeres not modified. Ventrite VI with triangular apical lobe, about 0.05 mm long. Aedeagus (Figs 68, 69) 0.45-0.47 mm long.

Comments: The aedeagal characters suggest relationships with *S. amicale* and *S. cursor* Löbl, 1975, described from Sarawak. It may be distinguished from *S. amicale* by the dark elytra and from *S. cursor* by parameres widened apically and the distinctive shape of the dorsal valve of the median lobe. In addition, the metaventral fovea is not elongate, the lines are narrower, and the metanepisterna are weakly narrowed anteriad.

Distribution: Malaysia: Sabah.

***Scaphisoma mirandoides* sp. nov.**

Figs 70, 71

Holotype: MHNG; male; SABAH: E Mount Kinabalu 1150 m, r[ou]te Ranau-Kota Kinabalu, 24.V.1987, Burckhardt – Löbl.

Diagnosis: Medium-large species with blackish body; antennomere IV much longer than antennomere III, antennomere XI shorter than antennomere X; elytra lacking basal striae; metaventrite with strigulate microsculpture, lacking antecoxal puncture rows and median fovea; ventrite I with submetacoxal areas about as long as shortest interval between its margin and apical margin of ventrite; aedeagus asymmetrical, with apical process inflexed, acute in lateral view, basal bulb large, parameres in dorsal view sinuate, uneven and weakly curved, straight in lateral view, internal sac with rod nearly evenly robust, narrowed at base and at tip.

Etymology: The species epithet is derived from the name of the related *S. mirandum*.

Description: Length 1.85 mm, width 1.21 mm. Head and body evenly light ochraceous, appendages yellowish. Length/width ratios of antennomeres as: III 17/9: IV 48/5: V 60/6: VI 58/8: VII 74/12: VIII 66/9: IX 83/10: X 73/11: XI 68/20. Antennomeres VI to XI with sparse long setae. Pronotum and elytra not microsculptured. Pronotum with anterior bead broadly interrupted; lateral margins evenly rounded in dorsal view; lateral margin carinae visible in dorsal view; lateral margin striae punctate; discal punctation extremely fine and sparse, hardly visible at 40 times magnification. Tip of scutellum exposed. Elytra weakly narrowed apically, with lateral margins slightly arcuate near anterior and apical angles, oblique in middle; lateral margin carina visible in dorsal view; lateral margin striae impunctate; apical margin truncated, not crenulate at inner angle; inner apical angle situated posteriad of level of outer apical angle; sutural margin raised; adsutural area flat, with single puncture row; sutural striae weakly converging apically, curved along pronotal lobe and extended laterally to form basal striae joined to lateral striae; discal punctation shallow, irregular, dense and very fine, punctures in part similar to pronotal punctures, puncture intervals mostly larger than puncture diameters. Hypomeron dull, lacking setigerous punctures. Mesanepisternum extremely finely punctate. Mesepimeron very large, nearly touching mesocoxa, gradually narrowed, about eight times as long as wide. Metaventrite with strigulate microsculpture, weakly convex in middle, lacking impressions and antecoxal puncture rows;

submesocoxal line parallel, margined by coarse punctures extended laterally along mesepimera; submesocoxal area about 0.02 mm long, as long as tenth of shortest interval to metacoxae. Metanepisternum lacking obvious microsculpture, flat, weakly narrowed anteriad, with suture straight except near angles. Protibiae straight, mesotibiae curved, metatibiae slightly sinuate. Abdomen with strigulate microsculpture, very finely punctate. Ventrite I with submetacoxal line strongly convex, finely punctate; submetacoxal area 0.13 mm long, about as long as shortest interval between its margin and apical margin of ventrite.
Male. Protarsomeres I to III widened, nearly as wide as apex of protibiae. Mesotarsomere I strongly widened, mesotarsomeres II and III moderately widened, much narrower than apex of tibiae. Aedeagus (Figs 70, 71) 0.88 mm long.

Comments: The antennomere XI shorter than the antennomere X is an unusual feature of this new species. Its aedeagal characters suggest a relationship with *S. mirandum* Löbl, 1990. However, it may be distinguished from *S. mirandum* by the smaller body size, the much longer antennae, the shallow elytral punctation, the metaventrite lacking impressions, the abdominal and metaventral microsculpture, the nearly symmetrical parameres, and the broad apex of the apical process of the median lobe.

Distribution: Malaysia: Sabah.

Scaphisoma pictum species group

Löbl (1971) proposed the group for four species from Sri Lanka. Subsequently, many other Asian species have been assigned to it. They have the aedeagus with the ostium situated between the dorsal and ventral branches of the apical process of the median lobe, the parameres lobed, and a usually complex internal sac.

Scaphisoma angulatum Löbl, 1975

Scaphisoma angulatum Löbl, 1975: 284.

Material examined: MHNG; 1; Mount Kinabalu, 1550-1650 m, 24.IV.1987, D. Burckhardt & I. Löbl. – 2; Mount Kinabalu, summit trail, Ponduk Uban, 2050 m, 26.IV.1987, A. Smetana. – 1; Mount Kinabalu Nat. Park, X.1990, G. de Rougemont. – 1; Crocker Range, road Kota Kinabalu Tambunan, 1550-1650 m, 16.V.1987, D. Burckhardt & I. Löbl. – 5; Crocker Range, Gunung Emas, 1500-1700 m, around km 52 of road Kota Kinabalu Tambunan, 6-18.VI.1996. – 3; Crocker Range, around km 56 of road Kota Kinabalu Tambunan, Sunsuron Waterfall env., 1100-1200 m, 8.VI.1996.

Comment: The species was originally based on a single specimen found on Mount Kinabalu.

Distribution: Malaysia: Sabah.

Scaphisoma atavum sp. nov.

Figs 72, 73

Holotype: MHNG; male; Malaysia, SABAH, Crocker Range, Gunung Emas, 1500-1700 m, around km 52 of road Kota Kinabalu Tambunan 6-18.VI. 1996, 2c.

Diagnosis: Medium-large species with blackish or black body; antennomere IV much longer than antennomere III; elytra lacking basal striae; metaventrite lacking microsculpture and antecoxal puncture rows, with shallow apicomedian impression, submesocoxal lines parallel; ventrite I with submetacoxal areas as long as fifth of shortest interval between its margin and apical margin of ventrite; aedeagus symmetrical, with apical process constricted basally, gradually narrowed apically, inflexed, in lateral view curved near acute apex, basal bulb large, parameres in dorsal view sinuate and gradually narrowed, with strongly expanded basal angles (lateral view), internal sac lacking larger sclerites.

Etymology: The species epithet means ancestor in Latin.

Description: Length 1.73 mm, width 1.25 mm. Head and pronotum black, elytra and venter of thorax blackish with reddish shine. Ventrite I dark brown, following ventrites and legs ochraceous; antennae yellowish with light brown apical segments. Length/width ratios of antennomeres as in other members of *S. pictum* group. Pronotum and elytra not microsculptured. Pronotum with anterior bead broadly interrupted; lateral margins arcuate in dorsal view; lateral margin carinae concealed in dorsal view; lateral margin striae impunctate; prevailing discal punctation very fine and sparse, visible at 20 times magnification. Tip of scutellum exposed. Elytron weakly narrowed apically, with lateral margin arcuate; lateral margin carina concealed in dorsal view; lateral margin stria punctate; apical margin truncated, lacking obvious crenulation at inner angle; inner apical angle at level of outer apical angle; sutural margin not raised; adsutural area flat, about 0.07 mm wide shortly posteriad of scutellar tip, gradually slightly narrowing in apical third, with single row of very fine punctures; sutural striae starting near basal margin, curved along pronotal lobe, parallel except in apical third; basal stria absent; discal punctation near base like that on pronotum, on prevailing surface fine and dense, punctures well delimited, puncture intervals mostly about two to three times as large as puncture diameters. Hypomeron and mesanepisternum smooth. Mesoventrite impunctate. Mesepimeron about four times as long as wide and as long as interval to mesocoxa. Metaventrite lacking microsculpture; with shallow apicomedian impression, slightly convex between mesocoxa, with distinct punctures on apicomedian area, very finely punctate on remaining surface; antecoxal puncture

rows absent; submesocoxal line parallel, margined by coarse punctures not extended laterally along mesepimera; submesocoxal area about 0.03 mm long, as long as seventh of shortest interval to metacoxae. Metanepisternum lacking obvious microsculpture, flat, narrowed anteriad, suture not impressed, rounded near angles. Tibiae straight. Abdomen with strigulate microsculpture, very finely punctate. Ventrite I with submetacoxal line convex, submetacoxal area 0.04 mm long, as long as fifth of shortest interval between its margin and apical margin of ventrite.

Male. Protarsomere I to III and mesotarsomeres I and II strongly widened, tarsomeres I about as wide as apices of tibiae. Ventrite VI lacking distinct apical lobe. Aedeagus (Figs 72, 73) 0.75 mm long.

Comment: This new species is distinguished from most members of the group by its body size and colour, in combination with the fine elytral punctation and the parallel submesocoxal lines. It is unique in the shape of the apical process of the median lobe and the parameres.

Distribution: Malaysia: Sabah.

***Scaphisoma brevistyle* sp. nov.**

Figs 74-77

Holotype: OUMNH; male; SABAH: Lahad Datu Ule Segama For[est]. Res[erve]. Coupe 88 logging area N04°59.738' E117°50.165' 250 m, iii-iv.2005 FIT no2 / E. Slade & J. Villanueva lgt. Select. logged Dipterocarp for. Yayasan Sabah Logging Concession OUMNH 2005-062.

Diagnosis: Medium-large species with ochraceous body; elytra lacking basal striae; metaventrite and metanepisternum with strigulate microsculpture, metaventrite lacking antecoxal puncture rows and median impression, submesocoxal lines parallel; ventrite I with submetacoxal areas as long as third of shortest interval between its margin and apical margin of ventrite; aedeagus symmetrical, with apical process conspicuously short, narrowed apically, inflexed, with tip acute, sinuate in lateral view, basal bulb large, about three times as long as apical process, parameres wide and constricted in middle in dorsal view, internal sac tubular, with fine scale-like membranous structures and larger sclerotized teeth.

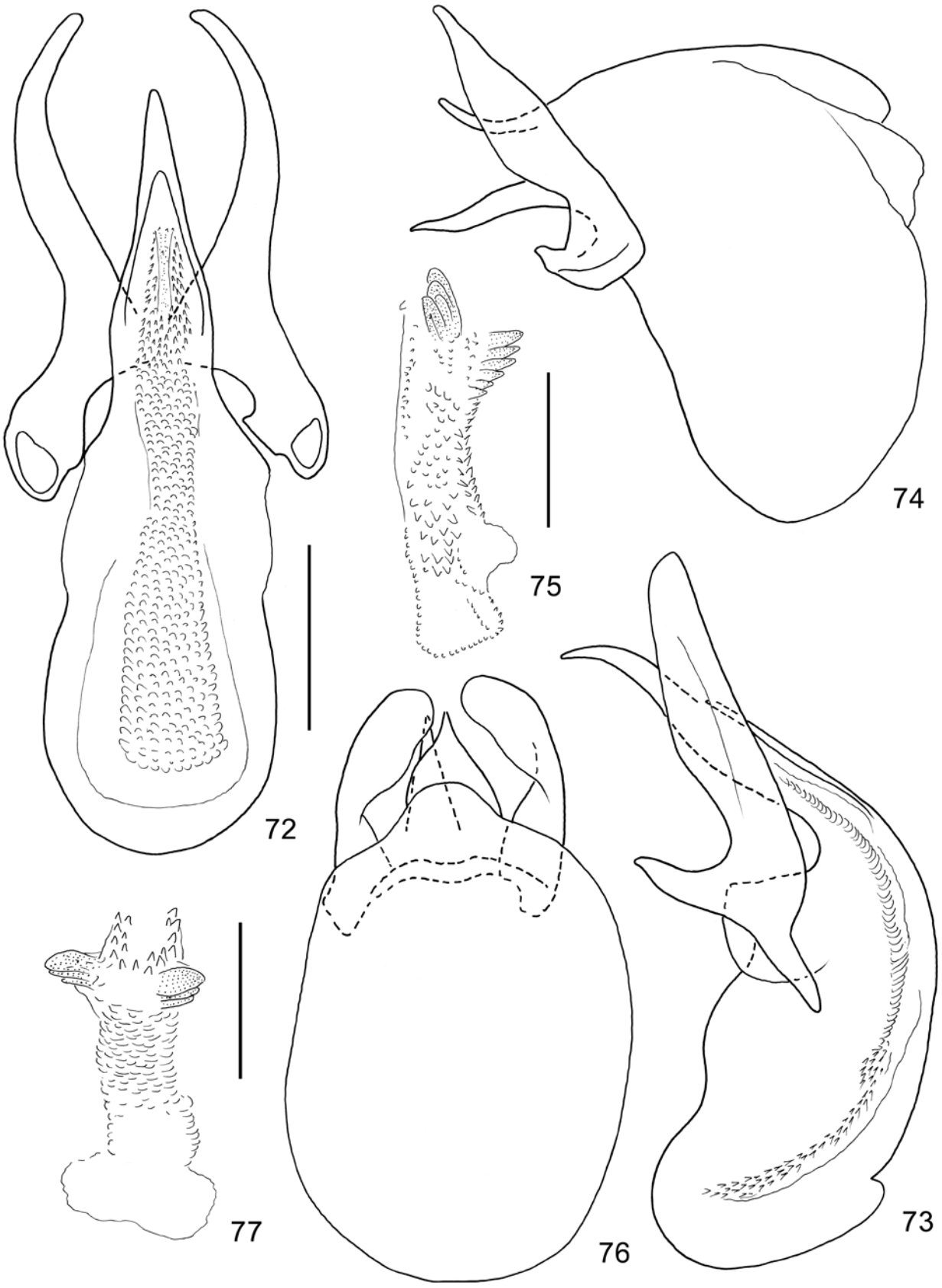
Etymology: The species epithet refers to the short parameres of this species.

Description: Length 1.45 mm, width 0.98 mm. Head and body ochraceous, appendages yellowish. Pronotum and elytra not microsculptured. Pronotum with anterior bead broadly interrupted; lateral margins arcuate in dorsal view; lateral margin carinae concealed in dorsal view; lateral margin striae impunctate; prevailing discal punctation very fine and sparse, visible at 20 times magnification. Tip of scutellum exposed. Elytron weakly narrowed apically, with lateral margin arcuate; lateral margin carina visible in dorsal view; lateral margin stria punctate; apical margin truncate, lacking obvious crenulation at inner angle; inner apical angle situated posteriad of level of outer apical angle; sutural margin not raised; adsutural area flat, nearly 0.06 mm wide shortly posteriad of scutellar tip, slightly narrowed in apical third, with single row of very fine punctures and few additional punctures near base; sutural striae starting near basal margin, oblique along pronotal lobe, parallel except in apical third; basal stris well delimitea absent; discal punctation near base like that on pronotum, on prevailing surface rather coarse and dense, punctured, puncture intervals mostly about as large as to two times as large as puncture diameters. Hypomeron smooth. Mesoventrite impunctate. Mesanepisternum with strigulate microsculpture, very finely punctate. Mesepimeron about twice as long as wide and somewhat shorter than half of shortest interval to mesocoxa. Metaventrite with strigulate microsculpture; lacking apicomedian impression, slightly convex between mesocoxa, entirely very finely punctate; antecoxal puncture rows absent; submesocoxal line parallel, margined by coarse punctures extended laterally to tip of mesepimera; submesocoxal area about 0.02 mm long, as long as seventh of shortest interval to metacoxae. Metanepisternum with strigulate microsculpture, somewhat convex, narrowed anteriad, with suture impressed, straight. Protibiae straight, mesotibiae and metatibiae arcuate. Most of abdomen very finely punctate. Ventrites I to IV with strigulate microsculpture, centres of ventrites V and VI with conspicuous punctulate microsculpture. Ventrite I with few distinct punctures along intercoxal process; submetacoxal line slightly convex, rather coarsely punctate; submetacoxal area 0.03 mm long, as long as third of shortest interval between its margin and apical margin of ventrite.

Male. Protarsomeres I to III and mesotarsomeres I and II strongly widened, tarsomeres I about as wide as apices of tibiae. Ventrite VI with flattened centre, lobe about 0.07 mm long, broadly rounded. Aedeagus (Figs 74-77) 0.83 mm long.

Comments: The unique specimen of this species has the antennae broken off and missing. As the species may be reliably distinguished by other characters, its description is considered justified. The short parameres and large basal bulb are shared with *S. inexspectatum* Löbl, 2016, but other aedeagal characters differ notably from those of the latter species, as of those of other congeners.

Distribution: Malaysia: Sabah.



Figs 72-77. *Scaphisoma* spp., genital characters. (72) *S. atavum* sp. nov., aedeagus in dorsal view, scale = 0.2 mm. (73) ditto, aedeagus in lateral view. (74) *S. brevistyle* sp. nov., aedeagus in lateral view, scale = 0.2 mm. (75) ditto, internal sac in lateral view, scale = 0.2 mm. (76) ditto, aedeagus in dorsal view, scale = 0.2 mm. (77) ditto, internal sac in dorsal view.

Scaphisoma ciampori sp. nov.

Figs 78-81

Holotype: MHNG; male; Malaysia, Sabah, Batu Punggul Resort env. 24.VI.-1.VII.1996, 11f, intercept trap.

Diagnosis: Body medium-large with dark brown dorsum, apical fourth of elytra yellowish; elytra lacking basal striae, sutural striae angulate near base; mesanepisternum, metaventrite and metanepisternum with strigulate microsculpture, metaventrite with antecoxal puncture rows, submesocoxal lines convex; metanepisternum not narrowed anteriad; ventrite I with submetacoxal areas as long as fourth of shortest interval between its margin and apical margin of ventrite; aedeagus symmetrical, with apical process oblique, gradually narrowed apically, with acute tip, angulate in lateral view, basal bulb large, about twice as long as apical process, parameres arcuate in dorsal view, straight posteriad of bases and nearly evenly wide in lateral view, internal sac with complex pattern of scale-like membranous structures, spines and larger sclerotized teeth.

Etymology: The species is named in honour of Fedor Čiampor (Bratislava), a well-known Slovak entomologist.

Description: Length 1.84 mm, width 1.29 mm. Head, pronotum and anterior three fourth of elytra evenly very dark brown with reddish shine, apical fourth of elytra yellowish; mesoventrite and metaventrite nearly blackish; abdomen ochraceous; appendages ochraceous to yellowish. Length/width ratios of antennomeres as in other members of *S. pictum* group. Pronotum and elytra not microsculptured. Pronotum with anterior bead broadly interrupted; lateral margins arcuate in dorsal view; lateral margin carinae exposed in dorsal view; lateral margin striae impunctate; prevailing discal punctation very fine and sparse, near base becoming somewhat coarser and visible at 30 times magnification. Tip of scutellum exposed. Elytron weakly narrowed apically, with lateral margin arcuate; lateral margin carina visible in dorsal view; lateral margin stria punctate; apical margin truncated, crenulate at inner angle; inner apical angle situated posteriad of level of outer apical angle; sutural margin raised; adsutural area flat, about 0.15 mm wide shortly posteriad of scutellar tip, gradually strongly narrowed apically, coarsely and irregularly punctate near base, irregularly punctate section followed by two puncture rows merging near apex; sutural striae angulate near base, strongly converging apically, starting at basal margin near pronotal lobe, punctate; basal stria absent; discal punctation rather coarse and dense, punctures well delimited, puncture intervals mostly about as large to three times as large as puncture diameters, punctation on light apical part finer. Hypomeron smooth. Mesoventrite impunctate. Mesanepisternum with strigulate microsculpture. Mesepimeron about four times as long as wide and distinctly longer than interval to mesocoxa. Metaventrite with strigulate microsculpture; slightly convex in middle, with patch of dense and rather coarse punctures on flattened area near metacoxal process; antecoxal puncture rows present; remaining punctation very sparse and extremely fine; submesocoxal line convex, margined by fine punctures not extended laterally along mesepimera; submesocoxal area about 0.05 mm long, as long as fourth of shortest interval to metacoxae. Metanepisternum flat, not narrowed anteriad, with strigulate microsculpture and suture impressed, somewhat rounded near angles. Tibiae straight. Abdomen with strigulate microsculpture, very finely punctate. Ventrite I with submetacoxal line convex, submetacoxal area 0.05 mm long, as long as fourth of shortest interval between its margin and apical margin of ventrite.

Male. Protarsomeres and mesotarsomeres I to III widened, protarsomeres I nearly as wide as apex of protibia. Lobe of ventrite VI triangular, 0.10 mm long. Aedeagus (Figs 78-81) 0.85 mm long.

Comments: This species may be readily distinguished from congeners having similar, strongly converging sutural striae of the elytra by its elytral colour pattern in combination with the metanepisternum not narrowed anteriad and the mesanepisternum bearing distinct strigulate microsculpture.

Distribution: Malaysia: Sabah.

Scaphisoma complicans Löbl, 1982

Scaphisoma complicans Löbl, 1982a: 10.

Material examined: MHNG; 1; Poring Hot Spring, 500 m, 11.V.1987, D. Burckhardt & I. Löbl. – 3; Crocker Range, Gunung Emas, 23.V.1998, J. Kodada & F. Čiampor. – 15; Crocker Range, Gunung Emas, 1500-1700 m, around km 52 of road Kota Kinabalu – Tambunan, 6.-18.VI.1996; 34, Batu Punggul Resort env., 24.VI.-1.VII.1996. – 6, Sabalangan River env., ca 25 km SE Sapulut, 26.VI.1998, J. Kodada & F. Čiampor. – 1; Sandakan Residency, Sepilok, Kabili-Sepilok Forest Reserve, 22.IV.1982, B. Hauser; 4, same data but 18.III.1983.

Comments: The species was based on a single specimen from Sarawak.

Distribution: Malaysia: Sabah, Sarawak.

Scaphisoma immotum sp. nov.

Figs 85-87

Holotype: MHNG; male; SABAH Mount Kinabalu 2600 m, 1.V.1987 Burchhardt – Löbl.

Paratypes: MHNG; 3 males, 2 females; same data as holotype. – 1 male; same data but 2.V.1987. – 2 males, 2 females; Mount Kinabalu, Summit Trail, Pontok Lowii, 2300-2400 m, 28.IV.1987, A. Smetana. – 1 male, 2 females; Mount Kinabalu, below Layang Layang, 2590 m, 1.V.1987, A. Smetana. – 1 male; Mount Kinabalu, 1550 m, 29.IV.1987, D. Burckhardt & I. Löbl.

Diagnosis: Body medium-large with dark brown to black dorsum; elytra lacking basal striae, sutural striae parallel in basal third; metaventrite with strigulate microsculpture only on narrow area between mesocoxae, antecoxal puncture rows present, submesocoxal lines parallel; ventrite I with submetacoxal areas about as long as third of shortest interval between its margin and apical margin of ventrite; aedeagus symmetrical, with apical process short, strongly inflexed, blunt in dorsal view, dorsal valve perpendicular to aedeagal axis, basal bulb large, parameres narrow posteriad of bases, strongly widened and with membranous lobes posteriad of basal third, internal sac with complex pattern of fine scale-like and spinous membranous structures.

Etymology: The species epithet is a Latin adjective meaning safe.

Description: Length 1.60-1.85 mm, width 1.10-1.23 mm. Head, pronotum and venter of thorax black, elytra dark brown to blackish-brown, basal ventrites dark reddish-brown to blackish, apical abdominal segments and appendages light reddish-brown to yellowish. Length/width ratios of antennomeres as in other members of *S. pictum* group. Pronotum and elytra not microsculptured. Pronotum with anterior bead broadly interrupted; lateral margins arcuate in dorsal view; lateral margin carinae hardly visible to concealed in dorsal view; lateral margin striae punctate; discal punctation fine and dense, very shallow, visible at 40 times magnification. Tip of scutellum exposed. Elytron moderately narrowed apically, with lateral margin arcuate; lateral margin carina exposed in dorsal view; lateral margin stria punctate; apical margin rounded, not crenulate at inner angle; inner apical angle situated posteriad of level of outer apical angle; sutural margin not raised; adsutural area flat, about 0.07 mm wide shortly posteriad of scutellar tip, narrowed apically, with single row of fine punctures and few additional punctures in basal third; sutural striae parallel in basal third, converging apically, starting near margin of pronotal lobe, finely punctate; basal stria absent; discal punctation coarser than pronotal punctation, consisting of well delimited punctures, puncture intervals mostly two to four times as large as puncture diameters. Hypomeron smooth. Mesanepisternum extremely finely punctate. Mesoventrite punctate. Mesepimeron about six times as long as wide and 1.5 times as long as interval to mesocoxa. Metaventrite with strigulate microsculpture limited onto narrow surface between mesocoxa, hardly convex between mesocoxa, most of mesal area with shallowly impressed and dense, rather coarse punctation; lateral parts of metaventrite very finely and sparsely punctate, antecoxal puncture rows present; submesocoxal line parallel, margined by coarse punctures not extended laterally along mesepimera; submesocoxal area about 0.04 mm long, as long as fifth of shortest interval to metacoxae; submesocoxal line convex, finely punctate. Metanepisternum lacking obvious microsculpture, slightly convex, narrowed anteriad, at widest point about twice as wide as at anterior margin, with suture impressed and rounded. Tibiae straight. Abdomen with strigulate microsculpture, very finely punctate. Ventrite I with submetacoxal line convex, finely punctate; submetacoxal area 0.05 mm long, about as long as third of shortest interval between its margin and apical margin of ventrite.
Male. Protarsomeres I to III rather strongly widened, protarsomere I somewhat narrower than apex of protibiae. Lobe of ventrite VI 0.04 mm long, broadly rounded. Aedeagus (Figs 85-87) 0.85-0.98 mm long.

Comments: The species is syntopic with *S. anchoroides*. It seems to occur mainly in higher altitudes of Mount Kinabalu, well above 2000 m.

Distribution: Malaysia: Sabah.

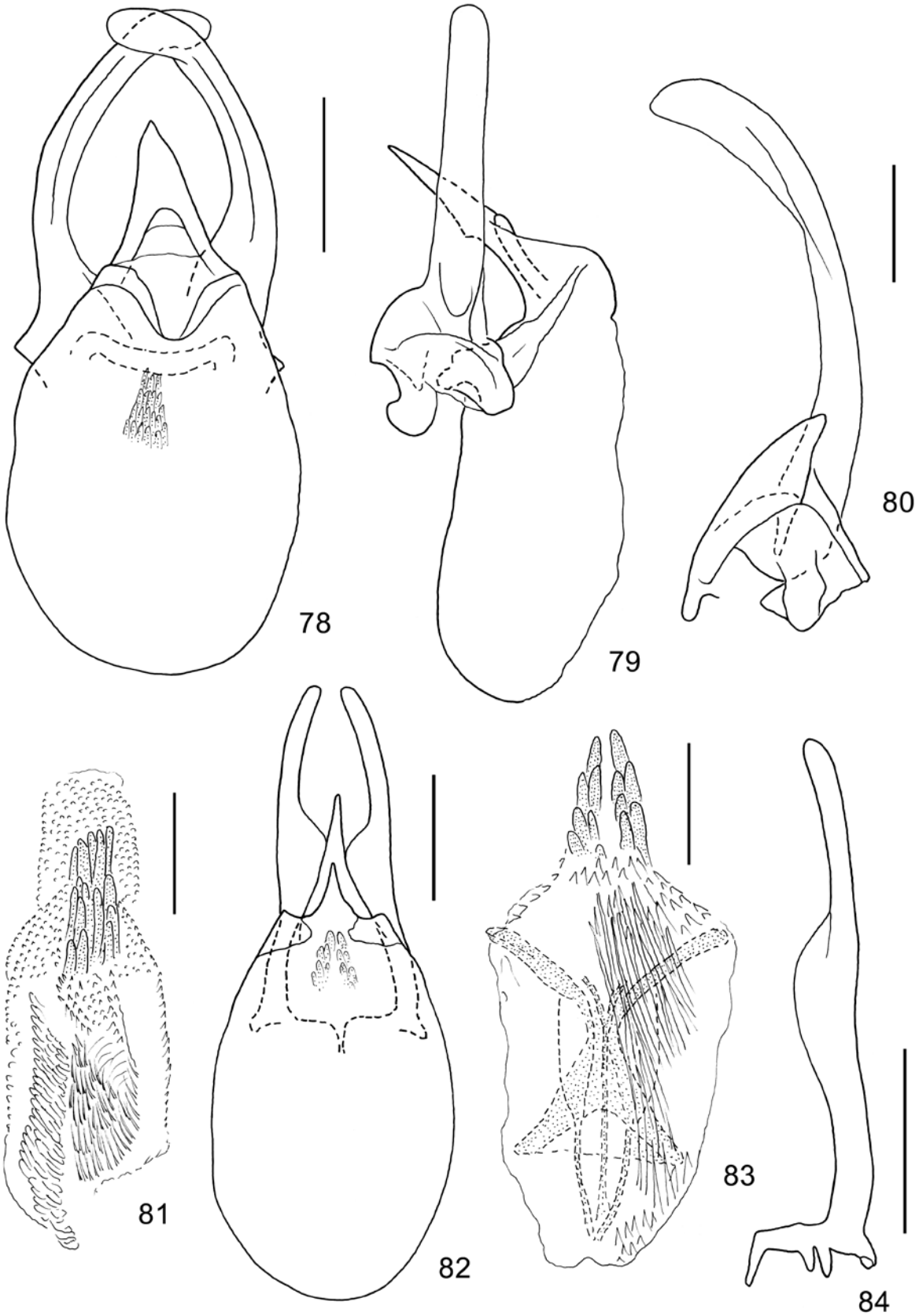
Scaphisoma lescheni sp. nov.
Figs 82-84

Holotype: MHNG; male; SABAH: Poring Hot Springs, 500 m, 6.V.1987 Burckhardt – Löbl.

Paratypes: MHNG; 1 male; with same data as holotype. – 1 female; Sabalangan River env., ca 25 km SE Sapulut, 26.VI.1998, J. Kodada & F. Čiampor.

Diagnosis: Small species with ochraceous body; elytra lacking basal striae, sutural striae strongly converging apically, coarse punctures forming three rows on inner half of disc; metaventrite with strigulate microsculpture on areas between mesocoxae and metacoxae, antecoxal puncture rows absent, submesocoxal lines parallel; metanepisternum at widest point twice as wide as at anterior margin; ventrite I with submetacoxal areas about as long as half of shortest interval between its margin and apical margin of ventrite; aedeagus symmetrical, with apical process elongate, gradually narrowed to acute tip, dorsal valve triangular, basal bulb large, parameres lacking lobes, strongly narrowed posteriad of bases, evenly narrow and curved in apical halves, internal sac tubular, convoluted basally, with very short scale-like and spine-like structures.

Etymology: The species is named in honour of my friend Richard A.B. Leschen of Auckland, New Zealand, with whom I had several times the pleasure to work.



Figs 78-84. *Scaphisoma* spp., genital characters. (78) *S. ciampori* sp. nov., aedeagus in dorsal view, scale = 0.2 mm. (79) ditto, aedeagus in lateral view. (80) ditto, paramere in ventral view, scale = 0.1 mm. (81) ditto, internal sac, scale = 0.1 mm. (82) *S. lescheni* sp. nov., aedeagus in dorsal view, scale = 0.1 mm. (83) ditto, internal sac, with long spines figured on one half only, scale = 0.05 mm. (84) ditto, paramere in ventral view, scale = 0.1 mm.

Description: Length 1.17-1.20 mm, width 0.75-0.77 mm. Head and body light ochraceous, appendages yellowish. Length/width ratios of antennomeres as in other members of *S. pictum* group. Pronotum and elytra lacking microsculpture. Pronotum with anterior bead broadly interrupted; lateral margins oblique in dorsal view; lateral margin carinae concealed in dorsal view; lateral margin striae impunctate; discal punctation extremely fine and sparse, very shallow, hardly visible at 40 times magnification. Tip of scutellum exposed. Elytron weakly narrowed apically, with lateral margin arcuate; lateral margin carina visible in dorsal view; lateral margin stria conspicuously coarsely punctate near bases, punctures becoming gradually finer posteriad, evanescent near apex; apical margin rounded, not crenulate at inner angle; inner apical angle situated posteriad of level of outer apical angle; sutural margin not raised; adsutural area flat, about 0.10 mm wide shortly posteriad of scutellar tip, gradually strongly narrowed apically, coarsely and irregularly punctate near base, irregularly punctate section followed by row of coarse punctures becoming very fine near apex; sutural striae strongly converging apically, starting at basal margin near pronotal lobe, coarsely punctate; basal stria absent; discal punctation forming three rows of coarse punctures on inner half of disc and slightly extended posteriad of elytral mid-length, punctation laterad and posteriad of puncture rows very fine, similar to pronotal punctation. Hypomeron smooth. Mesanepisternum extremely finely punctate. Mesepimeron slightly more than two times as long as wide and long as interval to mesocoxa. Metaventrite with strigulate microsculpture limited onto surface between mesocoxa and metacoxa, weakly convex in middle, with two small shallow and finely punctate apicomedian impressions, lacking antecoxal puncture rows; submesocoxal line parallel, margined by coarse punctures not extended laterally along mesepimera; submesocoxal area about 0.02 mm long, as long as sixth of shortest interval to metacoxae. Metanepisternum lacking obvious microsculpture, slightly convex, conspicuously narrowed anteriad, at widest point twice as wide as at anterior margin, with suture deeply impressed, broadly rounded in posterior third, oblique in anterior two thirds. Tibiae straight. Abdomen with strigulate microsculpture, very finely punctate. Ventrite I with submetacoxal line weakly convex, rather finely punctate; submetacoxal area 0.05 mm long, about as long as half of shortest interval between its margin and apical margin of ventrite.

Male. Tarsomeres I to III slightly widened. Ventrite VI lacking distinct lobe. Aedeagus (Figs 82-84) 0.50 mm long.

Comments: The elytral punctation of this species is like that of members of the *S. kinabaluum* group and unique within the *S. pictum* group. It provides reliable diagnostic characters in combination with the sutural striae not shortened and apically strongly converging. Another unique character is the shape of the metanepisterna.

Distribution: Malaysia: Sabah.

Scaphisoma nigrum Löbl, 1986

Scaphisoma nigrum Löbl, 1986: 91.

Material examined: MHNG; 2 males; Mount Kinabalu, 1500 m, 25.IV.1987 D. Burckhardt & I. Löbl. – 2 males; same data but 22.IV.1987. – 4 males; same data but 1550-1650 m, 24.IV.1987. – 2 males; same data but 1550 m, 29.IV.1987. – 2 males; Kinabalu National Park, Headquarters, Silau-Silau Trail, 1560 m, 3.VIII.1088, A. Smetana. – 1 male; same data but Liwagu Trail, 1500 m, 22.V.1987; 2 males; Poring Hot Spring, Langatan River, 850 m, 14.V.1987, D. Burckhardt & I. Löbl. – 5 males; Crocker Range, road Kota Kinabalu-Tambunan, 1550-1650 m, 16.V.1987, D. Burckhardt & I. Löbl. – 2 males; same data but 1600 m, 18.V.1987.

Comments: The species was based on a single specimen from the Cameron Highlands, West Malaysia. It exhibits unusually variable body size and colour. Interestingly, specimens from the vicinity of Poring Hot Spring and from the Crocker Range are on average smaller and lighter than the specimens collected near the Headquarters of the Kinabalu National Park.

Distribution: Malaysia: Sabah; West Malysia.

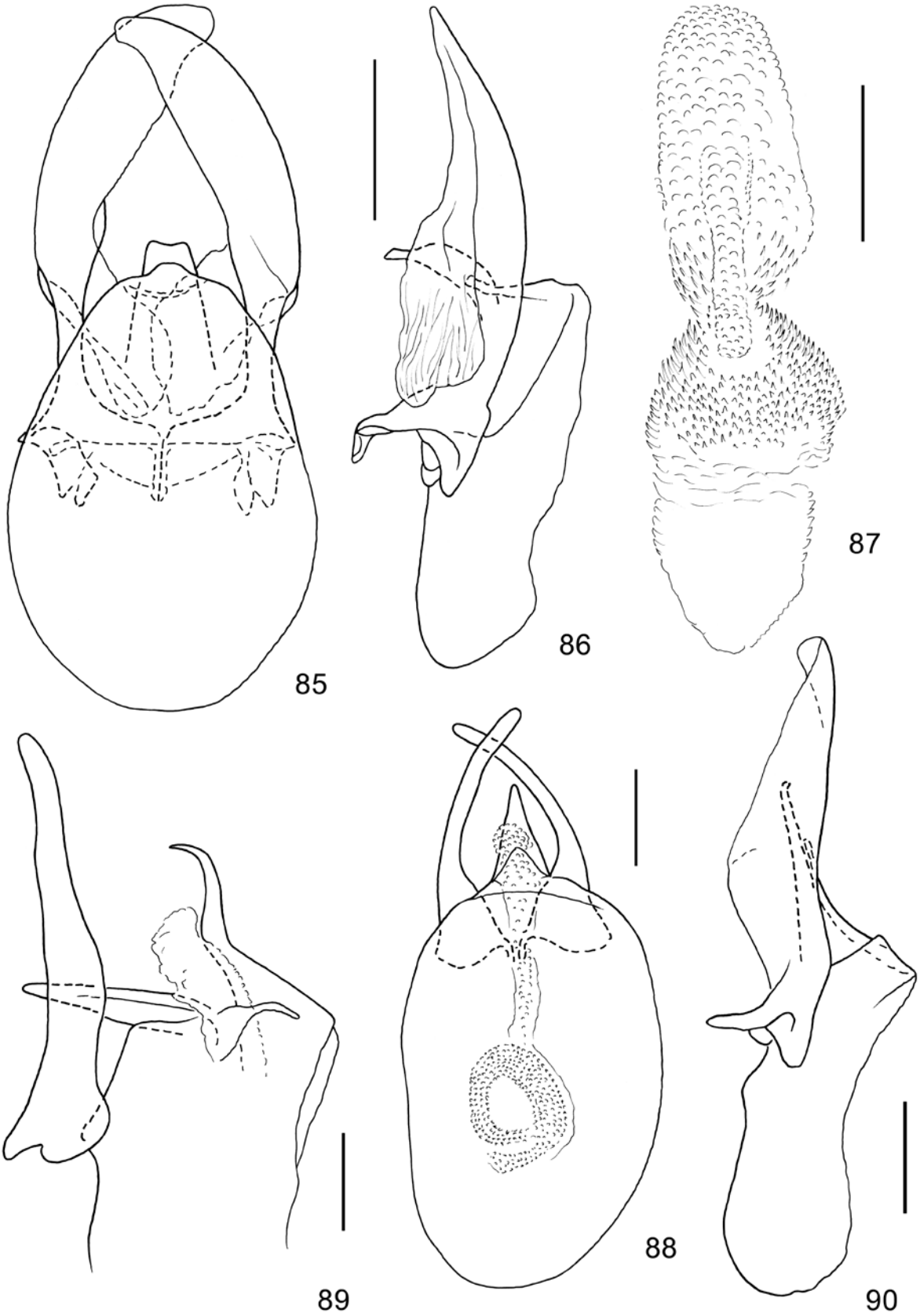
Scaphisoma onerosum sp. nov.

Figs 88, 89

Holotype: MHNG; male; Malaysia, SABAH, Crocker Range, Gunung Emas, 1500-1700 m, around km 52 of road Kota Kinabalu Tambunan, 6-18.VI.1996, 2c.

Diagnosis: Medium-large species with ochraceous body; elytra lacking basal striae, sutural striae parallel; metaventrite with strigulate microsculpture, antecoxal puncture rows absent, submesocoxal lines convex; ventrite I with submetacoxal areas nearly as long as half of shortest interval between its margin and apical margin of ventrite; aedeagus symmetrical, with apical process oblique, strongly inflexed, gradually narrowed to acute tip, dorsal valve triangular in dorsal view, sinuate in lateral view, basal bulb large, parameres strongly narrowed in basal and apical thirds, strongly widened in middle, lacking lobes, internal sac convoluted basally with two long, diverging mesal sclerites, long spines, and apical bunch of denticles.

Etymology: The species epithet is a Latin adjective meaning difficult.



Figs 85-90. *Scaphisoma* spp., genital characters. (85) *S. immotum* sp. nov., aedeagus in dorsal view, scale = 0.2 mm. (86) ditto, aedeagus in lateral view. (87) ditto, internal sac, scale = 0.1 mm. (88) *S. onerosum* sp. nov., aedeagus in dorsal view, scale = 0.1 mm. (89) ditto, aedeagus in lateral view, without proximal part of basal bulb, scale = 0.05 mm. (90) *S. oxurum* sp. nov., aedeagus in lateral view, scale = 0.1 mm.

Description: Length 1.42 mm, width 1.0 mm. Head, body and appendages ochraceous. Length/width ratios of antennomeres as in other members of *S. pictum* group. Pronotum and elytra not microsculptured. Pronotum with anterior bead broadly interrupted; lateral margins arcuate in dorsal view; lateral margin carinae visible in dorsal view; lateral margin striae impunctate; discal punctation dense and extremely fine, very shallow, hardly visible at 100 times magnification in middle part of disc, distinct near base. Tip of scutellum exposed. Elytron weakly narrowed apically, with lateral margin arcuate near base and apex, oblique in middle; lateral margin carina visible in dorsal view; lateral margin stria finely punctate; apical margin rounded, crenulate at inner angle; inner apical angle at level of outer apical angle; sutural margin not raised; adsutural area flat, about 0.06 mm wide shortly posteriad of scutellar tip, nearly evenly wide, with single fine puncture row; sutural striae starting at basal margin near pronotal lobe, curved at base, punctate; discal punctation rather fine, well delimited, punctures much larger than those on pronotum; puncture intervals mostly about two to three times larger than puncture diameters. Hypomeron smooth. Mesoventrite punctate. Mesanepisternum extremely finely punctate. Mesepimeron about three times as long as wide and nearly as long as half of shortest interval to mesocoxa. Metaventrite sparsely and very finely punctate, with strigulate microsculpture, weakly convex in middle, lacking impressions, lacking antecoxal puncture rows; submesocoxal line parallel, margined by coarse punctures not extended laterally along mesepimera; submesocoxal area about 0.03 mm long, as long as fifth of shortest interval to metacoxae. Metanepisternum slightly convex, weakly narrowed anteriad, with suture impressed, slightly arcuate, lacking obvious microsculpture. Tibiae straight. Abdomen with strigulate microsculpture, very finely punctate. Ventrite I with submetacoxal area 0.05 mm long, nearly as long as half of shortest interval to apical margin.

Male. Protarsomeres I to III distinctly widened, narrower than apex of protibiae. Aedeagus (Figs 88, 89) 0.59 mm long.

Comments: The aedeagal characters suggest relationships with *S. flexuosum* Löbl, 1986 and *S. garomontium* Löbl, 1986. The new species may be distinguished by the shape and structure of the internal sac convoluted proximally and lacking large denticles. It differs from *S. flexuosum* also by the shorter mesepimera, the metaventrite entirely microsculptured and the shorter submesocoxal and submetacoxal areas, and from *S. garomontium* by its much finer elytral punctation, the metaventrite lacking apicomedian impressions, and the shorter submetacoxal areas.

Distribution: Malaysia: Sabah.

***Scaphisoma oxurum* sp. nov.**

Figs 90-94

Holotype: MHNG; male; SABAH 30a Crocker Range 1600 m, 18.V.1987 Burckhardt – Löbl.

Paratypes: MHNG; 2 males; with same data as holotype. – 1 male; Crocker Range, road Kota Kinabalu Tambunan, 1550-1650 m, 16.V.1987, D. Burckhardt & I. Löbl. – 1 male; Crocker Range, Gunung Emas, around km 52 of road Kota Kinabalu - Tambunan, 1500-1700 m, 6.-18.VI.1996. – 1 male; Crocker Range, km 52 road Kota Kinabalu Tambunan, 1600-1800 m, 2-5.VII.2020, S. Kurbatov & S. Zimina. – 1 male; Mount Kinabalu, Liwagu Trail, 1500 m, 22.V.1987, D. Burckhardt & I. Löbl; 1 male; Mount Kinabalu, Liwagu Trail, 1520 m, 11.VIII.1988, A. Smetana. – 1 male; Mount Kinabalu, 1750 m, 22.IV.1987, D. Burckhardt & I. Löbl.

Diagnosis: Medium-large species with reddish-brown to blackish body; elytra lacking basal striae, sutural striae slightly converging apically; mesal area of metaventrite with strigulate microsculpture, antecoxal puncture rows present, submesocoxal lines convex; ventrite I with submetacoxal areas about as long as third of shortest interval between its margin and apical margin of ventrite; aedeagus symmetrical, with apical process long, not inflexed, gradually narrowed to acute tip, dorsal valve triangular in dorsal view, basal bulb large, parameres with membranous lobes expanded in apical halves, internal sac with two apicomedian rows of robust, diverging teeth followed by few finer, converging teeth.

Etymology: The species epithet is a Greek adjective referring to the acute abdomen.

Description: Length 1.34-1.50 mm, width 0.85-0.98 mm. Head, thorax, and elytra reddish-brown to blackish with reddish shine, abdomen reddish-brown with yellowish apical segments, femora light reddish-brown, tibiae, tarsi and antennae yellowish. Length/width ratios of antennomeres as in other members of the *S. pictum* group. Pronotum and elytra not microsculptured. Pronotum with anterior bead broadly interrupted; lateral margins arcuate in dorsal view; lateral margin carinae visible in dorsal view; lateral margin striae punctate; discal punctation dense and rather fine, punctures well delimited, becoming denser and coarser near base and visible at 15 times magnification. Tip of scutellum exposed. Elytron rather strongly narrowed apically, with lateral margin arcuate in basal half, oblique posteriad middle; lateral margin carina visible in dorsal view; lateral margin stria finely punctate; apical margin truncated, crenulate at inner angle; inner apical angle situated posteriad of level of outer apical angle; sutural margin raised; adsutural area flat, about 0.05 mm wide shortly posteriad of scutellar

tip, evenly wide in basal fourth, narrowed apically, with single fine puncture row; sutural striae starting near basal margin near pronotal lobe, straight or slightly curved at base, punctate; discal punctation rather coarse, well delimited, punctures much larger than those on pronotum; puncture intervals mostly about two times to four times as large as puncture diameters. Hypomeron smooth. Mesoventrite impunctate. Mesanepisternum extremely finely punctate, lacking microsculpture. Mesepimeron about five times as long as wide and 1.5 times as long as interval to mesocoxa. Median part of metaventrite shallowly impressed, with strigulate microsculpture and sparse and fine punctation; lateral parts of metaventrite lacking microsculpture, very finely punctate, with antecoxal puncture rows; submesocoxal line slightly convex, margined by coarse punctures extended laterally up to mesepimera; submesocoxal area about 0.03 mm long, as long as sixth of shortest interval to metacoxae. Metanepisternum lacking obvious microsculpture, nearly flat, narrowed anteriad, with suture impressed, rounded at angles, oblique or somewhat sinuate in middle. Tibiae straight. Abdomen with strigulate microsculpture, very finely punctate. Ventrite I with submetacoxal area 0.05-0.06 mm long, about as long as third of shortest interval to apical margin.

Male. Protarsomeres I to III distinctly widened, narrower than apex of protibia. Lobe of ventrite VI about 0.08 mm long, triangular. Aedeagus (Figs 90-94) 0.62-0.68 mm long.

Comments: The structures of the aedeagal internal sac resemble those of *S. singaporense* Löbl, 1986, but the shape of the parameres and the apical process of the median lobe differ notably. The new species may be readily distinguished from *S. singaporense* by its much smaller body size and the evenly dark apical fourth of the elytra.

Distribution: Malaysia: Sabah.

***Scaphisoma pallidulum* sp. nov.**

Figs 95, 96

Holotype: MHNG; male; SABAH Mount Kinabalu 1500 m, 30.IV.1987 Burckhardt – Löbl.

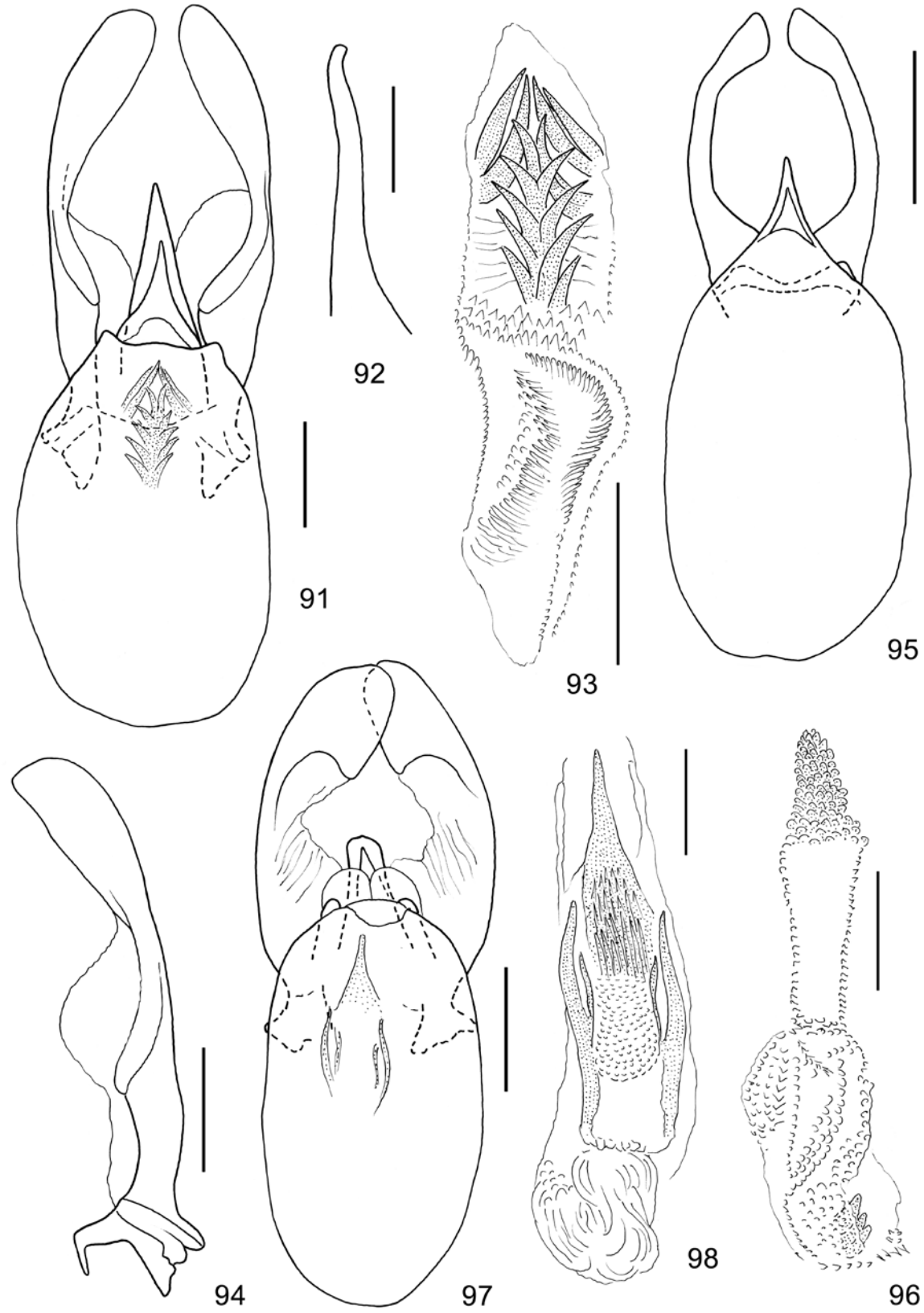
Paratypes: MHNG; 2 males; same data as holotype. – 1 male; same data but Liwagu Trail, 22.V.1987.

Diagnosis: Medium-large species with ochraceous body; elytra darkened along apical margins, lacking basal striae, sutural striae slightly converging apically; mesanepisternum and metaventrite with strigulate microsculpture, antecoxal puncture rows absent, submesocoxal lines convex; ventrite I with submetacoxal areas nearly as long as half of shortest interval between its margin and apical margin of ventrite; aedeagus symmetrical, with apical process long, gradually narrowed to acute tip, dorsal valve triangular in dorsal view, basal bulb large, parameres lacking membranous lobes, with expanded bases and apices, evenly narrow in middle section, internal sac bearing fine scale-like structures, with oval basal section bearing few proximal teeth, apical section tubular and lacking sclerotized teeth.

Etymology: The species epithet is a Latin adjective meaning pale.

Description: Length 1.54-1.67 mm, width 1.04-1.11 mm. Head, body and appendages ochraceous to yellowish, elytra slightly darkened along apical margins. Length/width ratios of antennomeres as in other members of *S. pictum* group. Pronotum and elytra not microsculptured. Pronotum with anterior bead broadly interrupted; lateral margins arcuate in dorsal view; lateral margin carinae barely visible in dorsal view; lateral margin striae punctate; discal punctation dense and very fine, punctures well delimited, visible at 20 times magnification. Tip of scutellum exposed. Elytron rather strongly narrowed apically, with lateral margin arcuate in basal half, oblique posteriad middle; lateral margin carina visible in dorsal view; lateral margin stria finely punctate; apical margin truncated, crenulate at inner angle; inner apical angle at level of outer apical angle; sutural margin not raised; adsutural area flat, about 0.05 mm wide shortly posteriad of scutellar tip, nearly evenly wide, with single fine puncture row; sutural striae starting at basal margin near pronotal lobe, curved at base, punctate; discal punctation rather fine, well delimited, punctures much larger than those on pronotum; puncture intervals mostly about as large to two times as large as puncture diameters. Hypomeron smooth. Mesoventrite punctate. Mesanepisternum extremely finely punctate, with strigulate microsculpture. Mesepimeron about three times as long as wide and distinctly shorter than interval to mesocoxa. Metaventrite sparsely and very finely punctate, with strigulate microsculpture, weakly convex in middle, lacking impressions, lacking antecoxal puncture rows; submesocoxal line slightly convex, margined by coarse punctures extended laterally up to mesepimera; submesocoxal area about 0.03 mm long, as long as sixth of shortest interval to metacoxae. Metanepisternum slightly convex, weakly narrowed anteriad, with suture impressed, straight except at rounded anterior angle, lacking obvious microsculpture. Tibiae straight. Abdomen with strigulate microsculpture, very finely punctate. Ventrite I with submetacoxal area 0.06 mm long, nearly as long as half of shortest interval to apical margin.

Male. Protarsomeres I to III rather strongly widened, protarsomere I nearly as wide as apex of protibia. Aedeagus (Figs 95, 96) 0.75-0.85 mm long.



Figs 91-98. *Scaphisoma* spp., genital characters. (91) *S. oxurum* sp. nov., aedeagus in dorsal view, scale = 0.1 mm. (92) ditto, median lobe, apical part of ventral branch in lateral view, scale = 0.05 mm. (93) ditto, internal sac, scale = 0.1 mm. (94) ditto, paramere in ventral view, scale = 0.1 mm. (95) *S. pallidulum* sp. nov., aedeagus in dorsal view, scale = 0.2 mm. (96) ditto, internal sac, scale = 0.1 mm. (97) *S. ruficolle* (Pic), aedeagus in dorsal view, scale = 0.2 mm. (98) ditto, internal sac, scale = 0.1 mm.

Comments: The aedeagal characters of this new species suggest relationships with *S. onerosum, S. flexuosum* and *S. garomontium*. It may be distinguished by the broad apices of the parameres and the structure of the internal sac. The dense elytral punctation of *S. pallidulum* provides a diagnostic character separating the species from *S. onerosum*.

Distribution: Malaysia: Sabah.

Scaphisoma ruficolle (Pic, 1915)

Figs 97-100

Pseudoscaphosoma ruficolle Pic, 1915b: 5.
Pseudoscaphosoma rufipenne Pic, 1916b: 7, **syn. nov**.
Pseudoscaphosoma ruficolle var. *maculipenne* Achard, 1920.
Pseudoscaphosoma ruficolle var. *distinctipenne* Pic, 1920.
Scaphisoma ruficolle; Löbl, 1975: 272.

Lectotype of *Pseudoscaphosoma rufipenne* Pic, 1916: NMPC; male; by present designation, labelled: Banguey J.W. (handwritten) / type (handwritten by M. Pic) / Ps. rufipenne (handwritten by M. Pic) / TYPE (red, printed) / Lectotype S. rufipenne (Pic) det. I. Löbl, 2022.

Material examined: MHNG; 1 male; Batu Punggul Resort env., 24.VI.-1.VII.1996; BPBM, MHNG. – 2 males; Tawau Residence Kalabakan, 80 mi West Tawau, 9-18.XI.1958, L.W. Quate.

Redescription: Length 1.52-1.78 mm, width 1.15-1.26 mm. Head, pronotum, hypomera, apical fifth of elytra and exposed abdominal tip light ochraceous, most of elytra, mesoventrite, metaventrite and basal ventrites darker, reddish-brown, appendages yellowish. Length/width ratios of antennomeres as in other members of *S. pictum* group. Pronotum and elytra not microsculptured. Pronotum with anterior bead broadly interrupted; lateral margins arcuate in dorsal view; lateral margin carinae visible in dorsal view; lateral margin striae impunctate; discal punctation extremely fine and sparse, very shallow, hardly visible at 100 times magnification. Tip of scutellum exposed. Elytron weakly narrowed apically, with lateral margin arcuate; lateral margin carina visible in dorsal view; lateral margin stria finely punctate; apical margin rounded, crenulate at inner angle; inner apical angle situated posteriad of level of outer apical angle; sutural margin not raised; adsutural area flat, about 0.12-0.15 mm wide shortly posteriad of scutellar tip, gradually strongly narrowed apically, finely and irregularly punctate near base, irregularly punctate section followed by row of fine punctures; sutural striae strongly converging apically, starting at basal margin near pronotal lobe, angular posteriad of level of scutellum, punctate; discal punctation rather coarse and shallow, punctures much larger than those on pronotum; puncture intervals mostly about as large to twice as large as puncture diameters. Hypomeron with strigulate microsculpture. Mesoventrite impunctate. Mesanepisternum extremely finely punctate. Mesepimeron not impressed, about four times as long as wide and shorter than interval between its tip and mesocoxa. Metaventrite with strigulate microsculpture, convex in middle, flattened and distinctly densely punctate between metacoxae, with antecoxal puncture rows, remaining punctation extremely fine and sparse; submesocoxal line convex, finely punctate; submesocoxal area about 0.04-0.05 mm long, as long as fourth of shortest interval to metacoxae. Metanepisternum flat, weakly narrowed anteriad, with suture moderately impressed and somewhat rounded at angles, lacking obvious microsculpture. Protibiae and metatibiae straight, mesotibiae curved. Abdomen with strigulate microsculpture. Ventrite I with patch of coarse punctures posteriad of intercoxal process, remaining punctation extremely fine and sparse; submetacoxal line convex, coarsely punctate; submetacoxal area 0.05 mm long, as long as third of shortest interval between its margin and apical margin of ventrite.
Male. Protarsomeres and mesotarsomeres I to III strongly widened, tarsomeres I about as wide as apices of respective tibiae. Lobe of ventrite VI subtriangular, about 0.10 mm long. Aedeagus (Figs 97-100) 0.85-1.10 mm long.

Comments: The appendages and the apical ventrites of the lectotype have been broken off and are missing. The lectotype is deposited in NMPC that holds the J. Achard's collection currently including several syntypes of species described by M. Pic. Likely they had been sent to J. Achard as gifts. The bulk of the M. Pic collection is in the Muséum national d'Histoire naturelle in Paris, for which the respective type material became unavailable for study.

Distribution: Malaysia: Sabah, Banggi Island.

Scaphisoma solutum Löbl, 1990

Scaphisoma solutum Löbl, 1990: 562.

Material examined: MHNG; 1 male; Crocker Range, around km 56 of road Kota Kinabalu Tambunan, Sunsuron Watefall env., 1100-1200 m, 8.VI.1996.

Comments: The species was based on a single specimen from Thailand. The Sabah specimen is smaller than the holotype, only 1.20 mm long, 0.78 mm wide, with the aedeagus 0.50 mm long and the submetacoxal area hardly 0.05 mm long.

Distribution: Malaysia: Sabah; Thailand.

Scaphisoma rouyeri species group

Löbl (1981a) established the group to accommodate 13 Asian species with a symmetrical aedeagus with the

dorsal side of the apical process incompletely split and lobed parameres. Most of these species have shortened sutural striae of the elytra and hypomera with distinct strigulate microsculpture. Both character states are rather unusual in other species groups.

Scaphisoma alesi sp. nov.

Figs 101, 102

Holotype: MHNG; male; Borneo Sabah Mount Kinabalu Nat[ional]. Park H[ead]Q[uarters] Silau-Silau Tr[ail]. 1560 m 3.8.[19]88 A. Smetana [B78].

Paratypes: MHNG; 23 males, 33 females; with same data as holotype. – 2 males, 1 female; same data but 1550 m, 2.IX.1988. – 1 male; same data but 4.IX.1988. – 1 male; Kinabalu Nat. Park, Headquarters, at Liwagu Trail, 1500 m, 16.V.1987, A. Smetana. – 2 males; same data but 13.VIII.1988. – 1 female; Poring Hot Spring, 500 m, 6.V.1987, D. Burckhardt & I. Löbl. – 9 males, 11 females; Crocker Range, Gunung Emas, 1500-1700 m, around km 52 of road Kota Kinabalu - Tambunan 6.-18. VI.1996. – 2 females; Crocker Range, Gunung Emas, 23.V.1996, J. Kodada & F. Čiampor. – 11 males, 19 females; Crocker Range, around km 56 of road Kota Kinabalu - Tambunan, Sunsuron Waterfall env., 1100-1200 m, 8.VI.1996. – EUMJ; 2 females; Kinabalu Nat. Park, Headquarters, 1500 m, 17-19.III.1993, T. Ueno.

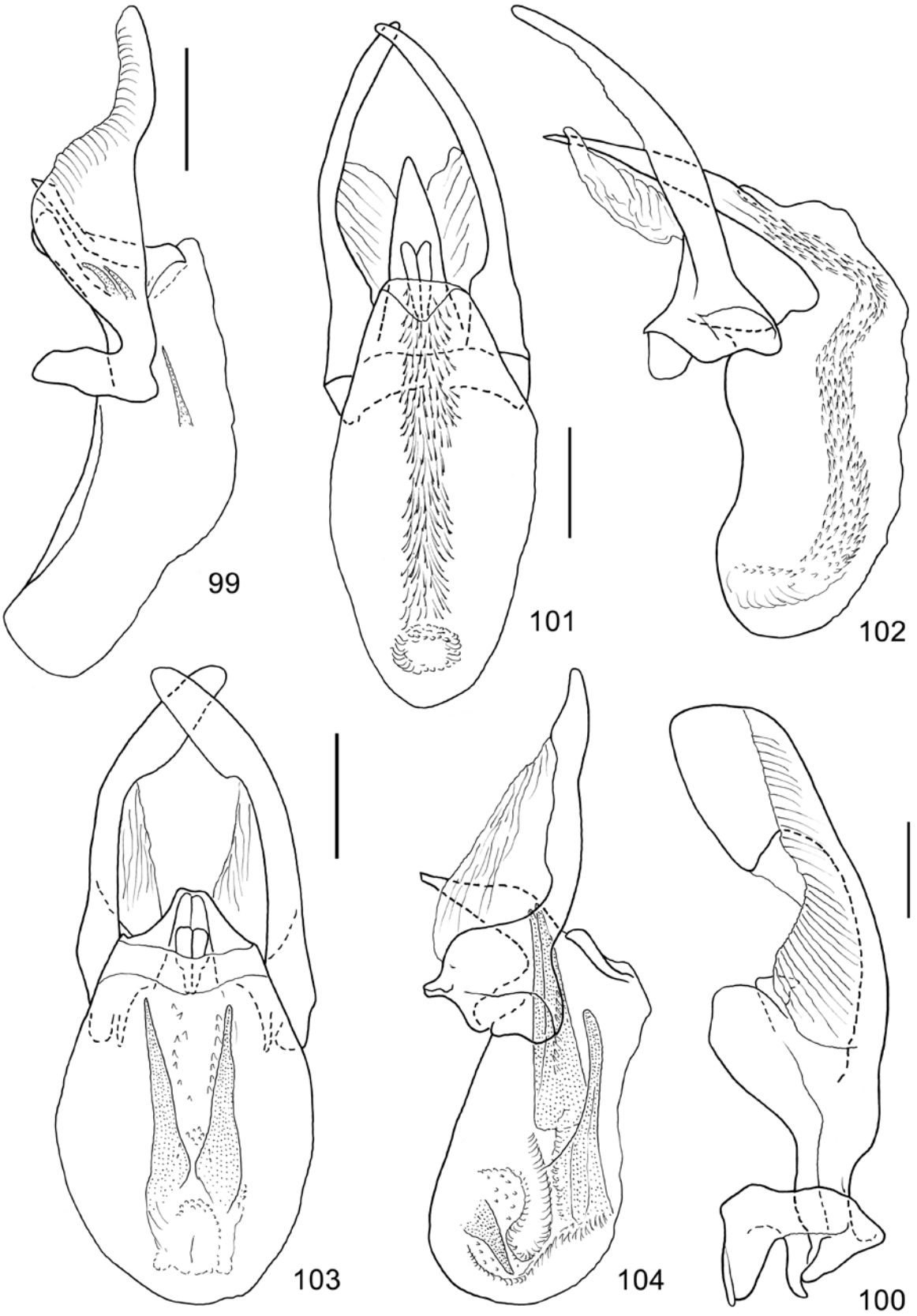
Diagnosis: Medium-large species with dark brown body, elytra lighter in apical third; pronotum lacking basal coarse punctures; with sutural striae shortened, discal coarse punctures forming striae reaching up to apical third; hypomeron and metaventrite with strigulate microsculpture, antecoxal puncture rows present, submesocoxal lines parallel; ventrite I with submetacoxal areas nearly as long as half of shortest interval between its margin and apical margin of ventrite; aedeagus symmetrical, with apical process long, strongly inflexed, gradually narrowed to acute tip in dorsal view, basal bulb oval, parameres arcuate, narrowed apically, with ventral margins uneven in apical halves, each with short lobe, internal sac tubular, finely spinose, lacking sclerotized teeth.

Etymology: The species is named in honour of the late Aleš Smetana, one of my oldest friends.

Description: Length 1.55-1.65 mm, width 0.97-1.10 mm. Head, pronotum, and most of elytra evenly dark brown, apical third of elytra entirely light brown or yellowish, or in part light and near apical margin darkened. Ventral side of thorax darkened, often blackish; ventrites I to V or VI brown, apical abdominal segments yellowish. Appendages yellowish. Antennae long, length/width ratios of antennomeres like those in other species of the group. Pronotum and elytra lacking microsculpture. Pronotum with anterior bead broadly interrupted; lateral margins nearly oblique, lateral margin carinae visible in dorsal view, lateral margin striae punctate; discal punctation dense and well visible, punctures well delimited, not becoming denser and coarser along basal margin. Tip of scutellum exposed. Elytron moderately narrowed apically, with lateral margin arcuate; lateral carina distinct in dorsal view; lateral margin stria punctate; apical margin rounded, finely crenulate at inner angle; outer apical angle at level of inner apical angle; sutural margin not or slightly raised; sutural stria moderately shortened, starting posteriad of scutellar tip, sometimes traceable at each side of pronotal lobe, parallel with suture anterior of mid-length, converging posteriad; adsutural area bearing single puncture row; discal punctures coarse, punctures well delimited, in part about as large as puncture intervals, forming oblique rows extended to light apical area; punctation on apical third irregular, in part coarse. Hind wing present. Hypomeron impunctate, with strigulate microsculpture. Mesepimeron not impressed, narrow and long, about four times as long as wide and two times as long as interval between its tip and mesocoxa. Metaventrite lacking impressions, with strigulate microsculpture, in middle slightly convex and irregularly coarsely punctate, very finely punctate laterally, antecoxal puncture rows excepted; submesocoxal line parallel, coarsely punctate; submesocoxal area 0.03 mm long, as long as fourth to third of shortest interval to metacoxa. Metanepisternum narrowed anteriad, with suture impressed, rounded near angles, lacking obvious microsculpture. Protibiae straight, mesotibiae and metatibiae slightly curved. Abdomen with strigulate microsculpture. Exposed tergites and ventrites very finely punctate, except for distinct punctures on intercoxal process of ventrite I. Ventrite I with submetacoxal line convex, punctate; submetacoxal area 0.06 mm, shorter than half of shortest interval to apical margin of ventrite.

Male. Protarsomeres I to III moderately widened, much narrower than apex of protibiae, mesotarsomeres I and II slightly widened. Apical margin of ventrite VI rounded. Aedeagus (Figs 101, 102) 0.53-0.62 mm long.

Comments: This species shares with *S. delictum* Löbl, 1981, *S. malignum* Löbl, 1986 and *S. pseudodelictum* Löbl, 1986 a long apical process of the median lobe, narrow apical halves of the parameres and a long, finely spinose internal sac. Unlike these three species, the apical spines in the new species are not notably elongate and do not form a bunch. *Scaphisoma alesi* may be easily distinguished by the pronotum not conspicuously punctate near the basal margin and the elytra not darkened along the apical margins. In addition, *S. pseudodelictum* possesses a conspicuously dense and coarse punctation extended on to the entire lateral parts of the pronotum. The new species is rather similar to *S. punctatum* (Pic, 1915) from Kalimantan for which the



Figs 99-104. *Scaphisoma* spp., genital characters. (99) *S. ruficolle* (Pic), aedeagus in lateral view, scale = 0.1 mm. (100) ditto, paramere in ventral view, scale = 0.2 mm. (101). *S. alesi* sp. nov., aedeagus in dorsal view, scale = 0.1 mm. (102) ditto, aedeagus in lateral view. (103) *S. burckhardti* sp. nov., aedeagus in dorsal view, scale = 0.1 mm. (104) ditto, aedeagus in lateral view.

male characters remain unknown. The latter species has elytra with coarse puncture rows extending to the lateral margins.

Distribution: Malaysia: Sabah.

Scaphisoma burckhardti sp. nov.

Figs 103, 104

Holotype: MHNG; male; Sabah: Poring Hot Spring, 550-600 m 9.V.1987 #18a Burckhardt – Löbl.

Paratypes: MHNG; 1 male; Poring Hot Spring, 500 m, 6.V.1987, D. Burckhardt & I. Löbl. – 5 males, 1 female; Batu Punggul Resort env., 24.VI.-1.VII.1996, vegetation debris and forest floor litter accumulated around large trees near river. – OUMNH; 1 male; Lahad Datu Ulu Segama For. Res., Danum Valley For. Centre, N 04°57' E 117°48' 450 m, Nature Trail Area, lowland mixed Dipterocarp forest, 1.-5.IX.2005, FIT, D. Mann, E. Slade & J. Villanueva.

Diagnosis: Small species with brown body; pronotum with punctation coarser along base than in middle of disc; elytra with sutural striae strongly shortened, coarse discal punctures rows extended to apical margins; hypomeron and metaventrite lacking microsculpture, antecoxal puncture rows present, submesocoxal lines parallel; ventrite I with submetacoxal areas about as long as half of shortest interval between its margin and apical margin of ventrite; aedeagus symmetrical, with apical process rather short, strongly inflexed, gradually narrowed, concavely truncate at tip, basal bulb oval, parameres with long lobes, abruptly widened in apical fourth, with dorsal margins sinuate in lateral view, internal sac with complex pattern of membranous scale-like structures, denticles and larger sclerites, and with two large spines diverging and narrowed apically.

Etymology: The species is named in honour of my friend and colleague, Daniel Burckhardt of Basel, Switzerland.

Description: Length 1.05-1.18 mm, width 0.72-0.76 mm. Head, pronotum, and elytra evenly brown, ventral side of thorax often darkened, ventrites I to III about as elytra, following ventrites, exposed tergites and appendages yellowish. Antennae long, length/width ratios of antennomeres like those in other species of group. Pronotum and elytra lacking microsculpture. Pronotum with anterior bead broadly interrupted; lateral margins nearly oblique, lateral margin carinae concealed in dorsal view, lateral margin striae punctate; discal punctation dense and well visible along basal margin, with punctures in part about as large as puncture intervals, on prevailing surface much finer and rather sparse. Tip of scutellum exposed. Elytron moderately narrowed apically, with lateral margin arcuate; lateral carina indistinct in dorsal view; lateral margin stria punctate; apical margin truncated, finely crenulate at inner angle; outer apical angle at level of inner apical angle; sutural margin slightly raised or not; sutural stria shortened, starting posteriad of elytral mid-length, parallel with suture; adsutural area bearing single puncture row; discal punctures coarse, forming oblique rows extended to apical margin of elytron, punctures well delimited, in part as large or larger than puncture intervals. Hypomeron impunctate, lacking microsculpture. Mesepimeron impressed, narrow and long, about four times as long as wide and two times as long as interval between its tip and mesocoxa. Metaventrite flattened in middle, lacking impressions and obvious microsculpture, with irregularly scattered, distinct punctures on median area, lateral areas very finely and sparsely punctate; antecoxal puncture rows coarse and very dense; submesocoxal line parallel, coarsely punctate; submesocoxal area 0.02 mm long, as long as sixth of shortest interval to metacoxa. Metanepisternum narrowed anteriad, with suture impressed, lacking obvious microsculpture. Tibiae straight. Abdomen with strigulate microsculpture evanescent on basolateral parts of ventrite I. Exposed tergites very finely punctate. Ventrite I with submetacoxal line convex, punctate; submetacoxal area 0.05 mm long, about as long as half of shortest interval to apical margin of ventrite; punctation very fine and sparse, as on following ventrites, except for distinct punctures on intercoxal process.

Male. Protarsomeres I to III moderately widened, much narrower than apex of protibia. Mesotarsomeres I and II slightly widened. Aedeagus (Figs 103, 104) 0.40-0.53 mm long.

Comments: This species may be readily distinguished from other Bornean members of the group by the small body size in combination with the evenly brown elytra with strongly shortened sutural striae, the lack of hypomeral microsculpture and the shape of the parameres abruptly widened apically. The internal sac with two large spines and the shape of the parameres as seen in dorsal view are diagnostic.

Distribution: Malaysia: Sabah.

Scaphisoma jankoi sp. nov.

Figs 105, 106

Holotype: MHNG; male; Malaysia, Sabah, Crocker Range, around km 56 of road Kota Kinabalu Tambunan, Sunsuron Waterfall env., 1100-1200 m a.s.l. 8.VI.1996, 5 c.

Diagnosis: Small species with reddish-brown body, elytra lighter than pronotum and with subhumeral spot; pronotum with punctation coarser along base than in middle of disc; elytra with sutural striae strongly shortened, outer rows of coarse punctures

extended nearly to apical margins; hypomeron lacking microsculpture; metaventrite with strigulate microsculpture, antecoxal puncture rows present, submesocoxal lines parallel; ventrite I with submetacoxal areas about as long as third of shortest interval between its margin and apical margin of ventrite; aedeagus symmetrical, with apical process rather short, strongly inflexed, gradually narrowed in lateral view, dorsal branches expanded, basal bulb oval, parameres with lobes, nearly evenly wide posteriad of bases and with arcuate apical halves in dorsal view, with dorsal margins sinuate in lateral view, internal sac with two apical pairs of sclerotized spines and fine scale-like structures and denticles in proximal half.

Etymology: The species epithet is a Slav diminutive of the forename of Ján Kodada of Bratislava, a friend and an outstanding field worker.

Description: Length 1.35 mm, width 0.93 mm. Head and most of body reddish-brown, elytron lighter than pronotum and with weakly delimited still lighter subhumeral spot and lighter apical fourth. Apical abdominal segments and appendages ochraceous to yellowish. Antennae long, length/width ratios of antennomeres like those in other species of group. Pronotum and elytra lacking microsculpture. Pronotum with anterior bead broadly interrupted; lateral margins nearly oblique, lateral margin carinae concealed in dorsal view, lateral margin striae punctate; discal punctation dense and well visible along basal margin, with punctures in part about as large as puncture intervals, on prevailing surface much finer and rather sparse. Tip of scutellum exposed. Elytron moderately narrowed apically, with lateral margin arcuate; lateral carina exposed in dorsal view; lateral margin stria punctate; apical margin truncated, finely crenulate at inner angle; outer apical angle at level of inner apical angle; sutural margin slightly raised in apical half; sutural stria shortened, starting posteriad of elytral basal third, parallel with suture; adsutural area bearing single puncture row; discal punctures coarse, forming oblique rows; outer rows nearly reaching apical margin of elytron, inner rows hardly reaching apical fourth of elytron; coarse punctures well delimited, in part as large or larger than puncture intervals. Hypomeron impunctate, lacking microsculpture. Mesepimeron impressed, large, about three times as long as wide and slightly more than two times as long as interval between its tip and mesocoxa. Metaventrite with strigulate microsculpture, hardly convex in middle, lacking impressions, coarsely punctate on median area; lateral areas of metaventrite very finely and sparsely punctate; antecoxal puncture rows coarse and dense; submesocoxal line parallel, coarsely punctate; submesocoxal area 0.02 mm long, as long as seventh of shortest interval to metacoxa. Metanepisternum lacking obvious microsculpture, narrowed anteriad, with suture impressed and broadly arcuate. Tibiae straight. Abdomen with strigulate microsculpture evanescent on basolateral parts of ventrite I. Exposed tergites very finely punctate. Ventrite I with submetacoxal line convex, punctate; submetacoxal area 0.05 mm long, about as long as third of shortest interval to apical margin of ventrite; punctation as on following ventrites very fine and sparse, except for distinct punctures on intercoxal process.

Male. Protarsomeres I to III moderately widened, narrower than apex of protibia. Mesotarsomeres I and II slightly widened. Apical margin of ventrite VI broadly rounded. Aedeagus (Figs 105, 106) 0.58 mm long.

Comments: This new species may be distinguished from other members of the *S. rouyeri* group by the expanded dorsal branches of the median lobe in combination with the internal sac bearing two pairs of spine-like sclerites.

Distribution: Malaysia: Sabah.

Scaphisoma kalabitoides **sp. nov.**

Figs 107, 108

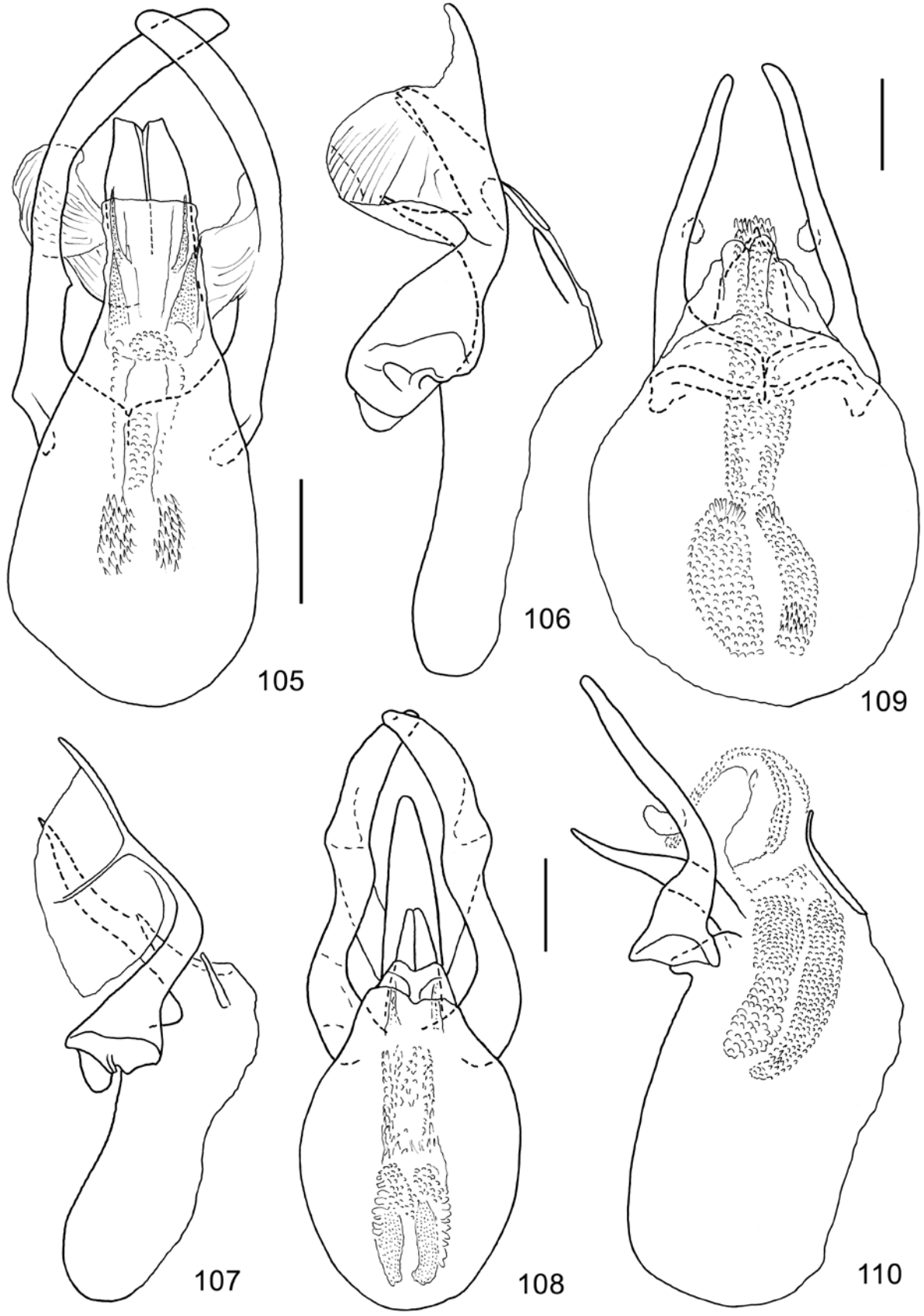
Holotype: MHNG; male; Malaysia SABAH, Crocker Range, Gunung Emas, 1500-1700 m, around km 52 of road Kota Kinabalu Tambunan. 6.-18. VI. 1996, 2c.

Paratypes: MHNG; 1 male; with same data as holotype. – 1 female; Crocker Range, Gunung Emas, 23.V.1998, J. Kodada & F. Čiampor.

Diagnosis: Medium-large species with brown or reddish-brown body, elytra with distinctive colour pattern; pronotum with punctation coarser along base than in middle of disc; elytra with sutural striae shortened, rows of coarse punctures extended to apical third; hypomeron and metaventrite with strigulate microsculpture, antecoxal puncture rows present, submesocoxal lines nearly parallel; ventrite I with submetacoxal areas about as long as fifth of shortest interval between its margin and apical margin of ventrite; aedeagus symmetrical, with apical process long, inflexed, sinuate and gradually narrowed in lateral view, basal bulb oval, parameres with large lobes, wide and conspicuously sinuate in dorsal view, dorsal margins convex in lateral view, internal sac with two incurved proximal tooth-like sclerites and fine scale-like structures and denticles.

Etymology: The species epithet is derived from the name of the related *S. kalabitum*.

Description: Length 1.72-1.78 mm, width 1.08-1.15 mm. Head and pronotum evenly dark reddish-brown. Elytron dark brown along basal margin, along anterior half of lateral margin and in anterior half near suture; with large ochraceous spot covering most of



Figs 105-110. *Scaphisoma* spp., genital characters. (105) *S. jankoi* sp. nov., aedeagus in dorsal view, scale = 0.1 mm. (106) ditto, aedeagus in lateral view. (107) *S. kalabitoides* sp. nov., aedeagus in lateral view. (108) ditto, aedeagus in dorsal view, scale = 0.2 mm. (109) *S. mediale* sp. nov., aedeagus in dorsal view, scale = 0.1 mm. (110) ditto, aedeagus in lateral view.

anterior half of disc; posterior ochraceous spot light brown to yellowish, darkened near apical margin. Ventral side of thorax dark brown, ventrites I to IV rather dark reddish-brown, following ventrites and exposed tergites yellowish. Appendages yellowish. Antennae long, length/width ratios of antennomeres like those in other species of group. Pronotum and elytra lacking microsculpture. Pronotum with anterior bead broadly interrupted; lateral margins nearly oblique, lateral margin carinae concealed in dorsal view, lateral margin striae punctate; discal punctation dense and well visible along basal margin, with punctures in part about as large as puncture intervals, on prevailing surface very finer and sparse. Tip of scutellum exposed. Elytron moderately narrowed apically, with lateral margin arcuate; lateral carina distinct in dorsal view; lateral margin stria punctate; apical margin truncated, finely crenulate at inner angle; outer apical angle situated posteriad of level of inner apical angle; sutural margin slightly raised or not; sutural stria shortened, starting posteriad of basal fourth of sutural length, parallel with suture; adsutural area bearing single puncture row; discal punctures coarse, in part forming oblique rows reaching apical third of elytron, punctures well delimited, mostly distinctly smaller than puncture intervals. Hypomeron appearing impunctate, with strigulate microsculpture. Mesepimeron narrow and long, about eight times as long as wide and three times as long as interval between its tip and mesocoxa. Metaventrite slightly convex in middle, lacking impressions, flattened apicomesally, bearing strigulate microsculpture, very finely and sparsely punctate, except for coarse punctures on apicomesal area and antecoxal puncture rows; submesocoxal line nearly parallel, coarsely punctate; submesocoxal area 0.03-0.04 mm long, as long as sixth of shortest interval to metacoxa. Metanepisternum lacking obvious microsculpture, narrowed anteriad, with suture broadly rounded near angles, oblique in middle. Protibiae and metatibiae straight, mesotibiae curved. Abdomen with strigulate microsculpture. Exposed tergites very finely punctate. Ventrite I with submetacoxal line convex, punctate; submetacoxal area 0.04 mm long, about as long as fifth of shortest interval to apical margin of ventrite; punctation as on following ventrites very fine and sparse, row of distinct punctures along margin of intercoxal process excepted.

Male. Protarsomeres I and II strongly enlarged, I nearly as wide as apex of protibia; protarsomere III slightly widened. Mesotarsomeres I and II strongly widened. Ventrite VI with apical margin slightly notched at each side of mesal lobe, latter about 0.04 mm long. Aedeagus (Figs 107, 108) 1.10-1.15 mm long.

Comments: This species shares with *S. kalabitum* Löbl, 1987 and *S. pseudokalabitum* Löbl & Ogawa, 2016 a peculiar form of the parameres. However, it is easily distinguished by the long and sinuate apical process of the median lobe, which is extended posteriad of the level of the middle third of the parameres. The internal sac with a pair of incurved basal tooth-like sclerites is also unique in the new species. The external characters of *S. kalabitoides* are very similar to those of *S. kalabitum*, but *S. pseudokalabitum* may be distinguished by its smaller body and colour pattern.

Distribution: Malaysia: Sabah.

Scaphisoma kalabitum Löbl, 1987

Scaphisoma kalabitum Löbl, 1987: 95.

Material examined: MHNG; 1; Mount Kinabalu, nr Headquarters, 1550-1650 m, 24.IV.1987, D. Burckhardt & I. Löbl. – 2; Mount Kinabalu, 1750 m, 27.IV.1987, D. Burckhardt & I. Löbl. – 1; Mount Kinabalu, 1750 m, X.1990, G. de Rougemont. – 1; Mount Kinabalu, nr Headquarters, 1490 m, 18.V.1987, A. Smetana; 1; Mount Kinabalu, nr Headquarters, 1500 m, 25.IV.1987, D. Burckhardt & I. Löbl. – 1; Mount Kinabalu, Headquarters, Mempening Trail, 1600 m, 17.V.1987, A. Smetana. – 1; Mount Kinabalu, nr Headquarters, 1560-1660 m, 24.IV.1987, A. Smetana. – 6, Mount Kinabalu, nr Headquarters, Liwagu Trail, 1500-1550 m, *27*.IV., 30.IV. and 16.V.1987, A. Smetana. – 10, Mount Kinabalu, Headquarters, Liwagu Trail, 1510 m, 13.VIII.1988, A. Smetana. – 14, Mount Kinabalu, nr Headquarters, Silau-Silau Trail, 1550 m, 2. and 4.IX.1988, A. Smetana. – 31; Mount Kinabalu, Headquarters, Silau-Silau Trail, 1560 m, 3.VIII.1988, A. Smetana. – 7, Crocker Range, around km 56 of road Kota Kinabalu - Tambunan, Sunsuron Waterfall env., 1100-1200 m, 8.VI.1996. – 1; Crocker Range, Gunung Emas, 23.V.1998, J. Kodada & F. Čiampor; 9, Crocker Range, Gunung Emas, 1500-1700 m, around km 52 of road Kota Kinabalu – Tambunan, 6.-18.VI.1996. – 1; Batu Punggul Resort env., 24.VI.-1.VII.1996, FIT. – 2; Sepilok, Kabili-Sepilok Forest Reserve, 30 m, 19.III.1983, B. Hauser. – EUMJ; 4, Mount Kinabalu, Headquarters, 1500 m, 17.-19.III.1993, T. Ueno. – EUMJ; 1; Mount Kinabalu N.P., Poring Hot Spring, 600 m, 20.-26.III.1993, T. Ueno.

Comments: The description of the species was based on two males. The females have the elytra expanded apically and longer along the suture than along the lateral margins, and their apical margins are conspicuously oblique.

Distribution: Malaysia: Sabah.

Scaphisoma mediale sp. nov.

Figs 109-111

Holotype: MHNG; male; Sabah Mount Kinabalu 1750 m 27.IV.1987 Burckhardt – Löbl.

Paratypes: MHNG; 1 male; 1 female; with same data as holotype. – 1 female; Mount Kinabalu, 1800 m, 26.IV.1987, D. Burckhardt & I. Löbl. – 1 male; Crocker Range, around km 56 of road Kota Kinabalu-Tambunan, Sunsuron Waterfall env., 1100-1200 m, 8.VI.1996. – BPBM; 1 male; Mount Kinabalu, Kambaranga, 2140 m, 22-30.X.1958, T.C. Maa.

Diagnosis: Medium-large species with dark brown to blackish thorax, elytra with yellowish subbasal band and light area posteriad of middle third; pronotum with punctation coarser along base than in middle of disc; elytra with sutural striae shortened, rows of coarse punctures extending to apical third; hypomeron and metaventrite with strigulate microsculpture, antecoxal puncture rows present, submesocoxal lines nearly parallel; ventrite I with submetacoxal areas nearly as long as half of shortest interval between its margin and apical margin of ventrite; aedeagus symmetrical, with apical process short, strongly inflexed, sinuate and gradually narrowed in lateral view, basal bulb large, oval, parameres with minute lobes, hardly narrowed posteriad of wide base and slightly sinuate in dorsal view, curved posteriad of bases in lateral view, internal sac lacking sclerites, with two proximal bulbous parts followed by longer tubular section.

Etymology: The species epithet is a Latin adjective meaning central.

Description: Length 1.50-1.55 mm, width 0.98-1.04 mm. Head and pronotum evenly dark brown to blackish. Elytron dark brown, with light, yellowish or ochraceous narrow subbasal band and broad light area posteriad of middle third, in some specimens narrowly darkened along or near apical margin. Venter of thorax and ventrite I dark reddish-brown to blackish, following ventrites, exposed tergites and appendages yellowish. Antennae long, length/width ratios of antennomeres like those in other species of group. Pronotum and elytra lacking microsculpture. Pronotum with anterior bead broadly interrupted; lateral margins arcuate, lateral margin carinae exposed in dorsal view, lateral margin striae punctate; discal punctation dense and well visible on basal sixth to fourth, with punctures in part about as large as puncture intervals, on prevailing surface notably finer and sparser. Tip of scutellum exposed. Elytron moderately narrowed apically, with lateral margin oblique in middle third, rounded near base and apex; lateral carina distinct in dorsal view; lateral margin stria punctate; apical margin truncated, not crenulate, outer apical angle at same level as inner apical angle; sutural margin slightly raised; sutural stria shortened, starting posterior basal fifth of sutural length, parallel with suture; adsutural area bearing single puncture row; discal punctures coarse, in part forming oblique rows reaching apical third of elytron, punctures well delimited, usually distinctly smaller than puncture intervals; apical fourth of elytron appearing impunctate. Hypomeron very finely punctate, with strigulate microsculpture. Mesepimeron narrow and long, about ten times as long as wide and two times as long as interval between its tip and mesocoxa. Metaventrite slightly convex in middle, lacking impressions, flattened apicomesally, bearing strigulate microsculpture, very finely and sparsely punctate, except on flattened area and antecoxal rows of coarse punctures; submesocoxal line nearly parallel, rather coarsely punctate; submesocoxal area 0.04-0.05 mm long, as long as fifth to fourth of shortest interval to metacoxa. Metanepisternum narrowed anteriad, with suture broadly rounded near angles, oblique in middle, lacking obvious microsculpture. Protibiae and metatibiae straight, mesotibiae curved. Abdomen with strigulate microsculpture. Exposed tergites very finely punctate. Ventrite I with submetacoxal line convex, punctate; submetacoxal area 0.07 mm long, nearly as long as half of shortest interval to apical margin of ventrite; punctation as on following ventrites very fine and sparse, row of distinct punctures along margin of intercoxal process except for.

Male. Protarsomere I weakly enlarged. Ventrite VI with shallow apicomedian impression. Aedeagus (Figs 109-111) 0.70-0.74 mm long.

Comments: The aedeagal characters of this new species suggest a relationship with *S. malignum* Löbl, 1986, known from Northeast India. These two species share narrow, weakly sinuate parameres, small parameral lobe and a large basal bulb. *Scaphisoma mediale* may be distinguished by the lobe situated at mid-length of the parameres while it is basal in *S. malignum*. Moreover, the internal sac bears a mesal bunch of spines and the apical process of the median lobe is oblique in lateral view in the latter species, while the apical process is sinuate in lateral view and the mesal bunch of spines is absent in the new species. The shape of the parameres is nearly the same as in *S. centronotatum* Pic, 1922, a member of the *S. pictum* group.

Distribution: Malaysia: Sabah.

Scaphisoma meritum sp. nov.

Figs 112, 113

Holotype: MHNG; male; Malaysia, Sabah, Crocker Range, Gunung Emas, 23.05.1998, J. Kodada & F. Čiampor lgt.

Paratypes: MHNG; 1 male; Poring Hot Spring, Langanan Falls, 900-950 m, 12.V.1987, D. Burckhardt & I. Löbl. – 2 males; same data but 900 m, 14.V.1987, A. Smetana. – 1 male; same data but below Langanan Falls, 800 m, 12.V.1987.

Diagnosis: Rather small species with dark brown to blackish body; pronotum with punctation coarser along

base than on anterior third of disc; elytra with sutural striae shortened, rows of coarse punctures extended to apical third; hypomeron and metaventrite with strigulate microsculpture, antecoxal puncture rows present, submesocoxal lines nearly parallel; ventrite I with submetacoxal areas nearly as long as third of shortest interval between its margin and apical margin of ventrite; ventrite VI with deep apicomedian notch; aedeagus symmetrical, with apical process short, strongly inflexed, oblique and gradually narrowed in lateral view, basal bulb oval, parameres with large lobes, uneven margins and slightly widened apices in dorsal view, upper margin sinuate in lateral view, internal sac with basal bunch of spines.

Etymology: The species epithet is a Latin adjective meaning respected.

Description: Length 1.25-1.45 mm, width 0.85-0.94 mm. Head and pronotum evenly dark brown to blackish. Elytron dark brown to blackish along base, lateral and sutural margins, on centre and on apical fifth; with small ochraceous subbasal spot and large, transverse yellowish band posteriad of mid-length. Ventral side of thorax blackish, ventrites I to III dark brown, following ventrites, exposed tergites and appendages yellowish. Antennae long, length/width ratios of antennomeres like those in other species of group. Pronotum and elytra lacking microsculpture. Pronotum with anterior bead broadly interrupted; lateral margins oblique, lateral margin carinae exposed in dorsal view, lateral margin striae punctate; discal punctation dense and coarse along base, consisting of well delimited punctures in part as large as puncture intervals; scattered coarse punctures reaching anterior half of pronotal length, most punctures very fine and sparse. Tip of scutellum exposed. Elytron moderately narrowed apically, with lateral margin oblique in middle third, rounded near base and apex; lateral carina distinct in dorsal view; lateral margin stria punctate; apical margin arcuate, not crenulate, outer apical angle situated posteriad of level of inner apical angle; sutural margin raised; sutural stria shortened, starting posteriad of basal fifth of sutural length, parallel with suture; adsutural area bearing single puncture row; discal punctures coarse, in part forming oblique rows reaching apical fourth of elytron, punctures well delimited, in part as large or larger than puncture intervals; apical fifth of elytron finely punctate. Hypomeron very finely punctate, with strigulate microsculpture. Mesepimeron impressed, narrow and long, about six times as long as wide and three times as long as interval between its tip and mesocoxa. Metaventrite convex in middle, lacking impressions, flattened apicomesally, bearing strigulate microsculpture, very finely and sparsely punctate, except on flattened area, with few coarse punctures in middle and antecoxal rows of coarse punctures; submesocoxal line parallel, rather coarsely punctate; submesocoxal area 0.02-0.03 mm long, about as long as tenth of shortest interval to metacoxa. Metanepisternum narrowed anteriad, with suture broadly rounded near angles, oblique in middle, lacking obvious microsculpture. Protibiae straight, mesotibiae and metatibiae curved. Abdomen with strigulate microsculpture. Exposed tergites very finely punctate. Ventrite I with submetacoxal line convex, punctate; submetacoxal area 0.04 mm long, nearly as long as third of shortest interval to apical margin of ventrite; punctation as on following ventrites very fine and sparse, row of distinct punctures along margin of intercoxal process excepted.

Male. Protarsomeres I and II distinctly enlarged, protarsomere III and mesotarsomeres not enlarged. Ventrite VI with deep apicomedian notch. Aedeagus (Figs 112, 113) 0.55-0.69 mm long.

Comments: The aedeagal characters of this new species are similar to those of *S. kalabitum* Löbl, 1987 and *S. pseudokalabitum* Löbl & Ogawa, 2016, but differ significantly by the widened apices of the parameres and the internal sac possessing two proximal bunches of spines. This new species is distinguished also by the shape of the male ventrite VI, and from *S. pseudokalabitum* by the larger body size and colour pattern of the elytra.

Distribution: Malaysia: Sabah.

***Scaphisoma panas* sp. nov.**

Figs 114, 115

Holotype: MHNG; male; SABAH: Poring Hot Springs, 500 m 6.V.1987 Burckhardt – Löbl.

Paratypes: MHNG; 2 males; with same data as holotype. – 1 male; same data but 8.V.1987; 1 female; above Poring Hot Spring 550 m, 9.V.1987, A. Smetana. – 1 male; Poring Hot Spring, 600 m 11.VII.92, E. Heiss. – 2 males, 1 female; Sepilok, Kabili-Sepilok Forest Reserve, 4.V.1982, B. Hauser. – 1 male, 3 females; same data but 22.IV.1982. – 1 female; same but 6.V.1982; 2 males, 3 females; same data but 18.III.1983.

Diagnosis: Small species with brown body; pronotum with punctation coarser along base than on middle of disc; elytra with sutural striae shortened, rows of coarse punctures nearly reaching apical margin; hypomeron lacking microsculpture; metaventrite with strigulate microsculpture evanescent laterally, antecoxal puncture rows present, submesocoxal lines parallel; ventrite I with submetacoxal areas as long as half to two thirds of shortest interval between its margin and apical margin of ventrite; aedeagus symmetrical, with apical process rather short, weakly inflexed, oblique, gradually narrowed and with blunt apex in lateral view, basal bulb oval, parameres with large lobes, arcuate in dorsal and

lateral views, widened apically in dorsal view, internal sac with two basal bunches of diverging spines.

Etymology: The species epithet is a Malay word meaning hot.

Description: Length 1.04-1.18 mm, width 0.68-0.75 mm. Head and body light to dark brown, abdomen lighter than thorax, with apical segments yellowish, appendages yellowish. Antennae long, length/width ratios of antennomeres like those of other species of group. Pronotum and elytra lacking microsculpture. Pronotum with anterior margin bead broadly interrupted; lateral margins oblique in basal laves, arcuate in anterior halves; lateral margin carinae concealed in dorsal view, lateral margin striae punctate; disc coarsely and densely punctate along basal margin, on prevailing surface very finely and sparsely punctate. Elytron moderately narrowed apically, with lateral margin arcuate; lateral carina concealed in dorsal view; lateral margin stria punctate; apical margin weakly rounded to truncated, lacking obvious crenulation; outer apical angle at same level as inner apical angle; sutural margin slightly raised or not; sutural stria shortened, starting posteriad of basal fifth of sutural length, slightly converging apically; adsutural area bearing single puncture row; discal punctures coarse, in part forming oblique rows nearly reaching apical margin of elytron, punctures well delimited, in part as large as or larger than puncture intervals; apical fourth of elytron coarsely punctate. Hypomeron smooth, lacking microsculpture. Mesepimeron impressed, narrow and long, about five times as long as wide and two times as long as interval between its tip and mesocoxa. Metaventrite flattened in middle, lacking impressions, with strigulate microsculpture evanescent laterally; punctation scattered and coarse on mesal area, very fine and sparse on lateral areas except for conspicuously impressed antecoxal rows of coarse punctures; submesocoxal line parallel, coarsely punctate; submesocoxal area hardly 0.02 mm long, as long as seventh to sixth of shortest interval to metacoxa. Metanepisternum narrowed anteriad, broadly rounded near posterior angle, with conspicuously deep and punctate suture, lacking obvious microsculpture. Tibiae straight. Abdomen with strigulate microsculpture. Exposed tergites very finely punctate. Ventrite I with submetacoxal line convex, punctate; submetacoxal area 0.04-0.05 mm long, about as long as half to two thirds of shortest interval to apical margin of ventrite; punctation as on following ventrites very fine and sparse, row of distinct punctures along margin of intercoxal process excepted.

Male. Protarsomeres I to III and mesotarsomeres I and II slightly widened, much narrower than apices of respective tibiae. Ventrite VI with small rounded lobe about 0.02 mm long. Aedeagus (Figs 114, 115) 0.42-0.50 mm long.

Comments: The new species resembles the syntopic *S. burckhardti* in its small body size, the body colour, the strongly shortened sutural striae of the elytra, and the hypomera lacking microsculpture. It is distinguished by the gradually widened apical section of the parameres and the internal sac with two proximal spine bunches.

Distribution: Malaysia: Sabah.

Scaphisoma parakalabitum sp. nov.

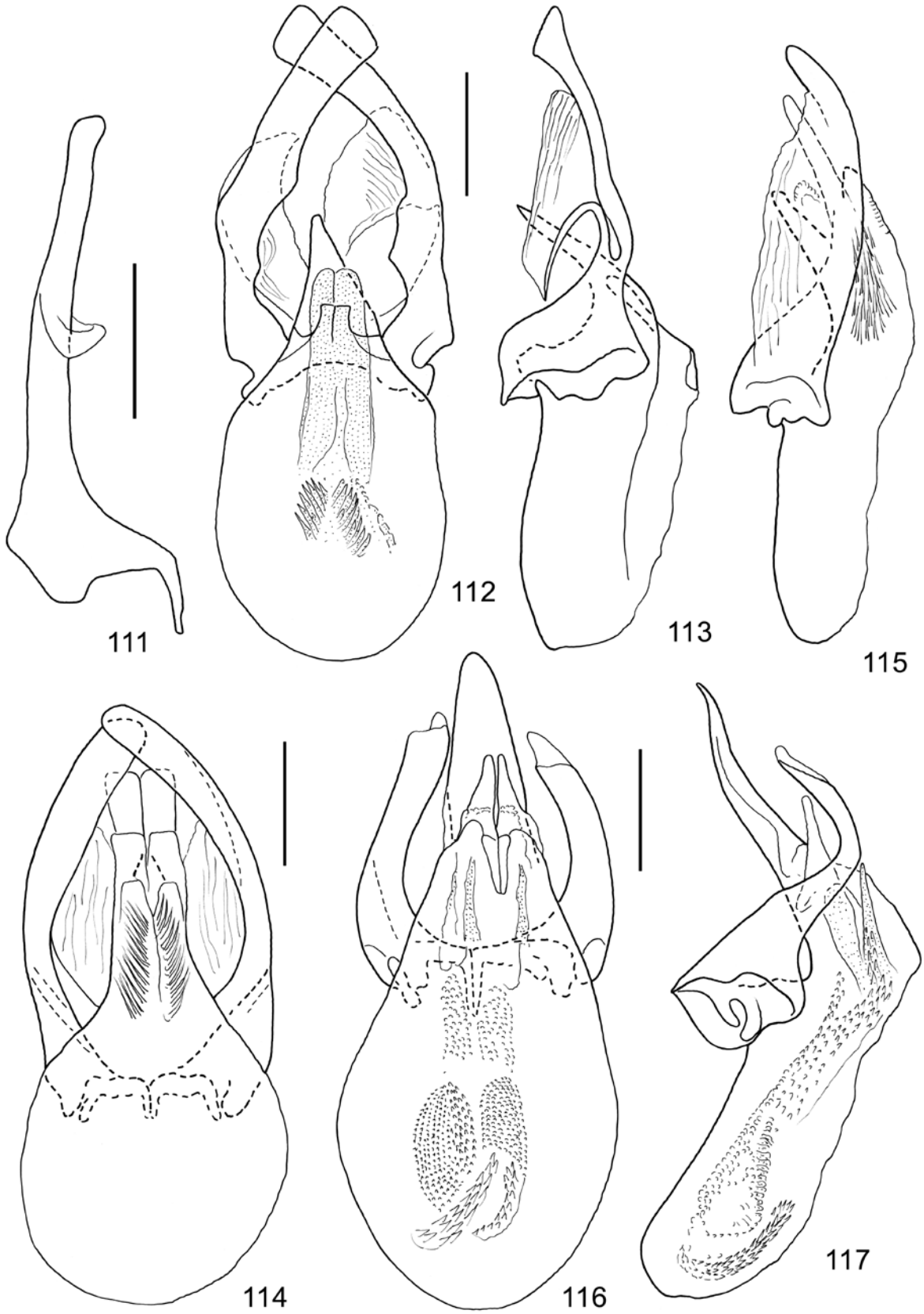
Figs 116, 117

Holotype: MHNG; male; Malaysia, SABAH, Crocker Range, Gunung Emas, 1500-1700 m, around km 52 of road Kota Kinabalu Tambunan, 6.-18.VI.1998, 2c.

Diagnosis: Medium-large species with thorax blackish, elytra with ochraceous spot and yellowish apical third; pronotum with punctation coarser along base than on middle of disc; elytra with sutural striae shortened, rows of coarse punctures nearly reaching apical margin; hypomeron lacking microsculpture; metaventrite with strigulate microsculpture evanescent laterally, antecoxal puncture rows present, submesocoxal lines parallel; ventrite I with submetacoxal areas as long as half to two thirds of shortest interval between its margin and apical margin of ventrite; aedeagus symmetrical, with apical process long, weakly inflexed, sinuate, gradually narrowed and acute at apex in lateral view, apex blunt in dorsal view, basal bulb oval, parameres short, with minute apical lobes, arcuate in dorsal view, with strongly curved and narrowed apical third in lateral view, internal sac with two proximal bunches of fine spines and robust apical sclerites.

Etymology: The species epithet is formed by the Greek word *para* meaning beyond and the name of the related species *S. kalabitum*.

Description: Length 1.85 mm, width 1.20 mm. Head and pronotum evenly blackish. Elytron dark brown along basal, lateral and sutural margins, with large ochraceous spot in anterior half, darkened on transverse area posteriad of spot, yellowish in apical third. Venter of thorax I blackish. Ventrite I dark brown with reddish basal area, following two ventrites brown, apical abdominal segments and appendages yellowish. Antennae long, length/width ratios of antennomeres like those of other species of group. Pronotum and elytra lacking microsculpture. Pronotum with anterior margin bead broadly interrupted; lateral margins arcuate, lateral margin carinae exposed in dorsal view, lateral margin striae punctate; disc with two arcuate, dense rows of coarse punctures becoming irregular anteriad of mesal lobe, prevailing discal punctation very fine and sparse. Tip of scutellum exposed. Elytron moderately narrowed apically, with lateral margin



Figs 111-117. *Scaphisoma* spp., genital characters. (111) *S. mediale* sp. nov., paramere in ventral view, scale = 0.1 mm. (112) *S. meritum* sp. nov., aedeagus in dorsal view, scale = 0.1 mm. (113) ditto, aedeagus in lateral view. (114) *S. panas* sp. nov., aedeagus in dorsal view, scale = 0.1 mm. (115) ditto, aedeagus in lateral view. (116) *S. parakalabitum* sp. nov., aedeagus in dorsal view, scale = 0.2 mm. (117) ditto, aedeagus in lateral view.

oblique in middle third, rounded near base and apex; lateral carina hardly distinct in dorsal view; lateral margin stria punctate; apical margin truncated, finely crenulate at inner angle, outer apical angle at same level as inner apical angle; sutural margin not raised; sutural stria shortened, starting posteriad of basal fifth of sutural length, slightly converging apically; adsutural area bearing single puncture row; discal punctures coarse, in part forming oblique rows reaching apical fourth of elytron, punctures well delimited, distinctly smaller than puncture intervals; apical fourth of elytron finely punctate. Hypomeron very finely punctate, with strigulate microsculpture. Mesepimeron narrow and long, about five times as long as wide and two times as long as interval between its tip and mesocoxa. Metaventrite slightly convex in middle, lacking impressions, flattened apicomesally, bearing strigulate microsculpture, very finely and sparsely punctate, except on flattened area and antecoxal rows of coarse punctures; submesocoxal line nearly parallel, rather coarsely punctate; submesocoxal area 0.03 mm long, as long as seventh of shortest interval to metacoxa. Metanepisternum narrowed anteriad, with suture broadly rounded near angles, oblique in middle, lacking obvious microsculpture. Protibiae and metatibiae straight, mesotibiae curved. Abdomen with strigulate microsculpture. Exposed tergites very finely punctate. Ventrite I with submetacoxal line convex, punctate; submetacoxal area 0.05 mm long, about as long as third of shortest interval to apical margin of ventrite; punctation as on following ventrites very fine and sparse, row of coarse punctures along margin of intercoxal process excepted.

Male. Protarsomeres I to III strongly enlarged, I narrower than apex of protibia; mesotarsomeres I and II distinctly enlarged. Ventrite VI with small rounded lobe about 0.02 mm long. Aedeagus (Figs 116, 117) 0.96 mm long.

Comments: This species is in external characters very similar to *S. kalabitum* and *S. kalabitoides* although somewhat larger and with less shortened sutural striae of the elytra. The aedeagal characters suggest close relationships with these species. Nevertheless, it may be readily distinguished from all members of the *S. rouyeri* group by the short parameres bearing an apical lobe. The internal sac with two proximal spine bunches is also diagnostic.

Distribution: Malaysia: Sabah.

Scaphisoma paratrox sp. nov.

Figs 118, 119

Holotype: MHNG; male; Malaysia, Sabah rd Kota-Kinabalu – Tambunan km 52 1600-1800 m 2-5.07.2002 Kurbatov & Zimina.

Paratypes: MHNG; 1 male; Crocker Range, around km 56 of road Kota Kinabalu-Tambunan, Sunsuron Waterfall env., 1100-1200 m, 8.VI.1996. – 1 female; with same data as holotype.

Diagnosis: Small species with thorax blackish, elytra dark with light subbasal spot and light apical third, or with light apical bands; pronotum with punctation coarser along base than on middle of disc; elytra with rows of coarse punctures extended to apical fourth; hypomeron lacking microsculpture; metaventrite with strigulate microsculpture evanescent anterolaterally, antecoxal puncture rows present, submesocoxal lines parallel; ventrite I with submetacoxal areas as long as third of shortest interval between its margin and apical margin of ventrite; aedeagus symmetrical, with apical process short, obliquely inflexed, sinuate, gradually narrowed and with acute apex in lateral view, overlapped in dorsal view, basal bulb oval, parameres with large lobes, apical halves arcuate in dorsal view, dorsal margin sinuate in lateral view, internal sac with robust spines and tubular membranous section.

Etymology: The species epithet is formed by the Greek word *para* meaning beyond and the name of the likely related *S. atrox*.

Description: Length 1.30-1.35 mm, width 0.84-0.86 mm. Head and pronotum evenly dark reddish-brown to blackish. Elytron reddish-brown to blackish, with light subbasal spot and light apical third or light apical band. Ventral side of thorax blackish, ventrites I to III dark brown, following ventrites, exposed tergites and appendages light brown to yellowish. Antennae long, length/width ratios of antennomeres like those in other species of group. Pronotum and elytra lacking microsculpture. Pronotum with anterior margin bead broadly interrupted; lateral margins oblique, lateral margin carinae hardly exposed or not at all exposed in dorsal view, lateral margin striae punctate; discal punctation dense and coarse along base, consisting of well delimited punctures in part as large as puncture intervals; prevailing surface very finely and sparsely punctate. Tip of scutellum exposed. Elytron moderately narrowed apically, with lateral margin oblique in middle third, rounded near base and apex; lateral carina concealed in dorsal view; lateral margin stria punctate; apical margin truncated, finely crenulate near inner angle, outer apical angle at level of inner apical angle; sutural margin not raised; sutural stria shortened, starting posterior basal fifth of sutural length, parallel with suture; adsutural area bearing single puncture row; discal punctures coarse, in part forming oblique rows reaching apical fourth of elytron, punctures well delimited, in part as large or larger than puncture intervals; apical fifth of elytron finely punctate. Hypomeron smooth, lacking microsculpture. Mesepimeron impressed, narrow and long, about six times as long as wide and two times as long as

interval between its tip and mesocoxa. Metaventrite flattened in middle, lacking impressions, with strigulate microsculpture evanescent anterolaterally, very finely and sparsely punctate, except for coarse punctures in middle and impressed antecoxal rows of coarse punctures; submesocoxal line parallel, rather coarsely punctate; submesocoxal area 0.02 mm long, about as long as seventh of shortest interval to metacoxa. Metanepisternum narrowed anteriad, with suture broadly rounded near apical angle, lacking obvious microsculpture. Tibiae straight. Abdomen with strigulate microsculpture. Exposed tergites very finely punctate. Ventrite I with submetacoxal line convex, punctate; submetacoxal area 0.04-0.05 mm long, about as long as third of shortest interval to apical margin of ventrite; punctation as on following ventrites very fine and sparse, row of distinct punctures along margin of intercoxal process excepted.

Male. Protarsomeres I to III distinctly enlarged, protarsomere I narrower than apex of protibia. Mesotarsomeres I and II slightly enlarged. Ventrite VI with apical margin nearly convex, lobe very short. Aedeagus (Figs 118, 119) 0.56-0.57 mm long.

Comments: The colour pattern and body size of this new species are like those of *S. mediale* and *S. meritum*. *Scaphisoma paratrox* may be distinguished from them by the smooth hypomera and the laterally evanescent microsculpture of the metaventrite. The aedeagal characters suggest a relationship with *S. atrox* Löbl, 1981 although the apical process of the median lobe is shorter and the internal sac bears a pair of long spines. The latter species may be easily distinguished from *S. paratrox* and other Bornean members of the group by the elytral punctation not in oblique rows.

Distribution: Malaysia: Sabah.

Scaphisoma rouyeri Pic, 1916

Scaphosoma (*Scutoscaphosoma*) *rouyeri* Pic, 1916a: 3.
Scutoscaphosoma subovatum Pic, 1920: 24.
Scaphisoma rouyeri; Löbl, 1981a: 156.
Scaphisoma rouyeri; Löbl, 1990: 563.
Scaphisoma rouyeri; Löbl, 2015b: 138.

Material examined: MHNG; 3; Kinabalu Nat. Park, Poring Hot Spring, 550-600 m, 9.V.1987, D. Burckhardt & I. Löbl. – 1; same data but 500 m, 8.V.1987. – 1; same data but 550 m, 9.V.1987, A. Smetana. – 2; Mount Kinabalu Nat. Park, X.1990, G. de Rougement. – 10; Crocker Range, Gunung Emas, 23.V.1996, J. Kodada & F. Čiampor. – 13; Batu Punggul Resort env., 24.VI.-1.VII.1996. – 2; Sabalangan River env., ca 25 km SE Sapulut, 26.VI.1998, J. Kodada & F. Čiampor. – 1; Banjaran Maitland, Batu Punggul, 25.-27.V.1995, I. Jeniš; EUMJ. – 1; Poring Hot Spring, 600 m, 20.-23.III.1993, T. Ueno.

Comments: These are the first records from Sabah.

Distribution: Indonesia: Java, Kalimantan; Malaysia: Sabah, Sarawak; Thailand.

Scaphisoma rufescens (Pic, 1920)

Pseudoscaphosoma punctatum var. *rufescens* Pic, 1920: 24.
Scutoscaphosoma distinctipenne Pic, 1923b: 195.
Scaphisoma rufescens; Löbl, 1981a: 157.
Scaphisoma rufescens; Löbl, 1990: 563.
Scaphisoma rufescens; Löbl, 2000: 611.
Scaphisoma rufescens; Löbl, 2012: 183.
Scaphisoma rufescens; Löbl, 2015a: 111.
Scaphisoma rufescens; Löbl, 2015b: 138.
Scaphisoma rufescens; Löbl & Ogawa, 2016: 1412

Material examined: MHNG; 1; Mount Kinabalu, Silau-Silau Trail, 1650 m, 3.VIII.1988, A. Smetana. – 2, Mount Kinabalu Nat. Park, Poring Hot Spring, 500 m, 8. & 11.V.1987, D. Burckhardt & I. Löbl. – 1; Mount Kinabalu Nat. Park, Poring Hot Spring, Langanan Creek, 915 m, 10.VIII.1988, A. Smetana. – 1; Crocker Range, about km 56 road Kota Kinabalu-Tambunan, Mawar Waterfall env., 31.V.1998, J. Kodada & F. Čiampor. – 16; Crocker Range, Gunung Emas, 23.V.1998, J. Kodada & F. Čiampor. – 1; Gunung Antulai, ca 5 km, S Sapulut, 2.VII.1996. – 10; Sabalangan River env., ca 25 km SE Sapulut, 26.VI.1998, J. Kodada & F. Čiampor. – 32; Batu Punggul Resort env., 24.VI.-1.VII.1996. – 1; Sepilok, Kabili-Sepilok Forest Reserve, 30 m, 19.III.1983, B. Hauser.

Distribution: The species is widely distributed in Southeast Asia. It is currently known from China, Indonesia, Malaysia, Philippines, Singapore, Thailand, and Vietnam.

Scaphisoma spiniger Löbl, 1981

Scaphisoma spiniger Löbl, 1981a: 161.

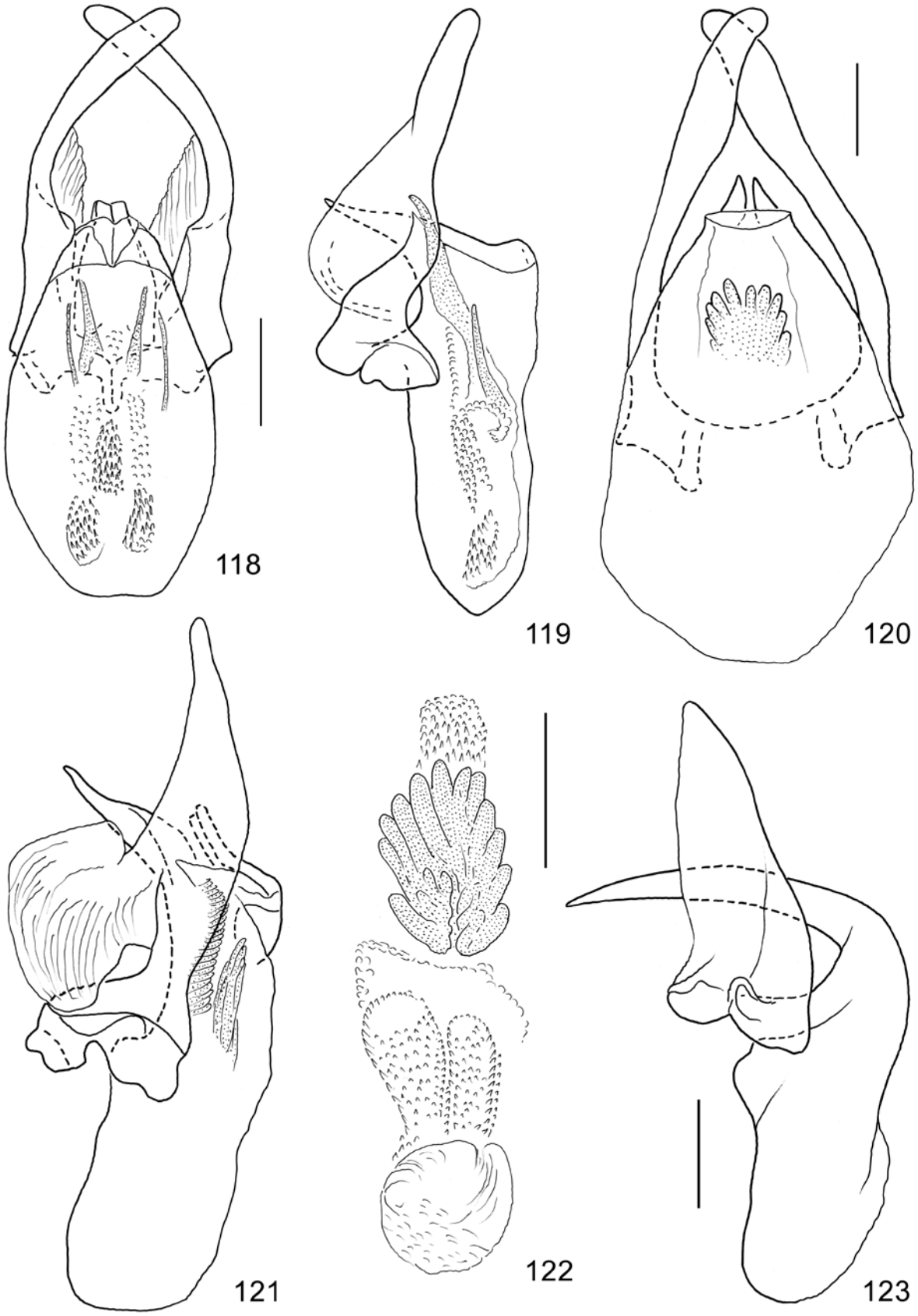
Comments: The species is based on a single specimen from Tawau, Quoin Hill. No material in the new collections.

Distribution: Malaysia: Sabah; Philippines.

Scaphisoma surigaosum (Pic, 1926)

Scutoscaphosoma luteoapicale Pic var. *surigaosum* Pic, 1926: 3.
Scaphosoma surigaosum; Löbl, 1970a: 128.
Scaphisoma surigaosum; Löbl, 1981a: 163.
Scaphisoma surigaosum; Löbl & Ogawa, 2016: 1414.

Material examined: MHNG; 30 males, 13 females; Batu Punggul Resort env., 24.VI.-1.VII.1996, vegetation debris and forest floor litter accumulated around



Figs 118-123. *Scaphisoma* spp., genital characters. (118) *S. paratrox* sp. nov., aedeagus in dorsal view, scale = 0.1 mm. (119) ditto, aedeagus in lateral view. (120) *S. placibile* sp. nov., aedeagus in dorsal view, scale = 0.2 mm. (121) ditto, aedeagus in lateral view. (122) ditto, internal sac, scale = 0.2 mm. (123) *S. melas* sp. nov., aedeagus in lateral view, scale = 0.1 mm.

large trees near river. – 1 male; Mount Kinabalu Nat. Park, X.1990, G. de Rougement. – 1 male; Bajnaran Maitland, Batu Punggul, 25.-27.V.1995, I. Jeniš. – 1 male; Kinabalu National Park, Poring Hot Spring, Langatan Fall, 900 m, 14.V.1987, A. Smetana. – 2 males, 1 female; Crocker Range, Gunung Emas, 23.V.1998, J. Kodada & F. Čiampor.

Comments: The species has been reported from the Philippine Islands of Luzon, Palawan, and Mindanao. These are the first records from Borneo.

Distribution: Malaysia: Sabah; Philippines.

Scaphisoma kinabaluum species group

Löbl (1987) highlighted the unusual characters of *S. kinabaluum* Löbl, 1987 and *S. sakaiorum* Löbl, 1987. They possess a symmetrical trilobed median lobe, as do the members of the *S. haemorrhoidale* group, but they have the dorsal branches distant and the ventral branch flattened. The parameres are lobed, as in members of the *S. rouyeri* group. These species also possess elytra with shortened sutural striae and discal punctures in longitudinal rows. A new syntopic species, *S. placibile*, is described below. It is distinguished notably by the shape of the apical process of its median lobe.

Scaphisoma kinabaluum Löbl, 1987

Scaphisoma kinabaluum Löbl, 1987: 97.

Material examined: MHNG; 2; Mount Kinabalu, near Headquarters, 1580 m, 27.IV.1987, D. Burckhardt & I. Löbl. – 2; Mount Kinabalu, near Headquarters, at Liwagu River, 1500 m, 16.V.1987, A. Smetana. – 2; Mount Kinabalu, near Headquarters, Silau-Silau Trail, 1550 m, 2.IX.1988, A. Smetana. – 1; same data but 1510 m, 13.VIII.1988. – 3; Crocker Range, 60 km Kota Kinabalu – Tambunan, 1350 m, 17.V.1987, D. Burckhardt & I. Löbl. – 2; Crocker Range, Gunung Emas, 23.V.1996, J. Kodada & F. Čiampor. – 3; Crocker Range, Gunung Emas, 1500-1700 m, around km 52 of road Kota Kinabalu Tambunan 6.-18.VI.1996. – 1; Crocker Range, Gunung Emas, 15.-27.IV.1993, I. Jeniš & M. Štrba. – 2; Crocker Range, around km 56 of road Kota Kinabalu-Tambunan, Sunsuron Waterfall env., 1100-1200 m, 8.VI.1996. – 2; Batu Punggul Resort env., 24.VI.-1.VII.1996, FIT and forest floor debris. – EUMJ, MHNG; 9; Kinabalu National Park, near Headquarters, 1500 m, 17.-19.III.1993, T. Ueno.

Comments: The species exhibits a sexually dimorphic pronotal coloration: in males it is ochraceous, in females dark brown to black.

Distribution: Malaysia: Sabah.

Scaphisoma placibile sp. nov.

Figs 120-122

Holotype: MHNG; male; Malaysia, SABAH, Crocker Range, Gunung Emas, 1500-1700 m, around km 52 of road Kota Kinabalu Tambunan, 6-18.VI.1996, 2c.

Paratypes: MHNG; 1 male; Crocker Range, Gunung Emas, 500-1900 m, 6.-21.V.1995, I. Jeniš. – 1 male; Crocker Range, Gunung Emas, 23.V.1996, J. Kodada & F. Čiampor. – 1 female; Crocker Range, Mawar Waterfall env., 17.VI.1996. – 2 females; Mount Kinabalu Nat. Park, Headquarters, Silau-Silau Trail, 1560 m, 3.VIII.1988, A. Smetana. – EUMJ; 1 male, 1 female; Mount Kinabalu Nat. Park, Headquarters, 1500 m, 19.III.1993, T. Ueno.

Diagnosis: Large species with pronotum ochraceous in males, dark to blackish in females, elytra bicolorous; antennomere III much shorter than antennomere IV; elytra with sutural striae shortened, inner rows of coarse punctures extended to mid-length; hypomeron and metaventrite with strigulate microsculpture, antecoxal puncture rows absent, submesocoxal lines parallel; ventrite I with submetacoxal areas nearly as long as fourth of shortest interval between its margin and apical margin of ventrite; aedeagus symmetrical, with apical process short, concealed in dorsal view, inflexed, sinuate, gradually narrowed, apex acute in lateral view, basal bulb oval, parameres with large lobes, widened posteriad of basal third and weakly sinuate in dorsal view, narrowed apically and with irregularly arcuate dorsal margin in lateral view, internal sac with two subbasal membranous vesicles and bunch of large blunt subapical teeth.

Etymology: The species epithet is a Latin adjective meaning agreeable.

Description: Length 2.15-2.24 mm, width 1.38-1.60 mm. Head, pronotum and hypomeres ochraceous in males, dark brown to blackish in females; elytra ochraceous with narrowly darkened basal and lateral margins and darkened on adsutural areas, darkened areas somewhat expanded on humeral areas. Ventral side of mesothorax and metathorax dark brown to blackish; ventrites I to III dark brown, following ventrites and exposed tergites ochraceous to yellowish; appendages ochraceous to yellowish. Antennae long, length/width ratios of antennomeres like those of *S. kinabaluum*. Pronotum and elytra lacking microsculpture. Pronotum with anterior margin bead broadly interrupted; lateral margins evenly arcuate, lateral margin carinae not exposed in dorsal view, lateral margin striae punctate; discal punctation very fine and sparse, hardly visible at 50 times magnification. Tip of scutellum exposed. Elytron weakly narrowed apically, with lateral margin arcuate; lateral carina exposed in dorsal view; lateral margin stria punctate; apical margin

slightly rounded, crenulate near inner angle, outer apical angle at level of inner apical angle; sutural margin not raised; sutural stria shortened, starting posterior basal fifth of sutural length, slightly converging posteriad; adsutural area bearing single puncture row; disc with four to five rows of rather coarse and well delimited punctures, these somewhat coarser than those of sutural stria, inner two puncture rows starting at base and extended up to mid-length of elytron, two to three outer puncture rows starting somewhat more distant form basal margin and much shorter, not reaching mid-length of elytron; intervals between coarse punctures much larger than their diameters; remaining discal punctation fine, consisting of poorly delimited and in part hardly visible punctures. Hypomeron very finely punctate, with strigulate microsculpture evanescent near upper margin. Venter of mesothorax and metathorax with strigulate microsculpture and very fine punctation, distinct punctures margining submesocoxal line excepted. Mesepimeron not impressed, about four times as long as wide and long about as interval between its tip and mesocoxa. Metaventrite flattened in middle, lacking impressions, antecoxal puncture rows absent; submesocoxal line parallel, finely punctate; submesocoxal area about 0.05 mm long, about as long as sixth of shortest interval to metacoxa. Metanepisternum narrowed anteriad, with suture impressed, rounded near apical angle, lacking obvious microsculpture. Protibiae and metatibiae straight, mesotibiae curved. Abdomen with strigulate microsculpture. Exposed tergites very finely punctate. Ventrite I with submetacoxal line convex, punctate; submetacoxal area about 0.06 mm long, nearly as long as fourth of shortest interval to apical margin of ventrite; punctation as on following ventrites very fine and sparse, row of distinct punctures along margin of intercoxal process excepted.

Male. Protarsomeres I to III strongly enlarged, protarsomeres I and II about as wide as apex of protibia, protarsomere III narrower. Mesotarsomeres I and II strongly enlarged. Ventrite VI with apical lobe about 0.10 mm long, broad, its margin nearly truncated. Aedeagus (Figs 120-122) 1.40-1.52 mm long.

Comments: This species shares with *S. kinabaluum* most of its diagnostic characters. It is distinguished by the elytral colour pattern and the aedeagal characters. Unlike in *S. kinabaluum*, the ventral branch of the apical process is concealed in dorsal view and sinuate near the tip in lateral view, the dorsal branches of the median lobe are short and triangular, the parameres are rather narrow and bear membranous lobes not expanded posteriad of parameral mid-length, and the internal sac has a compact subapical bunch of robust teeth.

Distribution: Malaysia: Sabah.

Scaphisoma sakaiorum Löbl, 1987

Scaphisoma sakaiorum Löbl, 1987: 99.

Material examined: MHNG; 1; East Mount Kinabalu, road Ranau-Kota Kinabalu, 1150 m, 24.V.1987, D. Burckhardt & I. Löbl. – 2; Mount Kinabalu, near Headquarters, 1500 m, 25.IV.1987, D. Burckhardt & I. Löbl. – 1; same data but 1580 m, 27.V.1987. – EUMJ; 1; same data but 19.III.1993, T. Ueno. – MHNG; 4; Mount Kinabalu, near Headquarters, at Liwagu River, 1500 m, 30.IV. and 16.V.1987, A. Smetana. – 2; Mount Kinabalu, near Headquarters, at Liwagu River, 1510 m, 13.VIII.1988, A. Smetana. – 1; Mount Kinabalu, near Headquarters, Bukit Ular Tail, 1700 m, 29.IV.1987, A. Smetana. – 4; Mount Kinabalu Nat. Park, Poring Hot Spring, 550-600 m, 9.V.1987, D. Burckhardt & I. Löbl. – 1; same data but 500 m, 6.V.1987. – 1; Mount Kinabalu Nat. Park, above Poring Hot Spring, 550 m, 9.V.1987, A. Smetana. – 4; Mount Kinabalu, near Headquarters, Silau-Silau Trail, 1550 m, 2.IX.1988, A. Smetana. – 9; same data but 1560 m, 3.VIII.1988. – 1; Crocker Range, Highway A3 km 48, about 1000 m, 5.IX.1988, A. Smetana. – 4; Crocker Range, Gunung Emas, 1500-1700 m, around km 52 of road Kota Kinabalu Tambunan 6.-18.VI.1996. – 1; Crocker Range, around km 56 of road Kota Kinabalu-Tambunan, Sunsuron Waterfall env., 1100-1200 m, 8.VI.1996. – 2; Batu Punggul Resort env., 24.VI.-1.II.1996.

Comments: The species may be easily distinguished by the arcuate outer row of coarse elytral punctures, in combination with the evenly light body colour.

Distribution: Malaysia: Sabah.

Scaphisoma subconvexum species group

The group was proposed by Löbl & Ogawa (2016) for six Philippine species characterized by fused mesepimera, irregularly, in part coarsely punctate elytra and a symmetrical aedeagus with a usually prominent articular process and lacking sclerotized pieces and flagellum.

Scaphisoma melas sp. nov.

Figs 123, 124

Holotype: MHNG; male; BORNEO Sabah Mount Kinabalu Nat[ional]. P[ar]k. H[ead]Q[quarters] Silau-Silau Tr[ail]. 1550 m, 2.IX.[19]88 A. Smetana [B171].

Paratype: SMNS; 1 male; Kinabalu Nat. Park, Headquarters, 1500-1600 m, 11-15.XI.1996, W. Schawaller.

Diagnosis: Medium-large species with black body; antennomere III much shorter than antennomere IV; elytra lacking basal striae, coarsely punctate up to apical third; mesepimeron fused with mesanepisternum;

metaventrite lacking microsculpture, antecoxal puncture rows absent, submesocoxal lines convex; metanepisternum with strongly convex suture; ventrite I with submetacoxal areas nearly as long as third of shortest interval between its margin and apical margin of ventrite; aedeagus symmetrical, with apical process long, strongly inflexed, sinuate, gradually narrowed to acute apex in lateral view, appearing blunt in dorsal view, basal bulb small, parameres expanded ventrally, with widened apices in dorsal view, internal sac tubular, with weakly sclerotized structures in basal section.

Etymology: The species epithet means black in Greek.

Description: Length 1.41-1.46 mm, width 0.90-1.02 mm. Head, thorax, and most of elytra black, elytra becoming somewhat lighter near apices. Abdomen dark brown, appendages reddish-brown. Length/width ratios of antennomeres as III 9/5: IV 26/5: V 29/6: VI 29/8: VII 42/12: VIII 35/10: IX 42/12: X 43/14: XI 57/15. Pronotum and elytra lacking microsculpture. Pronotum with anterior margin bead broadly interrupted; lateral margins evenly rounded; lateral margin carinae concealed in dorsal view; lateral margin striae punctate; discal punctation sparse and very fine, visible at 50 times magnification. Tip of scutellum exposed. Elytron rather strongly narrowed apically, with evenly arcuate lateral margin; lateral margin carinae distinct in dorsal view; lateral margin striae very finely punctate; apical margin rounded; inner apical angle not expanded, at same level as outer apical angle, apical margin crenulated near inner angle; sutural margin raised posteriad of basal third, sutural stria starting near basal margin, curved along pronotal lobe, parallel to suture up to apical third, in apical third converging to suture; adsutural area flat, with single row of coarse punctures; punctation very fine, as on pronotum, along basal margin, on humeral area and along lateral margin; punctation coarse and very dense on most of disc, up to apical third of elytron, consisting of well delimited punctures in large part about as large as puncture intervals; apical third of elytron very finely punctate. Hypomeron smooth. Mesoventrite impunctate, mesanepisternum extremely finely punctate. Mesepimeron fused with mesanepisternum. Metaventrite lacking microsculpture, between mesocoxae slightly convex, most of middle area impressed, with shallow mesal stria and densely, distinctly punctate; lateral parts of metaventrite extremely finely punctate, antecoxal puncture rows absent; submesocoxal line convex, coarsely punctate; submesocoxal area 0.04 mm long, about as long as third of shortest interval between its margin and apical margin of metaventrite. Metanepisternum flat, narrowed anteriad, with strongly convex suture slightly impressed near posterior angle, lacking obvious microsculpture. Tibiae straight. Abdomen with strigulate microsculpture, very finely punctate. Ventrite I lacking coarse punctures on metacoxal process; submetacoxal line convex, coarsely punctate; submetacoxal area 0.04 mm long, nearly as long as third of shortest interval between its margin and apical margin of ventrite.

Male. Protarsomeres I to III and mesotarsomeres I and II widened, protarsomere I narrower than apex of protibia. Aedeagus (Figs 123, 124) 0.54-0.58 mm long.

Comments: The aedeagal characters suggest relationships with *S. simplex* Löbl, 1972 and *S. simplexoides* Löbl & Ogawa, 2016. The new species differs by its much larger body size, darker colour and coarser elytral punctation. The apical process of the median lobe is more inflexed than in the related species, being nearly perpendicular to the basal bulb in the holotype. In addition, the parameres are wider.

Distribution: Malaysia: Sabah.

Scaphisoma tricolor species group

This group was redefined by Löbl & Ogawa (2016) and a check-list of its 24 members was given in Löbl (2022a). It is species-rich in the Philippines, while only four species are known from Sabah. Two species are to be added to the group, *S. carinatum* Löbl, 2018 from Sulawesi and *S. lineatopunctatum* (Pic, 1916) from Borneo.

Scaphisoma chujoi Löbl, 1982

Scaphisoma chujoi Löbl, 1982: 6.

Material examined: MHNG; 1 male; Batu Punggul Resort env., 24.VI.-1.VII.1996, 11c. vegetation debris and forest floor litter accumulated around large trees near river.

Comments: The species was based on two specimens collected in Sarawak.

Distribution: Malaysia: Sabah and Sarawak.

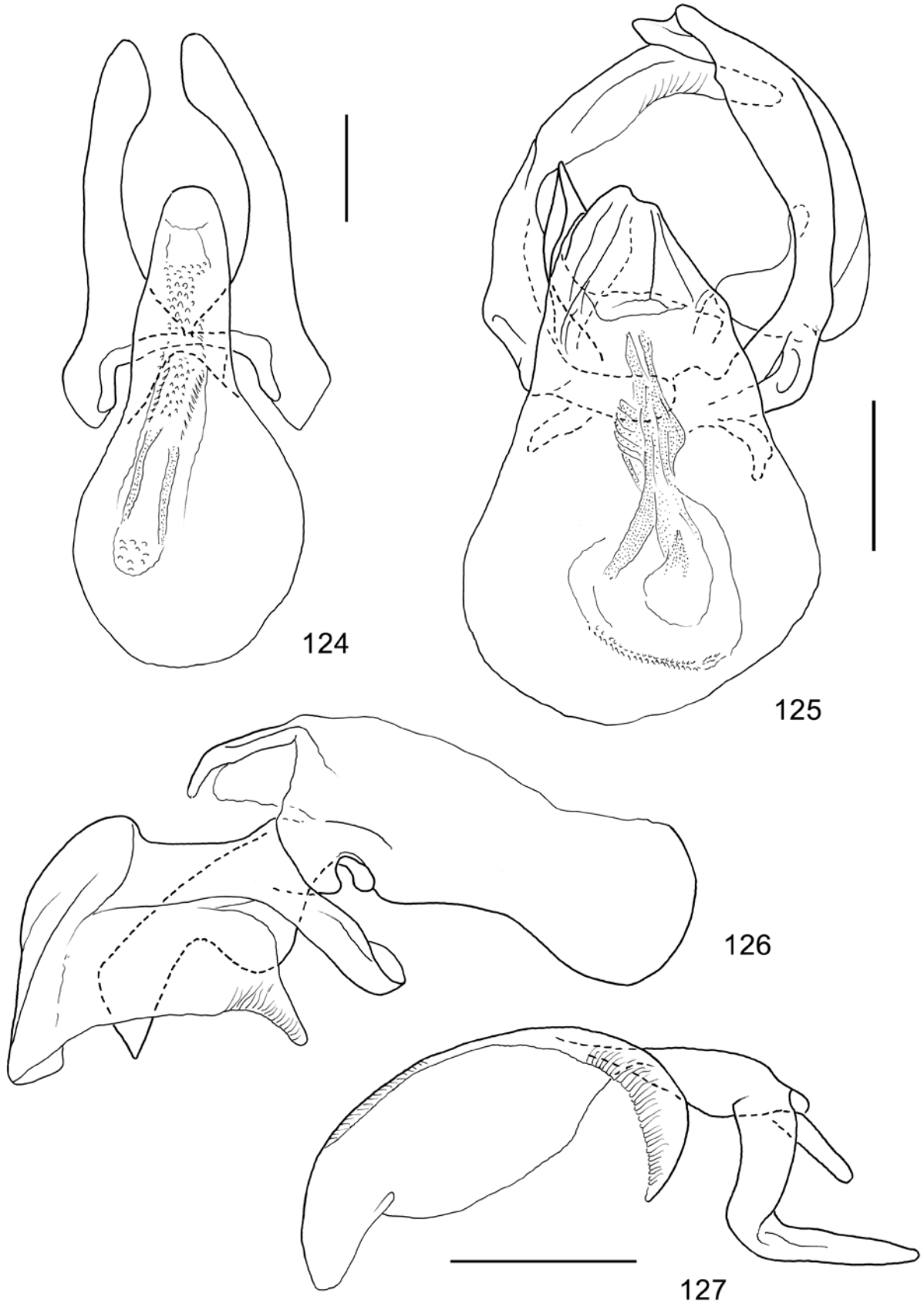
Scaphisoma lineatopunctatum (Pic, 1916)

Figs 125-127

Pseudoscaphosoma lineatopunctatum Pic, 1916a: 7.
Scaphisoma lineatopunctatum; Löbl, 2015b: 132.

Material examined: MHNG; 1 female; Poring Hot Spring, area below Langanan Falls, 800 m, 11.V.1987, A. Smetana. – 2 females; Poring Hot Spring, 550-600 m, 9.V.1987, D. Burckhardt & I. Löbl. – 6 males, 7 females; Batu Punggul Resort env., 24.VI.-1.VII.1996. – EUMJ; 1 female; Poring Hot Spring, 600 m, 20-26. III.1993, T. Ueno.

Comments: The species was redescribed and reported from Sabah in Löbl (2015b). The redescription was



Figs 124-127. *Scaphisoma* spp., genital characters. (124) *S. melas* sp. nov., aedeagus in dorsal view, scale = 0.1 mm. (125) *S. lineatopunctatum* (Pic), aedeagus in dorsal view, scale = 0.2 mm. (126) ditto, aedeagus in lateral view. (127) ditto, paramere in ventral view, scale = 0.2 mm.

based on three available females. Its relationship was unknown, in absence of male characters. The now examined aedeagi (Figs 125-127) suggest a close relationship with *S. aspectum* Löbl, 2015, a member of the *S. tricolor* group. *Scaphisoma lineatopunctatum* is one of the species that is sexually dimorphic in pronotal colour, i.e. dark brown in females, light ochraceous in males.

Distribution: Indonesia: Kalimantan; Malaysia: Sabah, Sarawak.

Scaphisoma memar sp. nov.

Figs 128-131

Holotype: MHNG; male; Malaysia, Sabah, Batu Punggul Resort env., 24.VI.-1.VII.1996, 11c. vegetation debris and forest floor litter accumulated around large trees near river.

Paratypes: MHNG; 2 males, 1 female; Sepilok, Kabili-Sepilok Forest Reserve, 30 m, 18.III.1983, B. Hauser. – 1 female; Poring Hot Spring, 500 m, 11.V.1987, D. Burckhardt & I. Löbl.

Diagnosis: Large species with ochraceous body; antennomere III much shorter than antennomere IV; elytra lacking basal striae, with strongly shortened sutural striae; mesepimeron small; metaventrite with microsculpture evanescent between mesocoxae, antecoxal puncture rows present, submesocoxal lines convex; ventrite I with submetacoxal areas about as long as third of shortest interval between its margin and apical margin of ventrite; aedeagus with ventral branch of apical process asymmetrical, long, strongly inflexed and sinuate in lateral view, oblique and truncate at apex in dorsal view, dorsal branch short and triangular, basal bulb concave above apical process, with ventral ridge, parameres asymmetrical, with large overlapping lobes, internal sac with complex robust sclerites and basal bunch of spines.

Etymology: The species epithet means soft in Malay.

Description: Length 1.94-2.04 mm, width 1.32-1.45 mm. Head and body ochraceous, elytra lighter near apices, appendages yellowish. Antennae long, as in other members of the group. Pronotum and elytra lacking microsculpture. Pronotum with anterior margin bead broadly interrupted; lateral margins evenly rounded; lateral margin carinae hardly visible in dorsal view; lateral margin striae appearing impunctate; discal punctation very fine, hardly visible at 100 times magnification. Tip of scutellum exposed. Elytron moderately narrowed apically, with evenly arcuate lateral margin; lateral margin carinae hardly distinct in dorsal view; lateral margin striae very finely punctate; apical margin rounded, crenulated near inner angle; inner apical angle not expanded, at same level as outer apical angle, sutural margin not raised, sutural stria fine and short, distinct in apical half of sutural length only; adsutural area flat, with single puncture row; discal punctation fairly fine, punctures well delimited, puncture intervals mostly about two to three times as large as puncture diameters. Hypomeron lacking microsculpture. Mesepimeron small, two times longer than wide, long about as half of shortest interval between its tip and mesocoxa. Metaventrite with strigulate microsculpture evanescent between mesocoxae, convex in middle, flattened and with two patches of coarse punctures near metacoxal process, slightly impressed antecoxal row of rather fine punctures, very finely and sparsely punctate on remaining surface; submesocoxal line convex, punctate; submesocoxal area 0.03-0.04 mm long, as long as fourth of shortest interval between its margin and apical margin of metaventrite. Metanepisternum flat, narrowed anteriad, impressed along curved suture, lacking obvious microsculpture. Protibiae straight, mesotibiae slightly curved, metatibiae somewhat sinuate. Exposed tergites impunctate, with strigulate to punctulate microsculpture. Ventrites with strigulate microsculpture, ventrite I with several coarse punctures on metacoxal process and coarse punctures margining convex submetacoxal line; very finely and sparsely punctate on prevailing surface; submetacoxal area 0.06 mm long, about as long as third of shortest interval between its margin and apical margin of ventrite. Following ventrites very finely and sparsely punctate.

Male. Protarsomeres I to III widened, protarsomere I slightly narrower than apex of protibia, protarsomeres II and III gradually narrower. Mesotarsomeres I and II widened. Ventrite VI with broadly rounded lobe about 0.09 mm long. Aedeagus (Figs 128-131) 1.15-1.20 mm long.

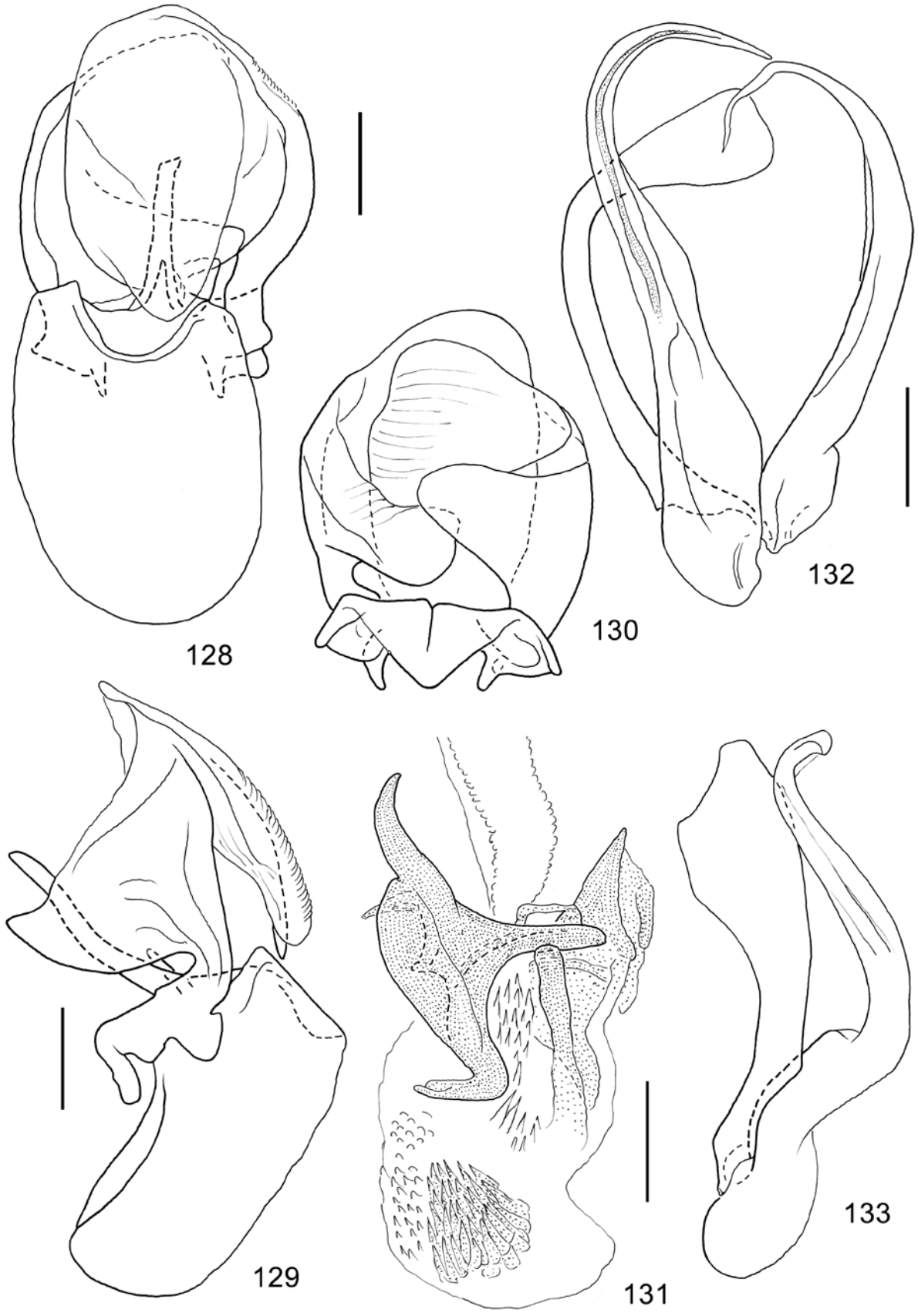
Comments: The new species shares with *S. palu* Löbl, 1983 a short dorsal branch as well as a truncated ventral branch of the median lobe and the internal sac with a proximal bunch of robust spines. The shape of the strongly sclerotized structures in the internal sac of these two species are quite different and diagnostic (see also Löbl, 1983). *Scaphisoma memar* may be readily distinguished from members of the *S. tricolor* group by the elytra with strongly shortened sutural striae. In addition, it differs from *S. palu* by the nearly evenly light body.

Distribution: Malaysia: Sabah.

Scaphisoma renominatum Löbl, 1975

Amalocera suturalis Achard, 1920: 128.
Scaphisoma renominatum Löbl, 1975: 272.

Material examined: MHNG; 2 males; labelled "Banguey" (= Banggi Island), lacking date and detailed locality information.



Figs 128-133. *Scaphisoma* spp., genital characters. (128) *S. memar* sp. nov., aedeagus in dorsal view, scale = 0.2 mm. (129) ditto, aedeagus in lateral view. (130) ditto, parameres in ventral view. (131) ditto, internal sac, scale = 0.1 mm. (132) *S. adami* sp. nov., aedeagus in dorsal view, scale = 0.1 mm. (133) ditto, aedeagus in lateral view.

Comments: Löbl (1975) transferred the species to *Scaphisoma* and renamed it because of secondary homonymy. The aedeagal characters suggest a relationship with *S. borneense* Pic, 1916. *Scaphisoma renominatum* may be distinguished by the dark brown elytra, their light apical area excepted, and by the aedeagus with the ventral branch of the apical process oblique in lateral view.

Distribution: Malaysia: Sabah, Banggi Island.

Scaphisoma unicolor species group

This group was proposed for species possessing a strongly asymmetrical aedeagus, usually with weakly sclerotized parameres, an internal sac lacking spinose or scale-like structures, and a flagellum simple partly extruded in repose. They have often also a strongly prominent articular process of the median lobe. The Sabah samples yielded four species.

Scaphisoma adami sp. nov.

Figs 132, 133

Holotype: MHNG; male; SABAH Mount Kinabalu 1580 m, 27.IV.1987 Burckhardt – Löbl.

Paratype: MHNG; 1 male; Mount Kinabalu Nat. Park, Poring Hot Spring, Langanan Falls area, 900 m, 14.V.1987, A. Smetana.

Diagnosis: Medium-large species with reddish-brown dorsum of body; antennomere III as long as antennomere IV; elytra lacking basal striae, sutural striae parallel; metaventrite lacking microsculpture, antecoxal puncture rows absent, submesocoxal lines convex; ventrites with punctulate microsculpture, ventrite I with submetacoxal areas as long as sixth to fourth of shortest interval between its margin and apical margin of ventrite; aedeagus asymmetrical, apical process long, sinuate in lateral view, incurved in dorsal view, membranous near apex, basal bulb small, lacking prominent articular process, left paramere narrowed to acute tip, right paramere expanded apically.

Etymology: The species is named in honour of my friend Adam Ślipiński (Canberra) with whom I had the pleasure to work on several taxa.

Description: Length 1.50-1.76 mm, width 0.95-1.20 mm. Head, pronotum and elytra dark reddish-brown, elytra narrowly lighter along apical margins. Mesoventrite and metaventrite blackish. Ventrites blackish with lighter apical areas. Basal halves of femora dark brown, apical halves lighter; tibiae, tarsi and antennae yellowish. Length/width ratios of antennomeres as: III 15/9: IV 15/8: V 30/9: VI 50/10: VII 58/16: VIII 41/13: IX 48/16: X 40/16: XI 50/19. Pronotum and elytra lacking microsculpture. Pronotum with anterior bead broadly interrupted; lateral margins evenly arcuate in dorsal view; lateral margin carinae concealed in dorsal view; lateral margin striae punctate; discal punctation very fine and dense, punctures not clearly delimited, hardly visible at 30 times magnification. Tip of scutellum exposed. Elytra weakly narrowed apically, with lateral margins evenly arcuate; lateral margin carina visible in dorsal view; lateral margin striae impunctate; apical margin truncated, lacking distinct crenulation; inner apical angle at level of outer apical angle; sutural margin not raised; adsutural area flat, with single row of very fine punctures; sutural striae parallel, curved along pronotal lobe, not extended laterally; basal striae absent; discal punctation coarser than pronotal punctation, dense, with puncture intervals in part about as large to twice as large as puncture diameters. Ventral side of thorax lacking microsculpture. Hypomeron appearing glabrous. Mesoventral shield impunctate. Mesepimeron three times as long as wide and long about as half of shortest interval to mesocoxa. Metaventrite with punctation even, very fine and dense; slightly convex in middle, impressed apicomesally; antecoxal puncture rows absent; submesocoxal area 0.03 mm long, about as long as sixth of shortest interval to metacoxa; submesocoxal line parallel, coarsely punctate, coarse punctures not extended laterad of coxae. Metanepisternum flat, lacking obvious microsculpture, narrowed anteriad, suture oblique, not impressed, impunctate. Tibiae straight. Abdomen with punctulate microsculpture, as metaventrite densely and very finely punctate. Ventrite I with submetacoxal line parallel, coarsely punctate, coarse punctures not present along margin of intercoxal process; submetacoxal area 0.02-0.03 mm long, as long as sixth to fourth of shortest interval between its margin and apical margin of ventrite.

Male. Protarsomeres and mesotarsomeres I to III slightly widened. Aedeagus (Figs 132, 133) 0.43-0.44 mm long.

Comments: The aedeagal characters of this new species suggest relationships with *S. palawanum* Pic, 1926, *S. inopportunum* Löbl, 2016 and *S. oviforme* Löbl, 2016. *Scaphisoma adami* may be distinguished by the shorter antennomere IV and the shape of the parameres, notably the much longer right paramere. It differs from *S. inopportunum* also by the distinctly microsculptured abdomen.

Distribution: Malaysia: Sabah.

Scaphisoma ernsti sp. nov.

Figs 134, 135

Holotype: MHNG; male; MALAYSIA – Sabah Kinabalu Nat. Park Poring H. Spr. 600 m 11.VII.1992 Heiss.

Paratypes: MHNG; 3 males, 5 females; with same data as holotype.

Diagnosis: Small species with reddish-brown dorsum of body; antennomere III as long as two thirds of length of antennomere IV; elytra lacking basal striae, sutural striae parallel; mesoventer coarsely punctate; metaventrite lacking microsculpture, with dense patch of punctures near metacoxal process, submesocoxal lines convex, antecoxal puncture rows absent; ventrite I with submetacoxal areas nearly as long as half of shortest interval between its margin and apical margin of ventrite; aedeagus asymmetrical, apical process short, incurved, with acute tip, basal bulb rather large, lacking prominent articular process, left paramere with subapical notch, right paramere arcuate, nearly evenly narrow in apical half.

Etymology: The species was found by Ernst Heiss of Innsbruck, Austria, and is named in his honour.

Description: Length 1.0-1.32 mm, width 0.70-0.91 mm. Head and body reddish-brown, apical abdominal segments and appendages yellowish. Length/width ratios of antennomeres as: III 10/7: IV 15/6: V 29/7: VI 37/10: VII 46/12: VIII 35/10: IX 47/12: X 46/12: XI 55/12. Pronotum and elytra lacking microsculpture. Pronotum with anterior bead broadly interrupted; lateral margins evenly arcuate in dorsal view; lateral margin carinae visible in dorsal view; lateral margin striae punctate; discal punctation fine and dense, punctures well delimited, visible at 15 times magnification. Tip of scutellum exposed. Elytra weakly narrowed apically, with lateral margins evenly arcuate; lateral margin carina entirely distinct in dorsal view; lateral margin striae punctate; apical margin arcuate, lacking distinct crenulation; inner apical angle situated posteriad of level of outer apical angle; sutural margin not raised; adsutural area flat, with single row of very fine punctures; sutural striae parallel, curved along pronotal lobe, not extended laterally; basal striae absent; discal punctation coarser than pronotal punctation, dense, with puncture intervals mostly about as large to twice as large puncture diameters. Ventral side of thorax lacking microsculpture. Hypomeron appearing glabrous. Mesoventrite conspicuously coarsely punctate. Mesepimeron four times as long as wide and about 1.5 times as long as interval to mesocoxa. Metaventrite with slightly convex mesal area, flattened on apicomedian area, lacking impressions, with patch of very dense, coarse punctures anteriad of metacoxal process; metaventral sides and area between mesocoxae sparsely and very finely punctate; antecoxal puncture rows absent; submesocoxal area 0.04 mm long, nearly as long as half of shortest interval to metacoxa; submesocoxal line convex, conspicuously coarsely punctate, coarse punctures extended laterally. Metanepisternum slightly convex, strongly narrowed anteriad, suture impressed, impunctate, broadly rounded at posterior angle, hardly rounded at anterior angle, lacking obvious microsculpture. Tibiae straight. Abdomen with strigulate microsculpture, as sides of metaventrite sparsely and very finely punctate. Ventrite I with submetacoxal line convex, coarsely punctate, coarse punctures present along margin of intercoxal process; submetacoxal area 0.04 mm long, nearly as long as half of shortest interval between its margin and apical margin of ventrite.
Male. Protarsomeres I to III hardly widened. Aedeagus (Figs 134, 135) 0.43 mm long.

Comments: This species may be easily distinguished from other members of the *S. unicolor* group by the mesoventer coarsely punctate and the metaventrite having an apicomedian patch of punctures. The shape of the median lobe and parameres also are diagnostic.

Distribution: Malaysia: Sabah.

Scaphisoma ruficoloroides sp. nov.

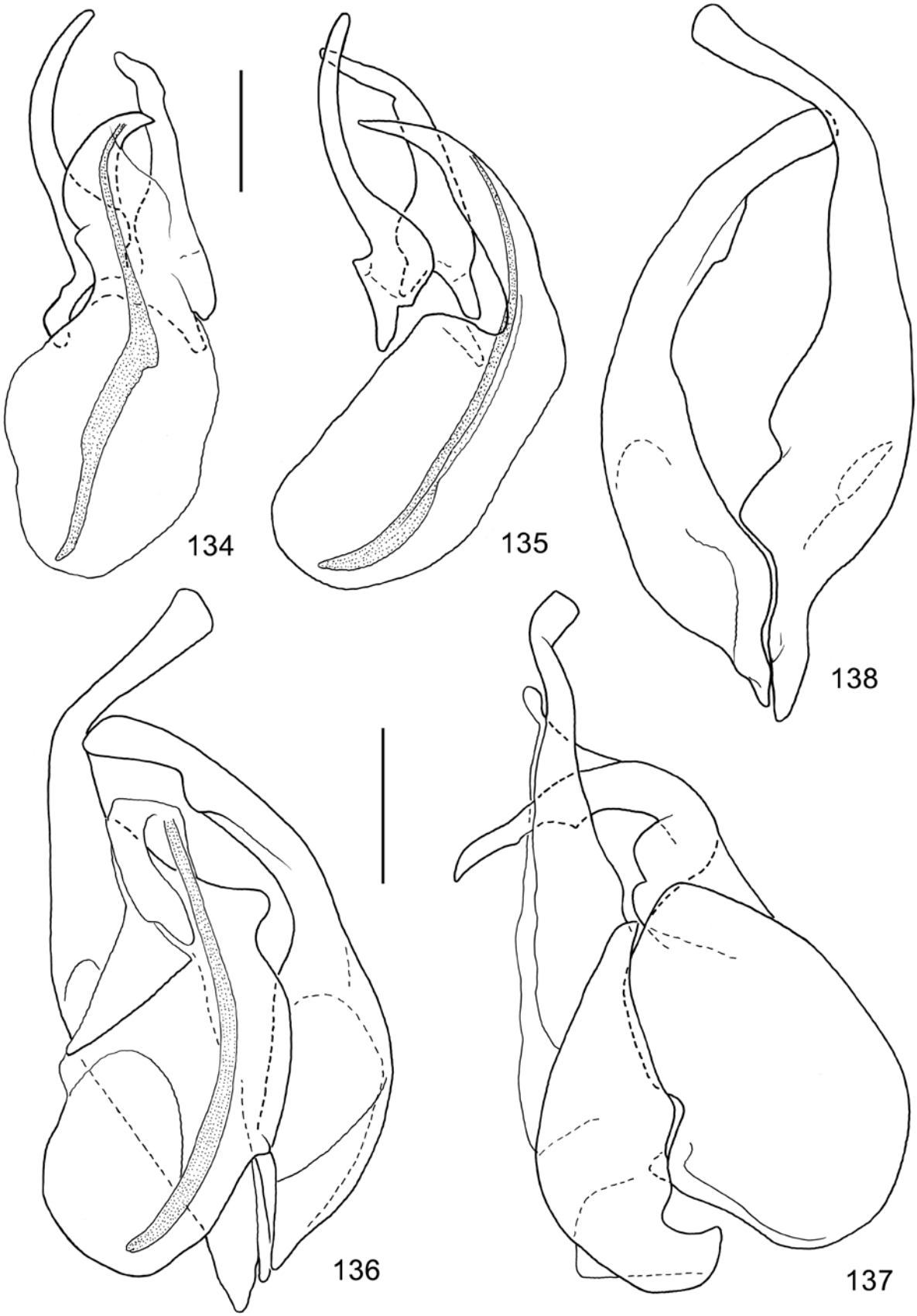
Figs 136-138

Holotype: MHNG; male; Borneo Sabah Mount Kinabalu N[ational]. P[ark]. Por[ing]. H[ot]. S[pring]. area Langanan Fall 900 m 14.V.87 A. Smetana.

Paratypes: MHNG; 5 males; Poring Hot Spring, Langanan Fall, 900-950 m, 12.V.1987, D. Burckhardt & I. Löbl. – 1 male; Poring Hot Spring, 500 m, 7.V.1987, D. Burckhardt & I. Löbl. – 1 male, 1 female; Mount Kinabalu, Headquarters, Liwagu Trail, 1500 m, 16.V.1987, A. Smetana. – 1 male; Crocker Range, 1600 m, 19.V.1987, D. Burckhardt & I. Löbl. – EUMJ, MHNG; 3 males, 1 female; Mount Kinabalu, Headquarters, 1.V.1980, M. & A. Sakai. – MHNG; 1 female; Crocker Range, Gunung Emas, 1500-1700 m, around km 52 of road Kota Kinabalu Tambunan, 6-18. VI.1996.

Diagnosis: Rather large species with brown to ochraceous body; antennomere IV twice as long as antennomere III; elytra lacking basal striae, sutural striae parallel; mesoventer finely punctate; metaventrite lacking microsculpture and lacking patch of punctures near metacoxal process, submesocoxal lines parallel, antecoxal puncture rows absent; ventrite I with submetacoxal areas about as long as fourth of shortest interval between its margin and apical margin of ventrite; aedeagus asymmetrical, apical process robust and long, incurved, with two ventral denticles and acute tip, basal bulb large, lacking prominent articular process, left paramere abruptly narrowed near rounded apex, right paramere narrowed toward incurved apical fourth.

Etymology: The species epithet is derived from the name of the related *S. ruficolor* (Pic, 1916).



Figs 134-138. *Scaphisoma* spp., genital characters. (134) *S. ernsti* sp. nov., aedeagus in dorsal view, scale = 0.1 mm. (135) ditto, aedeagus in lateral view. (136) *S. ruficoloroides* sp. nov., aedeagus in dorsal view, scale = 0.2 mm. (137) ditto, aedeagus in lateral view. (138) ditto, parameres in ventral view.

Description: Length 1.55-1.92 mm, width 1.15-1.40 mm. Head and body light brown to ochraceous, elytra sometimes darkened along lateral and sutural margins and near apical margin. Appendages yellowish. Length/width ratios of antennomeres as: III 15/10: IV 30/9: V 40/10: VI 44/9: VII 58/14: VIII 40/11: IX 57/14: X 55/15: XI 72/6. Pronotum and elytra lacking microsculpture. Pronotum with anterior bead broadly interrupted; lateral margins evenly arcuate in dorsal view; lateral margin carinae concealed in dorsal view; lateral margin striae impunctate; discal punctation very fine, shallow, and rather dense, hardly visible at 40 times magnification. Tip of scutellum exposed. Elytra weakly narrowed apically, with lateral margins arcuate; lateral margin carina entirely visible in dorsal view; lateral margin striae impunctate; apical margin arcuate, with distinct crenulation; inner apical angle at level of outer apical angle; sutural margin not raised; adsutural area flat, with single row of very fine punctures; sutural striae parallel, curved along pronotal lobe, not extended laterally; basal striae absent; discal punctation slightly sparser and somewhat finer than pronotal punctation, very shallow, with puncture intervals mostly about twice as large as puncture diameters. Ventral side of thorax lacking microsculpture. Hypomeron appearing smooth. Middle of mesoventral shield very finely punctate. Mesepimeron four times as long as wide and slightly shorter than interval to mesocoxa. Metaventrite with slightly convex mesal area, hardly flattened on apicomedian area, lacking impressions; metaventral punctation dense and very fine, puncture diameters much smaller than puncture intervals; antecoxal puncture rows absent; submesocoxal area 0.02 mm long, about as long as tenth to eighth of shortest interval to metacoxa; submesocoxal line parallel, with few rather coarse punctures. Metanepisternum slightly convex, narrowed anteriad, suture impressed, impunctate, oblique, hardly rounded at angles, lacking obvious microsculpture. Tibiae straight. Abdomen with hardly visible punctulate microsculpture absent in ventrite I. Pygidium distinctly densely punctate. Ventrites finely and densely punctate, ventrite I with submetacoxal line convex, coarsely punctate, coarse punctures present along margin of intercoxal process; submetacoxal area 0.03 mm long, about as long as fourth of shortest interval between its margin and apical margin of ventrite.

Male. Protarsomeres I to III hardly widened. Ventrite I flattened mesally. Aedeagus (Figs 136-138) 0.75-0.90 mm long.

Comments: The size and the elytral coloration are unusually variable. The aedeagal characters suggest relationships with *S. ruficolor* (Pic, 1916), *S. anomalum* Löbl, 1972, *S. fastum* Löbl, 1990, and *S. blandum* Löbl, 1975. The new species may be readily distinguished from *S. ruficolor*, *S. anomalum*, and *S. fastum* by the elytra with sutural striae ending at each side of the pronotal lobe and by the shape of the parameres. *Scaphisoma blandum* possesses a distinctive elytral colour pattern and its size is significantly larger (body length 2.25 mm), while the sutural striae of the elytra are as those of *S. ruficoloroides*.

Distribution: Malaysia: Sabah.

Scaphisoma tajam sp. nov.

Figs 139, 140

Holotype: MHNG; male; Borneo Sabah mi 45 Labuk r[oad]. ex-Sandakan (Lungmamis) 12.-13.VI.1968 R.W. Taylor.

Paratype: MHNG; 1 male; Poring Hot Spring, 485 m, 21.VIII.1988, A. Smetana.

Diagnosis: Rather small species with reddish-brown body; antennomere III much shorter than antennomere IV; elytra with short basal striae, sutural striae slightly converging apically; metaventrite lacking microsculpture, with patch of setigerous punctures on apicomedian area, submesocoxal lines convex, antecoxal puncture rows absent; ventrite I with submetacoxal areas about as long as fifth of shortest interval between its margin and apical margin of ventrite; aedeagus asymmetrical, apical process long, incurved, gradually narrowed to acute tip, basal bulb small, with prominent, angulate articular process, parameres symmetrical, arcuate, each bearing small membranous lobe.

Etymology: The species epithet means acute in Malay.

Description: Length 1.30-1.37 mm, width 0.92-0.96 mm. Head, body and femora evenly dark reddish-brown, Tibiae, tarsi and antennae ochraceous to yellowish. Length/width ratios of antennomeres as: III 10/7: IV 25/7: V 30/7: VI 26/8: VII 37/11: VIII 26/8: IX 42/14: X 40/14: XI 50/15. Pronotum and elytra lacking microsculpture. Pronotum with anterior bead broadly interrupted; lateral margins evenly arcuate in dorsal view; lateral margin carinae nearly entirely visible in dorsal view; lateral margin striae punctate; discal punctation very fine and rather dense, hardly visible at 40 times magnification. Minute tip of scutellum exposed. Elytra weakly narrowed apically, with lateral margins arcuate; lateral margin carina entirely visible in dorsal view; lateral margin striae punctate; apical margin truncated, lacking obvious crenulation; inner apical angle at level of outer apical angle; sutural margin hardly raised; adsutural area flat, with single row of very fine punctures; sutural striae slightly converging apically, curved along pronotal lobe and extended laterally to form short basal striae evanescent near basal mid-width of elytra; discal punctation near base sparse and fine, somewhat coarser

than pronotal punctation, much coarser and denser on prevailing surface, with puncture intervals about twice as large as puncture diameters in middle, in part as large as puncture diameters near apex. Ventral side of thorax lacking microsculpture. Hypomeron appearing glabrous. Mesepimeron well two times longer than wide and slightly longer than shortest interval to mesocoxa. Metaventrite slightly convex between mesocoxae, flattened on apicomedian area, lacking impressions; punctation coarse and dense on flattened area, with setigerous punctures, puncture diameters in part larger than puncture intervals; submesocoxal area 0.05-0.06 mm long, about as long as half of shortest interval to metacoxa; submesocoxal line convex, finely punctate; remaining metaventral punctation very fine; antecoxal puncture rows absent. Metanepisternum flat, narrowed anteriad, suture impressed, impunctate, oblique, rounded at angles, lacking obvious microsculpture. Tibiae straight. Abdomen lacking obvious microsculpture. Pygidium distinctly densely punctate. Ventrites very finely and sparsely punctate, ventrite I with submetacoxal line hardly convex, distinctly punctate; submetacoxal area 0.03 mm long, about as long as fifth of shortest interval between its margin and apical margin of ventrite.
Male. Protarsomeres I to III hardly widened. Lobe of ventrite VI small, rounded, about 0.03 mm long. Aedeagus (Figs 139, 140) 0.42 mm long.

Comments: This species resembles *S. brunneonotatum* Pic, 1923 and *S. besucheti* Löbl, 1971. They share most of their diagnostic characters, including the aedeagal. *Scaphisoma tajam* may be distinguished by the metaventral puncture patch and the hardly convex submetacoxal lines. It differs from *S. besucheti* by the shorter parameral lobes and the angulate articular process of the median lobe, and from *S. brunneonotatum* by the narrower apical process of the median lobe and the parameral apices not widened in dorsal view.

Distribution: Malaysia: Sabah.

Scaphisoma species not assigned to groups

Scaphisoma cornutum sp. nov.
Fig. 141

Holotype: MHNG; male; SABAH: Poring Hot Springs 500 m 8.V.1987 Burckhardt – Löbl.

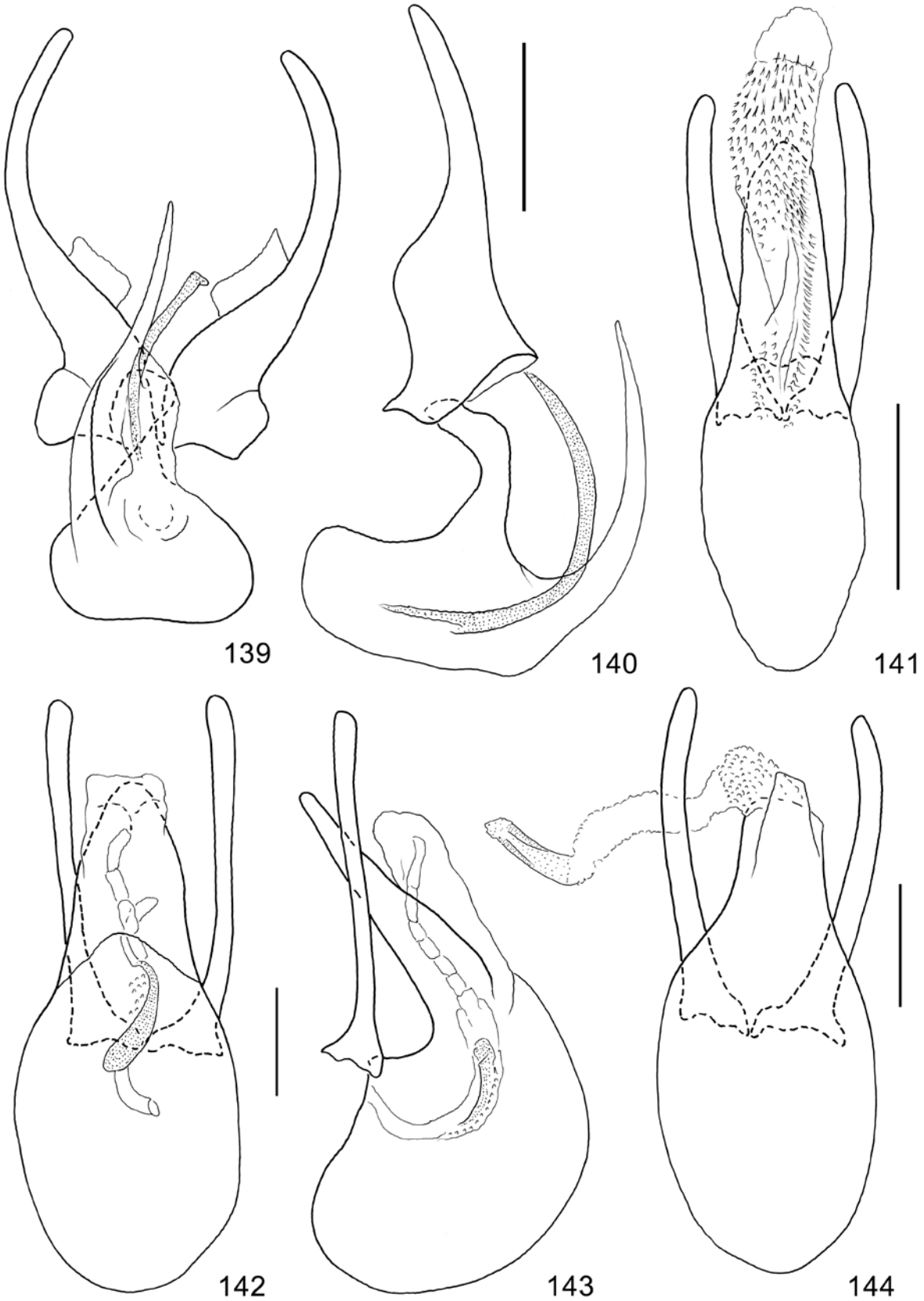
Paratype: MHNG; 1 female; Sepilok, Kabili-Sepilok Forest Reserve, 30 m, 19.III.1983, B. Hauser.

Diagnosis: Small species with brown dorsum of body; antennomere III slightly shorter than antennomere IV; elytra with short basal striae, sutural striae parallel; metaventrite lacking microsculpture and lacking patch of setigerous punctures on apicomedian area, submesocoxal lines convex, antecoxal puncture rows absent; ventrite I with submetacoxal areas about as long as third of shortest interval between its margin and apical margin of ventrite; aedeagus symmetrical, apical process long, weakly narrowed apically, with blunt tip, basal bulb elongate, lacking prominent articular process, parameres weakly arcuate, evenly narrow in apical halves, internal sac with lateral row of long spines and with basal and apical short membranous denticles.

Etymology: The species epithet is a Latin adjective meaning horned.

Description: Length 1.12-1.22 mm, width 0.80 mm. Head, thorax, and elytra brown, abdomen and appendages lighter, ochraceous. Length/width ratios of antennomeres as: III 10/6: IV 11/5: V 33/7: VI 38/8: VII 44/10: VIII 36/8: IX 40/10: X 42/10: XI 60/11. Pronotum and elytra without microsculpture. Pronotum with anterior bead broadly interrupted; lateral margins evenly rounded in dorsal view; lateral margin carinae nearly entirely concealed in dorsal view; lateral margin striae impunctate; discal punctation extremely fine and sparse, hardly visible at 100 times magnification. Minute tip of scutellum exposed. Elytra weakly narrowed apically, with lateral margins evenly arcuate; lateral margin carina exposed in dorsal view; lateral margin striae impunctate; apical margin hardly rounded, lacking obvious crenulation; inner apical angle at level of outer apical angle; sutural margin raised posteriad of basal fourth; adsutural area flat in anterior fourth, somewhat impressed posteriad, with single puncture row; sutural striae parallel, except on apical inflexed area, curved along pronotal lobe and extended laterally to form basal striae reaching elytral mid-width; discal punctation very shallow, dense, puncture intervals larger than puncture diameters. Hypomeron with punctulate microsculpture, lacking setigerous punctures. Mesanepisternum and metaventrite extremely finely punctate. Mesepimeron about three times as long as wide, shorter than interval to mesocoxa. Metaventrite weakly convex in middle, lacking impressions and antecoxal puncture rows; submesocoxal line convex; submesocoxal area 0.04 mm long, nearly as long as half of shortest interval to metacoxae. Metanepisternum flat, narrowed anteriad, with straight, impunctate suture, lacking obvious microsculpture. Tibiae straight. Abdomen with strigulate microsculpture, very finely punctate. Ventrite I with punctures on basomesal area larger than on remaining surface; submetacoxal line convex; submetacoxal area 0.04 mm long, about as long as third of shortest interval between its margin and apical margin of ventrite.
Male. Protarsomeres I to III distinctly widened. Aedeagus (Fig. 141) 0.32 mm long.

Comments: The aedeagal characters suggest a relationship with *S. pseudorufum* Löbl, 1986 although



Figs 139-144. *Scaphisoma* spp., genital characters. (139) *S. tajam* sp. nov., aedeagus in dorsal view. (140) ditto, aedeagus in lateral view, scale = 0.1 mm. (141) *S. cornutum* sp. nov., aedeagus in dorsal view, internal sac extruded, scale = 0.1 mm. (142) *S. danum* sp. nov., aedeagus in dorsal view, scale = 0.1 mm. (143) ditto, aedeagus in lateral view. (144) *S. dichroum* sp. nov., aedeagus in dorsal view, scale = 0.1 mm.

the apical process of the median lobe is longer and blunt at the tip, and the internal sac possesses a long lateral row of fine spines. The new species may be readily distinguished from *S. pseudorufum* by antennomeres V and VI being nearly even in length and the comparatively short submetacoxal areas, while the antennomere VI is about two times as long as the antennomere V, and the submetacoxal areas are 0.09-0.10 mm long in *S. pseudorufum*.

Distribution: Malaysia: Sabah.

Scaphisoma danum sp. nov.

Figs 142, 143

Holotype: OUMNH; male; SABAH: Lahad Datu Ulu Segama for. Res. Coupe 88 logging area N04°59.738' E117°50.165 / 250 m, iii-iv.2005 FIT no 2 prim forest, E. Slade & J. Villanueva lgt. Selectiv. Lowland mix. Dipterocarp / Logged dipterocarp for. Yayasan Cabah Logging Concession OUMN 2005-06.

Paratype: MHNG; 1 female; SABAH: Lahad Datu Ulu Segama For. Res., Danum Valley Conservation Area, Borneo Rain Forest Lodge, N05°02.682' E117°45.553', iii-iv.2005, FIT, primary Dipterocarp forest, E. Slade & J. Villanueva, OUMN 2005-062.

Diagnosis: Medium-large species with reddish-brown dorsum of body; antennomere III much shorter than antennomere IV; elytra with short basal striae, sutural striae parallel; mesepimeron short, slightly longer than wide; metaventrite lacking microsculpture, with coarsely punctate apicomesal impressions, submesocoxal lines convex, antecoxal puncture rows absent; propygidium coarsely punctate, pygidium finely punctate; ventrite I with submetacoxal areas reduced, about as long as fifteenth of shortest interval between its margin and apical margin of ventrite; aedeagus symmetrical, apical process long, inflexed and weakly narrowed apically, with oblique ventral margin and blunt tip, basal bulb oval, voluminous, lacking prominent articular process, parameres posteriad of bases nearly evenly narrow, hardly sinuate in dorsal view, straight in lateral view, internal sac with elongate mesal sclerite and segmented tube along apical part of ejaculatory duct.

Etymology: The species epithet is the name of the Danum valley.

Description: Length 1.64-1.66 mm, width 1.17 mm. Head, thorax, and elytra dark reddish-brown, apical abdominal segments yellowish, femora and tibiae as most of body, tarsi, and antennae yellowish. Length/width ratios of antennomeres as: III 15/2: IV 25/8: V 26/11: VI 35/12: VII 45/13: VIII 40/12: IX 40/13: X 44/13: XI 68/13. Pronotum and elytra not microsculptured. Pronotum with anterior bead broadly interrupted; lateral margins evenly rounded in dorsal view; lateral margin carinae nearly hardly visible in dorsal view; lateral margin striae impunctate; discal punctation very fine and sparse, hardly visible at 30 times magnification. Tip of scutellum exposed. Elytra weakly narrowed apically, with lateral margins evenly arcuate; lateral margin carina exposed in dorsal view; lateral margin striae impunctate; apical margin hardly truncate, crenulate at inner angle; inner apical angle posteriad of level of outer apical angle; sutural margin not raised; adsutural area flat, with single puncture row, about 0.04 mm wide shortly posteriad of scutellum; sutural striae parallel, curved along pronotal lobe and extended laterally to form basal striae reaching elytral mid-width; discal punctation very shallow, dense, puncture intervals larger than puncture diameters. Hypomeron smooth. Mesoventrite impunctate. Mesanepisternum extremely finely punctate. Mesepimeron short, slightly longer than wide, as long as fourth of shortest interval to mesocoxa. Metaventrite convex mesally, with two arcuate and coarsely punctate apicomesal impressions; remaining punctation very fine; antecoxal puncture rows absent; submesocoxal line convex; submesocoxal area about 0.05 mm long, as long as half of shortest interval to metacoxae. Metanepisternum flat, hardly narrowed anteriad, with nearly straight, impunctate suture, lacking obvious microsculpture. Tibiae straight. Abdomen with propygidium coarsely punctate, pygidium finely punctate; lacking microsculpture and very finely punctate on ventrites I to IV, with few coarse basomedian punctures on ventrite I excepted. Ventrite I with submetacoxal line parallel; submetacoxal area about 0.01 mm long, as long as fifteenth of shortest interval between its margin and apical margin of ventrite. Apical abdominal segments with punctulate microsculpture.

Male. Protarsomeres I to III slightly widened. Apex of ventrite VI broadly rounded, lacking lobe. Aedeagus (Figs 142, 143) 0.50 mm long.

Comments: This species is unique in possessing a segmented tube along the apical part of the ejaculatory duct. In addition, it may be readily distinguished from its Bornean congeners possessing elytra with basal striae by the small mesepimera and the reduced submetacoxal areas, in combination with the body colour, the length/width ratios of the antennomeres, the coarsely punctate metaventral impressions, and the puncture pattern of the abdominal tergites.

Distribution: Malaysia: Sabah.

Scaphisoma dichroum sp. nov.

Figs 144, 145

Holotype: MHNG; male; Malaysia, Sabah, Crocker Range, Tenom env., Kalang Waterfall env., 18.VI.1998, J. Kodada & F. Čiampor lgt.

Paratypes: MHNG; 2 females; with same data as holotype.

Diagnosis: Rather large species, pronotum very dark, elytra ochraceous with darkened triangular spot; antennomere III slightly longer than antennomere IV; elytra with short basal striae, sutural striae parallel; mesepimeron long, metaventrite lacking microsculpture, submesocoxal lines parallel, antecoxal puncture rows absent; ventrite I with submetacoxal areas about as long as eighth of shortest interval between its margin and apical margin of ventrite; aedeagus symmetrical, apical process long, curved and weakly narrowed apically, with concave ventral margin and blunt tip, dorsal valve weakly sclerotized, basal bulb oval, lacking prominent articular process, parameres posteriad of bases evenly narrow, slightly arcuate in dorsal view, slightly sinuate in lateral view, internal sac with very fine scale-like structures and weakly sclerotized tube.

Etymology: The species epithet is a Greek adjective meaning bicolorous.

Description: Length 1.85-1.92 mm, width 1.24-1.27 mm. Head and pronotum very dark, nearly black, with reddish shine. Elytra ochraceous, blackish along bases and lateral margins, with poorly delimited darkened triangular area along basal half of sutural length; blackish lateral area extended near apical margins to form transverse band reaching sutural stria. Venter of thorax and ventrites I to III blackish with reddish shine, apical ventrites yellowish. Femora reddish-brown, tibiae and tarsi lighter than femora, antennae light brown to yellowish. Length/width ratios of antennomeres as: III 10/10: IV 9/8: V 41/11: VI 54/10: VII 55/19: VIII 48/17: IX 60/18: X 55/17: XI 68/18. Pronotum and elytra not microsculptured. Pronotum with anterior bead broadly interrupted; lateral margins evenly rounded in dorsal view; lateral margin carinae nearly entirely concealed in dorsal view; lateral margin striae impunctate; discal punctation fine and dense, distinct at 40 times magnification. Tip of scutellum exposed. Elytra weakly narrowed apically, with lateral margins arcuate; lateral margin carina visible only near base in dorsal view; lateral margin striae impunctate; apical margin rounded, finely crenulate at inner angle; inner apical angle situated posteriad of level of outer apical angle; sutural margin not raised; adsutural area flat, with single puncture row; sutural striae parallel, except on apical inflexed area, curved along pronotal lobe and extended laterally to form short basal striae evanescent near basal mid-width of elytra; discal punctation shallow, dense and fine, puncture intervals somewhat larger than puncture diameters. Ventral side of thorax lacking microsculpture. Hypomeron appearing glabrous. Mesepimeron clearly four times as long as wide and as long as shortest interval to mesocoxa. Metaventrite slightly convex in middle, lacking impressions; submesocoxal area 0.03 mm long, about as long as seventh of shortest interval to metacoxa; submesocoxal line parallel, finely punctate; remaining metaventral punctation extremely fine; antecoxal puncture rows absent. Metanepisternum flat, narrowed anteriad, suture impressed, impunctate, rounded only at posterior angle, lacking obvious microsculpture. Tibiae straight. Abdomen with strigulate microsculpture, very finely and sparsely punctate. Ventrite I with submetacoxal line parallel, finely punctate; submetacoxal area 0.03 mm long, about as long as eighth of shortest interval between its margin and apical margin of ventrite.
Male. Protarsomeres I to III weakly widened. Lobe of ventrite VI rounded, small. Aedeagus (Figs 144, 145) 0.50 mm long.

Comments: This species is characterized by its conspicuous colour pattern combined with the elongate antennomere III slightly longer than antennomere IV, the parallel submetacoxal lines, and the comparatively large body size.

Distribution: Malaysia: Sabah.

Scaphisoma ineptum Löbl, 1987

Scaphisoma ineptum Löbl, 1987: 89.

Material examined: MHNG; 1 male; Mount Kinabalu, 1430 m, 22.V.1983, D. Burckhardt & I. Löbl. – 1 male; Crocker Range, 1550-1650 m, road Kota Kinabalu Tambunan, 16.V.1987, D. Burckhardt & I. Löbl.

Comments: This species was based on a single male with its internal sac of the aedeagus extruded. The two new specimens have their internal sac in resting position. These are entirely membranous suggesting the illustrated dark structure at the distal end of the internal sac is not a sclerite as indicated by Löbl (1987, figs 6, 7).

Distribution: Malaysia: Sabah.

Scaphisoma jacobsoni Löbl, 1975

Scaphisoma jacobsoni Löbl, 1975: 287.

Material examined: MHNG; 1 male; Mount Kinabalu Nat. Park, Poring Hot Spring, 485 m, 19.VIII.1988, A. Smetana. – 1 male; Crocker Range, Gunung Emas, 23.V.1998, J. Kodada & F. Čiampor. – 1 male; Batu Punggul Resort env., 24.VI.-1.VII.1996.

Comment: Löbl (1975) placed the species in the *S. haemorrhoidale* group.

Distribution: Indonesia: Bali, Java, Sumatra; Malaysia: Sabah, Sarawak; Thailand.

Scaphisoma keciloides sp. nov.

Figs 146, 147

Holotype: MHNG; male; SABAH Pangi 27.VII.82 Rougemont.

Paratypes: MHNG; 2 males, 3 females; with same data as holotype.

Diagnosis: Minute, light reddish-brown species; antennomere III slightly shorter than antennomere IV; elytra lacking basal striae, sutural striae parallel, discal punctation extremely fine; mesepimeron elongate, metaventrite lacking microsculpture, submesocoxal lines convex, antecoxal puncture rows absent; ventrite I with submetacoxal areas nearly as long as half of shortest interval between its margin and apical margin of ventrite; aedeagus symmetrical, apical process long, curved and narrowed apically, with concave ventral margin and blunt tip, dorsal valve weakly sclerotized, basal bulb oval, with prominent articular process, parameres widened from base to mid-length, posteriad of mid-length narrowed, with apical third evenly narrow in dorsal view, straight and gradually narrowed in lateral view; internal sac tubular, with very fine membranous denticles.

Etymology: The species epithet refers to its similarity to *S. kecil*.

Description: Length 0.85-0.90 mm, width 0.63-0.68 mm. Head and most of body light reddish-brown, elytra sometimes slightly darkened apically, apex of abdomen yellowish; femora and tibiae light reddish-brown, tarsi and antennae yellowish. Length/width ratios of antennomeres as: III 6/5: IV 8/4: V 15/6: VI 15/6: VII 22/9: VIII 15/6: IX 22/9: X: 20/9: XI 35/10. Pronotum and elytra lacking microsculpture. Pronotum with anterior margin bead broadly interrupted; lateral margins arcuate; lateral margin stria concealed in dorsal view, impunctate; discal punctation dense and extremely fine, hardly visible at 100 times magnification. Tip of scutellum exposed. Elytron strongly narrowed apically, with lateral margin arcuate, lateral margin stria concealed, impunctate; apical margin rounded, lacking distinct crenulation; inner apical angle at level of outer angle; sutural margin not raised; sutural stria starting at side of pronotal lobe, shallow, parallel with suture; adsutural area flat, about 0.04 mm wide shortly posteriad of scutellar tip, with single puncture row; punctation similar to that of pronotal on basal two thirds of disc, slightly more visible on apical third and consisting of fairly well delimited punctures, with puncture intervals mostly about three to five times as large as puncture diameters. Hypomeron and mesanepisternum smooth. Mesoventrite impunctate. Mesepimeron about two times as long as wide and slightly shorter than interval between its tip and mesocoxa. Metaventrite lacking microsculpture, in middle convex, lacking impressions, punctation extremely fine and sparse, hardly visible at 100 times magnification; antecoxal puncture rows absent; submesocoxal area about 0.02 mm long, as long as third of shortest interval between its margin and metacoxa; submesocoxal line convex, punctate. Metanepisternum flat, narrowed anteriad, suture somewhat impressed, oblique, rounded at anterior angle, lacking obvious microsculpture. Protibiae and metatibiae straight, mesotibiae slightly curved. Exposed tergites and ventrites lacking microsculpture and with sparse, extremely fine punctation. Ventrite I with submetacoxal area 0.02 mm long, nearly as long as half of shortest interval between its margin and apical margin of ventrite; submetacoxal line convex, finely punctate.
Male. Protarsomeres I to III hardly widened. Aedeagus (Figs 146, 147) 0.26-0.28 mm long.

Comments: This species may be readily distinguished by its minute body size from its Bornean congeners, *S. kecil* excepted. It is distinguished from *S. kecil* by the even, extremely fine elytral punctation, the shorter ventrite I, and the aedeagal characters, notably by the wide parameres and the absence of a flagellum.

Distribution: Malaysia: Sabah.

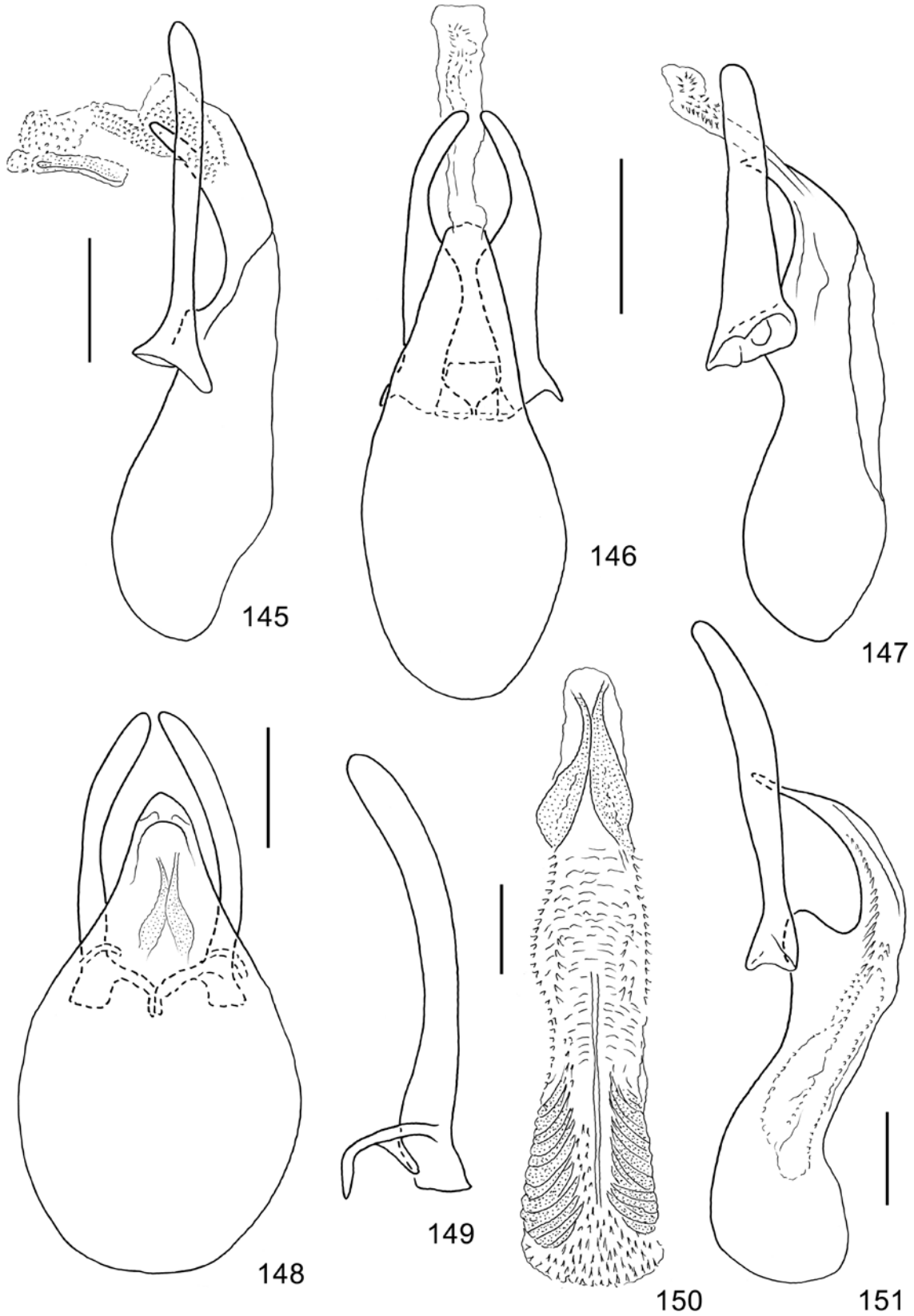
Scaphisoma klausnitzeri sp. nov.

Figs 148-150

Holotype: MHNG; male; SABAH: Poring Hot Springs, 550-600 m 9.V.1987 #18a Burckhardt – Löbl.

Paratypes: MHNG; 2 females; with same data as holotype. – 1 female; Poring Hot Spring, 600 m, 11.VII.1992, E. Heiss. – 1 female; Poring Hot Spring, 480 m, 20.VIII.1988, A. Smetana. – 1 female; Poring Hot Spring, area below Langanan Fall, 800 m, 11.V.1987, A. Smetana. – 1 male; Batu Punggul Resort env., 24.VI.-1.VII.1996.

Diagnosis: Small, reddish-brown species; antennomere III much shorter than antennomere IV; elytra lacking basal striae, sutural striae strongly converging apically, angulate near base, conspicuously coarsely punctate, lateral striae coarsely punctate; mesepimeron long, metaventrite lacking microsculpture, submesocoxal lines convex, antecoxal puncture rows absent; ventrite I with submetacoxal areas about as long as tenth of shortest interval between its margin and apical margin of ventrite; aedeagus symmetrical, apical process rather long, gradually narrowed apically, with blunt tip, dorsal valve weakly sclerotized, basal bulb oval, lacking prominent articular process, parameres evenly narrow, arcuate; proximal section of internal sac with lateral rows of rather large spines and with fine mesal spines, followed by membranous teeth-like structures and two apical sclerites.



Figs 145-151. *Scaphisoma* spp., genital characters. (145) *S. dichroum* sp. nov., aedeagus in lateral view, scale = 0.1 mm. (146) *S. keciloides* sp. nov., aedeagus in dorsal view, internal sac extruded, scale = 0.1 mm. (147) ditto, aedeagus in lateral view. (148) *S. klausnitzeri* sp. nov., aedeagus in dorsal view, scale = 0.1 mm. (149) ditto, paramere in ventral view, scale = 0.05 mm. (150) ditto, internal sac, scale = 0.05 mm. (151) *S. malam* sp. nov., aedeagus in lateral view, scale = 0.05 mm.

Etymology: The species is dedicated to my friend and colleague Bernhard Klausnitzer of Dresden, Germany.

Description: Length 1.25-1.32 mm, width 0.75-0.88 mm. Head, pronotum and most of elytra evenly dark reddish-brown, apical fifth of elytra light brown to yellowish; hypomera, mesoventrite, metaventrite and ventrite I as most of dorsal surface or somewhat darker, apical abdominal segments and appendages light brown to yellowish. Length/width ratios of antennomeres as: III 10/8: IV 24/6: V 40/7: VI 33/8: VII 40/10: VIII 33/8: IX 40/10: X 40/11: XI 50/11. Pronotum with anterior bead broadly interrupted; lateral margins nearly oblique in dorsal view; lateral margin carinae concealed in dorsal view; lateral margin striae distinctly punctate; discal punctation dense, fine, and shallow on prevailing surface, becoming deeper and well delimited toward base, with puncture intervals in part as large as puncture diameters; distinct at 20 times magnification. Tip of scutellum exposed. Elytra narrowed apically, with lateral margins arcuate; lateral margin carina entirely visible in dorsal view; lateral margin striae coarsely punctate; apical margin rounded, lacking obvious crenulation; inner apical angle situated posteriad of level of apical angle; sutural margin raised; adsutural area flat, 0.10 mm wide shortly posteriad of scutellar tip, irregularly and coarsely punctate near base, with single row of rather coarse punctures posteriad of mid-length; sutural striae strongly converging apically, angulate near base, conspicuously coarsely punctate; discal punctation very shallow and fine, dense, inconspicuous compared to punctation on basal part of pronotum. Ventral side of thorax lacking microsculpture, apicomedian part of metaventrite excepted. Hypomeron appearing glabrous. Mesoventrite punctate. Mesepimeron impressed, narrow, about five times as long as wide and distinctly longer than interval to mesocoxa. Metaventrite very finely and sparsely punctate and lacking microsculpture on lateral areas and between mesocoxae; with strigulate microsculpture on narrow mesal area near metacoxae, with two narrow, parallel, coarsely punctate apicomedian grooves; antecoxal puncture rows absent; submesocoxal area 0.03 mm long, about as long as fifth of shortest interval to metacoxa; submesocoxal line convex, coarsely punctate, coarse punctures extended laterad of mesocoxae. Metanepisternum convex, strongly narrowed anteriad, suture deeply impressed, impunctate, strongly rounded at posterior angle, slightly rounded at anterior angle, lacking obvious microsculpture. Tibiae straight. Abdomen very finely punctate, with strigulate microsculpture; submetacoxal line slightly convex, distinctly punctate, with few distinct punctures along margin of intercoxal process; submetacoxal area 0.02 mm long, about as long as tenth of shortest interval between its margin and apical margin of ventrite.

Male. Protarsomeres I to III weakly widened. Aedeagus (Figs 148-150) 0.43-0.48 mm long.

Comments: The aedeagal characters suggest a relationship with *S. jacobsoni*. However, the internal sac with a pair of large apical teeth and rows of proximal, curved spines are diagnostic. Both species are similar in external characters, but *S. klausnitzeri* may be distinguished by the coarse punctures along the lateral elytral striae. These two species may be distinguished by the presence of metaventral grooves from other Bornean species having the elytra with angulate and apically strongly converging sutural striae.

Distribution: Malaysia: Sabah.

***Scaphisoma malam* sp. nov.**

Figs 151, 152

Holotype: MHNG; male; BORNEO SABAH Mount Kinabalu Nat[ional]. P[ark]. H[ead]Q[uarters] Mempening Trail 1600 m 17.V.[19]87 A. Smetana.

Diagnosis: Medium-large, blackish species; antennomere III much shorter than antennomere IV, both combined shorter than antennomere V; elytra with short basal striae, sutural striae parallel; mesepimeron long; metaventrite lacking microsculpture, submesocoxal lines parallel, antecoxal puncture rows absent; ventrite I with submetacoxal areas about as long as half of shortest interval between its margin and apical margin of ventrite; aedeagus symmetrical, apical process rather short, curved ventrally, with abruptly narrowed apical section, acute tip, dorsal valve split, basal bulb elongate-oval, with prominent articular process, parameres widened toward mid-length, posterior mid-length moderately narrowed and curved in dorsal view, slightly sinuate and widest posteriad of mid-length in lateral view; proximal section of internal sac bulbous, with scale-like membranous structures followed by membranous spines.

Etymology: The species epithet means dark in Malay.

Description: Length 1.44 mm, width 1.02 mm. Body blackish with abdomen slightly lighter than thorax, appendages ochraceous to yellowish. Length/width ratios of antennomeres as: III 10/8: IV 16/7: V 35/10: VI 36/12: VII 46/15: VIII 37/12: IX 46/15: X 47/17 (left antennomere XI and right antennomeres VII to XI broken off). Pronotum with anterior bead broadly interrupted; lateral margins weakly rounded in dorsal view; lateral margin carinae nearly entirely visible in dorsal view; lateral margin striae punctate; discal punctation fine and dense, distinct at 40 times magnification. Tip of scutellum exposed. Elytra narrowed apically, with lateral margins arcuate; lateral margin carina entirely visible in dorsal view; lateral margin striae impunctate; apical margin hardly rounded, lacking obvious crenulation; inner apical angle at level of outer apical angle; sutural margin not

raised; adsutural area flat, with single row of very fine punctures; sutural striae parallel, curved along pronotal lobe and extended laterally to form short basal striae evanescent near basal mid-width of elytra; discal punctation sparse and fine near base, only slightly coarser than pronotal punctation, coarser and denser on prevailing surface, with puncture diameters in part about as large as puncture intervals. Ventral side of thorax lacking microsculpture. Hypomeron appearing glabrous. Mesepimeron well two times as long as wide and somewhat longer than interval to mesocoxa. Metaventrite very finely and sparsely punctate, convex in middle, lacking impressions; submesocoxal area 0.02 mm long, about as long as tenth of shortest interval to metacoxa; submesocoxal line parallel, finely punctate; antecoxal puncture rows absent. Metanepisternum lacking obvious microsculpture, flat, hardly narrowed anteriad, suture impressed, impunctate, slightly rounded at posterior angle. Tibiae straight. Ventrite I lacking microsculpture, with submetacoxal line convex, distinctly punctate; submetacoxal area 0.08 mm long, about as long as half of shortest interval between its margin and apical margin of ventrite. Following ventrites and exposed tergites with punctulate microsculpture, very finely and sparsely punctate.
Male. Protarsomeres I to III somewhat widened. Aedeagus (Figs 151, 152) 0.37 mm long.

Comments: The aedeagal characters, notably the shape of the median lobe and parameres, suggest relationships with *S. rufum* Achard, 1923, *S. interjectum* Löbl, 1992 and *S. kubani* Löbl, 2019. The bulbous basal section of the internal sac bearing scale-like structures followed by very fine spinous structures is distinctive for this new species. It may be distinguished from *S. rufum* by the darker body, and from *S. rufum*, *S. interjectum* and *S. kubani* by antennomeres III and IV combined shorter than antennomere V, the metaventrite finely and sparsely punctate between the metacoxae, and the large submetacoxal areas.

Distribution: Malaysia: Sabah.

Scaphisoma murutum Löbl, 1987

Scaphisoma murutum Löbl, 1987: 92.

Comments: The species was based on two specimens, the holotype from Pangi, and a paratype from Sarawak. It is absent in the new collections.

Distribution: Malaysia: Sabah, Sarawak.

Scaphisoma omissum sp. nov.

Figs 153, 154

Holotype: MHNG; male; Malaysia, SABAH, Crocker Range, Gunung Emas, 1500-1700 m, around km 52 of road Kota Kinabalu Tambunan 6.-18.VI.1996, 2c.

Diagnosis: Rather small species with blackish dorsum; antennomere III much shorter than antennomere IV; elytra lacking basal striae, sutural striae parallel, prevailing surface with discal punctation conspicuously coarse; mesepimeron long; metaventrite lacking microsculpture, submesocoxal lines convex, antecoxal puncture rows absent; ventrite I with submetacoxal areas about as long as fifth of shortest interval between its margin and apical margin of ventrite; aedeagus symmetrical, apical process long, strongly inflexed, with abruptly narrowed apical section, tip blunt, dorsal valve not split, basal bulb oval, lacking prominent articular process, parameres evenly broad posteriad of basal third and weakly arcuate in dorsal view, straight in lateral view; internal sac tubular, with fine scale-like and denticle-like membranous structures.

Etymology: The species epithet is a Latin adjective meaning overlooked.

Description: Length 1.33 mm, width 0.90 mm. Head, pronotum and elytra blackish. Ventral side of thorax and most of abdomen very dark reddish-brown to blackish, apical abdominal segments yellowish. Femora and tibiae reddish-brown, tarsi and antennae yellowish. Length/width ratios of antennomeres as: III 10/7: IV 22/5: V 26/6: VI 30/8: VII 36/10: VIII 32/8: IX 36/12: X 42/12: XI 56/12. Pronotum with anterior bead broadly interrupted; lateral margins weakly rounded in dorsal view; lateral margin carinae nearly concealed in dorsal view; lateral margin striae impunctate; discal punctation very fine, sparse, distinct at 40 times magnification. Tip of scutellum exposed. Elytra somewhat flattened on mediolateral areas, weakly narrowed apically, with lateral margins arcuate near base and apex, oblique in middle; lateral margin carina visible near base in dorsal view; lateral margin striae punctate; apical margin hardly rounded, crenulate near inner angle; inner apical angle at level of outer apical angle; sutural margin not raised; adsutural area flat, with single row of coarse punctures; sutural striae parallel, curved along pronotal lobe, not extended laterally; discal punctation sparse and very fine on humeral area, along lateral margin and on apical fourth, coarse and dense on prevailing surface, with puncture diameters in part about as large as puncture intervals. Ventral side of thorax lacking microsculpture. Hypomeron appearing glabrous. Mesoventrite extremely finely punctate. Mesepimeron nearly four times as long as wide and distinctly shorter than interval to mesocoxa. Metaventrite convex in middle, lacking impressions, densely and coarsely punctate, with punctures in part about as large as puncture intervals; lateral parts of metaventrite extremely finely punctate; submesocoxal area 0.03 mm long, about as long as fifth of shortest interval to metacoxa; submesocoxal line convex, coarsely punctate; antecoxal puncture rows absent. Metanepisternum lacking obvious microsculpture, flat, strongly narrowed

anteriad and apically, with suture slightly impressed, impunctate, conspicuously convex. Tibiae straight. Abdomen with strigulate microsculpture. Ventrite I extremely finely punctate, submetacoxal line convex, coarsely punctate; submetacoxal area hardly 0.02 mm, about as long as seventh of shortest interval between its margin and apical margin of ventrite. Following ventrites and exposed tergites very finely and sparsely punctate.

Male. Protarsomeres I to III distinctly widened, protarsomere I narrower than apex of protibia. Apical margin of ventrite VI rounded. Aedeagus (Figs 153, 154) 0.23 mm long.

Comments: This species resembles *S. melas*, notably by the conspicuous pattern of the elytral punctation. It differs drastically by the distinct mesepimera, ventrite I with a strigulate microsculpture, and the small aedeagus, lacking an articular process and with a less inflexed apical process of the median lobe.

Distribution: Malaysia: Sabah.

***Scaphisoma setosum* sp. nov**.

Figs 155, 156

Holotype: MHNG; male; Malaysia, SABAH, Crocker Range, Gunung Emas, 1500-1700 m, around km 52 of road Kota Kinabalu Tambunan, 6-18.IV.1996, 2c.

Diagnosis: Medium-large species with blackish dorsum; antennomere III hardly shorter than antennomere IV, antennomere XI longer than antennomeres IX and X combined; pronotum with anterior margin bead uninterrupted, elytra with basal striae joining lateral striae, sutural striae parallel; mesepimeron long; metaventrite lacking microsculpture, submesocoxal lines convex, antecoxal puncture rows absent; ventrite I lacking submetacoxal lines; aedeagus symmetrical, apical process short, slightly inflexed, with blunt tip, dorsal valve not split, strongly sclerotized, basal bulb lacking prominent articular process, parameres each with setose apical lobe, nearly evenly broad between bases and lobes and hardly arcuate in dorsal view, gradually widened in lateral view; internal sac with complex pattern of membranous denticles, spine-like and scale-like structures, and sclerite.

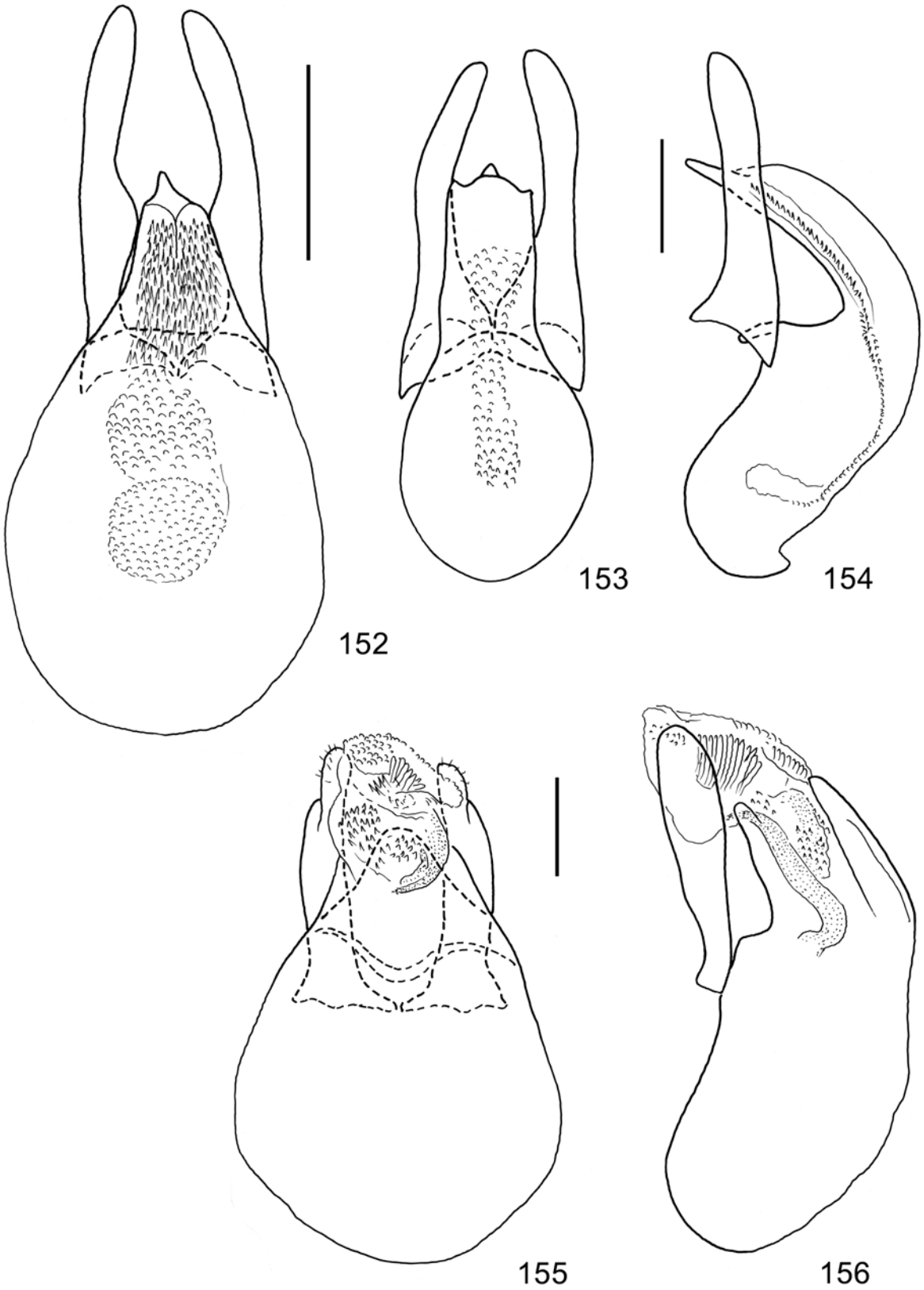
Etymology: The species epithet is a Latin adjective meaning setose.

Description: Length 1.74 mm, width 1.18 mm. Head, pronotum, elytra, abdomen and appendages light reddish-brown, elytra slightly lighter than pronotum, mesoventrite and metaventrite distinctly darkened. Length/width ratios of antennomeres as: III 17/9: IV 18/10: V 20/13: VI 30/16: VII 44/15: VIII 40/15: IX 52/16: X 55/19: XI 115/19. Antennomeres VI to XI conspicuously setose, setae dense and oblique. Pronotum and elytra not microsculptured. Pronotum with anterior margin bead entire; lateral margins evenly rounded in dorsal view; lateral margin carinae nearly entirely concealed in dorsal view; lateral margin striae impunctate; discal punctation extremely fine and sparse, visible at 40 times magnification. Tip of scutellum exposed. Elytra weakly narrowed apically, with lateral margins slightly arcuate near anterior and apical angles, oblique in middle; lateral margin carina visible in dorsal view only near base; lateral margin striae impunctate; apical margin rounded, finely crenulate at inner angle; inner apical angle situated posteriad of level of outer apical angle; sutural margin not raised; adsutural area flat, with single puncture row; sutural striae parallel, except on apical inflexed area, curved along pronotal lobe and extended laterally to form basal striae joined to lateral striae; discal punctation shallow, irregular and fine, puncture intervals much larger than puncture diameters. Ventral side of thorax lacking microsculpture. Hypomeron and mesanepisternum appearing glabrous, with few extremely fine punctures. Mesepimeron clearly four times as long as wide and three times as long as shortest interval to mesocoxa. Metaventrite slightly convex in middle, with pair of elongate and punctate impressions situated near metacoxal process; submesocoxal area 0.03 mm long, about as long as seventh of shortest interval to metacoxa; submesocoxal line convex, coarsely punctate, coarse punctures extended laterally along inner section of mesepimeral margin; remaining metaventral punctation extremely fine; antecoxal puncture rows absent. Metanepisternum lacking obvious microsculpture, flat, hardly narrowed anteriad, suture rounded only at anterior angle and coarsely punctate. Protibiae straight, mesotibiae and metatibiae curved. Abdomen lacking microsculpture; ventrite I lacking submetacoxal lines, with basal row of coarse punctures interrupted in middle and extended laterally up to lateral margins. Remaining abdominal punctation extremely fine, hardly visible at 100 times magnification.

Male. Protarsomeres I to III distinctly widened, protarsomere I nearly as wide as apex of protibia. Ventrite VI with small triangular lobe, about 0.05 mm long. Aedeagus (Figs 155, 156) 0.52 mm long.

Comments: This species is tentatively placed in *Scaphisoma*. Several character states requesting dissections of the mouth-parts and thorax remain unknown because the single available specimen is left as entire as possible. It may be easily distinguished by the antennae with an unusually long antennomere XI, the uninterrupted anterior bead of pronotum and ventrite I lacking submetacoxal lines. These character states may be reversions. The aedeagal characters do not suggest relationships with any known species, and the finely setose lobes of the parameres area a unique feature.

Distribution: Malaysia: Sabah.



Figs 152-156. *Scaphisoma* spp., genital characters. (152) *S. malam* sp. nov., aedeagus in dorsal view, scale = 0.1 mm. (153) *S. omissum* sp. nov., aedeagus in dorsal view, scale = 0.05 mm. (154) ditto, aedeagus in lateral view. (155) *S. setosum* sp. nov., aedeagus in dorsal view, scale = 0.1 mm. (156) ditto, aedeagus in lateral view.

Scaphisoma taylori Löbl, 1975

Scaphisoma taylori Löbl, 1975: 280.

Material examined: OUMNH; 2 females; Lahad Datu Ulu Segama Forest Reserve, Danum Valley Forest Centre, N 04°58' E 117°42', 450 m, VIII.1998, D. Bebber. – MHNG; 1 male; same data but N 04°57' E 117°418', 200 m, 29.X.1998, D. Mann, E. Slade & J. Villanueva.

Comments: The species was based on a single specimen from Quoin Hill, near Tawau.

Distribution: Malaysia: Sabah.

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CHECKLIST OF BORNEAN SCAPHIDIINAE

(Based on published data only, extra-Bornean islands/countries separated by semicolon)

Cyparium castaneum Löbl, 2023	Sabah
Cyparium glabrum Löbl, 2023	Sabah
Cyparium minutissimum Löbl, 2023	Sabah
Cyparium ornatum Löbl, 2023	Sabah
Cyparium punctatum Pic, 1916	Banggi Island, Sabah; Philippines
Episcaphium callosipenne (Achard, 1922)	Sarawak; Java, Sumatra, West Malaysia
Cerambyciscapha dohertyi Pic, 1915	Kalimantan
Diatelium wallacei Pascoe, 1863	Kalimantan, Sarawak; Sumatra
Euscaphidium tuberosum Achard, 1922	"Borneo"; Sumatra
Scaphidium aterrimum Reitter, 1879	"Borneo occidental"; India
Scaphidium atricolor Pic, 1915	Brunei; Kalimantan,Sabah, Sarawak
Scaphidium atrosuturale Pic, 1915	Kalimantan
Scaphidium binominatum Achard, 1915	"Borneo"
Scaphidium borneense Pic, 1915	Kalimantan
Scaphidium disconotatum Pic, 1915	"Borneo"; Java
Scaphidium gibbosum Pic, 1915	Indonesia: Kalimantan
Scaphidium grande Gestro, 1879	Kalimantan, Sabah, Sarawak; India to Taiwan
Scaphidium impuncticolle Pic, 1915	Brunei, Sabah
Scaphidium inornatum Gestro, 1879	Sarawak
Scaphidium longicolle Pic, 1915	Brunei, Kalimantan; Java,
Scaphidium longithorax Pic, 1916	Brunei; Kalimantan, Sabah; West Malaysia
Scaphidium martapuranum Pic, 1916	Kalimantan
Scaphidium minutum Pic, 1920	Sabah
Scaphidium nigrosuturale Pic, 1920	Sabah
Scaphidium orbiculosus Reitter, 1880	"Borneo"
Scaphidium peninsulare Achard, 1920	Indonesia: Sumatra, Kalimantan; West Malaysia
Scaphidium quadriplagatum Achard, 1915	Brunei, Kalimantan, Sabah
Scaphidium shelfordi (Achard, 1922)	Sarawak
Scaphidium simplicicolle (Pic, 1923)	"Borneo"
Scaphidium subelongatum Pic, 1915	Sabah, "Borneo"; Java
Scaphidium sulcaticolle (Pic, 1923)	Kalimantan
Scaphidium sulcatum Pic, 1915	Sabah
Scaphidium sulcipenne Gestro, 1879	Sarawak; Sumatra, West Malaysia
Scaphidium trinotatum Pic, 1920	Sabah
Scaphidium waterstradti Pic, 1915	Banggi Island, Sabah
Baeocera barbara Löbl, 1990	Sabah; Thailand
Baeocera doriai (Pic, 1920)	Sabah, Sarawak
Baeocera hutan Löbl, 2022	Sabah
Baeocera incisa (Löbl, 1973)	Sabah
Baeocera kinabalua Löbl, 1987	Sabah, Sarawak
Baeocera obliqua (Löbl, 1973)	Sabah
Baeocera omnigena Löbl, 2021	Sabah
Baeocera rudis Löbl, 2021	Sabah
Baeocera rufula (Löbl, 1973)	Sabah; Singapore

Baeocera sarawakensis Löbl, 1987	Sabah, Sarawak
Baeocera secreta Löbl, 2021	Sabah
Baeocera sedata Löbl, 2021	Sabah
Baeocera segregata Löbl, 2021	Sabah
Baeocera seiugata Löbl, 2021	Sabah
Baeocera semirufa Löbl, 2021	Sabah
Baeocera serendibensis (Löbl, 1971)	Sabah; China, India, Nepal, Pakistan; Sri Lanka, Thailand
Baeocera taylori (Löbl, 1973)	Sarawak
Bironium borneense Löbl, 1987	Sabah, Sarawak
Bironium grouvellei (Achard, 1920)	Brunei, Sabah; Sumatra, Thailand,West Malaysia,
Bironium minutum (Achard, 1920)	Sarawak; Sumatra, West Malaysia
Bironium pustulatum Löbl, 2011	Sabah; Philippines
Bironium sumatranum (Achard, 1920)	Sarawak; India, Thailand, West Malaysia
Kathetopodion borneensis (Pic, 1935)	Sabah
Mordelloscaphium testaceimembre Pic, 1915	Kalimantan, Sabah
Pseudobironium convexum Löbl & Tang, 2013	Kalimantan; Hainan, Mentawei
Pseudobironium horaki Löbl & Tang, 2013	Sabah, Sarawak; Java
Pseudobironium irregulare Löbl, 2022	Sabah
Pseudobironium pubiventer Löbl & Tang, 2013	Sabah
Pseudobironium rapax Löbl, 2022	Sabah
Pseudobironium sparsepunctata (Pic, 1915)	Banggi Island, Sabah, Sarawak; Java, Philippines
Pseudobironium subovatum Pic, 1920	Kalimantan, Sabah; Sumatra, Laos, Thailand, West Malaysia
Pseudobironium vitalisi (Achard, 1920)	Kalimantan, Sabah, Sarawak; Java, Sumatra
Sapitia lombokiana Achard, 1920	Sabah; Lombok, Sumatra, Philippines, Thailand, Vietnam, Yunnan
Sapitia versicolor Pic, 1920	Sabah; Sumatra, Thailand
Scaphicoma rufa (Pic, 1923)	Sabah; Sumatra
Scaphicoma dohertyi (Pic, 1915)	Kalimantan, Sabah
Scaphisoma adami sp. nov.	Sabah
Scaphisoma affectuosum sp. nov.	Sabah
Scaphisoma affluens sp. nov.	Sabah
Scaphisoma alesi sp. nov.	Sabah
Scaphisoma alternum sp. nov.	Sabah
Scaphisoma amicale sp. nov.	Sabah
Scaphisoma ancoroides sp. nov.	Sabah
Scaphisoma angulatum Löbl, 1975	Sabah
Scaphisoma apparatum Löbl, 2015	Kalimantan
Scaphisoma assingi sp. nov.	Sabah
Scaphisoma atavum sp. nov.	Sabah
Scaphisoma bihamatum sp. nov.	Sabah
Scaphisoma borneense Pic, 1916	Kalimantan
Scaphisoma brevistyle sp. nov.	Sabah
Scaphisoma burckhardti sp. nov.	Sabah
Scaphisoma caudatoides Löbl & Ogawa, 2016	Sabah; Philippines
Scaphisoma caudatulum sp. nov.	Sabah
Scaphisoma chujoi Löbl, 1982	Sabah, Sarawak
Scaphisoma ciampori sp. nov.	Sabah
Scaphisoma complicans Löbl, 1982	Sabah, Sarawak
Scaphisoma constrictum sp. nov.	Sabah
Scaphisoma cornutum sp. nov.	Sabah
Scaphisoma crassum sp. nov.	Sabah
Scaphisoma cursitor sp. nov.	Sabah
Scaphisoma cursor Löbl, 1975	Sarawak
Scaphisoma danum sp. nov.	Sabah
Scaphisoma dayak Löbl, 1982	Sarawak
Scaphisoma dichroum sp. nov.	Sabah
Scaphisoma distortum sp. nov.	Sabah

Scaphisoma dohertyi Pic, 1915	Sabah; Bali, Java, Sumbawa, China, India, Thailand, Vietnam, West Malysia
Scaphisoma dusunum Löbl, 1987	Sabah
Scaphisoma ernsti sp. nov.	Sabah
Scaphisoma foveatum Löbl, 1987	Sarawak
Scaphisoma idaanum Löbl, 1987	Sarawak
Scaphisoma immotum sp. nov.	Sabah
Scaphisoma ineptum Löbl, 1987	Sabah
Scaphisoma jacobsoni Löbl, 1975	Sabah, Sarawak; Bali, Java, Sumatra
Scaphisoma jankoi sp. nov.	Sabah
Scaphisoma javanum Löbl, 1979	Sabah, Sarawak; Java, Philippines
Scaphisoma kalabitoides sp. nov.	Sabah
Scaphisoma kalabitum Löbl, 1987	Sabah
Scaphisoma katinganum Löbl, 1987	Sarawak
Scaphisoma kecil sp. nov.	Sabah
Scaphisoma keciloides sp. nov.	Sabah
Scaphisoma kinabaluum Löbl, 1987	Sabah
Scaphisoma klausnitzeri sp. nov.	Sabah
Scaphisoma lescheni sp. nov.	Sabah
Scaphisoma lineatopunctatum (Pic, 1916)	Kalimantan, Sabah
Scaphisoma luteomaculatum Pic, 1915	Sabah; Bali, Buru, Java, Lombok, Sumatra, Sumbawa, Myanmar, Philippines
Scaphisoma maculatum Pic, (1920)	Sarawak
Scaphisoma majale sp. nov.	Sabah
Scaphisoma makar sp. nov.	Sabah
Scaphisoma makkul sp. nov.	Sabah
Scaphisoma malam sp. nov.	Sabah
Scaphisoma malaccanum (Pic, 1915)	Sabah; West Malaysia, Philippines
Scaphisoma malayanum Löbl, 1986	Sabah; West Malaysia
Scaphisoma malaysianum sp. nov.	Sabah
Scaphisoma marshallae Löbl, 1987	Sarawak
Scaphisoma mediale sp. nov.	Sabah
Scaphisoma melas sp. nov.	Sabah
Scaphisoma memar sp. nov.	Sabah
Scaphisoma meritum sp. nov.	Sabah
Scaphisoma mindanaosum Pic, 1926	Kalimantan, Sabah; Laos; Philippines, Sumatra
Scaphisoma mirandoides sp. nov.	Sabah
Scaphisoma mujur sp. nov.	Sabah
Scaphisoma murutum Löbl, 1987	Sabah, Sarawak
Scaphisoma newtoni sp. nov.	Sabah
Scaphisoma nigrum Löbl, 1986	Sabah; West Malaysia
S*caphisoma obliquemaculatum* Motschulsky, 1863	Kalimantan, Sabah; Java, Sulawesi, Sumbawa, Sumatra, Sri Lanka, Thailand, Vietnam, Mascarene Islands
Scaphisoma obsoletum sp. nov.	Sabah
Scaphisoma omissum sp. nov.	Sabah
Scaphisoma onerosum sp. nov.	Sabah
Scaphisoma oxurum sp. nov.	Sabah
Scaphisoma pallidulum sp. nov.	Sabah
Scaphisoma panas sp. nov.	Sabah
Scaphisoma parakalabitum sp. nov.	Sabah
Scaphisoma paratrox sp. nov.	Sabah
Scaphisoma pennatum sp. nov.	Sabah
Scaphisoma pici Löbl, 1979	Kalimantan
Scaphisoma placibile sp. nov.	Sabah
Scaphisoma punctatipenne Pic, 1916	Kalimantan
Scaphisoma punctatum (Pic, 1915)	Kalimantan
Scaphisoma quadrimaculatum Pic, 1922	Sabah; Sumatra, India, Laos, Philippines

Scaphisoma renominatum Löbl, 1975	Banggi Island, Sabah
Scaphisoma rouyeri Pic, 1916	Kalimantan, Sabah, Sarawak; Java, Thailand
Scaphisoma rufescens (Pic, 1920)	Banggi Island, Sabah, Sarawak; Bali, China, Philippines, Singapore, Thailand, Vietnam, West Malaysia
Scaphisoma ruficolle (Pic, 1915)	Banggi Island, Sabah
Scaphisoma ruficolor (Pic, 1916)	Kalimantan
Scaphisoma ruficoloroides sp. nov.	Sabah
Scaphisoma sakaiorum Löbl, 1987	Sabah
Scaphisoma satoi Löbl, 1982	Sarawak
Scaphisoma setifer sp. nov.	Sabah
Scaphisoma setigerum sp. nov.	Sabah
Scaphisoma setosum sp. nov.	Sabah
Scaphisoma solutum Löbl, 1990	Sabah; Thailand
Scaphisoma spiniger Löbl, 1981	Sabah
Scaphisoma submaculatum Pic, 1920	Kalimantan
Scaphisoma surigaosum (Pic, 1926)	Sabah; Philippines
Scaphisoma tajam sp. nov.	Sabah
Scaphisoma tarsale Löbl, 2015	Kalimantan
Scaphisoma taylori Löbl, 1975	Sabah
Scaphisoma wagneri sp. nov.	Sabah
Scaphoxium opacum Löbl, 2021	Sabah
Scaphoxium opertum Löbl, 2021	Sabah
Scaphoxium sinuatum Löbl, 2022	Sabah
Scaphoxium taylori Löbl, 1981	Brunei, Sabah, Sarawak; Philippines
Vituratella kistneri (Löbl, 1979)	Sabah; Sumatra
Xotidium flagellum Ogawa & Löbl, 2016	Sabah
Xotidium heissi Ogawa & Löbl, 2016	Brunei, Sabah
Xotidium smetanai Ogawa & Löbl, 2016	Sabah