A revision of the parasitic wasp genus *Bathyaulax* Szépligeti (Hymenoptera: Braconidae: Braconinae) from Africa and the Arabian Peninsula

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Abstract

The predominantly Afrotropical braconine wasp genus *Bathyaulax* Szépligeti is revised and an identification key provided. A total of 51 species are recognized as valid; 27 species are described as new. *andrewi* sp. nov., *erythropus* sp. nov., *kvisti* sp. nov., *larjuskini* sp. nov., *vannouhuysie* sp. nov. and *williami* sp. nov. from Kenya, *artoï* sp. nov., *heinie* sp. nov. and *jimii* sp. nov. from D. R. Congo, *buntikae* sp. nov. from Sierra Leone and D. R. Congo, *nigroconus* sp. nov. from D. R. Congo and Uganda, *atrox* sp. nov. from Uganda, *bifoveae* sp. nov. and *varkonyii* sp. nov. from Tanzania, *ikonenie* sp. nov. from Senegal, Kenya and Uganda, *fritzeni* sp. nov., *juhai* sp. nov. and *olliae* sp. nov. from Saudi Arabia, *kossui* sp. nov. and *marjae* sp. nov. from Yemen, *kupariensis* sp. nov. and *raunoi* sp. nov. from Mozambique, *nirgitarus* sp. nov. from Madagascar, *ramosus* sp. nov. and *suvie* sp. nov. from South Africa, *pickeri* sp. nov. from South Africa and Namibia, and *pippolaensis* sp. nov. from north East Africa, possibly Somaliland. *Bicentra* Achterberg & Sigwart is synonymized with *Bathyaulax*, hence *Bathyaulax concavitarsis* (van Achterberg & Sigwart 1987) comb. nov.; *Bathyaulax atriceps* (Kriechbaumer 1894), *Bathyaulax gutta* (Enderlein (1918) 1920) and *Bathyaulax pectinatus* (Enderlein (1918) 1920) are each synonymized with *Bathyaulax martinii* (Gribodo 1879) syn. nov.; *Bathyaulax laeviventris* Enderlein (1918) 1920 is synonymized with *Bathyaulax krebsii* (Cameron 1909) syn. nov.; *Bathyaulax hirticeps* (Cameron 1909) is synonymized with *Bathyaulax hriticaps* (Cameron 1909) syn. nov.; *Goniobracon aevolatus* Szépligeti 1913 and *Goniobracon abdominalis* Szépligeti 1914 are synonymized with *Bathyaulax kersteni* (Gerstaecker 1871) comb. et syn. nov.; *Bathyaulax nigricaps* Enderlein 1920 is synonymized with *Bathyaulax lucidus* (Szépligeti 1911) syn. nov.; *Goniobracon seminiger* Szépligeti 1914 is synonymized with *Bathyaulax perspicax* (Szépligeti 1905) syn. nov.; *Bathyaulax transitus* (Szépligeti 1913) is synonymized with *Bathyaulax rufa* (Szépligeti 1906) syn. nov.

Keywords: Bicentra, Euryacria, Goniobracon, Afrotropical, Arabia

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Introduction

The genus *Bathyaulax* Szepligeti is one of the most easily recognized of the numerous large, principally tropical braconine wasps, with very distinctively arched telotarsi and with the penultimate tarsal articles strongly produced distoventrally on both the inner and outer sides (Quicke 1981, 1987). Despite these apomorphies, *Bathyaulax* species have in the past been almost arbitrarily confused with members of several other genera, such that Shenefelt’s (1978) catalogue is unhelpful when it comes to knowing which species should be attributed to this genus. The junior author, having examined the type specimens of almost all braconine species described from the Afrotropical region, has reclassified many species both into and out of *Bathyaulax* and as a result the genus was thought to comprise approximately 33 species (Quicke 1981, 1983, 1985a,b, 1991a; Quicke and van Achterberg 1990; Quicke and Koch 1990), making it possible to attempt a revision with a realistic hope of including all described species.

As with most tropical genera of Braconinae, there are few published host records that involve reliable parasitoid identifications. For *Bathyaulax*, several unidentified species were recorded by Quicke (1989) as having been reared from beetles (some at least belonging to the Cerambycidae) from pods of various *Acacia* species, and it was postulated that the modified tarsi and strongly arched telotarsi might be adaptations for grasping these hard, smooth structures. However, Quicke et al. (2005) recorded a new species as attacking ceramycid larvae in a tree branch in wet tropical forest in west Uganda, so the host range of the genus is clearly not restricted to pod-borers.

All species are quite large and brightly coloured (Figure 1) and the genus includes species that display most of the common previously recognized colour patterns of other Afrotropical parasitic wasps (Quicke 1986). The only major pattern of larger wasps not known, to date, to occur in *Bathyaulax* is black with dark wings and pale yellow head (and prothorax). The species illustrated in Figure 1B appeared in the recent book, *Field Guide to the Insects of South Africa* (Picker et al. 2003), but unfortunately, while the specimen concerned was collected by the photographer, it was subsequently largely eaten by insect pests and we were unable to identify it with confidence.

Achterberg and Sigwart (1987) described an Afrotropical braconine genus, *Bicentra* Achterberg & Sigwart, based on its possession of two fore tibial spurs, a feature usually regarded as plesiomorphic within the Hymenoptera, elsewhere occurring only in the “Symphyta”, in the apocritan superfamily Ceraphronoidea, and in one other braconine genus, *Rhamnura* Enderlein, also known only from Africa (Achterberg 1981). We here regard *Bicentra* as a junior synonym of *Bathyaulax*.

Terminology follows Achterberg (1988). Collections housing specimens studied are abbreviated as follows: BMNH=Natural History Museum, London, UK; CNCI=Canadian National Collection of Insects, Ottawa, Canada; DH=Durban Museum and Art Gallery, Durban, South Africa; HECO=Hope Entomological Collections, Oxford, UK; IRSNB=Institut Royal des Sciences Naturelles de Belgique, Brussels, Belgium; MNH=Magyar Nemzeti Muzeum Termeszettudomanyi Muzeum, Budapest, Hungary; MNHN=Muséum National d’Histoire Naturelle, Paris, France; Ncip=National Collection of Insects, Pretoria, South Africa; NMW=Naturhistorische Museum, Vienna, Austria; NRS=Naturhistoriska Riksmuseet, Stockholm, Sweden; RMCA=Musée Royal de l’Afrique Centrale, Tervuren, Belgium; RNHL=Rijksmuseum van Natuurlijke Historie, Leiden, Netherlands; UZMC=Zoological Museum University of Copenhagen, Denmark; ZMHBr=Museum für Naturkunde der Humboldt-Universität, Berlin, Germany; ZPAN=Zoology Institute, Polish Academy of Sciences, Warsaw, Poland.
Systematics

For recognition of the subfamily Braconinae, see van Achterberg (1993). For recognition of the genus Bathyaulax, see Quicke (1987).

Checklist of species

[T] indicates country of origin of holotype/lectotype when known from more than one country

- *andrewi* sp. nov. (Kenya)
- *angolensis* Fahringer 1941 (Angola)
- *appelatrix* (Cameron 1909) (South Africa)
- *artoi* sp. nov. (D. R. Congo)
- *atripennis* (Szépligeti 1914) (Uganda)
- *atrox* sp. nov. (Uganda)
- *bicolor* Szépligeti 1906 (Tanzania [T], Kenya, South Africa)
- *bifoveae* sp. nov. (Tanzania)
- *buntikae* sp. nov. (Sierra Leone [T], D. R. Congo)
- *concavitarsis* van Achterberg & Sigwalt 1987 **comb. nov.** (Congo, D. R. Congo, Rwanda, Zambia)
- *concolor* Szépligeti 1906 (Tanzania)
- *cyanogaster* (Szépligeti 1901) (Cameroon, Cote d’Ivoire, D. R. Congo [T], Egypt¹, Ghana, Nigeria, Uganda)
- *rufithorax* (Bingham 1909)
- *delagoaensis* (Cameron 1909) (Mozambique [T], South Africa, D. R. Congo, Mozambique, Zambia)
- *erythropus* sp. nov. (Kenya)
- *flavipera* (Enderlein 1918) (Madagascar)
- *fortisulcatus* (Strand 1912) (Syria? [T], Kenya)
- *foveiventris* (Roman 1912) (Madagascar)
  - *latiangulata* Enderlein (1918) 1920
  - *laeviventris* Enderlein (1918) 1920 **syn. nov.**
- *fritzeni* sp. nov. (Saudi Arabia)
- *heinie* sp. nov. (D. R. Congo)
- *hirticeps* (Cameron 1909) (South Africa)
  - *krebii* Cameron 1909 **syn. nov.**
- *ikonenie* sp. nov. (Senegal [T], Kenya, Uganda)
- *jimii* sp. nov. (D. R. Congo)
- *juhai* sp. nov. (Saudi Arabia)
- *kersteni* (Gerstaecker 1871) (Kenya [T], Ethiopia, Eritrea, Angola, Mozambique, Namibia, South Africa, Tanzania)
  - *areolatus* Szépligeti 1913 **syn. nov.**
  - *abdominalis* Szépligeti 1914c **syn. nov.**
- *kossui* sp. nov. (Yemen)
- *kupariensis* sp. nov. (Mozambique)
- *kvisti* sp. nov. (Kenya)
- *larjuskini* sp. nov. (Kenya)
- *lucidus* (Szépligeti 1911) (DR Congo, Kenya, Malawi [T], Tanzania, Zimbabwe)
nigriceps Enderlein 1920 syn. nov.
marjae sp. nov. (Yemen)
martnii (Gribodo 1879) (Congo [T], D. R. Congo, Eritrea, Ethiopia, Kenya, Malawi, Mozambique, Rwanda, South Africa, Sudan, Tanzania, Zambia, Zimbabwe)
atricep Krichebaumer 1894 syn. nov.
gutta (Enderlein (1918) 1920) syn. nov.
pectinatus (Enderlein (1918) 1920) syn. nov.
monteiroi (Cameron 1909) (Angola, Mozambique [T])
 nigroconus sp. nov. (D. R. Congo [T], Uganda)
nirgitarsus sp. nov. (Madagascar)
oillae sp. nov. (Saudi Arabia)
 perspicax (Szépligeti 1905) (D. R. Congo, Gabon, Gambia, Senegal, Sierra Leone [T], Togo)
 seminiger Szépligeti 1914a syn. nov.
pickeri sp. nov. (Namibia, South Africa [T])
pippolaensis sp. nov. (northeast Africa, possibly Somaliland)
ramosus sp. nov. (South Africa)
rareo sp. nov. (Mozambique)
ruber (Bingham 1902) (Ivory Coast, Kenya, Malawi, Saudi Arabia, Sudan, Uganda, Zimbabwe [T])
rufa (Szépligeti 1906) (Kenya [T])
transitus (Szépligeti 1913) syn. nov.
somaliensis (Szépligeti 1914) (Ethiopia)
striolatus (Szépligeti 1914) (Sierra Leone)
suvie sp. nov. (South Africa)
syraensis (Strand 1912) (Syria)
vannouhuysie sp. nov. (Kenya)
varipennis (Szépligeti 1914) (Ethiopia)
varkomyi sp. nov. (Tanzania)
william sp. nov. (Kenya)
zonatus Fahringer 1931 (Tanzania)

Notes: 1 recorded by Sarhan and Quicke (1993)

Key to species of Bathyaulax

1. Two fore tibial spurs .................. 2
   – One fore tibial spur .................. 3

2. (1) Head red, only dorso-laterally black (Figure 39). Metasomal tergites two to three with medial longitudinal strigation (Figure 41) ................
   – Head entirely black (excluding labrum). Metasomal tergites very smooth or sometimes with little strigation on first tergite around antero-medial triangle (Figure 77) ................
   concavitarsis (van Achterberg & Sigwalt)
   lucidus (Szépligeti)

3. (1) Head black, mesosoma orange-red (Figure 45), metasomal tergites shiny metallic blue-black (Figure 47) and sternites white; metasomal setosity on tip of
apical third of ovipositor sheaths silvery white (Figure 46). 

- Not exactly as above

4. (3) Mesosoma yellow with following areas black: lateral part of propleuron, dorsal part of pronotum, antero-lateral mesoscutum and dorsal part of mesopleuron (Figure 52); length of body less than 15 mm. 

- Not exactly as above

5. (4) Mesosoma (except sometimes the mesoscutum) and at least metasomal tergite 1 yellow, and at least tergites 4–8 black (Figures 48, 94). Antennae all black.

- Not yellow as above (Figure 1B), if mesosoma orange-yellow, then tergites 4–8 red to yellow-brown, not black. Antennae black or with apical third distinctly orange-yellow (Figure 1A).

6. (5) Mesoscutum black and head dorsally entirely black (Figure 48).

- Mesoscutum yellow, head dorsally black or black with yellow pattern

7. (6) Top of head marked black with two submedial posterior emarginations (Figures 20, 92). Metasomal tergites 1–3 yellow, tergites 6–8 black (Figure 94). Raised median area on first metasomal tergite smooth with weak ridges on posterior margin. Second tergite strongly medially striated (Figure 11), third tergite similar but stigitation weak. Tergite 4 with smooth antero-lateral areas, median area longitudinally strigose to reticulate (Figure 94).

- Head dorsally entirely black (Figure 29), tergite 2 medially yellow and otherwise black, tergites 3–8 black. Sculpture on latero-posterior areas of tergites coriaceous to pustulate (Figure 28).

8. (5) Mesoscutum entirely black, metasoma at least with tergites 3–6 dark red (see Figure 1B), all legs black or very dark.

- Mesosoma orange-brown (Figure 1A), metasoma variable, at least fore and mid legs red to yellow.

9. (8) Second and third metasomal tergites 1.3–1.4 times wider than long (Figure 95).

- Second and third metasomal tergites 1.8–2.5 times wider than long (Figures 4, 62, 76).

10. (9) Raised median area of first tergite smooth (Figure 4). Head uniformly dark brown, without distinct colour pattern on dorsal side (Figure 35).

- Raised medial area of third tergite sculptured (Figures 62, 76). Head dark brown or black, sometimes with light brown markings around eyes and toruli.

11. (10) Raised median area of tergites 1–4 strigose (Figure 123). Top of the head with pale reddish-brown lines around eyes dorso-laterally and spots next to toruli (Figure 122).

- Raised median area on metasomal tergites 3–4 not strigose (Figures 62, 76), but rugose to finely striated. Head with or without reddish marks as described above.

12. (11) Posterior margin of first metasomal tergite with two strong depressions and with postero-lateral uneven ridges. Sculpture on raised median area on tergites 3...
and 4 roughly strigated to reticulate (Figure 62), tergite 5 smooth or anteriorly pustulate. A smooth triangle-shaped area on top of clypeus, with dorsal part depressed (Figure 61).  

- Posterior margin of first metasomal tergite finely strigated. Sculpture on raised medial area on tergites 3 and 4 finely striated (Figure 76); tergite 5 smooth. A smooth triangle-shaped area on top of clypeus continuing as a smooth line up between toruli.  

larjuskini sp. nov.

13. (8) Antennae black with apical third conspicuously yellow-orange (Figure 1A); setae on apical 1/5 of ovipositor sheath silvery white (see Figure 46)  

- Antennae all black or dark brown (see Figure 1B); setae on ovipositor sheath all black, apex not conspicuously whitish  

larjuskini sp. nov.

14. (13) Metasoma largely black, first tergite reddish black (Figure 1A)  

- Metasomal tergites 1–3 dark red, tergites 4–8 black (Figure 88)  

atrox sp. nov.

15. (13) Metasomal tergites 2–3 very finely longitudinally striated, second suture with fewer than 50 striae (Figure 83). Wings boldly patterned yellow and black (Figures 81, 82). Head largely black (Figure 80).  

martini sp. nov.

16. (15) Metasomal tergite 2 very wide (>2.7 times wider than medially long) (Figure 71). Tergites 4 and 5 median raised area strongly coriaceously sculptured (Figure 18) and tergites 3–5 virtually without transverse sculptured groove (Figures 18, 71). Tergite 6 striated to reticulate (Figure 18)  

head orange with black area on top head varying in extent from only stemmaticum to frons, vertex and occiput all black.  

kersteni (Gerstaecker)

17. (16) Hind tarsi and posterior 0.9 of tibiae black (Figure 85). Posterior transverse furrows of tergites 3–5 smooth (Figure 87).  

- Hind legs entirely reddish orange. At least some of posterior transverse furrows on tergites 3–5 with ridges (Figure 38).  

nigritarsus sp. nov.

18. (17) Third metasomal tergite with a strong median carinae bordered by a pair of large, deep, smooth pits (Figure 38).  

- Third tergite without a distinct mid longitudinal carinae, or if is present, then not bordered by such deep smooth pits (Figures 17, 60, 99).  

bifoveae sp. nov.

19. (18) Raised antero-medial triangular area on second metasomal tergite completely smooth and clearly defined (Figure 60). Wings very dark, black to dark brown, vein 1-CU1 long (about 0.25 times 2-CU1) and yellow (Figure 58). Frons and dorsal side of the head black.  

heinii sp. nov.

- Not with combination of characters as above and metasomal sculpture not as in Figure 60. Vein 1-CU1 colour variable and shorter than 0.25 of the length of vein 2-CU1  

heinii sp. nov.
20. (19) Metasomal tergites 4 and 5 punctured. Tergite 2 with raised antero-medial triangular area strongly strigose (Figure 17). Ovipositor shorter than abdomen (ovipositor 0.8 of the length of metasoma). Wing pattern bold (Figure 119). \textit{varipennis} (Szépligeti)

- Tergites 4 and 5 not punctured. If tergite 5 punctured, then ovipositor longer than metasoma. Tergite sculpture variable. Wing pattern not as in Figure 119.

21. (20) Mid-longitudinal carina on posterior half of metasomal tergite 2 with numerous curved carinae emerging from it (Figure 99). Tergite 3 smooth antero-lateral areas connected medially with a narrow ridge. (Figure 99) Head dorso-laterally black (Figure 98). \textit{ramosus} sp. nov.

- Tergite 2 sculpture with no branching ridges. Tergite 3 antero-lateral areas not connected with a ridge. Head colour variable.

22. (21) Metasomal tergites very smooth, only transverse furrows with ridges and posterior to tergite 2 antero-medial triangular area, sometimes also between tergite 3 antero-lateral areas. Head at least dorso-laterally black, with reddish brown lines around eyes and spots on dorsal side posterior to toruli.

- Sculpture on metasomal tergites variable, BUT if raised areas of tergites very smooth, then tergite 1 raised median area strigose. Head colour variable.

23. (22) Head ventrally orange-brown, frons and occiput black (Figure 63). Mid-carina on tergite 3 posterior transverse furrow strong and raised (Figure 65). \textit{ikonenae} sp. nov.

- Head black with following areas orange: clypeus, small area close to mandibles, lines around eyes and small spots next to toruli. All carinae on tergite 3 posterior transverse furrow similar.

24. (23) Vein 1-CU1 long, about 0.25 of the length of the vein 2-CU1. Wings fairly uniformly darkened (Figure 36). Hind wings uniformly dark. 2–3 carinae between antero-lateral areas on tergite three (Figure 37). \textit{buntikae} sp. nov.

- Vein 1-CU1 about 0.15 of the length of the vein 2-CU1. Wings with distinct pattern (Figure 55), hind wings hyaline with postero-apical margin darkened. Tergite 3 without carinae between antero-lateral areas, but smooth (Figure 56). \textit{foveiventris} (Roman)

25. (24) Tergite 2 with antero-medial triangle indistinctly defined and/or not raised, but finely strigate as whole median areas of tergites 2 and 3 (Figure 23). Antennal setae white. Ovipositor short, less than 1.2 times length of metasoma. \textit{andrewi} sp. nov.

- Tergite 2 antero-medial triangle raised or coarsely strigated to smooth if not conspicuously raised. Strigation not fine. Antennal setae, colour and ovipositor length variable.

26. (25) Tergite 3 raised medial area smooth with two small foveolate-punctate areas submedially (Figure 74). Tergite 2 antero-medial triangle strongly raised and sharply defined. Raised medial area of tergite 2 strongly strigose (Figure 74). \textit{kupariensis} sp. nov.

- Tergite 3 raised medial area without foveolate-punctate areas, medial area either smooth or sculptured (Figures 6, 14, 59, 72). Tergite 2 antero-medial triangle and tergite sculpture variable.
27. (26) Head completely without black markings or with black only on stemmaticum (Figure 42).  
   - Head with black pattern at least on and around stemmaticum.  
   ........... 28

28. (27) Head without any black colour (not even stemmaticum) (Figure 42). Face granulate (Figure 40). Tergite 1 postero-laterally strigose with weak medial longitudinal groove (Figure 43). Tergite 2 antero-medial triangle raised and smooth, surrounding raised medial area strigose (Figure 44). Tergite 3 raised medial area rugose (Figure 44) ......... concolor Szépligeti
   - Stemmaticum at least partly black (around ocelli) and not with above combination of characters. If stemmaticum lacks black colour, then second tergite antero-medial triangle not smooth, but strongly sculptured. ........... 29

29. (28) Metasomal tergite 2 antero-medial triangular area completely sculptured and only weakly raised (Figures 6, 14). Wing pattern bold (Figures 54, 105) ......... 30
   - Tergite 2 antero-medial triangular area at least anteriorly smooth and raised (Figure 96) ........... 31

30. (29) Vein cu-a postfurcal (Figure 105). Tergite 2 strigation on medial area convoluted and may vary on coarseness between antero-medial triangular area and raised median area (Figure 14) .......... rufa (Szépligeti)
   - Veins 1-M and cu-a interstitial (Figure 54). Tergite 2 strigation on medial area clear and well defined, carinae straight (Figure 6) .......... fortisulcatus (Strand)

31. (30) Metasomal tergite 2 antero-medial triangle completely smooth and approximately 2 times wider than long (Figure 96). Tergite 3 antero-lateral areas connected medially with a transverse ridge (Figure 96). Raised medial areas on tergites 3 and 4 smooth (Figures 96, 97). Tergite 5 posterior transverse furrow smooth and without carinae (Figure 97) ........... pippolaensis sp. nov.
   - Tergite 2 antero-medial triangle posteriorly sculptured, and about as long as wide (Figures 59, 72). Tergite 3 antero-lateral areas not connected, and tergite 3 and 4 raised medial areas strigose to reticulate. Transverse furrow on tergite 5 with carinae ........... 32

32. (31) Metasomal tergite 2 antero-medial triangular area not posteriorly sharply defined, posterior margin striated (Figure 72). Fore wing vein 3-SR bisinous (Figure 73) .......... kossui sp. nov.
   - Metasomal tergite 2 antero-medial triangular area also posteriorly sharply triangle-shaped, posterior margin rugose (Figure 59). Fore wing vein 3-SR straight (Figure 57) .......... fritzeni sp. nov.

33. (27) First tergite without median longitudinal groove (Figures 27, 108) ....... 34
   - First tergite with median longitudinal groove (Figures 110, 120) ........... 39

34. (33) Fore wing vein cu-a interstitial (Figures 84, 106) .......... 35
   - Fore wing vein cu-a postfurcal (Figure 51) .......... 36

35. (34) Fore wing with a hyaline areas on basal and subbasal cells and below pterostigma, forming a bold pattern (Figure 106). Hind wing postero-apically darkened. Tergite 3 raised median area medially as wide as laterally (Figure 15) .......... somaliensis (Szépligeti)
Fore wing with hyaline areas below pterostigma and sometimes around vein 1-CU1, but basal and subbasal cells darkened (Figure 84). Hind wing darkened with only hyaline area on the base of the marginal cell. Raised median area on tergite 3 longer on the medial than the lateral area (Figure 85) — monteiroii (Cameron)

36. (34) Tergite 3 raised area foveolate-rugose (Figure 51). Apical quarter of pterostigma darkened (Figure 52) — erythropus sp. nov.

37. (36) Only dorsal side of the head black, not face though sometimes with a dark brown spot at top of clypeus (Figures 113, 114). Tergite 4 raised area with sparse punctuation and uneven, not smooth (Figure 115) — syraensis (Strand)

38. (37) Tergite 4 strigated. Tergite 3 median area strongly raised, notch-like and strigated (Figure 109). Tergite 1 posterior strigation rough (Figure 108). Face fairly smooth and punctate (Figure 107). Body length about 20 mm — striolatus (Szépligeti)

39. (33) Tergites 3 and 4 strongly strigated (Figures 3, 91, 121)

40. (40) Strigation on second tergite straight, antero-medial triangle only weakly raised (Figure 110). Antennae brown, setae on apical part white. Tergite 5 almost smooth with weak punctures and unevenness (Figure 112) — suvie sp. nov.

41. (41) Head only ventrally orange-brown, otherwise black with orange-brown lines around eyes (Figure 30). Fore wing veins 1-M and cu-a postfurcal (1-CU1 0.2–0.25 times length of 2-CU1). First tergite medio-longitudinal groove weak. Wings very dark with only small weak hyaline area below pterostigma (Figure 31) — atripennis (Szépligeti)

42. (41) Head black only on dorsal side around stemmaticum, face and lateral areas orange-brown. Fore wing veins 1-M and cu-a weakly postfurcal (vein 1-CU1 less than 0.2 times length of 2-CU1). First tergite medio-longitudinal groove strong. Fore wings with clear hyaline zone below pterostigma —
43. (42) Longitudinal groove of first metasomal tergite very deep and wide; second tergite triangle posteriorly depressed, anterior margin of depression curved and sharply defined, with punctate strigose sculpture anterior to depression (Figure 70). Fore wing basal cell distinctly hyaline compared to subbasal cell, hind wing vein 2-SC+R interstitial (Figure 69) ....... 
   - Longitudinal groove of first metasomal tergite shallow and narrow, well defined only on anterior half of tergite, second tergite triangle posteriorly rugose, but not strongly depressed (Figure 91). Fore wing basal cell weakly but evenly hyaline, similar to subbasal cell, hind wing vein 2-SC+R longitudinal (Figure 89) ....... 
   
44. (39) Tergite 3 raised median area smooth (Figure 24) ....... 
   - Tergite 3 raised median area strigose to rugose ....... 45

45. (44) Tergite 3 strigated (Figures 68, 118, 125) ....... 46
   - Tergite 3 rugose (Figures 7, 13) ........... 50

46. (45) Scape dorsally orange-brown and ventrally dark brown to black, with a clear contrast (Figure 67). Flagellomeres brown to orange, flattened apically. Face punctulate (Figure 66). ............ 
   - Scape unicolorous, brown to black. Flagellum and face variable ....... 47

47. (46) Second tergite antero-medial triangle well defined, raised and smooth (Figure 115). ............ 
   - Second tergite antero-medial triangle sculptured and/or partly depressed, or triangle posterior margin as in Figure 12 ........... 48

48. (47) Second tergite antero-medial triangle posteriorly depressed (Figure 78).
   - Tergite 4 clearly medially rugose to reticulate (Figure 79) ....... 
   - Tergite 4 smooth or with weak unevenness ........... 49

49. (48) Head dorso-laterally black (Figure 100). Face yellow without spot near upper margin of clypeus. Metasomal tergite 2 median raised area medially clearly longer than medio-laterally (Figure 12). Body length clearly less than 15 mm ....... 
   - Head only dorsally black, around stemmaticum (Figure 117). Black spot on top of clypeus. Metasomal tergite 2 median raised area nearly similar in length medially to laterally (Figure 118). Body length more than 15 mm ....... 

50. (46) Tergite 3 grooves separating raised median area form antero-lateral areas as in Figure 7. Second tergite antero-medial triangle strongly raised, smooth & well defined posteriorly (Figures 7, 75). Median areas of tergites smooth ....... 
   - Tergite 3 not as above (Figure 13). Tergite 2 not as raised and well defined posteriorly. Median area of tergites with at least some nigralry sculpture ....... 
   
   - juhai sp. nov.
   - ollilae sp. nov.
   - angolensis Fahringer
   - jimii sp. nov.
   - zonatus sp. nov.
   - marjae sp. nov.
   - raunoi sp. nov.
   - vannouhuysie sp. nov.
   - kvisti sp. nov.
   - ruber complex
Systematics

*Bathyaulax andrewi* sp. nov.
(Figures 21–23)

**Material examined**

Holotype: Female (BMNH). Kenya, N.F.D. (=Northern Frontier District), Kiunga, XI-1945, J. Adamson.

**Description**

Female: Length of body 13 mm, of fore wing 12 mm, of ovipositor 7 mm.

Antennae with 110 flagellomeres, terminal flagellomere 2.4 times longer than wide.

Height of clypeus:inter-tentorial distance:tentorio-ocular distance = 1.0:3.4:3.2. Width of face:width of head:height of eye = 1.5:2.5:1.0. Height of face:width of face = 1.0:2.0. Sculpture on face medially punctate to laterally rugulose, with punctulation. Clypeus granulate. Frons flat, smooth, with medial longitudinal groove. POL:transverse diameter of posterior ocellus:shortest distance between posterior ocellus and eye = 1.4:1.0:3.5. Length of eye in dorsal view:distance of occiput and posterior margin of eye = 1.5:1.0.

Mesosoma approximately 1.9 times longer than maximally deep.

Fore wing: length of veins r:3-SR:SR1 = 1.0:2.6:3.3. Length of veins 2-SR:3-SR:r-m = 1.0:2.3:1.3. Length of veins m-cu:2-M = 1.0:2.5. Length of veins 1-CU1:2-CU1 = 1.0:6.9. Shape of vein 1-SR + M weakly s- shaped. Swelling in vein 3-CU1 1.5 times thicker than the other part of the vein.

Legs: Length of fore femur:tibia:tarsus = 2.3:2.5:1.0. Fore basitarsus 4.0 times longer than deep. Length of hind femur:tibia:tarsus = 2.4:3.5:1.0. Hind basitarsus 4.0 times longer than deep.

First metasomal tergite 1.1 times longer than wide; raised median smooth with striation on the posterior margin. Second tergite 2.3 times wider than long; medial area strigose. Third tergite 2.7 times wider than long; with striated transverse furrows on anterior and subposterior margins, raised median area finely striated, antero-lateral areas smooth. Tergites four and five similar to three, but in tergite four sculpture on median area finely striated, and in five sparsely punctate. Tergites six to eight smooth.

Yellow except for the following which are black: small area around stemmaticum, apex of mandibles and ovipositor sheets. Antennae brown. Fore wings faintly darkened with hyaline areas as follows: the base of wings from veins 1-M and cu-a, below pterostigma and around vein r-m. Hind wing hyaline areas on basal and in the base of marginal cells. Apical quarter of pterostigma darkened.

**Etymology**

Named after Dr. Andrew Polaszek.

*Bathyaulax angolensis* Fahringer 1941
(Figure 24)

**Material examined**

Holotype: Male (MNW): *Bathyaulax angolensis* Fahringer 1941. Angola, Luanda, 2.VIII. ’36, Zerny.
Description

Male: Length of body 10 mm, of fore wing 8 mm.

Antennae with 76 flagellomeres, terminal flagellomere pointed, approximately 2.5 times longer than wide. Height of clypeus:inter-tentorial distance:tentorio-ocular distance = 1.0:3.3:3.3. Width of face:width of head:height of eye = 1.2:2.0:1.0. Height of face:width of face = 1.0:1.8. Sculpture on face fairly strong, pustulate to granulate. Clypeus rugulose. Frons depressed, very sparsely punctulate, with medial longitudinal groove. POL:transverse diameter of posterior ocellus:shortest distance between posterior ocellus and eye = 1.3:1.0:3.1. Length of eye in dorsal view:distance of occiput and posterior margin of eye = 2.2:1.0.

Mesosoma approximately 1.9 times longer than maximally deep.

Fore wing: length of veins r:3-SR-SR1:1.0:2.5:4.3. Length of veins 2-SR:3-SR:r-m = 1.0:2.0:1.1. Length of veins m-cu:2-M = 1.0:2.8. Length of veins 1-CU1:2-CU1 = 1.0:7.8. Vein 1-SR+M weakly convex, curving slightly downwards to both 1-M and 2-SR+M. Vein 3-CU1 only slightly swollen posteriorly, about 1.3 times thicker than the other part of the vein.

Legs: length of fore femur:tibia:basitarsus = 1.9:2.2:1.0. Fore basitarsus 4.3 times longer than wide. Length of hind femur:tibia:basitarsus = 2.1:3.0:1.0. Hind basitarsus 5.0 times longer than deep.

First metasomal tergite 1.8 times longer than wide; raised median area with strong medio-longitudinal furrow, latero-longitudinally striated. Second tergite 1.6 times wider than long; with raised smooth triangular area on anterior part of tergite. Longitudinal striation posterior from triangular area, not reaching the posterior margin of the tergite. Third tergite 2.0 times wider than long. Transverse furrows on anterior and subposterior margins striated, transverse area in between smooth, longer medially than laterally. Tergites four and five with striated transverse furrows on anterior and posterior margins, and smooth lateral areas surrounded by similar furrows. Tergites six to eight smooth.
Figures 2–7. Features of the second and third metasomal tergites of *Bathyaulax* species. (2) *B. appelatrix* (3) *B. atriennis*, (4) *B. bicolor*, (5) *B. delagoensis*, (6) *B. fortisulcatus*, (7) *B. kvisti*.
Figures 8–13. Features of the second and third metasomal tergites of Bathyaulax species. (8) B. lucidus, (9) B. monteiroii, (10) B. nigroconus, (11) B. perspicax, (12) B. raunoi, (13) B. ruber.
Figures 14–18. Features of the second and third (14)–(17) and fifth and sixth (18) metasomal tergites of *Bathyaulax* species. (14) *B. rufa*, (15) *B. somaliensis*, (16) *B. syraensis*, (17) *B. varipennis*, (18) *B. kersteni*.
Orange-brown except for the following which are black: antenna, temples and frons, vertex, face and apex of mandibles. Wings fairly evenly darkened, with a faint hyaline zones in fore wings. Basal two-thirds of pterostigma yellowish white.

**Bathyaulax appelatrix** (Cameron 1909)
(Figures 2, 25–27)

*Iphiaulax appelatrix* Cameron 1909
*Ipobracon apellatrix* [!]: Fahringer 1929

**Material examined**

Holotype: Female (ZMHB): *Iphiaulax appelatrix* Cameron 1909. South Africa, Capland, [no date] Krebs S.

**Description**

Female: Length of body 13 mm, of fore wing 12 mm, of ovipositor 11 mm.

Antennae broken. Height of clypeus:inter-tentorial distance:tentorio-ocular distance=1.0:3.5:3.1. Width of face:width of head:height of eye=1.3:2.2:1.0. Height of face:width of face=1.0:1.8. Face and clypeus granulate. Frons depressed, very smooth, with medial longitudinal groove. POL:transverse diameter of posterior ocellus:shortest distance between posterior ocellus and eye=1.2:1.0:3.0. Length of eye in dorsal view:distance of occiput and posterior margin of eye=1.4:1.0.

Mesosoma approximately 1.7 times longer than maximally deep.

Fore wing: length of veins r:3-SR:SR1=1.0:2.6:2.5. Length of veins 2-SR:3-SR:r-m=1.0:2.6:1.5. Length of veins m-cu:2-M=1.0:2.6. Length of veins 1-CU1:2-CU1=1.0:4.7. Shape of vein 1-SR+M almost straight, very weakly wavy. Swelling in vein 3-CU1 2 times thicker than the other part of the vein.

Legs: [The type missing fore legs.] Length of hind femur:tibia:atarsus=2.1:2.7:1.0. Hind basitarsus 3.8 times longer than deep.

First metastomal tergite 1.6 times longer than wide; raised median area smooth with very weak aciculation on posterior margin, and sparsely sublaterally striated. Second tergite 1.9
times wider than long; strongly medially to sublaterally striated below raised medial triangular area. Third tergite 2.2 times wider than long; median raised area weakly striated, sublaterally smooth, tapering towards lateral sides of tergite. Tergite four with strigated transverse furrows on anterior and subposterior margins, and smooth lateral areas surrounded by similar furrows. Tergites five to eight smooth, tergite five with strigated transverse furrows on anterior and subposterior margins.

Orange-brown except for the following which are black: antenna, temples and frons, vertex, face and apex of mandibles. Thin orange-brown zones around eyes, and spots

Figures 21–24. Automontage® images of Bathyaulax species. (21)–(23) B. andrewi, face, wing and metasomal tergites 2–5. (24) B. angolensis, metasomal tergites 2–4.
between eyes and ocelli. Wings fairly evenly weakly darkened, with faint hyaline zones in fore wings. Apical quarter of pterostigma yellow-white.

**Bathyaulax artoi** sp. nov.  
(Figures 28–29)

Material examined

Holotype: Male (RMCA): D. R. Congo, Lulua, Sandoa, X-1031, G.F. Overlaet.

Figures 25–28. Automontage® images of *Bathyaulax* species. (25)–(27) *B. appelatrix*, face, fourth metasomal tergite and first metasomal tergite. (28) *B. artoi*, metasomal tergites two and three (lateral view).
Description

Male: Length of body 18 mm, of fore wing 14 mm.

Antennae with more than 74 (apex broken) flagellomeres. Height of clypeus:intertentorial distance:tentorio-ocular distance = 1.0:3.0:1.4. Width of face:width of head:height of eye = 1.0:2.5:1.4. Height of face:width of face = 1.0:1.2. Sculpture on face scarce punctuation with a little smooth oval area on top of clypeus. Clypeus rugulose. Frons not depressed, smooth, with medial longitudinal groove. POL:transverse diameter of posterior
ocellus: shortest distance between posterior ocellus and eye = 1.0:1.2:2.6. Length of eye in dorsal view: distance of occiput and posterior margin of eye = 2.3:1.0.

Mesosoma approximately 1.7 times longer than maximally deep.

Fore wing: length of veins r:3-SR:SR1 = 1.0:2.2:2.5. Length of veins 2-SR:3-SR:r-m = 1.0:2.7:1.3. Length of veins m-cu:2-M = 1.0:3.5. Length of veins 1-CU1:2-CU1 = 1.0:7.1. Shape of vein 1-SR+M weakly s-shaped. Swelling in vein 3-CU1 1.6 times thicker than the other part of the vein.

Legs: Length of fore femur:tibia:tarsus = 2.2:2.4:1.0. Fore basitarsus 5.5 times longer than deep. Length of hind femur:tibia:tarsus = 2.0:3.1:1.0. Hind basitarsus 5.8 times longer than deep.

First metasomal tergite 1.6 times longer than wide; raised median area smooth, with strigose posterior margin. Second tergite 1.5 times wider than long; medial area raised and strigose. Sublateral areas depressed longitudinally, sculpture on latero-posterior areas coriaceous to pustulate. Third tergite 1.5 times wider than long; with strigated transverse furrows on anterior and subposterior margins, raised median area medially strigated to laterally coriaceous, only antero-lateral areas smooth. Tergites four and five similar but with medial raised area coriaceous. Tergite six similar to four and five but with very small antero-lateral areas. Tergite seven smooth.

Orange-yellow except for the following which are black: dorsal side of the head and temples, occiput, apex of mandibles, metasomal tergite two postero-laterally, tergites three to six. Apical margin of tergite six and tergite seven whitish yellow. Forewings darkened with following hyaline areas: basally from veins 1-M and cu-a, band below pterostigma and oval area around vein r-m. Hind wings darkened postero-apically.

Etymology

Named after the first author’s friend, Arto Holappa.

_Bathyaulax atripennis_ (Szépligeti 1914)
(Figures 3, 30, 31)
_Goniobracon atripennis_ Szépligeti 1914a
_Iphiaulax atripennis_: Brues 1926

Material examined

Holotype: Female (ZMHB): _Goniobracon atripennis_ Szépligeti 1914a. Uganda, Ukereve, [no date] Conrads, S.V.

Description

Female: Length of body 20 mm, of fore wing 18 mm, of ovipositor 23 mm.

Antennae with 110 flagellomeres, but apex of antenna broken. Height of clypeus: intertentorial distance: tentorio-ocular distance = 1.0:3.9:3.4. Width of face: width of head: height of eye = 1.2:2.1:1.0. Height of face: width of face = 1.0:1.9. Face punctuated with hairs. Clypeus rugulose to papillate, with hairs. Frons depressed, very smooth, with medial longitudinal groove. POL: transverse diameter of posterior ocellus: shortest distance between posterior ocellus and eye = 1.5:1.0:3.6. Length of eye in dorsal view: distance of occiput and posterior margin of eye = 1.5:1.0.

Mesosoma approximately 1.7 times longer than maximally deep.
Genus *Bathyaulax* from Africa and the Arabian Peninsula  145

Fore wing: length of veins r:3-SR:SR1=1.0:2.3:3.8. Length of veins 2-SR:3-SR:r-m=1.0:2.0:1.4. Length of veins m-cu:2-M=1.0:2.3. Length of veins 1-CU1:2-CU1=1.0:4.3. Shape of vein 1-SR+M straight. Swelling in vein 3-CU1 1.5 times thicker than the other part of the vein.

Legs: length of fore femur:tibia:basitarsus=2.2:2.6:1. Fore basitarsus 3.6 times longer than deep. Length of hind femur:tibia:basitarsus=2.0:2.9:1.0. Hind basitarsus 5.0 times longer than deep.

First metasomal tergite 1.5 times longer than wide; raised median area smooth with weak anterior depression and strong ridges on posterior margin. Second tergite 1.8 times wider than long; strongly medially to submedially striated posterior to raised triangular area. Triangular area not smooth, but very faintly strigose. Third tergite 2.2 times wider than long; strongly striated, only smooth areas antero-laterally. Sculpture on tergites three and four similar. Tergite five with striated transverse furrows on anterior and subposterior margins. Tergites six to eight smooth.

Orange-brown except for the following which are black: antenna, face, temples, frons, vertex and apex of mandibles and ovipositor sheaths. Wings dark brown, with a weak and narrow hyaline zone in fore wing. Basal two thirds of pterostigma whitish-yellow.

*Bathyaulax atrox* sp. nov.
(Figures 1A, 32–34)

Material examined
Holotype: Female (BMNH): Uganda, nr. Makerere Biological Field Station, Kibale Forest National Park, 8.8.2003, D. Quicke.
Paratype: Male (BMNH): Uganda, nr. Makerere Biological Field Station, Kibale Forest National Park, 22.8.2004, D. Quicke.

Description
Female: Length of body 16 mm, of fore wing 15 mm, of ovipositor 20 mm.
Antennae with 115 flagellomeres. Terminal flagellomere 3.5 times longer than wide. Height of clypeus:inter-tentorial distance:tentorio-ocular distance=1.0:3.2:2.6. Width of face:width of head:height of eye=1.0:1.9:1.0. Height of face:width of face=1.0:1.5. Sculpture on face punctate with a smooth line from between toruli down to face, not reaching clypeus. Clypeus rugose. Frons not depressed, smooth, with medial longitudinal groove. POL:transverse diameter of posterior ocellus:shortest distance between posterior ocellus and eye=1.0:1.0:3.5. Length of eye in dorsal view:distance of occiput and posterior margin of eye=1.6:1.0.
Mesosoma approximately 1.8 times longer than maximally deep.
Fore wing: length of veins r:3-SR:SR1=1.0:2.8:3.2. Length of veins 2-SR:3-SR:r-m=1.0:2.7:1.3. Length of veins m-cu:2-M=1.0:3.3. Length of veins 1-CU1:2-CU1=1.0:8.0. Shape of vein 1-SR+M straight. Swelling in vein 3-CU1 1.7 times thicker than the other part of the vein.
Legs: Length of fore femur:tibia:tarsus=2.2:2.2:1.0. Fore basitarsus 4.3 times longer than deep. Length of hind femur:tibia:tarsus=1.6:2.5:1.0. Hind basitarsus 7.0 times longer than deep.
First metasomal tergite 1.7 times longer than wide; raised median smooth with strigation on posterior margin. Second tergite 1.4 times wider than long; medial area raised and strigose. Sublateral areas smooth. Third tergite 1.6 times wider than long; with strigated transverse furrows on anterior and weakly on posterior margin, raised median area strigated, antero-lateral areas smooth and only weakly raised. Tergites four and five with strigated transverse furrows on anterior margin and weakly on posterior margin, with out strigation. Sculpture on raised median area reticulate to rugulose. Tergites six to eight smooth.

Head dorsally black with red spots medially to eyes, head ventrally red. Antennae black with orange-red apex (1:1). Mesosoma, fore and middle legs red. Dorsal and lateral sides of hind coxa, trochanter, trochantellus and base of femur red, otherwise hind legs black. Tergites and ovipositor sheets black, abdomen ventrally white. Fore and hind wings black, with small pale spot on base of pterostigma.

Etymology

Named after the intriguing life style of parasitic wasps.

Biology

This species has been shown to parasitize a wood-boring cerambycid in western Uganda (Quicke et al. 2005).

*Bathyaulax bicolor* Szépligeti 1906
(Figures 4, 35)
*Iphiaulax bicolor*: Brues 1926

Material examined

Holotype: Female (MNH): *Bathyaulax bicolor* Szépligeti 1906, Tanzania, Katona, Mto-ya-Kifaru, 1904.

Additional specimens examined

*South Africa*: 1 female, W. Gobabis (W55) 8mls, 11.iv.1972, Southern African Exp. B.M. 1972-l (BMNH); 2 males, Rustenburg, 1911 W.L.D. (BMNH); 1 male, Pretoria,1911, W.L.D. (BMNH); 1 female, Hluhluwe Game Reserve, 20.2.1997, M. Picker. (BMNH)

*Kenya*: 2 females, Tsavo east NP, nr. Voi Gate, VI 1977, D. Quicke. (BMNH); 1 male, Voi River Valley, Pipeline roads, VIII 1977, D. Quicke. (BMNH)

Description

Female: Length of body 16 mm, of fore wing 13 mm, of ovipositor 11 mm.

Antennae with 103 flagellomeres. Terminal flagellomere 3.8 times longer than wide, not sharp.

Height of clypeus:inter-tentorial distance:tentorio-ocular distance = 1.0:3.3:3.6. Width of face:width of head:height of eye = 1.5:2.5:1.0. Height of face:width of face = 1.0:1.8. Face medially granulate to laterally sparsely punctulate. Clypeus sparsely strigated with
granulation. Frons weakly depressed, smooth. POL: transverse diameter of posterior ocellus: shortest distance between posterior ocellus and eye = 1.3:1.0:2.8.

Length of eye in dorsal view: distance of occiput and posterior margin of eye = 1.4:1.0. Mesosoma approximately 1.8 times longer than maximally deep.

Fore wing: length of veins r:3-SR:SR1 = 1.0:2.3:4.3. Length of veins 2-SR:3-SR:r-m = 1.0:1.9:1.3. Length of veins m-cu:2-M = 1.0:2.4. Length of veins 1-CU1:2-CU1 = 1.0:5.4. Vein 1-SR+M very weakly S-curved. Swelling in vein 3-CU1 1.4 times thicker than the other part of the vein.

Figures 35–38. Automontage® images of Bathyaulax species. (35) B. bicolor, frons. (36)–(37) B. buntikae, wing and metasomal tergites 2–3. (38) B. bifoveae, metasomal tergites 2–3.
Legs: length of fore femur:tibia:basitarsus=1.8:2.0:1.0. Fore basitarsus 5.0 times longer than deep. Length of hind femur:tibia:basitarsus=2.6:3.8:1.0. Hind basitarsus 3.8 times longer than deep.

First metasomal tergite 1.6 times longer than wide; raised median area smooth with weak anterior depression and strigose to strigated on posterior half. Second tergite 2.5 times wider than long; strongly medially to submedially striated posterior to smooth raised triangular area. Third tergite 1.9 times wider than long; transverse furrows on anterior and subposterior margins strigated, transverse area between them smooth, longer medially than laterally. Smooth oval raised areas on lateral sides of tergite. Sculpture on tergites three and four is almost similar, tergite four lacks of lateral smooth areas. Tergites five to eight smooth.

Black except for abdomen which is red. Wings dark brown, with hyaline areas on fore wing cell 2a and below vein 2-SR+M. Basal two half of pterostigma whitish-yellow.

**Bathyaulax bifoveae** sp. nov.

(Figure 38)

**Material examined**

Holotype: Female (CNCI): Tanzania, Dar es Salaam, Tanganyika, X-1961, G. Heinrich.

**Description**

Female: Length of body 18 mm, of fore wing 14 mm, of ovipositor 15 mm.

Antennae with more than 101 (apex broken) flagellomeres. Height of clypeus:inter-tentorial distance:tentorio-ocular distance=1.0:3.0:2.9. Width of face:width of head:height of eye=1.2:2.0:1.0. Height of face:width of face=1.0:1.6. Sculpture on face pustulate, clypeus similar. Frons weakly depressed, smooth, with medial longitudinal groove. POL:transverse diameter of posterior ocellus:shortest distance between posterior ocellus and eye=1.1:1.0:3.2. Length of eye in dorsal view:distance of occiput and posterior margin of eye=1.4:1.0.

Mesosoma approximately 1.7 times longer than maximally deep.

Fore wing: length of veins r:3-SR:SR1=1.0:2.4:3.8. Length of veins 2-SR:3-SR:r-m=1.0:2.1:1.2. Length of veins m-cu:2-M=1.0:2.5. Length of veins 1-CU1:2-CU1=1.0:7.4. Shape of vein 1-SR+M nearly straight, weakly convex. Swelling in vein 3-CU1 1.8 times thicker than the other part of the vein.

Legs: Length of fore femur:tibia:basitarsus=2.1:2.3:1.0. Fore basitarsus 4.5 times longer than deep. Length of hind femur:tibia:basitarsus=2.3:3.3:1.0. Hind basitarsus 4.4 times longer than deep.

First metasomal tergite 1.6 times longer than wide; raised median area smooth with medial longitudinal groove, posterior margin strigated. Second tergite 1.7 times wider than long; medial and antero-medial triangular area raised and striate to aciculate. Third tergite 1.9 times wider than long; with transverse furrows on anterior and subposterior margins, anterior furrow medially aciculate to rugose and laterally strigated, and posterior margin strigated. Raised median area anteriorly strigose to rugose, with two depressions separated with a ridge. Antero-lateral areas smooth. Tergites four and five with strigated transverse furrows on anterior and subposterior margins, raised median areas aciculate and smooth antero-lateral areas surrounded by similar furrows. Tergites six to eight smooth.
Yellow except for the following which are black: antenna, frons, vertex, apex of mandibles and ovipositor sheets. Wings darkened with hyaline areas in fore wing below pterostigma and narrowly around vein r-m, and in hind wing in the base of the marginal cell. Pterostigma apical quarter darkened.

**Etymology**

Named because of the two large pits on third metasomal tergite.

*Bathyaulax buntikae* sp. nov.
(Figures 36, 37)

**Material examined**

Holotype: Female (HECO): “S Leon” (=Sierra Leone?), [no date].

Additional specimens examined

D. R. Congo: 1♀ P.N.G., 12.2.1951, H. De Saeger (RMCA).

**Description**

Female: Length of body 21 mm, of fore wing 18 mm, of ovipositor 18 mm.

Antennae with 122 flagellomeres, terminal flagellomere 2.3 times longer than wide. Height of clypeus:inter-tentorial distance:tentorio-ocular distance = 1.0:4.6:3.9. Width of face:width of head:height of eye = 1.1:2.1:1.0. Height of face:width of face = 1.0:1.7. Sculpture on face medially pustulate to laterally punctulate. Clypeus rugose. Frons depressed, smooth, with medial longitudinal groove. POL:transverse diameter of posterior ocellus:shortest distance between posterior ocellus and eye = 1.0:1.1:3.1. Length of eye in dorsal view:distance of occiput and posterior margin of eye = 2.1:1.0.

Mesosoma approximately 1.7 times longer than maximally deep.

Fore wing: length of veins r:3-SR:SR1 = 1.0:2.0:4.0. Length of veins 2-SR:3-SR:r-m = 1.0:1.9:1.1. Length of veins m-cu:2-M = 1.0:2.7. Length of veins 1-CU1:2-CU1 = 1.0:4.0. Shape of vein 1-SR+M straight, but curved near vein 1-M. Swelling in vein 3-CU1 1.2 times thicker than the other part of the vein.

Legs: Length of fore femur:tibia:tarsus = 2.1:2.1:1.0. Fore basitarsus 5.1 times longer than deep. Length of hind femur:tibia:tarsus = 1.8:2.9:1.0. Hind basitarsus 6.8 times longer than deep.

First metasomal tergite 1.7 times longer than wide; raised median area smooth, with short strigation on posterior margin. Second tergite 1.1 times wider than long; medial area raised and smooth, with some weak ridges postero-laterally around it. Third tergite 1.5 times wider than long; with strigated transverse furrows on anterior and subposterior margins, median and antero-lateral areas smooth and raised. Two to three ridges between antero-lateral areas. Tergites four and five with strigated transverse furrows on anterior margin, and smooth medial and antero-lateral areas raised. Subposterior furrows on both tergites, strigated in tergite four and smooth in tergite five. Tergites six to eight smooth.

Orange-brown except for the following which are black: antenna, head, apex of mandibles and ovipositor sheets. Orange-brown stripes next to eyes and spots next to toruli.
on dorsal side of the head. Wings evenly darkened with hyaline zone below pterostigma. About apical half of pterostigma darkened.

**Etymology**

Named after Dr. Buntika Areekul.

*Bathyaulax concavitarsis* (van Achterberg & Sigwalt 1987) comb. nov.

(Figures 39, 41)

*Bicentra concavitarsis* van Achterberg & Sigwalt 1987

**Material examined**

*Congo*: 1 female, Brazzaville, 1898, E.M.J. Regnier (MNHN); 1 female, Kintele, IV-1978, G. Onore (MNHN).

*D. R. Congo*: 1 female, Lulua, Kapanga, VII-1933, F.G. Overlaet (RMCA); 1 female, Lulua, Sandoa, II-1932, F.G. Overlaet (RMCA); 1 female, Lulua, Kalemba, XII-1937, M. Carlier (RMCA).

*Rwanda*: 1 female, Tambwe, 14.1.1947, Miss. Tanganika (IRSNB).

*Zambia*: 1 female, East Loangwa Distr., Petauke, 2.2.1905, S.A. Neave (HECO).

**Description**

Female: Length of body 21 mm, of fore wing 18mm, of ovipositor 24 mm.

Antennae with 119 flagellomeres, terminal flagellomere 2.6 times longer than wide. Height of clypeus:inter-tentorial distance:tentorio-ocular distance=1.0:4.5:3.8. Width of face:width of head:height of eye=1.2:2.1:1.0. Height of face:width of face=1.0:1.8. Face pustulate to punctate. Frons smooth, sparsely punctulate, weakly depressed on median area around longitudinal groove. POL:transverse diameter of posterior ocellus:shortest distance between posterior ocellus and eye=1.2:1.0:2.6. Length of eye in dorsal view:distance of occiput and posterior margin of eye=1.7:1.0.

Mesosoma approximately 1.7 times longer than maximally deep.

Fore wing: length of veins r:3-SR:SR1=1.0:2.4:3.9. Length of veins 2-SR:3-SR:r-m=1.0:1.9:1.2. Length of veins m-cu:2-M=1.0:2.4. Length of veins 1-CU1:2-CU1=1.0:4.4. Vein 1-SR+M straight. Swelling in vein 3-CU1 1.6 times thicker than the other part of the vein.

Legs: Length of fore femur:tibia:basitarsus=1.9:2.1:1.0. Fore basitarsus 4.3 times longer than deep. Two foretibial spurs. Length of hind femur:tibia:basitarsus=2.0:2.8:1.0. Hind basitarsus 4.3 times longer than deep.

First metasomal tergite 1.5 times longer than wide; raised median area smooth, posterior margin with dense striation. Second tergite 1.8 times wider than long; raised median area striigated, antero-medial triangular area slightly raised. Third tergite 2.0 times wider than long; with striigated transverse furrows on anterior and subposterior margins, raised median area only narrowly longitudinaly strigose. Antero-lateral areas raised and smooth, only a thin striigated area between them (two to three carinae). Tergite four similar, but antero-lateral areas more narrow. Tergite five with striigated transverse furrows on anterior and weakly on subposterior margin. Tergites six to eight smooth.

Orange-brown except for the following which are black: face, frons, vertex and temples, apex of mandibles, antennae and ovipositor sheets. Wings darkened, with two hyaline areas
in fore wing on basal and subbasal cells and below pterostigma. About a third of pterostigma apically darkened. Hind wing darkened with a hyaline area on marginal cell.

Notes
Specimens compared to van Achterberg’s (1987) description of new genus and species *Bicentra concavitarsis* van Achterberg & Sigwalt 1987. The only difference to *Bathyaulax* is the two foretibial spurs and, thus, can be synonymized. Also another species with two foretibial spurs was found, *B. lucidus* (Szépligeti 1911).

Figures 39–43. Automontage® images of *Bathyaulax* species. (39, 41) *B. concavitarsis* head (lateral view) and tergites 2–3. (40, 42, 43) *B. concolor*, face, frons and metasomal tergite one.
Bathyaulax concolor Szépligeti 1906
(Figures 40, 42–44)
Iphiaulax concolor: Brues 1926

Material examined

Holotype: Male (MNH): Bathyaulax concolor Szépligeti 1906. Tanzania, Katona, Mto-ya-Kifaru, 1905.

Description

Male: Length of body 14 mm, of fore wing 13 mm.

Antennae with 96 flagellomeres, but apex broken. Height of clypeus:inter-tentorial distance:tentorio-ocular distance = 1.0:3.1:1.8. Width of face:width of head:height of eye = 1.2:2.1:1.0. Height of face:width of face = 1.0:1.5. Sculpture on face granulate. Clypeus striated. Frons depressed, smooth, with medial longitudinal groove. POL:transverse diameter of posterior ocellus:shortest distance between posterior ocellus and eye = 1.3:1.0:2.8. Length of eye in dorsal view:distance of occiput and posterior margin of eye = 1.4:1.0.

Mesosoma approximately 1.7 times longer than maximally deep.

Fore wing: length of veins r:3-SR:SR1 = 1.0:2.7:4.4. Length of veins 2-SR:3-SR:r-m = 1.0:1.9:1.2. Length of veins m-cu:2-M = 1.0:2.4. Length of veins 1-CU1:2-CU1 = 1.0:4.6. Shape of vein 1-SR + M very weakly S-shaped. Swelling in vein 3-CU1 1.5 times thicker than the other part of the vein.

Legs: Length of fore femur:tibia:tarsus = 2.0:2.3:1.0. Fore basitarsus 4.0 times longer than deep. Length of hind femur:tibia:tarsus = 2.0:3.0:1.0. Hind basitarsus 5.0 times longer than deep.

First metasomal tergite 1.3 times longer than wide; raised median area smooth with basal half weakly depressed and striation on posterior half. Second tergite 1.6 times wider than long; strongly medially to sublaterally striated below raised medial triangular area. Third tergite 2.2 times wider than long; with striped transverse furrows on anterior and subposterior margins, transverse area in between reticulate rugose, laterally smooth, longer medially than laterally. Tergites four and five with striped transverse furrows on anterior and subposterior margins, and smooth lateral areas surrounded by similar furrows. Tergites six to eight smooth, tergite six with striped transverse furrow on basal margin.

Orange-brown except for antenna and apex of mandibles which are black. Wings fairly evenly weakly darkened, with faint hyaline zones in fore wings below pterostigma. Apical quarter of pterostigma yellowish-white.

Bathyaulax cyanogaster (Szépligeti 1901)
(Figures 45–47)
Iphiaulax cyanogaster Szépligeti 1901
Goniobracon cyanogaster: Szépligeti 1914a
Iphiaulax rufithorax Bingham 1909

Material examined

Lectotype: Female (MNH): Iphiaulax cyanogaster Szépligeti 1901. D. R. Congo, Vivi und Kulu.
Holotype: Female (BMNH): Iphiaulax rufithorax Bingham 1909. Uganda, Ruwenzori.
Additional specimens examined

Cameroon: 1 male, Edea, J.A. Reis & J. Bequaert (RMCA).
Côte d’Ivoire: 1 male, Danangoro, Maraoùé, V 1976, P.M. Elsen (RMCA).
D.R. Congo: 1 male, Mayidi, 1943, P. van Eyen (RMCA); 1 female, Urw. Mawambi, 1910, Grauer (NMW); 1 male, Luluabourg (Kasal), 31.1.1963, Jan Deheeger (RMCA); 1 female, Lukungu, no date, Ch. Haas (IRSNB); 2 females, Lulua, Kapanga, IX 1933, Overlaet (RMCA); 1 female, Lulua, Kapanga, IV 1933, G.F. Overlaet (RMCA); 1 male, Eala, IV 1936, J. Ghesquière (RMCA); 1 female, Malela, I–II 1913, Verschueren (RMCA); 1 male, Bambesa, II 1934, H.J. Brédô (RMCA); 2 males, Bambesa, 1.10.1934, J.V. Leroy (RMCA); 1 male, Bambesa, 20.10.1933, J.V. Leroy (RMCA); 1 male, Eala, V
1935, J. Ghesquière (RMCA); 1 male, Eala, III 1935, A. Corbisier (RMCA); 5 males, Eala, IX 1935, J. Ghesquière (RMCA); 1 female, Eala, 15.11.1931, H.J. Brédé (RMCA); 1 male, Lulua, Kapanga, IX 1932, G.F. Overlaet (RMCA); 1 female, Lulua, Kapanga, X 1933, G.F. Overlaet (RMCA); 1 male, Eala, XII 1935, J. Ghesquière (RMCA); 1 female, Boma [no date], R.F. Achille (RMCA); 1 female, Eala, IV 1933, Corbisier-Baland (RMCA); 1 female, Bambesa, 10.10.1933 J.V. Leroy (RMCA); 1 female, Eala, X 1935, J. Ghesquière (RMCA); 1 female, Albertville, XII 1918, R. Mayné (RMCA); 1 female, Sankuru, M’Pemba Zeo (Gangajika), 1.5.1960, D. R. Maréchal (RMCA); 2 females, Malela, II 1913, R. Verschueren (RMCA); 1 female, Haut Uélé, Moto, 1923, L. Burgeon (RMCA); 1 female, Eala, VI 1932, A. Corbisier (RMCA); 2 females, Bambesa, 15.9.1933, H.J. Brédé (RMCA); 1 female, Eala, XI 1935, J. Ghesquière (RMCA); 1 female, Eala, VII 1935, J. Ghesquière (RMCA); 4 females, Uélé, Bambesa, 10.8.1933, J.V. Leroy (RMCA); 2 females, Punthierville, 24.10.1910, Bequaert (RMCA); 1 female, Lomami, III 1931, P. Quarré (RMCA); 1 female, Eala, 7.10.1931, H.J. Brédé (RMCA); 1 female, Bas-Congo, Mangembo, 1932, Zwolakowski (RMCA); 1 female, Bambesa, 30.10.1933, H.J. Brédé (RMCA); 1 female, Ubangi, Kelzongo, 1.2.1932, H.J. Brédé (RMCA); 2 females, Eala, VI 1932, A. Corbisier (RMCA); 3 females, Eala, XI 1935, J. Ghesquière (RMCA); 1 female, Uélé, Dakwa, 9.7.1933, J.V. Leroy (RMCA); 1 male, Eala, IV 1932, H.J. Brédé (RMCA); 1 female, 1 male, Bambesa, XII 1933, H.J. Brédé (RMCA); 1 female, Massif Ruwenzori, Kyandolire, 7.10.1952, P. Vanschuytsbroeck & J. Kekenbosch (RMCA); 2 males, Uélé, Dingila, VII 1933, H.J. Brédé (RMCA); 1 female, 2 males, P.N.A. Mutsora, 1939, Hackars (RMCA); 2 females, Parc. Nat. Albert, 1937, Hackers (RMCA).

Uganda: 1 female, Kigezi, II-1928, H. Hargreaves (BMNH); 1 female, Mawokota, 20.4.1913, C.C. Gowdey (BMNH); 1 female, Entebbe, 10.–20.3.1914, C.C. Godwey (BMNH).

Ghana: 1 female, (Gold Coast) Agogo, 30.1.1941, K.M. Guichard (BMNH); 1 male, Takoradi [no date], Besnard (RMCA).

Nigeria: 1 female, Ibadan, no date, J.L. Gregory (BMNH).

Unknown country: 1 male, Ukaika, XII-1910, Grauer (NMW); 1 female, 1 male, “W.A.” no location or date (HECO); 2 males, Urwald – Beni (probably Benin), X-1910, Grauer (NMW); 1 female, Urwald – Beni (probably BENIN), X-1910, Grauer (NMW).

Description

Female: Length of body 17 mm, of fore wing 16 mm, of ovipositor 12 mm.

Antennae with 106 flagellomeres, terminal flagellomere 2.0 times longer than wide. Height of clypeus:inter-tentorial distance:tentorio-ocular distance=1.0:3.7:3.0. Width of face:width of head:height of eye=1.0:2.0:1.0. Height of face:width of face=1.0:1.7. Sculpture on face fairly smooth, scarce punctuation with hairs. Smooth oval area on top of clypeus. Clypeus pustulate. Frons depressed, punctulated, with medial longitudinal groove. POL:transverse diameter of posterior ocellus:shortest distance between posterior ocellus and eye=1.0:1.3:3.4. Length of eye in dorsal view:distance of occiput and posterior margin of eye=3.2:1.0.

Mesosoma approximately 1.4 times longer than maximally deep.

Fore wing: length of veins r:3-SR:SR1=1.0:3.2:3.7. Length of veins 2-SR:3-SR:r-m=1.0:2.7:1.4. Length of veins m-cu:2-M=1.0:2.8. Length of veins 1-CU1:2-CU1=1.0:6.7. Shape of vein 1-SR+M straight, but angled close to vein 1-M. Swelling in vein 3-CU1 2.0 times thicker than the other part of the vein.
Legs: Length of fore femur:tibia:tarsus=2.2:2.5:1.0. Fore basitarsus 3.8 times longer than deep. Length of hind femur:tibia:tarsus=2.5:2.9:1.0. Hind basitarsus 3.7 times longer than deep.

First metasomal tergite 1.5 times longer than wide; raised median area smooth. Second tergite 1.8 times wider than long; median triangular area distinctive, raised and smooth. Scarce transverse carinae around triangular area. Third tergite 2.2 times wider than long; with weakly strigated transverse furrows on anterior and subposterior margins, raised median and antero-lateral areas smooth. Tergites four and five similar to three, but antero-lateral areas more narrow. Tergites six to eight smooth.

Head, antennae, middle tibia and tarsi, hind legs and ovipositor sheets black. Apical third of ovipositor hair yellowish-white. Mesosoma, fore legs, mid femur and anterior third of hind coxa orange-red. Abdomen dark metallic blue. Fore wings dark brown with a metallic blue tinge. Narrow hyaline area below pterostigma which is dark brown. Hind wings evenly dark.

**Bathyaulax delagoaensis** (Cameron 1909)
(Figures 5, 48, 49)

*Iphiaulax delagoaensis* Cameron 1909

*Goniobracon delagoaensis*: Szépligeti 1914b

**Material examined**

Holotype: Female (ZMHB): *Iphiaulax delagoaensis* Cameron 1909. Mozambique, Delagoabai, [no date] Heine.

Additional specimens examined

**South Africa**: 1 female, Pt Natal [no date] (BMNH); 1 female, Natal, Vernulam, 25.11.1954, Bevis & Davidson (DH).

**D. R. Congo**: 1 female, Kapiri, IX 1912, Miss. Agric. (RMCA).

**Mozambique**: 1 male, Vallée du Pungoué, Guengère, 1906, G. Vasse (MNHN).

**Zambia**: 1 male, Melsetter, about 3600ft., Mt. Chirinda, 17–18.10.1905, Guy Marshall (HECO); 1 male, Melsetter, about 3600ft., Mt. Chirinda, 3–5.10.1905, Guy Marshall (HECO).

**Description**

Female: Length of body 17 mm, of fore wing 15 mm, of ovipositor 16 mm.

Antennae with 104 (apex broken) flagellomeres. Height of clypeus:inter-tentorial distance:tentorio-ocular distance=1.0:3.3:2.2. Width of face:width of head:height of eye=1.0:1.5:1.0. Height of face:width of face=1.0:1.5. Sculpture on face fairly smooth, scarce punctuation with hairs. Clypeus weakly strigated. Frons not depressed, smooth, with medial longitudinal groove. POL:transverse diameter of posterior ocellus:shortest distance between posterior ocellus and eye=1.0:1.0:3.3. Length of eye in dorsal view:distance of occiput and posterior margin of eye=1.9:1.0.

Mesosoma approximately 1.9 times longer than maximally deep.

Fore wing: length of veins r:3-SR:SR1=1.0:3.0:3.3. Length of veins 2-SR:3-SR:r-m=1.0:2.6:1.3. Length of veins m-cu:2-M=1.0:2.8. Length of veins 1-CU1:
2-CU1=1.0:5.7. Shape of vein 1-SR+M weakly but distinctly S-shaped. Swelling in vein 3-CU1 1.5 times thicker than the other part of the vein.

Legs: Length of fore femur:tibia:tarsus=2.2:2.2:1.0. Fore basitarsus 5.2 times longer than deep. Length of hind femur:tibia:tarsus=1.8:2.7:1.0. Hind basitarsus 6.0 times longer than deep.

First metasomal tergite 1.8 times longer than wide; raised median area strongly strigose. Second tergite 1.5 times wider than long; medial area raised and strongly strigose. Triangular area not distinctive or raised, but constitutes of strigation. Third tergite 1.7

Figures 48–51. Automontage® images of Bathyaulax species. (48, 49) B. delagoaensis, head and mesosoma (lateral view) and metasomal tergites 3–5. (50, 51) B. erythropus, metasomal tergites 2–3 and wing.
times wider than long; with strigated transverse furrows on anterior and subposterior margins, raised median area strongly strigated, antero-lateral areas smooth and connected with a ridge. Tergites four and five with strigated transverse furrows on anterior and subposterior margins, and smooth antero-lateral areas surrounded by similar furrows. Tergite four raised median area strongly strigose, in tergite five only weakly strigose. Tergites six to eight smooth, tergite six with strigated transverse furrow on basal margin.

Yellow except for the following which are black: antenna, temples and dorsal side of the head, occiput, apex of mandibles, spot on top of clypeus and a stripe continuing from it between toruli, antero-dorsal margin of pronotum, mesoscutum, apical one third of hind tibia, hind tarsi, metasomal tergites four to eight, ovipositor sheaths. Apical two thirds of wings dark brown with two small hyaline areas in fore wing, around veins r-m and 2-SR+M. Hind wing apical half darkened.

**Bathyaulax erythropus** sp. nov.
(Figures 50, 51)

**Material examined**
Holotype: Female (BMNH): Kenya, Voi River Valley, Pipe line Roads, VI-1977, D. Quicke.

**Description**
Female: Length of body 16mm, of fore wing 13mm, of ovipositor 13mm.

Antennae with 105 flagellomeres, terminal flagellomere 2.3 times longer than wide. Height of clypeus:inter-tentorial distance:tentorio-ocular distance = 1.0:3.0:2.7. Width of face:width of head:height of eye = 1.2:2.2:1.0. Height of face:width of face = 1.0:1.7. Sculpture on face granulate to pustulate. Clypeus granulate. Frons weakly depressed, smooth, with medial longitudinal groove. POL:transverse diameter of posterior ocellus:shortest distance between posterior ocellus and eye = 1.4:1.0:3.4. Length of eye in dorsal view:distance of occiput and posterior margin of eye = 1.4:1.0.

Mesosoma approximately 1.8 times longer than maximally deep.

Fore wing: length of veins r:3-SR:SR1 = 1.0:3.0:3.3. Length of veins 2-SR:3-SR:r-m = 1.0:2.6:1.3. Length of veins m-cu:2-M = 1.0:2.8. Length of veins 1-CU1:2-CU1 = 1.0:5.7. Shape of vein 1-SR+M weakly but distinctly S-shaped. Swelling in vein 3-CU1 1.5 times thicker than the other part of the vein.

Legs: Length of fore femur:tibia:tarsus = 2.2:2.3:1.0. Fore basitarsus 4.7 times longer than deep. Length of hind femur:tibia:tarsus = 2.1:3.0:1.0. Hind basitarsus 4.6 times longer than deep.

First metasomal tergite 1.5 times longer than wide; raised median area smooth with medial longitudinal groove and strigation on posterior margin. Second tergite 1.7 times wider than long; medial area raised and strigose. Antero-medial triangular area raised and smooth. Third tergite 2.0 times wider than long; with strigated transverse furrows on anterior and subposterior margins, raised median area rugose, antero-lateral areas smooth. Tergites four and five with strigated transverse furrows on anterior and subposterior margins, antero-lateral and median areas smooth and raised. Tergites six to eight smooth.
Yellow except for the following which are black: antenna, small area around stemmaticum, apex of mandibles and ovipositor sheets. Fore wings darkened with weakly paler areas below pterostigma and narrowly around vein r-m. Hind wings darkened with a paler area in the base of the marginal cell.

**Etymology**

Named after senior author’s favourite bird, Lesser White-Fronted goose, *Anser erythropus*.

*Bathyaulax flavipera* (Enderlein 1918)  
(Figures 52, 53)  
*Euryacria flavipera* Enderlein 1918  
*Iphiaulax flavipera*: Brues 1926  
*Bathyaulax (Euryacria) flavipera*: Fahlinger 1931  
*Bathyaulax flavipera*: Granger 1949

**Material examined**

Holotype: Female (ZPAN) “*Euryacria flavipera* Enderlein (1918) Madagascar, Mont D’Ambre [no date], Hammerstein S.

**Additional specimens examined**

*Madagascar*: 1 female, 1 male, Bekily, Reg. sud de L’Ile, X-1936, A. Seyrig (MNHN); 7 females, 1 male, Bekily, Reg. sud de L’Ile, X-1933, A. Seyrig (MNHN); 3 females, 13 males, Bekily, Reg. sud de L’Ile, IX-1933, A. Seyrig (MNHN); 1 female, Bekily, Reg. sud de L’Ile, V-1934, A. Seyrig (MNHN); 1, male, Bekily, Reg. sud de L’Ile, IX-1936, A. Seyrig (MNHN); 1 female, Bekily, Reg. sud de L’Ile, XI-1936, A. Seyrig (MNHN); 1 male, Bekily, Reg. sud de L’Ile, XII-1936, A. Seyrig (MNHN).

**Description**

Female: Length of body 10 mm, of fore wing 8 mm, of ovipositor 5 mm.

Antennae with 102 flagellomeres. Terminal flagellomere 3.3 times longer than wide. Height of clypeus:inter-tentorial distance:tentorio-ocular distance = 1.0:3.2:1.9. Width of face:width of head:height of eye = 1.1:2.1:1.0. Height of face:width of face = 1.0:1.8. Sculpture on face minute punctuation. Clypeus granulate. Frons weakly depressed, smooth, with medial longitudinal groove. POL:transverse diameter of posterior ocellus:-shortest distance between posterior ocellus and eye = 1.2:1.0:3.1. Length of eye in dorsal view:distance of occiput and posterior margin of eye = 12.1:1.0.

Mesosoma approximately 1.7 times longer than maximally deep.

Fore wing: length of veins r:3-SR:SR1 = 1.0:2.4:2.8. Length of veins 2-SR:3-SR:r-m = 1.0:2.3:1.3. Length of veins m-cu:2-M = 1.0:2.7. Length of veins 1-CU1:2-CU1 = 1.0:6.7. Shape of vein 1-SR+M concave, more strongly close to vein 1-M. Swelling in vein 3-CU1 1.6 times thicker than the other part of the vein.

Legs: Length of fore femur:tibia:tarsus = 2.2:2.4:1.0. Fore basitarsus 4.6 times longer than deep. Length of hind femur:tibia:tarsus = 2.3:3.1:1.0. Hind basitarsus 3.6 times longer than deep.
First metasomal tergite 1.2 times longer than wide; raised median area smooth. Second tergite 3.2 times wider than long; smooth, triangular median area distinctive and raised, smooth, with carinae on apical side. Third tergite 3.8 times wider than long; with strigated transverse furrow on anterior margin, raised median and antero-lateral areas smooth. Tergites four and five smooth with strigated transverse furrow on anterior margin. Tergites six and seven smooth.

Yellow except for the following which are black: triangle-shaped area on top of clypeus continuing between toruli, apex of mandibles, temples and dorsal side of the head, occiput, antennae, propleuron, dorsal part of pronotum, antero-lateral mesoscutum, dorsal part of mesopleuron. Wings evenly weakly darkened, with a darker area on the base of pterostigma of fore wing.

**Bathyaulax fortisulcatus** (Strand 1912)
(Figures 6, 54)

*Iphiaulax fortisulcatus* Strand 1912

*Iphiaulacidea (?) fortisulcatus* Fahringer 1926

**Material examined**

Holotype: Male (ZMHB): *Iphiaulax fortisulcatus* Strand 1912, SYRIA?, [no date] Ehrnbg.

Additional specimens examined

Kenya: 1 female, Tsavo East NP. 15.8.1976, D. Quicke (BMNH).

**Description**

Male: Length of body 14 mm, of fore wing 11 mm.

Antennae with 85 flagellomeres, but apex broken. Height of clypeus:inter-tentorial distance:tentorio-ocular distance = 1.0:2.6:2.7. Width of face:width of head:height of eye = 1.5:3.0:1.0. Height of face:width of face = 1.0:1.7. Sculpture on face granulate to pustulate, on clypeus similar. Frons depressed, smooth, with medial longitudal groove. POL:transverse diameter of posterior ocellus:shortest distance between posterior ocellus and eye = 1.2:1.0:2.4. Length of eye in dorsal view:distance of occiput and posterior margin of eye = 2.7:1.0.

Mesosoma approximately 1.6 times longer than maximally deep.

Fore wing: length of veins r:3-SR:SR1 = 1.0:2.1:3.5. Length of veins 2-SR:3-SR:r-m = 1.0:1.7:1.1. Length of veins m-cu:2-M = 1.0:3.8. Length of veins 1-CU1:2-CU1 = 1.0:7.6. Shape of vein 1-SR+M weakly S-shaped. Swelling in vein 3-CU1 1.5 times thicker than the other part of the vein.

Legs: Length of fore femur:tibia:tarsus = 2.2:2.4:1.0. Fore basitarsus 4.5 times longer than deep. Length of hind femur:tibia:tarsus = 2.7:3.4:1.0. Hind basitarsus 3.4 times longer than deep.

First metasomal tergite 1.3 times longer than wide; raised median area longitudinally depressed and whole area strongly strigated. Second tergite 2.2 times wider than long; raised median area strigated, antero-medial triangular area not raised or conspicuous. Third tergite 2.2 times wider than long; with strigated transverse furrows on anterior and
subposterior margins, raised median area longitudinally strigose to reticulate rugose. Antero-lateral areas raised and smooth. Tergites four and five similar. Tergites six and seven smooth.

Orange-brown except for apex of mandibles which are black. Wings fairly evenly weakly darkened, with two hyaline zones in fore wing below pterostigma and basally to veins 1-M and cu-a. Apical quarter of pterostigma darkened. Hind wing darkened with two hyaline areas around vein 1-M and costal and marginal cells.

Figures 52–56. Automontage® images of Bathyaulax species. (52, 53) B. flavipera, head and mesosoma (lateral view) and metasomal tergites 2–3. (54) B. fortesulcatus, wing. (55, 56) B. foveiventris, wing and metasomal tergites 2–3.
**Bathyaulax foveiventris** (Roman 1912)
(Figures 55, 56)

*Ipobracon foveiventris* Roman 1912  
*Iphiaulax foveiventris*: Brues 1926  
*Bathyaulax foveiventris*: Granger 1949

*Bathyaulax latiangulata* Enderlein (1918) 1920  
*Iphiaulax latiangulata*: Brues 1926, Synonymized by Granger 1949

*Bathyaulax laeviventris* Enderlein (1918) 1920 syn. nov.  
*Iphiaulax laeviventris*: Brues 1926

**Material examined**

Holotypes: Female (NRS): *Ipobracon foveiventris* Roman 1912, Madagascar, Ste Marie de Moaroay, 29.8.1911, W. Kaudern.  
Female (ZPAN): *Bathyaulax latiangulata* Enderlein (1918) 1920, Madagascar, Tamatave, no date.  
Female (ZPAN): *Bathyaulax laeviventris* Enderlein (1918) 1920, Madagascar, Mont D’Ambre [no date], Hammerstein, S.

**Additional specimens examined**

*Madagascar:* 1 female, Fort Dauphin (Mandena), 14.–18.4.1968, K.M.G. & P.D. (BMNH); 1 female, S. Madagascar [no date], Scott Elliot. (BMNH); 1 female, 1 male, “91 158”, “Mdg” [no locality or date] (BMNH); 1 female, Bekily, Reg. Sud de l’Ile, IX-1936, A. Seyrig (MNHN); 1 female, Bekily, Reg. Sud de l’Ile, VIII-1936, A. Seyrig (MNHN); 1 male, Bekily, I-1932, A. Seyrig (MNHN); 4 females, 3 males, Bekily, XII-1932, A. Seyrig (MNHN); 4 females, 5 males, Bekily, I-1933, A. Seyrig (MNHN); 2 females, Maroan-tsetra (Vadon), XI-1934, A. Seyrig (MNHN); 2 females, Fort Dauphin, X-1930, A. Seyrig (MNHN); 2 females, Baie d’Antongil, 1938, A. Mocquerys (MNHN); 1 female, Andranofeno P.K. 13g, Rte de Majunga, X-1957, Jean Eric (MNHN); 1 male, Ambilobe, IVa51 RP [no date] (MNHN); 1 male, 1 female, Reg. Du Sud-Est, Fort Dauphin, 1901, Ch. Alluaud (MNHN); 1 female, 1 male, Ste Marie de Madagascar, 1919, J. De Gaulle (MNHN); 1 male, Station forestiere de Fort/Dauphin, XI-1957, J. Elie (MNHN); 1 male, Rte d’Ambatondrarata [no date], H. Abadie (MNHN); 1 female, Behara, I-1938, A. Seyrig (MNHN); 1 male, Bekily, I-1937, A. Seyrig (MNHN); 1 male, Reg. De l’Androy Ambovombe, 1901, J. Decorse (MNHN); 1 male, Bekily, Reg. Sud de l’Ile, V-1934, (MNHN); 1 female, Baumox, 1904, P. Carie (MNHN); 1 female, Tananarive, XII-1931, A. Seyrig (MNHN); 1 female, Fort Dauphin, 1914, P. Godel (MNHN); 1 female [no locality], 1904, Ch. Alluaud (MNHN).

**Description**

Female: Length of body 19 mm, of fore wing 16 mm, of ovipositor 24 mm.

Antenneae with 126 flagellomeres. Terminal flagellomere 2.2 times longer than wide, acuminate. Height of clypeus:intertentorial distance:tentorio-ocular distance=1.0:4.2:3.2. Width of face:width of head:height of eye=1.0:2.0:1.0. Height of face:width of face=1.0:1.8. Sculpture on face punctate; on clypeus punctate reticulate to rugose. Frons depressed, smooth, with medial longitudinal groove. POL:transverse diameter of posterior ocellus:shortest distance between posterior ocellus and eye=1.0:1.2:3.3. Length of eye in dorsal view:distance of occiput and posterior margin of eye=1.9:1.0.
Mesosoma approximately 1.7 times longer than maximally deep.

Fore wing: length of veins r:3-SR:SR1=1.0:2.4:3.4. Length of veins 2-SR:3-SR:r-m=1.0:2.4:1.4. Length of veins m-cu:2-M=1.0:3.0. Length of veins 1-CU1:2-CU1=1.0:6.0. Shape of vein 1-SR+M weak S-shaped, almost straight. Swelling in vein 3-CU1 1.2 times thicker than the other part of the vein.

Legs: Length of fore femur:tibia:basitarsus=2.1:2.4:1.0. Fore basitarsus 4.4 times longer than deep. Length of hind femur:tibia:basitarsus=1.7:2.6:1.0. Hind basitarsus 5.7 times longer than deep.

First metasomal tergite 1.6 times longer than wide; raised median area smooth, with small striae on posterior margin, sometimes very few. Second tergite 1.4 times wider than long; antero-medial triangular area raised and smooth, sometimes with weak ridges around it. Third tergite 2.0 times wider than long; with weakly strigated transverse furrows on anterior but not on posterior margin, raised median area very smooth. Antero-lateral areas raised and also smooth. Tergites four and five similar, but five without antero-lateral raised areas. Tergites six to eight smooth.

Orange-brown except for following which are black: head excluding labrum, antennae and ovipositor sheets. Wings fairly evenly weakly darkened, darkest areas around cells 1R1 and 1M. Hyaline zone in fore wing below pterostigma. Apical end of pterostigma darkened (about one fifth of the total length). Hind wing darkened postero-apically.

*Bathyaulax fritzeni* sp. nov.

(Figures 57, 59)

**Material examined**

Holotype: Female (BMNH): Saudi Arabia, Asir, Nadissijla [?], 24.8.1944, A.R. Waterston.

**Description**

Female: Length of body 20 mm, of fore wing 16 mm, of ovipositor 22 mm.

Antennae broken (only 28 flagellomeres remaining). Height of clypeus:inter-tentorial distance:tentorio-ocular distance=1.0:4.2:3.4. Width of face:width of head:height of eye=1.1:2.3:1.0. Height of face:width of face=1.0:1.8. Sculpture on face medially pustulate and laterally punctulate. Clypeus granulate. Frons weakly depressed, smooth, with medial longitudinal groove. POL:transverse diameter of posterior ocellus:shortest distance between posterior ocellus and eye=1.0:1.0:2.8. Length of eye in dorsal view:distance of occiput and posterior margin of eye=1.5:1.0.

Mesosoma approximately 1.7 times longer than maximally deep.

Fore wing: length of veins r:3-SR:SR1=1.0:1.9:3.7. Length of veins 2-SR:3-SR:r-m=1.0:1.8:1.1. Length of veins m-cu:2-M=1.0:2.2. Length of veins 1-CU1:2-CU1=1.0:4.7. Shape of vein 1-SR+M straight. Swelling in vein 3-CU1 1.6 times thicker than the other part of the vein.

Legs: Length of fore femur:tibia:basitarsus=2.1:2.2:1.0. Fore basitarsus 4.8 times longer than deep. Length of hind femur:tibia:basitarsus=2.0:2.9:1.0. Hind basitarsus 5.0 times longer than deep.

First metasomal tergite 1.5 times longer than wide; raised median with medial longitudinal groove, posterior margin strigose. Second tergite 1.6 times wider than long; medial area raised and strigose. Antero-medial triangular area raised, anteriorly smooth and posteriorly rugose. Third tergite 2.0 times wider than long; with strigated transverse
furrows on anterior and subposterior margins, raised median area medially strigated and sublaterally smooth, antero-lateral areas smooth. Tergites four and five with strigated transverse furrows on anterior and subposterior margins, antero-lateral areas smooth and raised. Tergite four raised median area reticulate to rugose, in tergite five smooth. Tergites six to eight smooth.

Yellow except for the following which are black: antenna, stemmaticum, apex of mandibles and ovipositor sheets. Wings darkened with hyaline areas in fore wing below pterostigma and in hind wing in the base of the marginal cell. Apical quarter of pterostigma darkened.

Figures 57–60. Automontage® images of Bathyaulax species. (57, 59) B. frizeni, wing and tergites 2–3; (58, 60) B. heinie, wing and tergites 2–3.
Etymology

Named after the senior author’s friend, Niclas Fritze´n.

*Bathyaulax heinie* sp. nov.

(Figures 58, 60)

Material examined

Holotype: Female (MNHN): D. R. Congo: Djiri, II-1978, G. Onore.

Additional specimens examined

*D. R. Congo*: 1 female, Kintele, IV-1978, G. Onore (MNHN); 1 female, “Congo”, no date, D.F. Carpentier (IRSNB).

Description

Female: Length of body 19 mm, of fore wing 16 mm, of ovipositor 17 mm.

Antennae with 74 (apex broken) flagellomeres. Height of clypeus: inter-tentorial distance: tentorio-ocular distance = 1.0:5.6:4.7. Width of face: width of head: height of eye = 1.1:2.0:1.0. Height of face: width of face = 1.0:2.4. Sculpture on face pustulate with punctulation. Clypeus rugose. Frons weakly depressed, smooth, with medial longitudinal groove. POL: transverse diameter of posterior ocellus: shortest distance between posterior ocellus and eye = 1.5:1.0:3.7. Length of eye in dorsal view: distance of occiput and posterior margin of eye = 2.0:1.0.

Mesosoma approximately 1.8 times longer than maximally deep

Fore wing: length of veins r:3-SR:SR1 = 1.0:2.7:4.5. Length of veins 2-SR:3-SR:r-
m = 1.0:2.2:1.2. Length of veins m-cu:2-M = 1.0:2.3. Length of veins 1-CU1:2-
CU1 = 1.0:3.5. Shape of vein 1-SR + M straight. Swelling in vein 3-CU1 1.4 times thicker than the other part of the vein.

Legs: Length of fore femur: tibia: tarsus = 2.1:2.4:1.0. Fore basitarsus 4.6 times longer than deep. Length of hind femur: tibia: tarsus = 2.2:3.2:1.0. Hind basitarsus 4.0 times longer than deep.

First metasomal tergite 1.7 times longer than wide; raised median with medial longitudinal groove. Posterior margin strigated. Second tergite 1.8 times wider than long; medial area raised and sparsely strigose to reticulate. Antero-medial triangular area raised and smooth. Third tergite 2.0 times wider than long; with strigated transverse furrows on anterior and subposterior margins, raised median area strigated, antero-lateral areas smooth and raised. Tergites four and five with transverse furrows on anterior and subposterior margins. Both furrows strigated in tergite four, in five only anterior furrow strigated. Smooth and raised antero-lateral areas on both tergites. Tergite four raised median area rugulose, in tergite five smooth. Tergites six to eight smooth, tergite six with strigated transverse furrow on basal margin.

Yellow except for the following which are black: antenna, temples and dorsal side of the head, occiput, apex of mandibles and ovipositor sheets. Wings darkened with hyaline areas in fore wing basally from veins 1-M and cu-a, a transverse zone below pterostigma and around vein r-m; and in hind wing on the base of marginal cell.
**Etymology**

Named after the senior author’s friend, Heini Hyvärinen.

**Bathyaulax hirticeps** (Cameron 1909)  
(Figures 61, 62)

*Iphiaulax hirticeps* Cameron 1909  
*Iphiaulax krebsii* Cameron 1909 **syn. nov.**  
*Bathyaulax krebsii* (Cameron 1909)  
*Goniobracon krebsi* [!]: Fahringer 1935

**Material examined**

Holotypes: Female (ZMHB): *Iphiaulax hirticeps* Cameron 1909, South Africa, Capland [no date], Krebs S.  
Female: (ZMHB): *Iphiaulax krebsii* Cameron 1909, South Africa, Capland [no date], Krebs S.

**Description**

Female: Length of body 15 mm, of fore wing 12 mm.  
Antennae with 85 flagellomeres. Terminal flagellomere 3.5 times longer than wide. Height of clypeus:inter-tentorial distance:tentorio-ocular distance = 1.0:5.0:6.8. Width of face:width of head:height of eye = 1.3:2.2:1.0. Height of face:width of face = 1.0:1.8. Sculpture on face punctate. Clypeus rugose. Frons depressed and smooth, with a medial longitudinal carinae. POL:transverse diameter of posterior ocellus:shortest distance between posterior ocellus and eye = 1.1:1.0:3.6. Length of eye in dorsal view:distance of occiput and posterior margin of eye = 1.5:1.0.  
Mesosoma approximately 1.6 times longer than maximally deep.  
Fore wing: length of veins r:3-SR:SR1 = 1.0:3.9:5.8. Length of veins 2-SR:3-SR:r-m = 1.0:2.4:1.3. Length of veins m-cu:2-M = 1.0:2.5. Length of veins 1-CU1:2-CU1 = 1.0:4.2. Vein 1-SR+M straight. Swelling in vein 3-CU1 1.5 times thicker than the other part of the vein.  
Legs: length of fore femur:tibia:basitarsus = 2.0:2.1:1.0. Fore basitarsus 4.4 times longer than deep. Length of hind femur:tibia:basitarsus = 2.1:3.2:1.0. Hind basitarsus 4.1 times longer than deep.  
First metasomal tergite 1.4 times longer than wide; raised median area with medial longitudinal groove, posterior half strongly strigated on. Second tergite 2.2 times wider than long; strongly mediadly rugose to reticulate. Antero-medial triangular area raised and also strongly sculptured, anteriorly smooth. Third tergite 2.4 times wider than long; transverse furrows on anterior and subposterior margins strigated, raised medial area rugose. Antero-lateral areas smooth. Tergites four and five with anterior and subposterior strigated furrows, raised median areas rugose, antero-lateral areas smooth. Tergites six to eight smooth.  
Black to dark brown except for abdomen which is red. Head with reddish-brown lines around eyes. Wings dark brown, with hyaline areas on fore wing below pterostigma and weakly around vein r-m. Apical half of pterostigma darkened.
Bathyaulax ikonenae sp. nov.
(Figures 63–65)

Material examined

Holotype: Female (MNHN): Senegal, Ifan, Mont Rolland, Thies, 14.10.1959, M. Condamin & R. Roy.
Additional specimens examined

_Uganda:_ 1 female, Madi, V-1927, G.D.H. Carpenter (BMNH).
_Kenya:_ 1 female, Tsavo East N.P., nr. Voi Gate, VI-1977, D. Quicke (BMNH).

**Description**

Female: Length of body 17 mm, of fore wing 14 mm, of ovipositor 18 mm.

Antennae with 107 flagellomeres, terminal flagellomere 2.6 times longer than wide. Height of clypeus:inter-tentorial distance:tentorio-ocular distance = 1.0:3.5:3.1. Width of face:width of head:height of eye = 1.1:2.1:1.0. Height of face:width of face = 1.0:1.7. Sculpture on face punctate with punctuation. Clypeus rugose. Frons depressed, smooth, with medial longitudinal groove. POL:transverse diameter of posterior ocellus:shortest distance between posterior ocellus and eye = 1.2:1.0:3.1. Length of eye in dorsal view:distance of occiput and posterior margin of eye = 1.9:1.0.

Mesosoma approximately 1.9 times longer than maximally deep.

Fore wing: length of veins r:3-SR:SR1 = 1.0:2.6:3.9. Length of veins 2-SR:3-SR:r-m = 1.0:2.0:1.1. Length of veins m-cu:2-M = 1.0:2.6. Length of veins 1-CU1:2-CU1 = 1.0:5.9. Shape of vein 1-SR+M weakly S-shaped, sometimes vein with uneven thickenings. Swelling in vein 3-CU1 1.5 times thicker than the other part of the vein.

Legs: Length of fore femur:tibia:tarsus = 2.1:2.4:1.0. Fore basitarsus 4.8 times longer than deep. Length of hind femur:tibia:tarsus = 2.1:3.1:1.0. Hind basitarsus 4.5 times longer than deep.

First metasomal tergite 1.7 times longer than wide; raised median area smooth, sometimes subposterior margin weakly strigose. Second tergite 1.5 times wider than long; antero-medial triangular area smooth and raised, and a ridge continuing from the apical end of the triangle towards posterior margin. Third tergite 1.7 times wider than long; with strigated transverse furrows on anterior and subposterior margins, raised median and antero-lateral areas smooth. Tergites four and five with strigated transverse furrow on anterior and smooth transverse furrow on posterior margin, and with raised and smooth antero-lateral and median areas. Tergites six to eight smooth.

Yellow except for the following which are black: antenna, face, frons, vertex, apex of mandibles and ovipositor sheets. Wings darkened with hyaline areas in fore wing below pterostigma and in hind wing in the base of the marginal cell. Pterostigma apical half darkened.

**Etymology**

Named after the senior author’s friend, Suvi Ikonen.

*Bathyaulax jimii* sp. nov.
(Figures 66–68)

**Material examined**

Holotype: Female (RMCA): D. R. Congo: Lac Albert, Ishva, IX-1935, H.J. Brédo.
Description

Female: Length of body 20 mm, of fore wing 16 mm, of ovipositor 19 mm.

Antennae with 113 (apex broken) flagellomeres. Height of clypeus: inter-tentorial distance: tentorio-ocular distance = 1.0:4.5:3.8. Width of face: width of head: height of eye = 1.2:2.1:1.0. Height of face: width of face = 1.0:1.8. Sculpture on face pustulate. Clypeus granulate. Frons depressed, smooth, with medial longitudinal groove. POL: transverse diameter of posterior ocellus: shortest distance between posterior ocellus and eye = 1.2:1.0:2.6. Length of eye in dorsal view: distance of occiput and posterior margin of eye = 1.7:1.0.

Mesosoma approximately 1.7 times longer than maximally deep.

Fore wing: length of veins r:3-SR:SR1 = 1.0:2.4:3.9. Length of veins 2-SR:3-SR:r-m = 1.0:1.9:1.2. Length of veins m-cu:2-M = 1.0:2.4. Length of veins 1-CU1:2-CU1 = 1.0:4.4. Shape of vein 1-SR+M straight. Swelling in vein 3-CU1 1.8 times thicker than the other part of the vein.

Legs: Length of fore femur: tibia: tarsus = 1.9:2.1:1.0. Fore basitarsus 4.3 times longer than deep. Length of hind femur: tibia: tarsus = 2.0:2.8:1.0. Hind basitarsus 4.3 times longer than deep.

First metasomal tergite 1.5 times longer than wide; raised median area smooth with medial longitudinal groove, posteriorly strigose. Second tergite 1.8 times wider than long; medial area raised and strigose. Antero-medial triangular area raised and smooth. Third tergite 2.0 times wider than long; with strigated transverse furrows on anterior and subposterior margins, raised median area strigated, antero-lateral areas smooth. Tergites four and five with strigated transverse furrows on anterior and subposterior margins, antero-lateral areas smooth. Sculpture on tergite four raised median area reticulate to rugose, in tergite five only smooth. Tergites six to eight smooth.

Yellow except for the following which are black: antenna, small area around stemmaticum, apex of mandibles and ovipositor sheets. Fore wings darkened with weakly paler areas below pterostigma and narrowly around vein r-m. Hind wings evenly darkened.

Etymology

Named after the senior author’s nephew, Jimi Kaartinen.

*Bathyaulax juhai* sp. nov.

(Figures 69, 70)

Material examined

Holotype: Female (BMNH): Saudi Arabia, Wadi Majarish (below Taif), 12.2.1983, K. Guichard.

Description

Female: Length of body 17 mm, of fore wing 15 mm, of ovipositor 16 mm.

Antennae with 109 (apex broken) flagellomeres. Height of clypeus: inter-tentorial distance: tentorio-ocular distance = 1.0:4.2:3.2. Width of face: width of head: height of eye = 1.3:2.2:1.0. Height of face: width of face = 1.0:1.8. Sculpture on face pustulate.
Clypeus granulate. Frons weakly depressed, smooth, with medial longitudinal groove.

POL: transverse diameter of posterior ocellus: shortest distance between posterior ocellus and eye = 1.0:1.0:3.1. Length of eye in dorsal view: distance of occiput and posterior margin of eye = 1.5:1.0.

Mesosoma approximately 1.5 times longer than maximally deep.

Fore wing: length of veins r:3-SR:SR1 = 1.0:2.6:3.9. Length of veins 2-SR:3-SR:r-m = 1.0:2.2:1.3. Length of veins m-cu:2-M = 1.0:2.3. Length of veins 1-CU1:2-CU1 = 1.0:5.0.

Figures 66–70. Automontage® images of Bathyaulax species. (66)–(68) B. jimii, face, scape and metasomal tergites 2–3. (69, 70) B. juhai, wing and metasomal tergites 2–3.
Shape of vein 1-SR+M apically straight and with a small convex area close to vein 1-M. Swelling in vein 3-CU1 1.5 times thicker than the other part of the vein.

Legs: Length of fore femur:tibia:tarsus = 2.3:2.5:1.0. Fore basitarsus 3.6 times longer than deep. Length of hind femur:tibia:tarsus = 2.0:3.0:1.0. Hind basitarsus 5.2 times longer than deep.

First metasomal tergite 1.5 times longer than wide; raised median area smooth with medial longitudinal depression and strigation on posterior margin. Second tergite 1.8 times wider than long; medial area raised and strigose. Antero-medial triangular area anteriorly more strongly raised, posterior part depressed and strigated. Third tergite 2.3 times wider than long; with strigated transverse furrows on anterior and subposterior margins, raised median area strongly strigated, antero-lateral areas smooth. Tergite four similar. Tergite five with strigated transverse furrows on anterior and posterior margins, median area raised and smooth, and smooth antero-lateral areas surrounded by similar furrows. Tergites six to eight smooth.

Yellow except for the following which are black: antenna, small area around stemmaticum, apex of mandibles and ovipositor sheets. Wings darkened with hyaline areas in fore wing in apical half of basal cell and below pterostigma, and in hind wing in the base on the marginal cell.

Etymology

Named after the senior author’s friend, Juha Markkola.

_Bathyaulax kersteni_ (Gerstaecker 1871)
(Figures 18, 71)
_Bracon kersteni_ Gerstaecker 1871
_Iphiaulax kersteni_ (Gerstaecker 1871)
_Iphiaulacidea kersteni_: Fahringer 1926
_Goniobracon areolatus_ Szépligeti 1913 _syn. nov._
_Goniobracon abdominalis_ Szépligeti 1914c _syn. nov._

Material examined

Holotypes: Female (ZMHB): _Bracon kersteni_ Gerstaecker 1871. Kenya, Mombas [no date], v.d. Decken.
Female (MNH): _Goniobracon areolatus_ Szépligeti 1913. Ethiopia, Ulamo, III-1912, Kovács.

Additional specimens examined

_Angola_: 1 female, Rocadas, 19. – 22.2.1972, R. Cunene (BMNH); 1 female, [no locality or date] (BMNH); 1 male, [no locality or date] (MNHN); 1 male, Luanda, June/July 1957 and 1958 (CNCI).
_Eritrea_: 1 female, Cheren (Keren), no date (HECO); 1 female, Bas-Congo, Kisantu, 1945, Fr. Anastase (RMCA); 1 female, no location or date (HECO); 1 male, No location or date (UZMC).
_Kenya_: 1 female, 1 male, Voi River Valley, nr. Voi Gate Tsavo East, VIII-1977, D. Quicke (BMNH); Voi River Valley, Pipeline roads, VI-1977, D. Quicke, (BMNH); 1 female,
Tsavo East N. Park, 1977, D. Quicke (MNH); 6 females, 1 unknown sex, Tsavo East National Park, nr. Voi Gate, VI-1977, D. Quicke (BMNH); 2 females, 1 male, Thika-kitui, 30.8.1986, I.A.D. Robertson (BMNH); 1 female, Mombasa, Likoni, 18.8.1976, D. Quicke (BMNH); 1 female, Garissa Distr., Garissa, 8.10.1974, R. de Jong (RNHL); 1 male, Victoria, Nyanza, North of Usoga, 18.2.1906, C.A. Wiggins (HECO); 1 female, East Victoria, Nyanza, 27.4.1911, S.A. Neave (BMNH).

Figures 71–74. Automontage® images of Bathyaulax species. (71) B. kersteni, metasomal tergites 2–3. (72, 73) B. kossui, metasomal tergites 1–3 and wing. (74) B. kupariensis, metasomal tergites 2–3.
Mozambique: 2 females, 1 male, Beira, 2-IX-1961, G. Heinrich (CNCI).

Namibia: 1 male, Kaokoland, Ondorusu Falls, 23.–26.8.1973 (BMNH).

South Africa: 1 female, Pretoria, 1911, W.L.D. (BMNH); 1 female, Pretoria, 1911 (BMNH); 1 female, “Transvaal, Johannesburg, Ross”, “P. Cameron coll. 1914-110”, “Iphiaulax lativentris Cam. type Transvaal” (BMNH) [see notes]; 1 male, Sydenham, Ntl, 21.5.1959, G.C. Czayk (BMNH).

Tanzania: 1 female, Kibwezi, 24.4.1911, S.A. Neave (BMNH); 2 females, N.W. Tanganika, 1910, Grauer (NMW); 1 male, Morogoro, I-1963, G. Heinrich (CNCI); 1 female, 14-IX-1961, G. Heinrich (CNCI).

Country unknown: 1 female, 1 male, 1921, G.A.J. Rothney (HECO); 1 male, 1912, Stordy (BMNH); 1 female, 20.3.1914, B.E.A. (BMNH); 1 female, 1921, T. Ayres (BMNH).

Description

Female: Length of body 12 mm, of fore wing 10 mm, of ovipositor 6 mm.

Antennae with 114 flagellomeres, terminal flagellomere 2.8 times longer than wide, acuminate. Height of clypeus:inter-tentorial distance:tentorio-ocular distance=1.0:2.6:2.1. Width of face:width of head;height of eye=1.3:1.7:1.0. Height of face:width of face=1.0:1.9. Sculpture on face punctate, clypeus rugose. Frons not entirely depressed, only between eyes and toruli. Sculpture smooth, with medial longitudinal groove. POL:transverse diameter of posterior ocellus:shortest distance between posterior ocellus and eye=1.1:1.0:3.0. Length of eye in dorsal view:distance of occiput and posterior margin of eye=2.4:1.0.

Mesosoma approximately 1.6 times longer than maximally deep.

Fore wing: length of veins r:3-SR:SR1=1.0:2.4:3.0. Length of veins 2-SR:3-SR:r-m=1.0:2.1:1.1. Length of veins m-cu:2-M=1.0:2.6. Length of veins 1-CU1:2-CU1=1.0:8.1. Shape of vein 1-SR+M straight. Swelling in vein 3-CU1 1.5 times thicker than the other part of the vein.

Legs: Length of fore femur:tibia:tarsus=2.3:2.7:1.0. Fore basitarsus 3.5 times longer than deep. Length of hind femur:tibia:tarsus=2.3:3.4:1.0. Hind basitarsus 3.2 times longer than deep.

First metasomal tergite 1.1 times longer than wide; median area anteriorly depressed and posterior margin strongly strigated. Second tergite 2.9 times wider than long; triangular median area not raised and whole median and postero-lateral area strigated. Third tergite 3.4 times wider than long; with strigated transverse furrow on anterior margin, raised median area longitudinally strigose to reticulate rugose, sculpture strong. Antero-lateral areas raised and smooth, but narrow. Tergites four and five similar to three. Tergite six strigate, tergites seven and eight smooth.

Orange-brown except for following which are black: antennae, apex of mandibles, varying area around stemmaticum (at least around stemmaticum, sometimes also frons, vertex and occiput black) and ovipositor sheets. Wings fairly evenly weakly darkened, with hyaline zone in fore wing below pterostigma. Apical third of pterostigma darkened. Hind wing evenly darkened.

Notes

The holotype of Goniobracon abdominalis could not be found and the synonymy is based on the description. A specimen in the BMNH collection is labelled as the type of
Iphiaulax lativentris Cameron, which was described by Cameron (1906). According to Shenefelt (1978), type is lost and it is possible that this is indeed the holotype; however, as it bears an accession date of 1914 and is not in the collection of the South African Museum, we are reserving judgement on this and not formally synonymizing this species with kersteni.

**Bathyaulax kossui** sp. nov.  
(Figures 72, 73)

**Material examined**

Holotype: Female (BMNH): Yemen, Usaiifira, 1 mile N from Ta’izz, 13.12.1937, H.S. Scott & E.B. Britton.

**Description**

Female: Length of body 17 mm, of fore wing 15 mm, of ovipositor 19 mm.

Antennae with 111 flagellomeres, terminal flagellomere 3.0 times longer than wide. Height of clypeus:inter-tentorial distance:tentorio-ocular distance = 1.0:3.8:3.2. Width of face:width of head:height of eye = 1.3:2.3:1.0. Height of face:width of face = 1.0:2.0. Sculpture on face punctate. Clypeus granulate. Frons depressed, smooth, with medial longitudinal groove. POL:transverse diameter of posterior ocellus:shortest distance between posterior ocellus and eye = 1.0:1.3:3.7. Length of eye in dorsal view:distance of occiput and posterior margin of eye = 1.6:1.0.

Mesosoma approximately 1.5 times longer than maximally deep.

Fore wing: length of veins r:3-SR:SR1 = 1.0:1.9:3.3. Length of veins 2-SR:3-SR:r-m = 1.0:1.6:1.2. Length of veins m-cu:2-M = 1.0:2.2. Length of veins 1-CU1:2-CU1 = 1.0:5.7. Shape of vein 1-SR+M straight. Swelling in vein 3-CU1 1.3 times thicker than the other part of the vein.

Legs: Length of fore femur:tibia:tarsus = 2.1:2.2:1.0. Fore basitarsus 3.0 times longer than deep. Length of hind femur:tibia:tarsus = 2.0:3.0:1.0. Hind basitarsus 5.5 times longer than deep.

First metasomal tergite 1.4 times longer than wide; raised median area smooth with medial longitudinal depression, posterior margin strigose. Second tergite 1.7 times wider than long; medial area raised and strigose to weakly reticulate. Triangular area anteriorly raised and smooth, posteriorly strigated. Third tergite 2.3 times wider than long; with strigated transverse furrows on anterior and subposterior margins, raised median area strigated, antero-lateral areas smooth. Tergite four similar to three. Tergite five with strigated transverse furrows on anterior and subposterior margins, medial and antero-lateral areas smooth. Tergites six to eight smooth.

Yellow except for the following which are black: antenna, partly stemmaticum, apex of mandibles and ovipositor sheets. Wings with hyaline areas in fore wing below pterostigma and marginal cell and in hind wing in the base of the marginal cell.

**Etymology**

Named after the senior author's friend, Janne Koskima¨ki.
**Bathyaulax kupariensis** sp. nov.  
(Figure 74)

**Material examined**
Holotype: Female (BMNH): Mozambique, Beira, 28.9.1903, P.A. Sheppard, “*Bathyaulax concolor* Sz. female comp. with type male 1.9.1912, G.H.G”.

**Description**
Female: Length of body 16 mm, of fore wing 15 mm, of ovipositor 16 mm.

Antennae broken. Height of clypeus:inter-tentorial distance:tentorio-ocular distance = 1.0:3.1:2.9. Width of face:width of head:height of eye = 1.3:2.3:1.0. Height of face:width of face = 1.0:1.9. Sculpture on face fairly smooth, scarce punctuation with hairs. Clypeus weakly strigated. Frons not depressed, smooth, with medial longitudinal groove. POL:transverse diameter of posterior ocellus:shortest distance between posterior ocellus and eye = 1.4:1.0:3.6. Length of eye in dorsal view:distance of occiput and posterior margin of eye = 1.5:1.0.

Mesosoma approximately 1.7 times longer than maximally deep.

Fore wing: length of veins r:3-SR:SR1 = 1.0:2.5:4.0. Length of veins 2-SR:3-SR:r-m = 1.0:2.3:1.4. Length of veins m-cu:2-M = 1.0:2.3. Length of veins 1-CU1:2-CU1 = 1.0:6.2. Shape of vein 1-SR+M straight. Swelling in vein 3-CU1 1.5 times thicker than the other part of the vein.

Legs: Length of fore femur:tibia:tarsus = 2.3:2.5:1.0. Fore basitarsus 5.3 times longer than deep. Length of hind femur:tibia:tarsus = 2.3:3.3:1.0. Hind basitarsus 4.8 times longer than deep.

First metasomal tergite 1.7 times longer than wide; raised median area strongly strigose. Second tergite 1.9 times wider than long; medial area raised and strongly strigose. Triangular area not very distinctive (not raised), but constitutes of strigation. Third tergite 2.1 times wider than long; with strigated transverse furrows on anterior and posterior margins, raised median area strongly strigated, antero-lateral areas smooth and connected with a ridge. Tergites four and five with strigated transverse furrows on anterior and posterior margins, and smooth antero-lateral areas surrounded by similar furrows. Tergite four raised median area strongly strigose, in tergite five only weakly strigose. Tergites six to eight smooth, tergite six with strigated transverse furrow on basal margin.

Yellow except for the following which are black: antenna, temples and dorsal side of the head, occiput, apex of mandibles, spot on top of clypeus and a stripe continuing from it between toruli, antero-dorsal margin of pronotum, mesoscutum, apical one third of hind tibia, hind tarsi, metasomal tergites 4–8, ovipositor sheets. Apical two-thirds of wings dark brown with two small hyaline areas in fore wing, around veins r-m and 2-SR+M. Hind wing apical half darkened.

**Etymology**
Named after the senior author’s friend, Jussi Kupari.
Bathyaulax kvisti sp. nov.
(Figures 7, 19, 75)

Material examined
Holotype: Female (BMNH): Kenya, Diani Beach, VII-1951, N.L.H. Krauss.

Description
Female: Length of body 14 mm, of fore wing 12 mm, of ovipositor 13 mm.
Antennae broken. Height of clypeus:inter-tentorial distance:tentorio-ocular distance=1.0:4.1:4.0. Width of face:width of head:height of eye=1.2:2.1:1.0. Height of face:width of face=1.0:1.8. Sculpture on face pustulate with punctuation. Clypeus similar. Frons depressed, smooth, with medial longitudinal groove. POL:transverse diameter of posterior ocellus:shortest distance between posterior ocellus and eye=1.2:1.0:3.1. Length of eye in dorsal view:distance of occiput and posterior margin of eye=1.8:1.0.
Mesosoma approximately 1.7 times longer than maximally deep.
Fore wing: length of veins r:3-SR:SR=1:0.0:2.3:3.6. Length of veins 2-SR:3-SR:r-m=1.0:2.0:1.1. Length of veins m-cu:2-M=1.0:2.8. Length of veins 1-CU1:2-CU1=1.0:5.3. Shape of vein 1-SR+M straight. Swelling in vein 3-CU1 1.3 times thicker than the other part of the vein.
Legs: Length of fore femur:tibia:tarsus=2.2:2.5:1.0. Fore basitarsus 4.3 times longer than deep. Length of hind femur:tibia:tarsus=2.4:3.4:1.0. Hind basitarsus 3.8 times longer than deep.
First metasomal tergite 1.6 times longer than wide; raised median area smooth with a weak medial longitudinal depression, posterior margin strigilated. Second tergite 1.8 times wider than long; medial area raised and strigilated. Antero-medial triangular area raised and smooth. Third tergite 2.0 times wider than long; with strigilated transverse furrows on anterior and subposterior margins, raised median area strigilated, antero-lateral areas smooth. Tergites four and five with strigilated transverse furrows on anterior and subposterior margins, and medial and antero-lateral areas raised and smooth. Tergites six to eight smooth.
Yellow except for the following which are black: frons and vertex around stemmaticum, apex of mandibles and ovipositor sheets. Antennae brown. Wings darkened with hyaline areas in fore wing below pterostigma and weakly on apical part of basal cell, and in hind wing on the base of the basal cell. Less than fifth on pterostigma apically darkened.

Etymology
Named after the senior author’s friend, Jouni Kvist.

Bathyaulax larjuskini sp. nov.
(Figure 76)

Material examined
Holotype: Female (BMNH): Kenya, Tsavo East National Park, nr. Voi Gate, VI-1977, D. Quicke.
Additional material examined

Kenya: 1, male: Voi River Valley, Pipeline roads, VIII-1977, D. Quicke (BMNH).

Description

Female: Length of body 13 mm, of fore wing 11 mm, of ovipositor 12 mm.

Antennae with 99 flagellomeres. Terminal flagellomere 2.5 times longer than wide. Height of clypeus:inter-tentorial distance:tentorio-ocular distance = 1.0:4.8:4.7. Width of face:width

Figures 75–78. Automontage® images of Bathyaulax species. (75) B. kvisti, metasomal tergites 2–3. (76) B. larjuskini, metasomal tergites 2–3. (77) B. lucidus, metasomal tergites 2–3. (78) B. mariae, metasomal tergites 2–3.
of head:height of eye = 1.2:2.1:1.0. Height of face:width of face = 1.0:1.8. Sculpture on face pustulate. On top of clypeus a smooth triangle-shaped area. Clypeus rugose. Frons depressed and smooth, with a medial longitudinal groove. POL:transverse diameter of posterior ocellus:shortest distance between posterior ocellus and eye = 1.0:1.0:2.5.

Length of eye in dorsal view:distance of occiput and posterior margin of eye = 2.0:1.0.

Mesosoma approximately 1.6 times longer than maximally deep.

Fore wing: length of veins r:3-SR:SR1 = 1.0:2.3:3.9. Length of veins 2-SR:3-SR:r-m = 1.0:2.0:1.2. Length of veins m-cu:2-M = 1.0:2.6. Length of veins 1-CU1:2-CU1 = 1.0:5.3. Vein 1-SR+M straight. Swelling in vein 3-CU1 1.6 times thicker than the other part of the vein.

Legs: length of fore femur:tibia:basitarsus = 2.2:2.2:1.0. Fore basitarsus 3.8 times longer than deep. Length of hind femur:tibia:basitarsus = 2.0:2.8:1.0. Hind basitarsus 4.5 times longer than deep.

First metasomal tergite 1.3 times longer than wide; raised median area smooth with medial longitudinal groove, posterior half finely and densely strigated. Second tergite 1.8 times wider than long; strongly medially raised, and striated to rugose. Antero-medial triangular area raised and also strongly sculptured, anteriorly smooth. Third tergite 2.6 times wider than long; transverse furrows on anterior and subposterior margins strigated, raised medial area finely strigated. Antero-lateral areas smooth. Tergites four and five with anterior and subposterior strigated furrows, raised median areas finely strigated in tergite four and smooth in tergite five. Antero-lateral areas smooth. Tergite six smooth with transverse strigated furrow on anterior margin. Tergites seven and eight smooth.

Black to dark brown except for metasomal tergites two to eight which are red. Head with reddish-brown lines around eyes and spots on dorsal side posterior to toruli. Wings dark brown, with hyaline areas on fore wing below pterostigma and weakly around vein r-m. Apical half of pterostigma darkened.

**Etymology**

Named after the senior author’s friend, Niko Larjuskin.

*Bathyaulax lucidus* (Szépligeti 1911)
(Figures 8, 77)

*Hemibracon lucidus* Szépligeti 1911

*Goniobracon lucidus*: Szépligeti 1914a

*Iphiaulax lucidus*: Brues 1926

*Bathyaulax nigriceps* Enderlein 1920 **syn. nov.**

**Material examined**

Holotype: Female (ZMHB): *Hemibracon lucidus* Szépligeti 1911. Malawi, Nyassa-See, Langenburg, 3.10.–4.11.1898, Fülleborn S.

**Additional specimens examined**

*D. R. Congo*: 1 male, Kafakumba, IV-1931, F.G. Overlaet, *Bathyaulax nigriceps* Enderlein, det. De Saeger VI-1942 (RMCA); 1 male, Vallée Lukuga, XI-1911, Schwetz, *Bathyaulax nigriceps* Enderlein var. *picistoma* m., det. Fahringer (RMCA); 1 female, Dilolo, IX-X-1933, H. De Saeger (RMCA); 1 female, Eala, VII-1935, J. Ghesquière (RMCA).
Kenya: 1 female, Tanganyika, Mpala, no date, Oberthür (MNHN).

Tanzania: 1 female, Lulanguru, XI-1917, G.D.H. Carpenter (BMNH); 1 male, Lulanguru, XII-1917, G.D.H. Carpenter (BMNH).

Zimbabwe: 1 female, Redcliff, IX-X-1964, S. Buclin (RMCA).

Description

Female: Length of body 21 mm, of fore wing 18 mm, of ovipositor 24 mm.

Antennae with 126 flagellomeres, terminal flagellomere 2.6 times longer than wide. Height of clypeus:inter-tentorial distance:tentorio-ocular distance = 1.0:3.5:3.2. Width of face:width of head:height of eye = 1.2:2.2:1.0. Height of face:width of face = 1.0:2.2. Face punctate with hairs, smooth triangle-shaped area on top of clypeus and a narrow smooth line continuing upwards from it between toruli. Frons smooth, sparsely punctulate, depressed on median area around longitudinal groove. POL:transverse diameter of posterior ocellus:shortest distance between posterior ocellus and eye = 1.0:1.0:3.5. Length of eye in dorsal view:distance of occiput and posterior margin of eye = 2.0:1.0.

Mesosoma approximately 1.5 times longer than maximally deep.

Fore wing: length of veins r:3-SR:SR1 = 1.0:2.5:3.5. Length of veins 2-SR:3-SR:r-m = 1.0:2.4:1.3. Length of veins m-cu:2-M = 1.0:2.8. Length of veins 1-CU1:2-CU1 = 1.0:4.1. Shape of vein 1-SR + M straight. Swelling in vein 3-CU1 1.7 times thicker than the other part of the vein.

Legs: Length of fore femur:tibia:basitarsus = 2.0:2.1:1.0. Fore basitarsus 5.0 times longer than deep. Two foretibial spurs. Length of hind femur:tibia:basitarsus = 2.0:2.7:1.0. Hind basitarsus 2.8 times longer than deep.

First metasomal tergite 1.6 times longer than wide; raised median area sometimes weakly medially longitudinally depressed, smooth. Posterior margin smooth, or with dense striation or strong scarce strigation. Second tergite 1.4 times wider than long; raised median area strigated, antero-medial triangular area not raised or conspicuous. Third tergite 1.9 times wider than long; with strigated transverse furrows on anterior and subposterior margins, raised median area longitudinally strigose to reticulate rugose. Antero-lateral areas raised and smooth. Tergites four and five similar. Tergites six and seven smooth.

Orange-brown except for apex of mandibles which are black. Wings fairly evenly weakly darkened, with two hyaline zones in fore wing below pterostigma and basally to veins 1-M and cu-a. Apical quarter of pterostigma darkened. Hind wing darkened with two hyaline areas around vein 1-M and costal and marginal cells.

Notes

The type of *B. nigriceps* could not be located [though it was seen by Quicke and van Achterberg (1990)]. However, the original description agrees well with the type of *B. lucidus* and the two specimens identified as *nigriceps* in the RMCA are also conspecific.

*Bathyaulax marjae* sp. nov.  
(Figures 78, 79)

Material examined

Holotype: Female (BMNH): Yemen, Sann’a, 8.5.1980, I.L.
Description

Female: Length of body 17 mm, of fore wing 15 mm, of ovipositor 16 mm.

Antennae with 108 flagellomeres, terminal flagellomere 3.0 times longer than wide. Height of clypeus:inter-tentorial distance:tentorio-ocular distance=1.0:4.1:3.6. Width of face:width of head:height of eye=1.1:2.0:1.0. Height of face:width of face=1.0:1.7. Sculpture on face punctate with punctulation. Clypeus rugose. Frons depressed, smooth, with medial longitudinal groove. POL:transverse diameter of posterior ocellus:shortest distance between posterior ocellus and eye=1.1:1.0:2.8. Length of eye in dorsal view:distance of occiput and posterior margin of eye=1.6:1.0.

Mesosoma approximately 1.7 times longer than maximally deep.

Fore wing: length of veins r:3-SR:SR1=1.0:2.5:4.5. Length of veins 2-SR:3-SR:r-m=1.0:1.9:1.1. Length of veins m-cu:2-M=1.0:3.0. Length of veins 1-CU1:2-CU1=1.0:6.1. Shape of vein 1-SR+M straight. Swelling in vein 3-CU1 1.2 times thicker than the other part of the vein.

Legs: Length of fore femur:tibia:tarsus=2.0:2.2:1.0. Fore basitarsus 4.8 times longer than deep. Length of hind femur:tibia:tarsus=1.9:3.0:1.0. Hind basitarsus 6.3 times longer than deep.

First metasomal tergite 1.5 times longer than wide; raised median area smooth with median longitudinal groove, posterior margin strigated. Second tergite 1.8 times wider than long; medial area raised and strigose. Antero-medial triangular area raised and smooth. Third tergite 2.2 times wider than long; with strigated transverse furrows on anterior and subposterior margins, raised median area strigated, antero-lateral areas smooth. Tergites four and five with strigated transverse furrows on anterior and subposterior margins, antero-lateral areas smooth. Raised median area in tergite four reticulate to rugose, in tergite five smooth. Tergites six to eight smooth.

Yellow except for the following which are black: antenna, area around stemmaticum, apex of mandibles and ovipositor sheets. Apical third to quarter of pterostigma darkened.

Etymology

Named after the senior author’s mother, Marja Kaartinen.

*Bathyaulax martinii* (Gribodo 1879)  
(Figures 80–83

*Bracon martinii* Gribodo 1879  
*Iphiaulax martinii* Schulz 1911  
*Goniobracon martinii* Szépligeti 1906

*Bathyaulax atriceps* (Kriechbaumer 1894) *syn. nov.*

*Archibracon atriceps* (Kriechbaumer 1894)  
*Iphiaulax atriceps* Kriechbaumer 1894  
*Iphiaulax robustus* Cameron 1906  
*Goniobracon robustus* Szépligeti 1906

*Bathyaulax gutta* (Enderlein (1918) 1920) *syn. nov.*  
*Goniobracon gutta* Enderlein (1918) 1920

*Bathyaulax pectinatus* (Enderlein (1918) 1920) *syn. nov.*  
*Goniobracon pectinatus* Enderlein (1918) 1920  
*Iphiaulax pectinatus* Brues 1926
Material examined

Holotypes: Male (NCIP): *Iphialax atriceps* Kriechbaumer 1894. Congo, Mussnco [?], 12.7.1892, Brauns.
Female (ZPAN): *Bathyaulax pectinatus* Enderlein 1919. South Africa, Zoutpansberg, Transvaal [no date].
Female and lectotype male (ZPAN): *Bathyaulax gutta* Enderlein 1919. South Africa, Natal [no dates].

Figures 79–83. Automontage® images of *Bathyaulax* species. (79) *B. marjae* metasomal tergite 4. (80)–(83) *B. martini*, head (lateral view) wings to show colour pattern variation, and metasomal tergites 2–3.
**Additional specimens examined**

**Algeria:** 1 male, Oranie [no date] (UZMC); D. R. Congo: 1 female, 1 male, Tanganika, Mpala, VII–VIII 1953, H. Bomans (BMNH); 1 female, Mayidi, 1942, P. van Eyen (RMCA); 2 females, Gandajika, IV 1959 J. Decelle (RMCA); 1 female, Lulu Sandoa, VII 1931, G.F. Overlaet (RMCA); 1 female, Lulu Sandoa, V 1932, G.F. Overlaet (RMCA); 1 female, Lulu Kapanga, X 1933, G.F. Overlaet (RMCA); 2 females, Bunia, 15.7.1934, J.V. Leroy (RMCA); 2 females, Ituri, Nioka, VII 1934, J.V. Leroy (RMCA); 2 females, Kibombo, X 1930, H.J. Brédo (RMCA); 2 females, 1 male, Mahagi-Niarembé IX–XI 1935, C. Scops (RMCA); 3 females, Nyangwe, IV–V 1918, R. Mayne (RMCA); 2 females, Tanganika, Mpala, VII–VIII 1953, H. Bomans (RMCA); 1 female, Mfungwe-Kajumbe, VI 1907, Sheffield (RMCA); 1 female, Kayambo-Dikulwe, VI 1907, Sheffield (RMCA); 1 female, IV–V 1937, Hackers (RMCA); 1 female, W. Ruwenzori, III 1937, Hackers (RMCA); 1 female, Entre Irumu et Mombasa, X 1931, L. Lebrun (RMCA); 1 female, N. Kivu, Kissenyi, II 1928, Seydel (RMCA); 1 female, Haut-Luapula, Kansenia, 17.12.1919, Montpellier (RMCA); 1 female, Sankuru, Gandajika, 1952, Francquen (RMCA); 1 male, N. Kivu, Ibanda, 1935, Vandelannoite (RMCA); 1 male, N. Kivu, Ulvira, 1962, R. Kiss (RMCA); 1 male, Tanganyika-Moero, Nyunzu, I–II 1934, De Saeger (RMCA).

**Eritrea:** 1 female, Cheren [no date] (HECO).

**Ethiopia:** 1 female, Harrar, 1911, R.E. Turner (BMNH); 1 female, Higo Samula, 30.10.1911, Stordy (BMNH).

**Kenya:** 1 male, Mombasa, Kilindini, 8.10.1905, C.A. Wiggins (HECO); 1 female, Mombasa, 12–13.2.1912, S.A. Neave (BMNH); 1 female, Lake Jipe, 1959, van Someren (BMNH); 1 female, S. Mombasa, 27.8.1976, D. Quicke (BMNH); 1 male, Voi River Valley, Pipeline Roads, VIII-1977, D. Quicke (BMNH).

**Malawi:** 1 female, Nsanje, 10.9.1985, H. Hensen (RNHL); 1 female, Fort Johnston, 1911, P. Rendal (BMNH); 1 female, Nkhorongo mzuzu, Mzimba District, 24.3.2002, R.J. Murphy (BMNH); 1 female, Mughese Forest Reserve, Chitipa Distr., 13.–18.5.2004, R.J. Murphy (BMNH); 1 male, Ruo River, Mt Mulanje, 4–7.5.2002, R.J. Murphy (BMNH); 2 females, Ruo River Valley, Mt Mulanje, 24.9–7.10.2004, R.J. Murphy (BMNH).

**Mozambique:** 1 female, Del. B [Delagoa Bay], [no date] (BMNH).

**Rwanda:** 1 female, Rubona, 5.4.1963, G. Pierrard (RMCA); 1 male, Nduga, terr. Nyanza, II 1953, P. Basilewsky (RMCA).

**South Africa:** 1 male, Durban, 1902, F. Muir (HECO); 1 female, Lake Ngami, 1862, Castelane (HECO); 2 females, Natal, near Durban, Umbilo, 6–7.10.1904, G.F. Leigh (HECO); 1 female, Natal, near Durban, Sydenham, 21.8.1905, G.B. Longstaff (HECO); 1 female, Natal, Durban, 16.12.1904, G.F. Leigh (HECO); 1 female, Natal, Durban, 10.2.1905, G.F. Leigh (HECO); 10 females, Natal, no date, (HECO); 1 female, Pt Natal, no date (BMNH); 1 female, Umhlanga, Ntl, 19.10.1941, L.S. Whicher (DH); 1 male, Caffraria, no date (UZMC); 1 female, Grahamstown, 6.3.1954 (RMCA); 1 female, Cape G.H. [?], [no date] (BMNH).

**Sudan:** 2 females, Didinga Distr., Nagichot, XII-1925 – I-1926, Carpenter (BMNH).

**Tanzania:** 5 males, Mbeya, XII. 1962 (CNCI); 1 female, Mt Meru, 1500m, VI.1962 (CNCI); 1 male, Mkomazi Game Reserve, Peak of Maji Kununua, 7.12.1995, S. van Noort (RNHL); 1 male, Kunduchi, VII-1973 (RNHL); 1 male, no location or date (MNH); 1 female, Zanzibar, Pemba Is., 15.–23.9.1924, H.J. Snell (BMNH); 1 female, Njombe, Tanganyika, 1.7.1952, W. Peter (BMNH); 1 female, N.W. Tanganika, 1910,
Grauer (NMW); 1 male, Bukoba – Usumbura, 1910, Grauer (NMW); 1, female, 1 male, Ugano, Tanganyika-Terr., Matengo–Hochland, I-1936, Zerny (NMW); 1 female, Ugano, Tanganyika-Terr., Matengo–Hochland, II-1936, Zerny (NMW); 1 female, Ugano, Tanganyika-Terr., Matengo–Hochland, V-1936, Zerny (NMW); 1 female, Ugano, Tanganyika-Terr., Matengo–Hochland, III-1936, Zerny (NMW); 1 male, Litembo, Tanganyika-Terr., Matengo–Hochland, XII-1935, Zerny (NMW); 1 female, East Usambara Mts., Amani, 1.9.1981, M. Stoltze & N. Scharff (UZMC); 1, female, 1 male, West Usambara, no date (NMW).

Zambia: 1 male, 1 female, L. Bangweolo, Chishi Island, 24.6.1908, S.A. Neave (HECO) [Note: these two specimens were mistaken for syntypes of a MS name by Grosvenor by Quicke (1980) now recognised as a nomen nudum, see Achterberg and O'Toole (1993)]; 1 female, N. Loangwa, Mt. Uluugu, 12.6.1905, S.A. Neave (HECO); 1 female, Up. Kalungwisi Valley, 10.9.1908, S.A. Neave (HECO); 1 female, Katanga, 5.7.1907, Neave (BMNH).

Zimbabwe: 2 females, 5, males, Melsetter, Gazaland, IX-X-1905, G. Marshall (HECO); 1 female, Zambezi Valley, 20.5.–29.7.1988, J. Weyrich (BMNH).

Unknown country: 1 female, 1921, J. Rothney (HECO).

Description

Female: Length of body 22 mm, of fore wing 19 mm, of ovipositor 13 mm.

Antennae with 123 flagellomeres, terminal flagellomere 3.0 times longer than wide. Height of clypeus:inter-tentorial distance:tentorio-ocular distance=1.0:4.1:2.6. Width of face:width of head:height of eye =1.1:2.1:1.0. Height of face:width of face =1.0:1.9. Face punctulate, clypeus rugulose to rugose. Frons depressed, smooth, with medial longitudinal groove. POL:transverse diameter of posterior ocellus:shortest distance between posterior ocellus and eye =1.0:1.3:3.6. Length of eye in dorsal view:distance of occiput and posterior margin of eye=2.1:1.0.

Mesosoma approximately 1.4 times longer than maximally deep.

Fore wing: length of veins r:3-SR:SR1=1.0:2.7:3.0. Length of veins 2-SR:3-SR:r-m=1.0:2.3:1.2. Length of veins m-cu:2-M=1.0:2.9. Length of veins 1-CU1:2-CU1=1.0:4.6. Shape of vein 1-SR+M straight, but angled close vein 1-M. Swelling in vein 3-CU1 1.5 times thicker than the other part of the vein.

Legs: Length of fore femur:tibia:basitarsus=3.0:2.7:1.0. Fore basitarsus 3.3 times longer than deep. Length of hind femur:tibia:basitarsus=3.2:4.3:1.0. Hind basitarsus 3.3 times longer than deep.

First metasomal tergite 1.4 times longer than wide; raised median area with medial longitudinal groove and posterior area strongly striated. Second tergite 2.0 times wider than long; median area striated, without raised area. Third tergite 2.3 times wider than long; with striated transverse furrows on anterior and subposterior margins, raised median area longitudinally striated. Antero-lateral areas raised and smooth. Tergite four similar but without conspicuous antero-lateral areas, and sculpture striated to reticulate. Tergite five smooth with striated transverse furrow on anterior and posterior margins, tergites six to eight smooth.

Orange-brown or yellow except for the following which are black: head excluding labrum, apex of mandibles, antennae, middle telotarsi (not always entirely black), apical 5/6 of hind tibia, hind tarsi, ovipositor sheaths. Wings evenly darkened apically from veins 1-M and cu-a, with two hyaline zones in fore wing below pterostigma and around vein r-m.
Apical third of pterostigma darkened. Hind wing darkened postero-apically. The size and darkness of hyaline areas varies in both wings, but the pattern is similar.

**Bathyaulax monteiroii** (Cameron 1909)
(Figures 9, 84, 86)
*Iphiaulax monteiroii* Cameron 1909

**Material examined**
Holotype: Male (ZMHB): *Iphiaulax monteiroii* Cameron 1909. Mozambique, Delagoabai [no date], R. Monteiro.

**Additional specimens examined**
*Angola*: 1 female, [no date or locality] (BMNH).

**Description**
Male: Length of body 9 mm, of fore wing 12 mm.

Antennae with 97 flagellomeres, terminal flagellomere acuminated, 2.2 times longer than wide. Height of clypeus:inter-tentorial distance:tentorio-ocular distance = 1.0:2.6:2.0. Width of face:width of head:height of eye = 1.0:2.0:1.0. Height of face:width of face = 1.0:1.5. Sculpture on face granulate to rugulose, on clypeus similar. Frons depressed, smooth, with medial longitudinal groove. POL:transverse diameter of posterior ocellus:shortest distance between posterior ocellus and eye = 1.1:1.0:2.5. Length of eye in dorsal view:distance of occiput and posterior margin of eye = 1.6:1.0.

Mesosoma approximately 1.8 times longer than maximally deep.

Fore wing: length of veins r:3-SR:SR1 = 1.0:2.0:3.4. Length of veins 2-SR:3-SR:r-m = 1.0:1.8:1.0. Length of veins m-cu:2-M = 1.0:2.5. Length of veins 1-CU1:2-CU1 = 1.0:5.7. Shape of vein 1-SR+M straight but angled near vein 1-M. Swelling in vein 3-CU1 1.5 times thicker than the other part of the vein.

Legs: Length of fore femur:tibia:tarsus = 2.1:2.5:1.0. Fore basitarsus 4.0 times longer than deep. Length of hind femur:tibia:tarsus = 2.3:3.2:1.0. Hind basitarsus 4.5 times longer than deep.

First metasomal tergite 1.3 times longer than wide; raised median area anteriorly smooth and depressed, posterior half and lateral areas strongly striated, and with median longitudinal groove. Second tergite 2.0 times wider than long; raised median area longitudinally striated, antero-medial triangular area clearly raised and smooth. Sublateral areas smooth. Third tergite 2.0 times wider than long; with striated transverse furrows on anterior and subposterior margins, raised median area smooth. Antero-lateral areas raised and smooth. Tergites four and five similar to three, but antero-lateral areas more narrow. Tergites six to eight smooth.

Orange-brown except for the following which are black: Frons and vertex, antennae and apex of mandibles. Wings fairly evenly darkened, with a hyaline zone in fore wing below pterostigma. Apical 1/6 of pterostigma darkened. Hind wing darkened with hyaline area on marginal cell.
Bathyaulax nigritarsus sp. nov.  
(Figures 85–87)

Material examined
Holotype: Female (MNHN): Madagascar, Diégo Suarez, [no date], J. De Gaulle Collection (1919).
Description

Female: Length of body 20 mm, of fore wing 16 mm, of ovipositor 14 mm.

Antennae with more than 72 (apex broken) flagellomeres. Height of clypeus:intertentorial distance:tentorio-ocular distance = 1.0:3.1:2.2. Width of face:width of head:height of eye = 1.2:2.2:1.0. Height of face:width of face = 1.0:1.9. Face punctate with a smooth area on top of clypeus. Clypeus rugose. Frons not depressed, smooth, with medial longitudinal groove. POL:transverse diameter of posterior ocellus:shortest distance between posterior ocellus and eye = 1.1:1.0:3.5. Length of eye in dorsal view:distance of occiput and posterior margin of eye = 1.8:1.0.

Mesosoma approximately 1.7 times longer than maximally deep.

Fore wing: length of veins r:3-SR:SR1 = 1.0:2.4:2.8. Length of veins 2-SR:3-SR:r-m = 1.0:3.2:1.5. Length of veins m-cu:2-M = 1.0:2.9. Length of veins 1-CU1:2-CU1 = 1.0:3.5. Shape of vein 1-SR + M straight. Swelling in vein 3-CU1 1.6 times thicker than the other part of the vein.

Legs: Length of fore femur:tibia:tarsus = 2.2:2.3:1.0. Fore basitarsus 3.8 times longer than deep. Length of hind femur:tibia:tarsus = 2.0:2.9:1.0. Hind basitarsus 5.0 times longer than deep.

First metasomal tergite 1.1 times longer than wide; median area weakly raised and smooth. Second tergite 1.9 times wider than long; medial area strigose, with a small smooth antero-medial area, also postero-lateral areas smooth. Third tergite 2.3 times wider than long; with strigated transverse furrow on anterior margin, and a smooth furrow on subposterior margin. Antero-median area weakly strigated, lateral and posterior areas of tergite smooth. Tergite four with weak strigation on antero-median area, otherwise smooth. Tergites five to eight smooth.

Yellow except for the following which are black: antenna, small area around stemmaticum, apex of mandibles and ovipositor sheets. Fore wings darkened with hyaline areas as follows: the base of wings from veins 1-M and cu-a, below pterostigma and around vein r-m. Hind wing postero-apically darkened.

Etymology

Named from black hind tibia and tarsi.

Bathyaulax nigroconus sp. nov.
(Figures 10, 88, 90)

Material examined

Holotype: Female (RMCA): D. R. Congo: Lulua, Kapanga, V-1933, G.F. Overlaet.
Paratypes: 2 females (RMCA): D. R. Congo, Lulua, Kapanga, V-1932 and XI-1932, G.F. Overlaet; 1 female (BMNH): Uganda: Tero, 3.7.1912, C.C. Goway.

Description

Female: Length of body 21 mm, of fore wing 19 mm, of ovipositor 22 mm.

Antennae with 132 flagellomeres. Terminal flagellomere 2.8 times longer than wide. Height of clypeus:intertentorial distance:tentorio-ocular distance = 1.0:3.1:2.3. Width of face:width of head:height of eye = 1.1:2.0:1.0. Height of face:width of face = 1.0:1.6.
Sculpture on face smooth punctuation. Clypeus rugose. Frons not depressed, smooth, with medial longitudinal groove. POL: transverse diameter of posterior ocellus: shortest distance between posterior ocellus and eye = 1.0:1.5:4.3. Length of eye in dorsal view: distance of occiput and posterior margin of eye = 1.5:1.0.

Mesosoma approximately 1.8 times longer than maximally deep.

Fore wing: length of veins r:3-SR:SR1 = 1.0:2.4:2.7. Length of veins 2-SR:3-SR:r-m = 1.0:2.4:1.3. Length of veins m-cu:2-M = 1.0:2.8. Length of veins 1-CU1:
2-CU1 = 1.0:5.8. Shape of vein 1-SR+M straight but angled close to vein 1-M. Swelling in vein 3-CU1 1.3 times thicker than the other part of the vein.

Legs: Length of fore femur:tibia:cuticle = 2.4:3.2:1.0. Fore basitarsus 5.0 times longer than deep. Length of hind femur:tibia:cuticle = 1.8:3.1:1.0. Hind basitarsus 6.4 times longer than deep.

First metasomal tergite 1.7 times longer than wide; raised median area smooth. Second tergite 1.4 times wider than long; medial area raised and strigose, smooth antero-medial area. Third tergite 1.5 times wider than long; with strigated transverse furrows on anterior and subposterior margins, raised median area strigated, antero-lateral areas smooth and only weakly raised. Tergites four and five with strigated transverse furrows on anterior and mid-subposterior margins, sculpture on raised median area weak aciculation on tergite four and punctuation on tergite five. Sublateral areas smooth on tergites two to five. Tergites six to eight smooth.

Head dorsally black and ventrally orange-red. Antennae black with yellowish orange apex (about 1:1). Orange-red except for the following which are black: apical four-fifths of the hind tibia, hind tarsi, tergites four to eight and ovipositor sheets. Fore wing darkened with following hyaline areas: base of wing around basal and subbasal cells, small area in the middle of first submarginal cell and a narrow area around vein r-m. Small pale spot in the base of pterostigma (about 1/10 of the total length). Hind wing darkened with hyaline areas on basal and the base of marginal cells.

Etymology

Named after the black apex of metasoma.

**Bathyaulax ollilae** sp. nov.
(Figures 89, 91)

*Material examined*

Holotype: Female (BMNH): Saudi Arabia, Taif, 17.6.1934, J.B. Philby.

*Description*

Female: Length of body 14 mm, of fore wing 14 mm, of ovipositor 15 mm.

Antennae with 88 flagellomeres, but apex of antennae broken. Height of clypeus:inter-tentorial distance:tentorio-ocular distance = 1.0:3.6:3.5. Width of face:width of head:height of eye = 1.3:2.2:1.0. Height of face:width of face = 1.0:1.8. Sculpture on face punctate with punctulation. Clypeus rugose. Frons depressed and smooth, with a medial longitudinal groove. POL:transverse diameter of posterior ocellus:shortest distance between posterior ocellus and eye = 1.1:1.0:3.0.

Length of eye in dorsal view:distance of occiput and posterior margin of eye = 1.2:1.0. Mesosoma approximately 1.7 times longer than maximally deep.

Fore wing: length of veins r:3-SR:SR1 = 1.0:2.6:4.7. Length of veins 2-SR:3-SR:r-m = 1.0:1.9:1.0. Length of veins m-cu:2-M = 1.0:2.6. Length of veins 1-CU1:2-CU1 = 1.0:6.8. Vein 1-SR+M curved slightly towards posterior margin close to vein 1-M, otherwise straight. Swelling in vein 3-CU1 1.5 times thicker than the other part of the vein.
Legs: length of fore femur:tibia:basitarsus = 2.3:2.8:1.0. Fore basitarsus 4.8 times longer than deep. Length of hind femur:tibia:basitarsus = 1.8:2.6:1.0. Hind basitarsus 5.6 times longer than deep.

First metasomal tergite 1.7 times longer than wide; raised median area smooth with medial longitudinal groove, posterior margin strigid. Second tergite 1.5 times wider than long; medially strigated. Antero-medial triangular area raised and rugose, anteriorly smooth. Third tergite 2.0 times wider than long; transverse furrows on anterior and subposterior margins strigated, raised medial area strigated. Antero-lateral areas smooth. Tergites four and five with anterior and subposterior strigated furrows, raised median area strigose in tergite four and smooth in five. Antero-lateral areas smooth. Tergites six to eight smooth.

Orange-yellow except for the following which are black: area around stemmaticum, antennae, apex of mandibles and ovipositor shefts. Wings darkened with hyaline areas in fore wing below pterostigma and in hind wing on the base of the marginal cell. Apical third of the pterostigma darkened.

Etymology

Named after the senior author’s friend, Anne-Maarit Ollila.

_Bathyaulax perspicax_ (Szépligeti 1905)
(Figures 11, 20, 92, 94)
_Iphiaulax perspicax_ Szépligeti 1905
_Goniobracon perspicax_ Szépligeti 1906
_Goniobracon seminiger_ Szépligeti 1914a **syn. nov.**

Material examined

Holotypes: Female (MNH): _Iphiaulax perspicax_ Szépligeti 1905. Sierra Leone [no date or locality].
Female (MNB): _Goniobracon seminiger_ Szépligeti 1914a. Togo, Bismarckburg, Ueborg zur Begenzeit, 1.3.–15.3.91, R. Büttner S.

Additional specimens examined

_D. R. Congo_: 1 female, Kapiri, IX-1912, Agric. (RMCA).
_Gabon_: 1 female, Lastourville, 1933, G. Le Testu (MNHN).
_Gambia_: 1 male, Aboku, 10–23.11.1983, K.M. Guichard (BMNH).
_Senegal_: 1 female, Ifan, Mont Nimba, Yeali, Ferilides Pentes 700–1000 m, 6.11.1959, M. Concamin et R. Roy. (MNHN); 1 male, Casamance PNBC, 6.10.80, B. Sigwalt (MNHN).
_Sierra Leone_: 1 female, 1 male, Freetown, 1970–80, from Fourah Bay Coll (BMNH); 1 female, Lumley, Freetown, Oct. 1981, D. Quicke (BMNH).

Description

Female: Length of body 20 mm, of fore wing 17 mm, of ovipositor 20 mm.

Antennae with 131 flagellomeres, terminal flagellomere pointed, approximately 4.0 times longer than wide. Height of clypeus:inter-tentorial distance:tentorio-ocular
distance = 1.0:3.4:2.7. Width of face:width of head:height of eye = 1.0:2.0:1.0. Height of face:width of face = 1.0:1.5. Sculpture on face minute, scarce punctuation. Clypeus rugulose. Frons straight and not depressed, with medial longitudinal groove. POL: transverse diameter of posterior ocellus: shortest distance between posterior ocellus and eye = 1.0:1.0:3.8. Length of eye in dorsal view: distance of occiput and posterior margin of eye = 1.6:1.0.

Mesosoma approximately 1.8 times longer than maximally deep. Scutellar suture smooth.
Fore wing: length of veins r:3-SR:SR1=1.0: 2.6: 2.5. Length of veins 2-SR:3-SR:r-m=1.0: 2.8:1.0. Length of veins m-cu:2-M=1.0:3.3. Length of veins 1-CU1:2-CU1=1.0:5.9. Shape of vein 1-SR+M almost straight, curving slightly downwards to 1-M. Swelling in vein 3-CU1 2 times thicker than the other part of the vein.

Legs: length of fore femur:tibia:basitarsus=2.1:2.4:1. Fore basitarsus 3.7 times longer than deep. Length of hind femur:tibia:basitarsus=1.7:2.6:1. Hind basitarsus 7.7 times longer than deep.

First metasomal tergite 1.6 times longer than wide; raised median area smooth with weak ridges on posterior margin. Second tergite 1.6 times wider than long; strongly medially striated. Third tergite 1.8 times wider than long; weakly medially striated. Tergite four with smooth, slightly raised antero-lateral areas, raised median area longitudinally strigose to reticulate. Tergite five with striated transverse furrow on anterior margin and smooth transverse furrow on subposterior margin. Raised median area sparsely punctulate. Tergite six with striated transverse furrow on anterior margin. Tergite seven smooth. Sublateral areas on all tergites smooth.

Yellow except for the following which are black: antenna, temples and dorsal side of the head, forming conspicuous wedge towards occipital carina, apex of mandibles, three fourths of hind tibia, hind tarsi, metasomal tergites four to eight and ovipositor sheaths. Setae on apical half of ovipositor sheets silvery white. Apical two-thirds of wings dark brown with two hyaline zones in fore wing and one in hind wing.

*Bathyaulax pickeri* sp. nov.  
(Figures 93, 95)

**Material examined**

Holotype: Female (MNHN): South Africa, Transvaal, Occid., Linokana, no date, E. Holub, “170–94”.

**Additional specimens examined**

*South Africa*: 1 male, Wonderboom, near Pretoria, X-1931, J. Ogilvie (BMNH); 1 female, Rustenburg, no date (BMNH).

*Namibia (?)*: 1 female, Okakandje (?), 20.3.1943 (BMNH).

**Description**

Female: Length of body 23 mm, of fore wing 18 mm, of ovipositor 32 mm.

Antennae with 128 flagellomeres, terminal flagellomere 2.0 times longer than wide. Height of clypeus:inter-tentorial distance:tentorio-ocular distance=1.0:4.3:3.0. Width of face:width of head:height of eye=1.3:2.2:1.0. Height of face:width of face=1.0:2.1. Sculpture on face pustulate with punctures. Clypeus rugose. Frons depressed, smooth, with medial longitudinal groove. POL:transverse diameter of posterior ocellus:shortest distance between posterior ocellus and eye=1.0:1.0:2.8. Length of eye in dorsal view:distance of occiput and posterior margin of eye=1.5:1.0.

Mesosoma approximately 1.7 times longer than maximally deep.
Genus Bathyaulax from Africa and the Arabian Peninsula

Fore wing: length of veins r:3-SR:SR1=1.0:2.8:4.8. Length of veins 2-SR:3-SR:r-m=1.0:2.5:1.4. Length of veins m-cu:2-M=1.0:2.2. Length of veins 1-CU1:2-CU1=1.0:4.6. Shape of vein 1-SR+M straight. Swelling in vein 3-CU1 1.6 times thicker than the other part of the vein.

Legs: Length of fore femur:tibia:tarsus=2.1:2.3:1.0. Fore basitarsus 3.4 times longer than deep. Length of hind femur:tibia:tarsus=2.0:3.0:1.0. Hind basitarsus 6.3 times longer than deep.

First metasomal tergite 1.8 times longer than wide; raised median area smooth with striated posterior margin. Second tergite 1.3 times wider than long; medial area raised and strigose, strigose wavy. Triangular area not very distinctive (not raised). Sublateral areas smooth, anteriorly depressed. Third tergite 1.4 times wider than long; with striated transverse furrows on anterior and subposterior margins, antero-lateral areas smooth and raised, and connected in the middle by a ridge. Sculpture on medial area conspicuous with a ridge in the middle and several ridges branching from it postero-laterally. Tergite four similar, but antero-lateral areas more narrow. Tergite five with transverse furrows on anterior and subposterior margins, anterior furrow strigated. Antero-lateral and medial areas smooth and raised. Tergites six to eight smooth.

Entirely black except for abdomen which is red. Wings brownish-black with hyaline areas below pterostigma and faintly around vein r-m (not always present). Pterostigma basal half light yellow-brown.

Etymology

Named after Dr. Mike Picker, who photographed the living specimen in Figure 1B and donated the voucher to the BMNH.

Bathyaulax pippolaensis sp. nov.

(Figures 96, 97)

Material examined

Holotype: Female (IRSNB): N.O. Afrika, Umfuda [? Somaliland], 20.6.1901, V. Erlanger.

Description

Female: Length of body 15 mm, of fore wing 13 mm, of ovipositor 11 mm.

Antennae with more than 101 (apex broken) flagellomeres. Height of clypeus:inter-tentorial distance:tentorio-ocular distance=1.0:2.8:3.0. Width of face:width of head:height of eye=1.4:2.3:1.0. Height of face:width of face=1.0:2.3. Sculpture on face granulate, clypeus similar. Frons depressed, smooth, with medial longitudinal groove. POL:transverse diameter of posterior ocellus:shortest distance between posterior ocellus and eye=2.0:1.0:2.6. Length of eye in dorsal view:distance of occiput and posterior margin of eye=1.8:1.0.

Mesosoma approximately 1.7 times longer than maximally deep.

Fore wing: length of veins r:3-SR:SR1=1.0:2.3:4.3. Length of veins 2-SR:3-SR:r-m=1.0:2.0:1.2. Length of veins m-cu:2-M=1.0:2.5. Length of veins 1-CU1:2-CU1=1.0:6.4. Shape of vein 1-SR+M straight. Swelling in vein 3-CU1 1.3 times thicker than the other part of the vein.
Legs: Length of fore femur:tibia:tarsus = 2.2:2.4:1.0. Fore basitarsus 5.0 times longer than deep. Length of hind femur:tibia:tarsus = 1.9:2.8:1.0. Hind basitarsus 6.3 times longer than deep.

First metasomal tergite 1.3 times longer than wide; raised median area smooth with medial longitudinal groove, posterior margin striated. Second tergite 1.7 times wider than long; medial area raised and strigose. Antero-medial triangular area smooth, only weakly raised and wider than long. Third tergite 2.3 times wider than long; with strigated transverse furrows on anterior and posterior margins, raised median area smooth,
antero-lateral areas smooth and connected medially with a ridge. Tergites four and five with strigated transverse furrow on anterior margin. Subposterior margin also strigated in tergite four, but smooth in tergite five. Antero-lateral areas smooth in both tergites. Tergites six to eight smooth.

Yellow except for stemmaticum and ovipositor sheets which are black, and brown antennae. Fore wing with hyaline areas below pterostigma and weakly in basal cell. Hind wings broken.

Etymology

Named after the senior author's friend, Emilia Pippola.

*Bathyaulax ramosus* sp. nov.
(Figures 98, 99)

Material examined

Holotype: female (BMNH): South Africa, Bethanie, 17.–18.1.1972.

Description

Female: Length of body 17 mm, of fore wing 15 mm, of ovipositor 16 mm.

Antennae with 81 flagellomeres, terminal flagellomere 2.8 times longer than wide. Height of clypeus:inter-tentorial distance:tentorio-ocular distance=1.0:4.7:3.3. Width of face:width of head:height of eye=1.3:2.1:1.0. Height of face:width of face=1.0:1.8. Sculpture on face punctate. Clypeus rugose. Frons depressed, smooth, with medial longitudinal groove. POL:transverse diameter of posterior ocellus:shortest distance between posterior ocellus and eye=1.1:1.0:2.8. Length of eye in dorsal view:distance of occiput and posterior margin of eye=1.4:1.0.

Mesosoma approximately 1.8 times longer than maximally deep.

Fore wing: length of veins r:3-SR:SR1=1.0:3.1:3.9. Length of veins 2-SR:3-SR:r-m=1.0:2.5:2.0. Length of veins m-cu:2-M=1.0:3.2. Length of veins 1-CU1:2-CU1=1.0:6.0. Shape of vein 1-SR+M straight. Swelling in vein 3-CU1 1.3 times thicker than the other part of the vein.

Legs: Length of fore femur:tibia:tarsus=2.2:2.6:1.0. Fore basitarsus 5.3 times longer than deep. Length of hind femur:tibia:tarsus=2.1:3.0:1.0. Hind basitarsus 6.5 times longer than deep.

First metasomal tergite 1.6 times longer than wide; raised median smooth and posteriorly strigose. Second tergite 1.9 times wider than long; antero-medial triangular area raised and smooth. From the apical end of the triangle continues a ridge towards posterior margin, and some additional ridges branching from it postero-laterally forming a conspicuous pattern. Third tergite 2.0 times wider than long; with strigated transverse furrows on anterior and subposterior margins, raised median area rugose, antero-lateral areas smooth and connected medially with a ridge. Tergites four and five with strigated transverse furrows on anterior and subposterior margins, medial and antero-lateral areas smooth and raised. Tergites six to eight smooth.

Yellow except for the following which are black: antenna, temples and dorsal side of the head, occiput, apex of mandibles and ovipositor sheets. Both wings darkened with
hyaline area in fore wing below pterostigma. About apical half of pterostigma darkened.

Etymology
Named after the branching ridges on second metasomal tergite.

*Bathyaulax raunoi* sp. nov.  
(Figures 12, 100)

Material examined
Holotype: Female (ZMHB): Mozambique, Jombene Range, [no date], Chanler & Hohnel.

Description
Female: Length of body 12 mm, of fore wing 10 mm, of ovipositor 12 mm.
Antennae with 95 flagellomeres, terminal flagellomere 2.0 times longer than wide. Height of clypeus:inter-tentorial distance:tentorio-ocular distance=1.0:5.2:3.6. Width of face:width of head:height of eye=1.2:2.1:1.0. Height of face:width of face=1.0:1.8. Sculpture on face pustulate with punctulation. Clypeus rugose. Frons not depressed, smooth, with medial longitudinal groove. POL:transverse diameter of posterior ocellus: shortest distance between posterior ocellus and eye=1.0:1.3:2.6. Length of eye in dorsal view:distance of occiput and posterior margin of eye=1.4:1.0.
Mesosoma approximately 2.0 times longer than maximally deep.
Fore wing: length of veins r:3-SR:SR1=1.0:2.2:3.1. Length of veins 2-SR:3-SR:r-m=1.0:2.5:1.1. Length of veins m-cu:2-M=1.0:2.9. Length of veins 1-CU1:2-CU1=1.0:6.2. Shape of vein 1-SR+M slightly un evenly wavy. Swelling in vein 3-CU1 1.1 times thicker than the other part of the vein.
Legs: Length of fore femur:tibia:tarsus=2.1:2.5:1.0. Fore basitarsus 5.0 times longer than deep. Length of hind femur:tibia:tarsus=2.3:3.1:1.0. Hind basitarsus 5.3 times longer than deep.
First metasomal tergite 1.7 times longer than wide; raised median area smooth with a weak medial longitudinal groove and strigation on posterior margin. Second tergite 1.5 times wider than long; medial area raised and strigose. Antero-medial triangular area raised and smooth. Third tergite 1.5 times wider than long; with strigated transverse furrows on anterior and subposterior margins, raised median area narrow and strigated, medial area raised and forming a notch. Antero-lateral areas smooth. Tergites four and five with strigated transverse furrows on anterior and subposterior margins, medial and antero-lateral areas smooth. Tergites six to eight smooth.
Yellow except for the following which are black: antenna, frons, vertex, occiput, apex of mandibles and ovipositor sheets. Wings fairly evenly darkened, with hyaline areas in fore wing below pterostigma and in hind wing in the base on the marginal cells.

Etymology
Named after the senior author’s father Rauno Kaartinen.
Figures 100–105. Automontage® images of *Bathyaulax* species. (100) *B. raunoi*, head (lateral view). (101)–(104) *B. ruber*, head (lateral view), faces to show variation in colour pattern, and head (dorsal view). (105) *B. rufa*, wing.
Bathyaulax ruber (Bingham 1902) – complex
(Figures 13, 101–104)

Iphiaulax ruber Bingham 1902
Bathyaulax ruber, Shenefelt, 1978
Bathyaulax rufer [sic.] Quicke 1980

Bathyaulax ruber “Smith”; Quicke, 1980 [incorrect attribution: see Achterberg and O’Toole (1990)]

Material examined
Holotype: Female (HECO): Iphiaulax ruber Bingham 1902. Zimbabwe, Salisbury, Mashonaland, 1900, G.A.K. Marshall.

Additional specimens examined
Ivory Coast: 1 female, Ferkesèdougou, 10.–20.5.1964, J. Decelle (RMCA).
Kenya: Tsavo East National Park, nr. Voi Gate, VII-1977, D. Quicke (BMNH).
Malawi: 1 female, Lake Malawi National Park, Cape McClear, 22.11.2003, R.J. Murphy (to be deposited in Malawi Collection).
Saudi Arabia: 1 female, Taif, 17.6.1934, J.B. Philby (BMNH).
Sudan: 1 female, W. Darfur, W. Jebel Murra, Karanga, 20.6.1932, M. Steele (BMNH).
Uganda: 1 female, Kibale, Bugwere, 30.10.1933, H.B. Johnston (BMNH).

Description
Female: Length of body 20 mm, of fore wing 18 mm, of ovipositor 23 mm.

Antennae with 75 flagellomeres (antennae broken). Height of clypeus:inter-tentorial distance:tentorio-ocular distance = 1.0:4.1:3.5. Width of face:width of head:height of eye = 1.3:2.3:1.0. Height of face:width of face = 1.0:2.0. Sculpture on face granulate to pustulate, on clypeus similar. Over clypeus a small smooth area. Frons weakly depressed, smooth, with medial longitudinal groove. POL:transverse diameter of posterior ocellus:shortest distance between posterior ocellus and eye = 1.1:1.0:3.8. Length of eye in dorsal view:distance of occiput and posterior margin of eye = 1.8:1.0.

Mesosoma approximately 1.6 times longer than maximally deep.

Fore wing: length of veins r:3-SR:SR1 = 1.0:2.2:3.4. Length of veins 2-SR:3-SR:r-m = 1.0:2.0:1.3. Length of veins m-cu:2-M = 1.0:2.4. Length of veins 1-CU1:2-CU1 = 1.0:8.3.
Shape of vein 1-SR+M weakly S-shaped. Swelling in vein 3-CU1 1.5 times thicker than the other part of the vein.

Legs: Length of fore femur:tibia:tarsus = 1.9:2.2:1.0. Fore basitarsus 4.6 times longer than deep. Length of hind femur:tibia:tarsus = 2.2:3.1:1.0. Hind basitarsus 4.2 times longer than deep.

First metasomal tergite 1.5 times longer than wide; raised median area smooth with posterior margin strigated. Second tergite 3.2 times wider than long; raised median area striated, antero-medial triangular area raised and smooth. Semicircular areas on posterior sub-lateral margins. Third tergite 2.1 times wider than long; with strigated transverse furrows on anterior and posterior margins, raised median area longitudinally strigose. Antero-lateral areas raised and smooth. Tergites four and five similar, but tergite five raised median area smooth. Tergites six to eight smooth.
Orange-brown except for the following which are black: face, frons, vertex, temples, apex of mandibles, antennae and ovipositor sheets. Wings evenly darkened, with a weakly paler area below pterostigma. Apical quarter of pterostigma darkened, basal part yellowish-orange. Hind wing darkened with pale area on base of marginal cell.

**Bathyaulax rufa** (Szépligeti 1906)  
(Figures 14, 105)  
*Megagonia rufa* Szepligeti 1906  
*Bathyaulax rufus*: Brues 1926  
*Bathyaulax transitus* (Szépligeti 1913) *syn. nov.*  
*Goniobracon transitus* Szépligeti 1913  
*Iphiaulax transitus*: Brues 1926

**Material examined**

Holotypes: Male (MNH): *Megagonia rufa* Szepligeti 1906, Kenya, Katona, Mto-ja-Kifaru [no date]. Female (MNH): *Goniobracon transitus* Szépligeti 1913. Kenya, Katona, Assab, 1907.

**Additional specimens examined**

Kenya: 2 females, 2 males, Tsavo East National Park, VI-1977, D. Quicke (BMNH); 1 female, Tsavo East National Park, 13.7.1977, D. Quicke (BMNH); 1 female, Tsavo East National Park, 1981, D. Quicke (BMNH); 1 female, Tsavo East National Park, 6.8.1976, D. Quicke (BMNH); 1 female, Tsavo East National Park, VII-1977, D. Quicke (BMNH); 1 female, Tsavo East National Park, 15.8.1976, D. Quicke (BMNH); 1 female, Northern Frontier District, Juba River, 18.7.1922, J.O. Beven (BMNH); 1 female, Tsavo East National Park, VIII-1977, D. Quicke (CNCI).

**Description**

Female: Length of body 14 mm, of fore wing 15 mm, of ovipositor 17 mm.

Antennae with 119 flagellomeres, terminal flagellomere 3.8 times longer than wide. Height of clypeus:inter-tentorial distance:tentorio-ocular distance=1.0:2.7:2.6. Width of face:width of head:height of eye=1.3:2.3:1.0. Height of face:width of face=1.0:2.1. Sculpture on face granulate, on clypeus similar. Frons depressed, smooth, with medial longitudinal groove. POL:transverse diameter of posterior ocellus:shortest distance between posterior ocellus and eye=1.0:1.0:3.0. Length of eye in dorsal view:distance of occiput and posterior margin of eye=2.0:1.0.

Mesosoma approximately 1.5 times longer than maximally deep.

Fore wing: length of veins r:3-SR:SR1=1.0:2.8:4.5. Length of veins 2-SR:3-SR:r-m=1.0:1.8:1.3. Length of veins m-cu:2-M=1.0:2.2. Length of veins 1-CU1:2-CU1=1.0:4.9. Vein 1-SR+M weakly S-curved. Swelling in vein 3-CU1 1.4 times thicker than the other part of the vein.

Legs: Length of fore femur:tibia:tarsus=2.4:2.6:1.0. Fore basitarsus 3.3 times longer than deep. Length of hind femur:tibia:tarsus=1.8:2.8:1.0. Hind basitarsus 5.2 times longer than deep.
First metasomal tergite 1.4 times longer than wide; raised median area with medial longitudinal groove and whole area strongly strigated. Strigae on sub-lateral area curve downwards. Second tergite 1.9 times wider than long; raised median area strongly strigated, antero-medial triangular area only weakly raised with reticulate sculpture, continuing to posterior margin. Third tergite 2.2 times wider than long; with strigated transverse furrows on anterior and subposterior margins, raised median area longitudinally strigose to reticulate rugose. Antero-lateral areas raised and smooth. Tergite four similar, but raised median area is reticulate rugose. Tergite five with strigated transverse furrows on anterior and subposterior margins, raised median area almost smooth, with very weak pustulation. Tergites six to eight smooth.

Orange-brown except for apex of mandibles which are black and brown antennae. Wings darkened, with two hyaline areas in fore wing below pterostigma and basally to veins 1-M and cu-a. Apical third of pterostigma darkened. Hind wing darkened on posterior and apical margin.

*Bathyaulax somaliensis* (Szépligeti 1914)
(Figures 15, 106)

*Goniobracon somaliensis* Szépligeti 1914a

*Iphiaulax somaliensis*: Brues 1926

**Material examined**

Holotype: Female (ZMHB): *Goniobracon somaliensis* Szépligeti 1914. Ethiopia, Woreda, 10.6.1901, B. v. Erlanger.

**Description**

Females: Length of body 12 mm, of fore wing 12 mm, of ovipositor 9 mm.

Antennae with 70 flagellomeres (apex broken). Height of clypeus:inter-tentorial distance:tentorio-ocular distance = 1.0:3.6:2.9. Width of face:width of head:height of eye = 1.2:2.2:1.0. Height of face:width of face = 1.0:1.6. Sculpture on face granulate, on clypeus similar. Frons flat, smooth, with medial longitudinal groove. POL:transverse diameter of posterior ocellus:shortest distance between posterior ocellus and eye = 1.1:1.0:2.7. Length of eye in dorsal view:distance of occiput and posterior margin of eye = 2.0:1.0.

Mesosoma approximately 1.8 times longer than maximally deep.

Fore wing: length of veins r:3-SR:SR1 = 1.0:2.1:3.5. Length of veins 2-SR:3-SR:r-m = 1.0:2.0:1.1. Length of veins m-cu:2-M = 1.0:2.4. Length of veins 1-CU1:2-CU1 = 1.0:5.8. Shape of vein 1-SR+M weakly S-curved. Swelling in vein 3-CU1 1.5 times thicker than the other part of the vein.

Legs: Length of fore femur:tibia:tarsus = 2.0:2.4:1.0. Fore basitarsus 4.6 times longer than deep. Length of hind femur:tibia:tarsus = 2.2:3.2:1.0. Hind basitarsus 4.8 times longer than deep.

First metasomal tergite 1.5 times longer than wide; raised median area smooth with posterior margin strigated. Second tergite 1.8 times wider than long; raised median area strigated, antero-medial triangular area raised and smooth. Third tergite 2.5 times wider than long; with strigated transverse furrows on anterior and subposterior margins, median
and antero-lateral areas raised and smooth. Tergite four similar, but antero-lateral areas
more narrow. Tergites five to seven smooth.

Orange-brown except for following which are black: apex of mandibles, antennae and v-
shaped area around stemmaticum. Wings fairly weakly darkened, with hyaline zones in fore
wing below pterostigma, basally to veins 1-M and cu-a and around vein r-m. Apical quarter
of pterostigma darkened. Hind wing darkened with faint hyaline areas around basal,
subbasal and marginal cells.

Figures 106–109. Automontage® images of Bathyaulax species. (106) B. somaliensis, wings. (107)–(109) B.
striolatus, face, metasomal tergite 1 and metasomal tergites 2–3.
**Bathyaulax striolatus** (Szépligeti 1914)
(Figures 107–109)

*Goniobracon striolatus* Szépligeti 1914a

*Iphiaulax striolatus*: Brues 1926

*Bathyaulax striolatus*: Fahringer 1931

**Material examined**

Holotype: Female (ZMHB): *Goniobracon striolatus* Szépligeti 1914, Sierra leone, [no date], Bingham.

**Description**

Female: Length of body 20 mm, of fore wing 16 mm, of ovipositor 19 mm.

Antennae with 79 flagellomeres (apex broken). Height of clypeus:inter-tentorial distance:tentorio-ocular distance = 1.0:4.4:4.4. Width of face:width of head:height of eye = 1.3:2.2:1.0. Height of face:width of face = 1.0:1.9. Sculpture on face pustulate with dense punctulation, on clypeus similar. Frons weakly depressed, smooth, with medial longitudinal groove. POL:transverse diameter of posterior ocellus:shortest distance between posterior ocellus and eye = 1.2:1.0:3.4. Length of eye in dorsal view:distance of occiput and posterior margin of eye = 1.5:1.0.

Mesosoma approximately 1.7 times longer than maximally deep.

Fore wing: length of veins r:3-SR:SR1 = 1.0:2.6:4.1. Length of veins 2-SR:3-SR:r-m = 1.0:2.2:1.3. Length of veins m-cu:2-M = 1.0:2.4. Length of veins 1-CU1:2-CU1 = 1.0:4.4. Shape of vein 1-SR+M weakly curved close to vein 1-M, otherwise straight. Swelling in vein 3-CU1 1.3 times thicker than the other part of the vein.

Legs: The type specimen is without forelegs. Length of hind femur:tibia:tar-sus = 2.2:3.1:1.0. Hind basitarsus 4.5 times longer than deep.

First metasomal tergite 1.8 times longer than wide; raised median area smooth, anteriorly depressed and posteriorly strigated. Second tergite 1.8 times wider than long; raised median area strigated, antero-medial triangular area raised and smooth. Third tergite 1.9 times wider than long; with strigated transverse furrows on anterior and subposterior margins, raised median area longitudinally strigose. The centre of tergite raised, lump like. Antero-lateral areas raised and smooth, fairly wide. Tergites four and five similar, but antero-lateral areas more narrow and sculpture on tergite four pustulate to rugulose, tergite five smooth. Tergites six to eight smooth.

Orange-brown except for the following which are black: face, frons, vertex, temples, apex of mandibles, antennae and ovipositor sheets. Narrow orange-brown margins around eyes on dorsal side, and spots posterior to toruli. Wings darkened, with two hyaline areas in fore wing below pterostigma and below vein 1-CU1. Apical third of pterostigma darkened. Hind wing darkened with hyaline area on base of marginal cell.

**Bathyaulax suvie** sp. nov.
(Figures 110–112)

**Material examined**

Holotype: Female (BMNH): South Africa, Salisbury, Mashonaland, I-1902, G.A.K. Marshall.
Genus Bathyaulax from Africa and the Arabian Peninsula

Description

Female: Length of body 17 mm, of fore wing 16 mm, of ovipositor 11 mm.

Antennae with more than 97 (apex broken) flagellomeres. Height of clypeus: inter-tentorial distance: tentorio-ocular distance = 1.0:2.6:2.3. Width of face: width of head: height of eye = 1.3:2.2:1.0. Height of face: width of face = 1.0:1.8. Sculpture on face punctate to punctulate. Clypeus rugose. Frons weakly depressed, smooth, with medial longitudinal groove. POL: transverse diameter of posterior ocellus: shortest distance between posterior

Figures 110–112. Automontage® images of Bathyaulax suvie sp. nov., metasomal tergites 1–3, frons, tergites 4 and 5.
ocellus and eye = 1.0:1.0:3.0. Length of eye in dorsal view:distance of occiput and posterior margin of eye = 1.4:1.0.

Mesosoma approximately 1.6 times longer than maximally deep.

Fore wing: length of veins r:3-SR:SR1 = 1.0:1.6:3.6. Length of veins 2-SR:3-SR:r-m = 1.0:2.0:1.1. Length of veins m-cu:2-M = 1.0:2.6. Length of veins 1-CU1:2-CU1 = 1.0:5.1. Shape of vein 1-SR+M straight, but weakly curved towards posterior margin close to vein 1-M. Swelling in vein 3-CU1 1.5 times thicker than the other part of the vein.

Legs: Length of fore femur:tibia:tarsus = 2.3:2.6:1.0. Fore basitarsus 4.4 times longer than deep. Length of hind femur:tibia:tarsus = 2.3:3.1:1.0. Hind basitarsus 5.7 times longer than deep.

First metasomal tergite 1.4 times longer than wide; raised median area anteriorly smooth with a medial longitudinal groove, postero-laterally strongly strigose. Second tergite 2.1 times wider than long; medial area raised and strongly strigose, area posterior to antero-medial triangle rugose. Antero-medial triangular area raised, anterior part smooth and posterior striated. Third tergite 2.3 times wider than long; with striated transverse furrows on anterior and sub posterior margins, raised median area strongly striated, antero-lateral areas smooth. Tergites four and five similar to three, but tergite five median area weakly reticulate. Tergites six to eight smooth.

Orange-brown except for the following which are black: antenna, diamond-shaped area around stemmaticum, apex of mandibles and ovipositor sheets. Wings darkened, with weakly paler area below pterostigma in fore wing and the base of the marginal cell in hind wing.

Etymology

Named after the senior author’s friend, Suvi Sutela.

*Bathyaulax syraensis* (Strand 1912)
(Figures 16, 113–115)

*Iphiaulax syraensis* Strand 1912

*Iphiaulacidea ? syraensis*: Fahringer 1926

Material examined

Holotype: Female (ZMHB): *Iphiaulax syraensis* Strand 1912, Syria, no date, Ehnrbg.

Description

Female: Length of body 12 mm, of fore wing 13 mm, of ovipositor 13 mm.

Antenna with 53 flagellomeres (broken). Height of clypeus:inter-tentorial distance:tenctorio-ocular distance = 1.0:3.8:3.0. Width of face:width of head:height of eye = 1.1:2.0:1.0. Height of face:width of face = 1.0:1.7. Sculpture on face punctate with punctuation, on clypeus punctulate. Frons weakly depressed, smooth, with medial longitudinal groove. POL:transverse diameter of posterior ocellus:shortest distance between posterior ocellus and eye = 1.4:1.0:3.4. Length of eye in dorsal view:distance of occiput and posterior margin of eye = 2.1:1.0.

Mesosoma approximately 1.6 times longer than maximally deep.

Fore wing: length of veins r:3-SR:SR1 = 1.0:2.2:3.5. Length of veins 2-SR:3-SR:r-m = 1.0:1.8:1.1. Length of veins m-cu:2-M = 1.0:3.3. Length of veins 1-CU1:2-CU1 = 1.0:5.4.
Figures 113–118. Automontage® images of Bathyaulax species. (113)–(115) B. syraensis, face, frons and metasomal tergite 4. (116)–(118) B. vamouhuyisy, face, frons and metasomal tergites 2–3.
Shape of vein 1-SR+M weakly unevenly curvy near 1-M. Swelling in vein 3-CU1 1.4 times thicker than the other part of the vein.

Legs: Length of fore femur:tibia:tarsus = 2.1:2.3:1.0. Fore basitarsus 5.0 times longer than deep. Length of hind femur:tibia:tarsus = 1.9:2.7:1.0. Hind basitarsus 3.7 times longer than deep.

First metasomal tergite 1.4 times longer than wide; raised median smooth, anteriorly depressed and posteriorly striated. Second tergite 2.1 times wider than long; raised median area striated, antero-medial triangular area raised and smooth. Third tergite 2.3 times wider than long; with striated transverse furrows on anterior and sub-posterior margins, raised median area longitudinally striated, with raised lump-like area in the middle. Antero-lateral areas raised and smooth. Tergites four and five also with striated furrows on anterior and sub-posterior margins. In tergite four raised median area weakly striated, in tergite five smooth. Tergites six to eight smooth.

Orange-brown except for the following which are black: area around stemmaticum, apex of mandibles, ovipositor sheets. Antennae dark brown. Wings darkened, with a hyaline zones in fore wing below pterostigma. Apical third of pterostigma darkened. Hind wing darkened with hyaline area in the base of marginal cells.

**Bathyaulax vannouhuysae** sp. nov.
(Figures 116–118)

**Material examined**

Holotype: Female (BMNH): Kenya, Merifano, IX-1932, McArthur.

**Description**

Female: Length of body 16 mm, of fore wing 14 mm, of ovipositor 16 mm.

Antennae with 93 (apex broken) flagellomeres. Height of clypeus:inter-tentorial distance:tentorio-ocular distance = 1.0:3.4:3.0. Width of face:width of head:height of eye = 1.3:2.2:1.0. Height of face:width of face = 1.0:1.9. Sculpture on face punctate with punctulation. Clypeus rugose. Frons depressed, smooth, with medial longitudinal groove. POL:transverse diameter of posterior ocellus:shortest distance between posterior ocellus and eye = 1.2:1.0:3.4. Length of eye in dorsal view:distance of occiput and posterior margin of eye = 1.5:1.0.

Mesosoma approximately 1.6 times longer than maximally deep.

Fore wing: length of veins r:3-SR:SR1 = 1.0:2.1:3.9. Length of veins 2-SR:3-SR:r-m = 1.0:2.1:1.4. Length of veins m-cu:2-M = 1.0:2.2. Length of veins 1-CU1:2-CU1 = 1.0:4.1. Shape of vein 1-SR+M straight but angled close to vein 1-M. Swelling in vein 3-CU1 1.4 times thicker than the other part of the vein.

Legs: Length of fore femur:tibia:tarsus = 2.4:2.8:1.0. Fore basitarsus 4.0 times longer than deep. Length of hind femur:tibia:tarsus = 2.3:3.3:1.0. Hind basitarsus 4.3 times longer than deep.

First metasomal tergite 1.5 times longer than wide; raised median area smooth with medial longitudinal groove, posterior margin striated. Second tergite 1.9 times wider than long; medial area raised and striated. Antero-medial triangular area raised, anteriorly smooth and posteriorly striated. Third tergite 2.3 times wider than long; with striated transverse
furrows on anterior and subposterior margins, raised median area weakly strigated, antero-lateral areas smooth. Tergites four and five with strigated transverse furrows on anterior and subposterior margins, antero-lateral areas smooth. Sculpture on tergite four raised median area weakly rugulose, in tergite five smooth. Tergites six to eight smooth.

Yellow except for the following which are black: antenna, frons and a small area around stemmaticum, apex of mandibles and ovipositor sheets. A dark brown small spot on top of clypeus. Fore wing darkened with a hyaline zone below pterostigma. Hind wing also darkened with a hyaline area in the base of the marginal cell. The apical third of pterostigma darkened.

Etymology

Named after Dr. Saskya van Nouhuys.

*Bathyaulax varipennis* (Szépligeti 1914)  
(Figures 17, 119)

*Goniobracon varipennis* Szépligeti 1914a  
*Iphiaulax varipennis*: Brues 1926  
*Bathyaulax varipennis* Falhringer 1931

Material examined

Holotype: Female (ZMHB): *Goniobracon varipennis* Szépligeti 1914. Ethiopia, Hore [?], 23.5.1901, B.v.Erlanger.

Description

Female: Length of body 15 mm, of fore wing 16 mm, of ovipositor 8 mm.

Antennae with 113 flagellomeres, terminal flagellomere 1.9 times longer than wide. Height of clypeus:inter-tentorial distance:tentorio-ocular distance=1.0:3.3:2.9. Width of face:width of head:height of eye=1.3:2.2:1.0. Height of face:width of face=1:0.8. Sculpture on face punctulate, on clypeus rugose. Frons weakly depressed, smooth, with medial longitudinal groove. POL:transverse diameter of posterior ocellus:shortest distance between posterior ocellus and eye=1.5:1.0:3.4. Length of eye in dorsal view:distance of occiput and posterior margin of eye=1.9:1.0.

Mesosoma approximately 1.5 times longer than maximally deep.

Fore wing: length of veins r:3-SR:SR1=1.0:2.4:3.4. Length of veins 2-SR:3-SR:r-m=1.0:2.0:1.2. Length of veins m-cu:2-M=1.0:2.5. Length of veins 1-CU1:2-CU1=1.0:4.9. Shape of vein 1-SR+M almost straight. Swelling in vein 3-CU1 1.4 times thicker than the other part of the vein.

Legs: Length of fore femur:tibia:tarsus=1.9:2.3:1.0. Fore basitarsus 4.3 times longer than deep. Length of hind femur:tibia:tarsus=2.2:3.2:1.0. Hind basitarsus 3.6 times longer than deep.

First metasomal tergite 1.1 times longer than wide; raised median area with longitudinal groove and posterior area strongly strigated. Second tergite 2.1 times wider than long; raised median area strigated, antero-medial triangular area weakly raised and strigated. Third tergite 2.3 times wider than long; with strigated transverse furrows on anterior and subposterior margins, raised median area longitudinally strigose to reticulate rugose. Antero-lateral areas
raised and smooth. Tergites four similar. Tergites five and six with strigated transverse furrows on anterior and subposterior margins, raised median area punctulate.

Orange-brown except for the following which are black: stemmaticum and frons, apex of mandibles, antennae and ovipositor sheets. Wings fairly evenly weakly darkened, with two hyaline areas in fore wing below pterostigma and on basal and subbasal cells. Apical fifth of pterostigma darkened. Hind wing darkened postero-apically.

Figures 119–121. Automontage® images of Bathyaulax species. (119) B. varipennis, wings. (120, 121) B. varkonyii, metasomal tergites 1–3 and tergites 3–6.
Bathyaulax varkonyii sp. nov.  
(Figures 120, 121)

Material examined
Holotype: Female (BMNH): Tanzania, Tanganyika T., Maagaa, E. of Singida, X–XII-1935, E. Burtt.

Description
Female: Length of body 17 mm, of fore wing 16 mm, of ovipositor 16 mm.

Antennae with 103 flagellomeres, terminal flagellomere 1.8 times longer than wide. Height of clypeus:inter-tentorial distance:tentorio-ocular distance=1.0:3.3:3.5. Width of face:width of head:height of eye=1.2:2.1:1.0. Height of face:width of face=1.0:1.8. Sculpture on face punctate to punctulate. Clypeus rugose. Frons depressed, smooth, with medial longitudinal groove. POL:transverse diameter of posterior ocellus:shortest distance between posterior ocellus and eye=1.0:1.1:3.3. Length of eye in dorsal view:distance of occiput and posterior margin of eye=1.3:1.0.

Mesosoma approximately 1.6 times longer than maximally deep.

Fore wing: length of veins r:3-SR:SR1=1.0:2.1:3.2. Length of veins 2-SR:3-SR:r-m=1.0:1.9:1.4. Length of veins m-cu:2-M=1.0:2.6. Length of veins 1-CU1:2-CU1=1.0:4.6. Shape of vein 1-SR+M straight, but weakly curved towards posterior margin close to vein 1-M. Swelling in vein 3-CU1 1.5 times thicker than the other part of the vein.

Legs: Length of fore femur:tibia:tarsus=1.8:2.1:1.0. Fore basitarsus 5.2 times longer than deep. Length of hind femur:tibia:tarsus=2.3:3.3:1.0. Hind basitarsus 5.3 times longer than deep.

First metasomal tergite 1.6 times longer than wide; raised median area anteriorly smooth with a medial longitudinal groove, postero-laterally strigose. Second tergite 2.1 times wider than long; medial and antero-medial triangular areas raised and strongly strigose. Third tergite 2.2 times wider than long; with strigated transverse furrows on anterior and subposterior margins, raised median area strongly strigated, antero-lateral areas smooth. Tergites four and five similar to three, but tergite five raised medial area smooth. Tergites six to eight smooth.

Yellow except for the following which are black: antenna, partly frons and area around stemmaticum, apex of mandibles and ovipositor sheets. Hair on antennae whitish-yellow. Wings weakly darkened with paler areas in fore wing below pterostigma and in hind wing in the base on the marginal cell.

Etymology
Named after Dr. Gergely Várkonyi.

Bathyaulax williami sp. nov.  
(Figures 122–124)

Material examined
Holotype: Female (BMNH): Kenya, Tsavo East National Park, nr. Voi Gate, VI-1977, D. Quicke.
Female: Length of body 14 mm, of fore wing 11 mm, of ovipositor 13 mm. Antennae with 92 flagellomeres. Terminal flagellomere 2.3 times longer than wide. Height of clypeus:inter-tentorial distance:tentorio-ocular distance = 1.0:4.3:3.7. Width of face:width of head:height of eye = 1.2:2.1:1.0. Height of face:width of face = 1.0:1.8. Sculpture on face punctate with punctulation. Clypeus rugose. Frons depressed and smooth, with a medial longitudinal groove. POL:transverse diameter of posterior

Description

Female: Length of body 14 mm, of fore wing 11 mm, of ovipositor 13 mm. Antennae with 92 flagellomeres. Terminal flagellomere 2.3 times longer than wide. Height of clypeus:inter-tentorial distance:tentorio-ocular distance = 1.0:4.3:3.7. Width of face:width of head:height of eye = 1.2:2.1:1.0. Height of face:width of face = 1.0:1.8. Sculpture on face punctate with punctulation. Clypeus rugose. Frons depressed and smooth, with a medial longitudinal groove. POL:transverse diameter of posterior
Genus Bathyaulax from Africa and the Arabian Peninsula

Bathyaulax zonatus Fahringer 1931
(Figure 125)

Material examined
Holotype: Female (MNW): Bathyaulax zonatus Fahringer 1931. Tanzania, N.W. Tanganika, 1910, Grauer.

Additional specimens examined
Tanzania: 1 female, N.W. Tanganika, 1910, Grauer (MNW).

Description
Female: Length of body 14 mm, of fore wing 14 mm, of ovipositor 14 mm.
Antennae with 104 flagellomeres, terminal flagellomere 2.1 times longer than wide. Apex of antenna flattened. Height of clypeus:inter-tentorial distance:tentorio-ocular distance=1.0:3.6:3.0. Width of face:width of head:height of eye=1.2:2.1:1.0. Height of face:width of face=1.0:1.9. Sculpture on face pustulate and granulate, on clypeus granulated. Frons slightly depressed, smooth, with medial longitudinal groove.
POL: transverse diameter of posterior ocellus: shortest distance between posterior ocellus and eye = 1.0:1.4:3.1. Length of eye in dorsal view: distance of occiput and posterior margin of eye = 2.4:1.0.

Mesosoma approximately 1.8 times longer than maximally deep.

Fore wing: length of veins r:3-SR:SR1 = 1.0:2.0:3.9. Length of veins 2-SR:3-SR: r-m = 1.0:2.4:1.4. Length of veins m-cu:2-M = 1.0:2.5. Length of veins 1-CU1:2-CU1 = 1.0:6.2. Shape of vein 1-SR+M nearly straight, with a little unevenness. Swelling in vein 3-CU1 2.0 times thicker than the other part of the vein.

Legs: Length of fore femur:tibia:tarsus = 2.1:2.4:1.0. Fore basitarsus 3.8 times longer than deep. Length of hind femur: tibia: tarsus = 1.9:2.7:1.0. Hind basitarsus 4.3 times longer than deep.

First metasomal tergite 1.7 times longer than wide; raised median area smooth and posterior area strigated. Second tergite 1.7 times wider than long; raised median area strigated, antero-medial triangular area raised and smooth. Third tergite 2.0 times wider than long; with strigated transverse furrows on anterior and subposterior margins, raised median area longitudinally rugulose to reticulate rugose. Antero-lateral areas raised and smooth. Tergites four and five similar, but raised median areas smooth and antero-lateral areas more narrow. Tergites six and seven smooth.

Orange-brown except for the following which are black: face, frons, vertex, temples, apex of mandibles, antennae and ovipositor sheets. Wings fairly evenly darkened, with a paler area in fore wing below pterostigma. About apical fifth of pterostigma darkened. Hind wing darkened with a paler area on the base of marginal cell.

Excluded species and named variety

Based on their descriptions, *Bathyaulax carpomyiae* Ramakrishna Ayyar (1928), *B. tripoeniphaga* Ramakrishna Ayyar (1928), and *B. alami* Zaka-ur-Rab (1963) do not belong in this genus. The first two being less than 5 mm long and reared from fly larvae are likely to belong to the *Bracon* F. group of genera.

*Bathyaulax itea* (Cameron, 1897), originally described under *Bracon* was transferred to *Campyloneurus* by Achterberg and O’Toole (1993).

The type of *Bathyaulax perspicax* var. *bruesi* Fahringer belongs to *Serraulax* Quicke.

The holotype of *Bathyaulax xanthurus* Fahringer (1931) was located in the NMW collection and is probably best referred to *Serraulax*, hence *Serraulax xanthurus* Fahringer comb. nov. For *Bathyaulax lativentris* see notes under *B. kersteni*.

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