Doryctorgilus gen. nov. and other new taxa, with a study of the internal microsculpture of the ovipositor in the subfamily Orgilinae Ashmead (Hymenoptera: Braconidae)

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Key words: Braconidae; Orgilinae; Anstestrigini; Mimagathidini; Orgilini; *Doryctorgilus*; Agathidinae; Agathidini; Mesocoelina; *Agathis*; Neotropical; French Guyana; Brazil; Colombia; new genus; new species; ovipositor internal microsculpture; phylogeny; cladistic analysis; keys.
One new monotypic genus of the subfamily Orgilinae Ashmead, 1900 (type species: *D. morvanae* spec. nov.), two new species of the genus *Podorgilus* van Achterberg, 1994 (*P. nemorensis* spec. nov. and *P. luteus* spec. nov.) and one new species of the genus *Agathis* Latreille, 1804 (*A. depressifrons* spec. nov.) are described. The internal microsculpture of the ovipositor in several genera of the subfamily Orgilinae has been examined and revealed several new features with a potentially high phylogenetic value. A cladistic analysis has been performed with some of these new character-states which corroborate the recognition of the tribe Mimagathidini Enderlein, 1905 (excluding the subtribe Mesocoelina Viereck, 1918), and support the division of this subfamily into three tribes. The study of the genera *Bentonia* and *Stantonia* showed the need of an accurate analysis to verify the status of the genus *Bentonia*.

Introduction

During the current study of the family Braconidae Nees, 1812, from French Guyana by the first author, several specimens belonging to new taxa of the subfamily Orgilinae Ashmead, 1900, have been found among the material collected by Mr J. Cerda in the Kaw mountains. One of them turned out to be a member of a new and very aberrant genus of Orgilinae and a second species was recognised as a new species of the genus *Podorgilus* van Achterberg, 1994. In addition, a second specimen of *Podorgilus* collected in Brazil by Dr C. Villemant (MNHN) proved to be another new species. These three taxa are described and illustrated below. A new species of *Agathis* Latreille, 1804, of the subfamily Agathidinae Haliday, 1833, is added because it displays some peculiar character states and it superficially resembles the genus *Plesiocoelus* van Achterberg, 1990.

The genera of the subfamily Orgilinae Ashmead were revised by van Achterberg (1987) with subsequent additions by van Achterberg & Quicke (1992), van Achterberg (1992, 1994b) and Braet et al. (2000). Three tribes are currently recognised in this subfamily, Antestrigini van Achterberg, 1987, Mimagathidini Enderlein, 1905, and Orgilini Ashmead, 1900, and containing about 15 genera. The new Neotropical genus poses a problem; it possesses a row of numerous stout pegs on fore and middle tibiae, a key feature of the unrelated subfamily Doryctinae Foerster, 1862. However, this genus lacks

not only the cyclostome character but also the three synapomorphies of the ovipositor recently listed for Doryctinae s.s. (Quicke et al., 1992): a distinctive double nodus subapically, a heavily sclerotised apex and one or more ancillary teeth ventro-subapically. Moreover, the shape of the body, of the legs and the venation of the wings are typical for members of the Orgilinae and not for the Doryctinae. The genus could be related to the tribe Mimagathidini because the third and fourth segments of the labial palp are inserted onto the second segment, and the elongate hind trochantellus is as found in species of the genus *Eleonoria* Braet & van Achterberg, 2000 (Braet et al., 2000). The new genus shares the large subbasal cell of the hind wing with the genera of the tribe Orgilini. The biology of the new genus is unknown, but members of the tribe Orgilini are solitary koinobiont endoparasitoids of larvae of various Lepidoptera. The row of stout pegs on the tibia probably facilitates the emergence from the concealed pupation site of the caterpillar. The comb on the hind trochantellus of *Eleonoria* species may have a similar function.

The genus *Podorgilus* is characterised by having an enlarged hind basitarsus and up to now contains only the Neotropical type species. The biology of the genus is unknown.

Van Achterberg (1990b) included in the subtribe Mesocoelina Viereck, 1918 (subfamily Agathidinae: tribe Agathidini) the genera *Plesiocoelus* van Achterberg, 1990, *Aneurobracon* Brues, 1930, and *Mesocoelus* Schulz, 1911. After the discovery of the genus *Eleonoria* Braet & van Achterberg, 2000, the Mesocoelina (or "-ini") has been transferred to the Orgilinae (Braet et al., 2000) where it was synonymised with the tribe Mimagathidini. New molecular data of the genera *Plesiocoelus*, *Aneurobracon* and *Mesocoelus* strongly suggest a placement in the subfamily Agathidinae (D.L.J. Quicke, pers. comm.), as they do share several morphological features with the Agathidinae (Sharkey, 1986). Therefore, the three genera of the Mesocoelina have been excluded for the current analysis and the set of synapomorphies (especially the enlarged hind leg and the slender hind trochantellus) of the genus *Eleonoria* is considered to be present because of homoplasy.

The internal microsculpture of the ovipositor of several species of Orgilinae has been examined to confirm the placement of the new taxa in the Orgilinae, and to explore the new character-states which have potential phylogenetic value. The ovipositor system is important for the evolution of parasitic Hymenoptera (Quicke, 1997) and it is a source of many potentially phylogenetically informative characters (e.g., Quicke & van Achterberg, 1990; Rahman et al., 1998a, b). Insects ovipositors often have the wall of the egg canal micro-sculptured (Austin & Browning, 1981) and obviously, this plays an important role in the outward movement of the eggs in the ovipositor.

Material and methods

The following abbreviations of the depositories are used: AEI for American Entomological Institute, Gainesville, Florida, U.S.A.; FUSAGx for Faculté Universitaire des Sciences Agronomiques, Gembloux, Belgium; IHC for Instituto de Investigación de Recursos Biológicos Alexander von Humboldt, Bogotá D.C., Colombia; MNHN for Muséum National d'Histoire Naturelle, Paris, France; MRAC for Musée Royal d'Afrique Centrale, Tervuren, Belgium; and RMNH for Nationaal Natuurhistorisch

Museum, Leiden, Netherlands. OIM stands for "internal microsculpture of the ovipositor".

Specimens representing 15 species and belonging to 11 genera of Orgilinae and the new species of Agathidinae were used for this study. The material examined include only the pinned specimens. Examined are: *Agathis depressifrons* spec. nov. (French Guyana); *Bentonia longicornis* van Achterberg, 1992 (French Guyana); *Clotildea lucida* Szépligeti, 1914 (Ivory Coast); *Doryctorgilus morvanae* gen. nov. & spec. nov. (French Guyana); *Eleonoria* species near *E. japonica* Braet & van Achterberg, 2000 (?locality); *Orgilonia kiliwa* Braet, 1997 (Dem. Rep. of Congo), *O. striata* van Achterberg, 1987 (Dem. Rep. of Congo); *Orgilus* spec. (with long ovipositor; French Guyana), *O. niger* Penteado-Dias, 1999 (French Guyana), *O. podus* Braet & van Achterberg, 2001 (French Guyana), *O. quadricolor* Braet & van Achterberg, 2001 (French Guyana); *Podorgilus nemorensis* spec. nov. (French Guyana); *Sulorgilus reclinervis* van Achterberg, 1994 (?Philippines); *Stantonia* spec. 1 (specimen with long ovipositor; Neotropical); *Stantonia* spec. 2 (with short ovipositor; Neotropical).

The ovipositors were dissected from dried specimens and directly mounted on electron microscope stubs. These preparations were coated with 30 nm of gold and examined at 10 or 15 kV, using a PHILIPS XL 30 ESEM. All of them have been deposited in FUSAGx but the stub of *C. lucida* in MRAC and of *A. depressifrons* spec. nov. in RMNH. The terminology of the ovipositor and its microsculpture follows Rahman et al. (1998a, b). For the identification of the subfamilies Orgilinae and Agathidinae, see van Achterberg (1990a, 1993) and for the terminology used in this paper, see van Achterberg (1988, 1994a).

The observed SEM results and the morphological character-states have been included in the matrix for most of the genera included in the Orgilinae. The matrix was run with the Hennig86 software (Farris, 1988) with the <ie*, cc .-> and <nelsen> options. All characters have been considered as unordered. Polymorphic characters have been considered as unknown during the cladistic analysis.

Systematics

Subfamily Orgilinae Ashmead, 1900

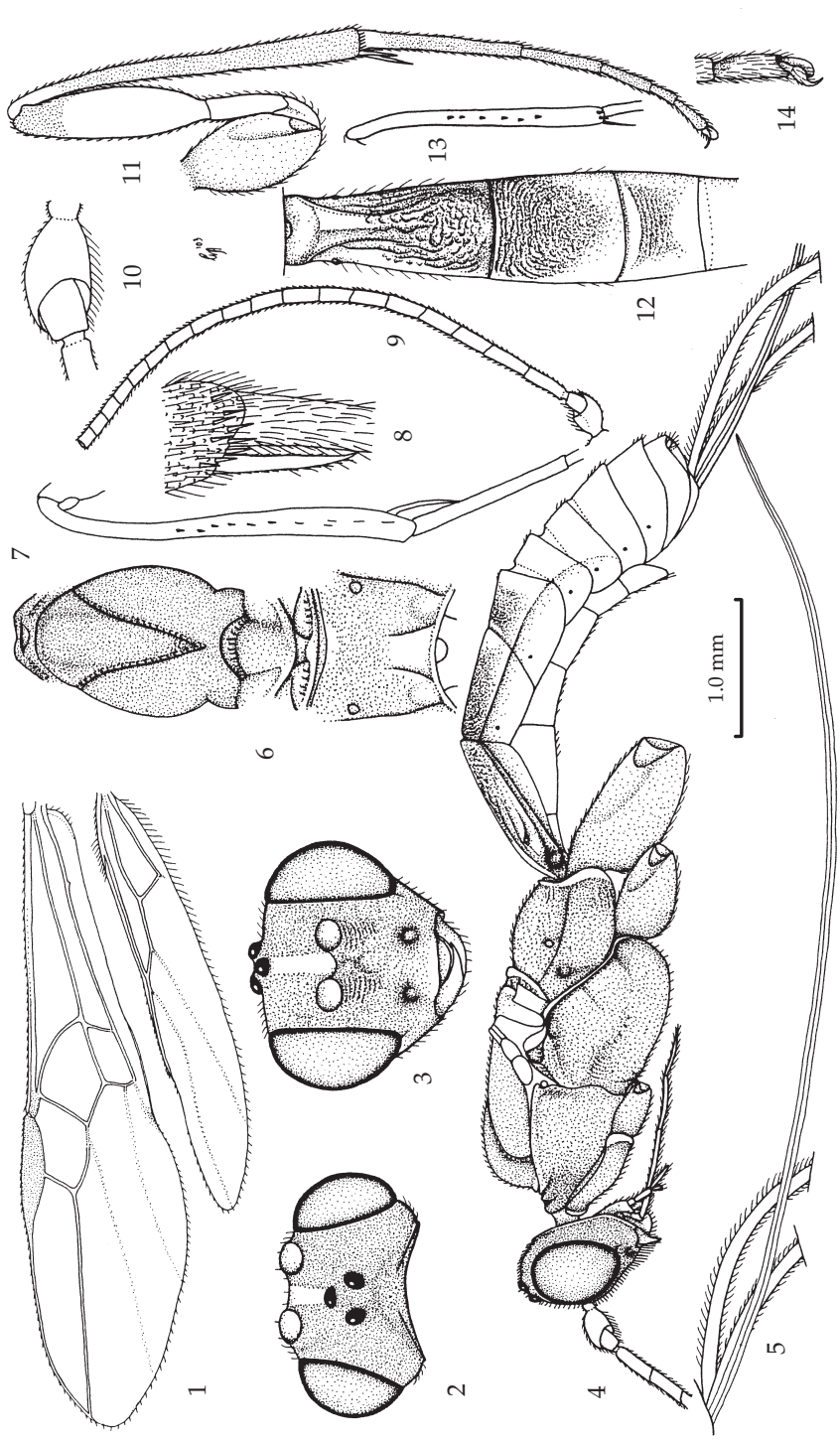
Doryctorgilus gen. nov.

(figs 1-23)

Type species.— *Doryctorgilus morvanae* spec. nov.

Etymology.— From the combination of the generic names *Doryctes* and *Orgilus*, because this genus share some characters of both. Gender: masculine.

Diagnosis.— Scapus oblique apically (fig. 10); apical segment of labial palp inserted (together with third segment) on second segment (figs 4, 16); clypeus weakly convex and punctate; mandible normal basally (fig. 4); occipital flange long and narrow (fig. 17); occipital carina absent medio-dorsally (fig. 15) and meeting hypostomal carina ventrally; mesosoma elongate (fig. 4); pronope present and elliptical (fig. 6); prepectal carina largely absent laterally (fig. 4); precoxal sulcus largely absent (fig. 4); metapleural flange absent (fig. 19); notauli complete and narrow (fig. 6); scutellum without transverse depression medio-posteriorly; propodeum without carina; second submar-



Figs 1-14, *Doryctorgilus morrannae* gen. nov. & spec. nov., holotype, ♀. 1, wings; 2, head, dorsal aspect; 3, head, frontal aspect; 4, habitus, lateral aspect; 5, ovipositor; 6, mesosoma, dorsal aspect; 7, fore tibia, frontal aspect; 8, apex of hind tibia, outer aspect; 9, antenna; 10, scapus and pedicellus; 11, hind leg; 12, first-third metasomal tergites, dorsal aspect; 13, middle tibia, frontal aspect; 14, outer hind claw. 1, 4, 5, 9, 11, 13: 1.0×scale-line; 2, 3, 6: 1.7 ×; 7: 2.0 ×; 8: 4.2; 10, 14: 2.5 ×; 12: 1.4 ×.

ginal cell of fore wing absent (fig. 1); subbasal cell of hind wing large (fig. 1); posterior margin of hind wing convex; fore and middle tibiae with row of stout spines or pegs; hind coxa without rugae; hind trochantellus slender and longer than hind trochanter (fig. 11); hind basitarsus slender (fig. 11); first metasomal tergite with long dorsal carinae and its surface sculptured; spiracles of first tergite not protruding; laterope large (fig. 4); second and base of third tergites with sharp lateral crease; ovipositor sheath with numerous stout setae (fig. 5).

Distribution.— Neotropical.

Notes.— The elongate hind trochantellus, the row of spines on fore and middle tibiae and the absence of the metapleural flange separates the new genus from all other genera of Orgilinae.

Doryctorgilus morvanae spec. nov.
(figs 1-23)

Material.— Holotype, ♀ (FUSAGx), "**Guyane française**: Montagne de Kaw, Relais Patawa, ix.2000, Malaise trap; 4°32'42''N 52°09'09''W, A.E.I. guyane-J. Cerda legs". Paratypes (6 ♀♀): 3 ♀♀ (IHC, AEI, FUSAGx), "**Colombia**, Putumayo, PNN La playa, Cabaña La playa, 0°2'S 75°12'W, 330 m, Malaise [trap], 5-25.xii.2001, E. Lozano, M2797"; 1 ♀ (IHC) "Colombia, Putumayo, PNN La playa, Cabaña Viviano, 0°7'S 74°56'W, 320 m, Malaise [trap], 15-30.x.2001, E. Lozano, M2437"; 1 ♀ (RMNH), "Colombia, Putumayo, PNN La playa Cabaña, La playa, 0°2'S 75°12'W, 330 m, Malaise [trap], 20.xi-5.xii.2001, E. Lozano, M2798"; 1 ♀ (RMNH), "Guyane française, Kourou, ix.2001, Malaise trap, D. Faure".

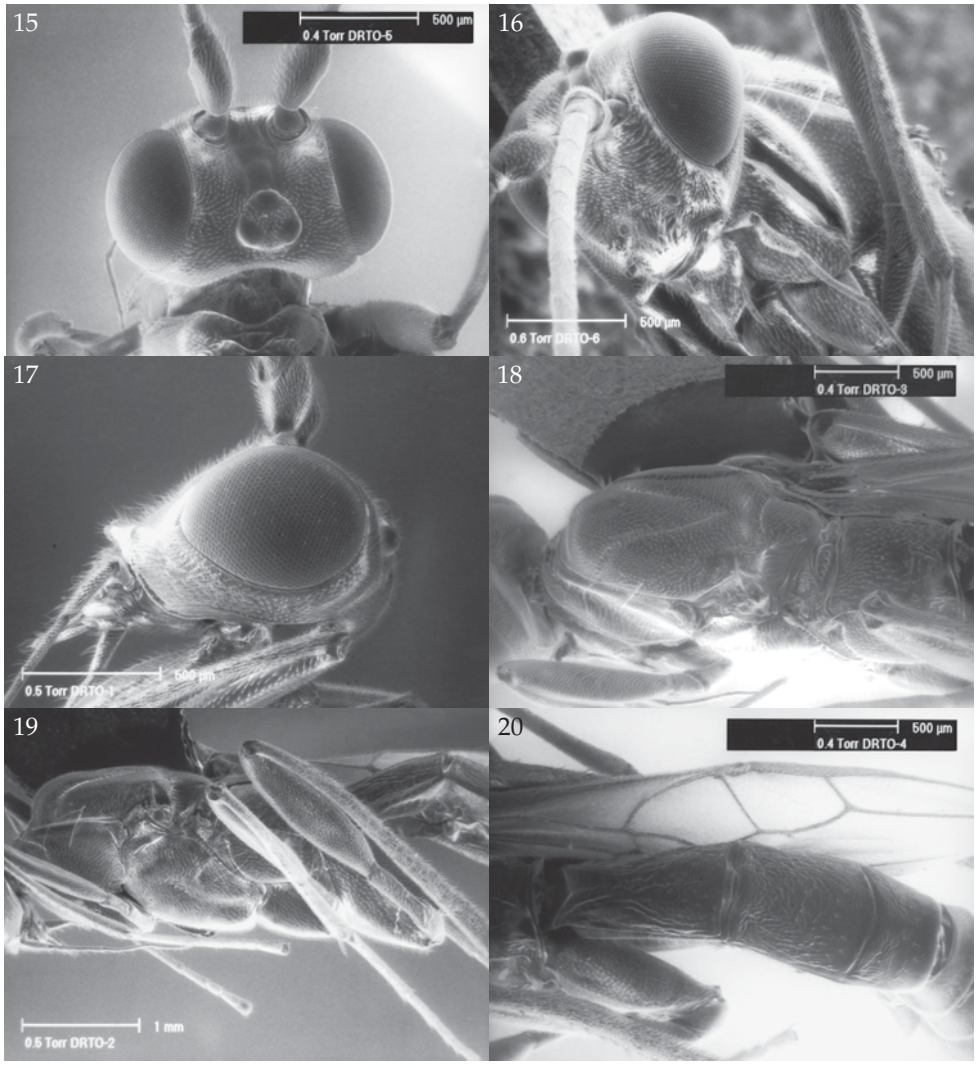
Holotype, ♀, length of body 6.5 mm, of fore wing 4.5 mm.

Head.— Remaining antennal segments 20; third segment about as long as fourth, length of third and fourth segments 3.9 and 3.8 times their maximum width; length of maxillary palp 1.7 times height of head; in dorsal view length of eye 5 times temple; temple directly narrowed posteriorly, coriaceous ventrally and punctate dorsally (fig. 2); OOL:diameter of ocellus:POL = 18:9:9; frons smooth medially, finely punctate laterally and punctate-coriaceous near antennal sockets and eyes; vertex convex, punctate, flattened near stemmaticum; face convex, punctate and finely aciculate-coriaceous near the eyes; clypeus weakly convex and punctate; setae on clypeus longer than setae on face; length of malar space 1.2 times basal width of mandible; occipital flange thin and rounded.

Mesosoma.— Length of mesosoma twice its maximum height; side of pronotum smooth between punctures, antero-ventrally coriaceous; mesopleuron punctate with some weak rugae anteriorly; precoxal sulcus absent, at most some large punctures medially and weakly impressed; metapleuron punctate and shiny; middle lobe of mesoscutum ending abruptly anteriorly (fig. 4); mesoscutum weakly depressed posteriorly at junction of notauli, notauli crenulate; scutellum punctate; scutellar sulcus large and smooth with small carinae posteriorly (figs 6, 18); surface of propodeum punctate, but medio-anteriorly smooth; mid-longitudinal carina of propodeum and metapleural flange absent.

Wings.— Fore wing (fig. 1): r:SR1+3-SR = 9:65; vein r-m largely transparent; cu-a postfurcal; vein 3-CU1 twice as long as vein CU1b. Hind wing: vein cu-a subvertical; 2-M pigmented; membrane largely setose basally; M+CU:1-M = 30:16.

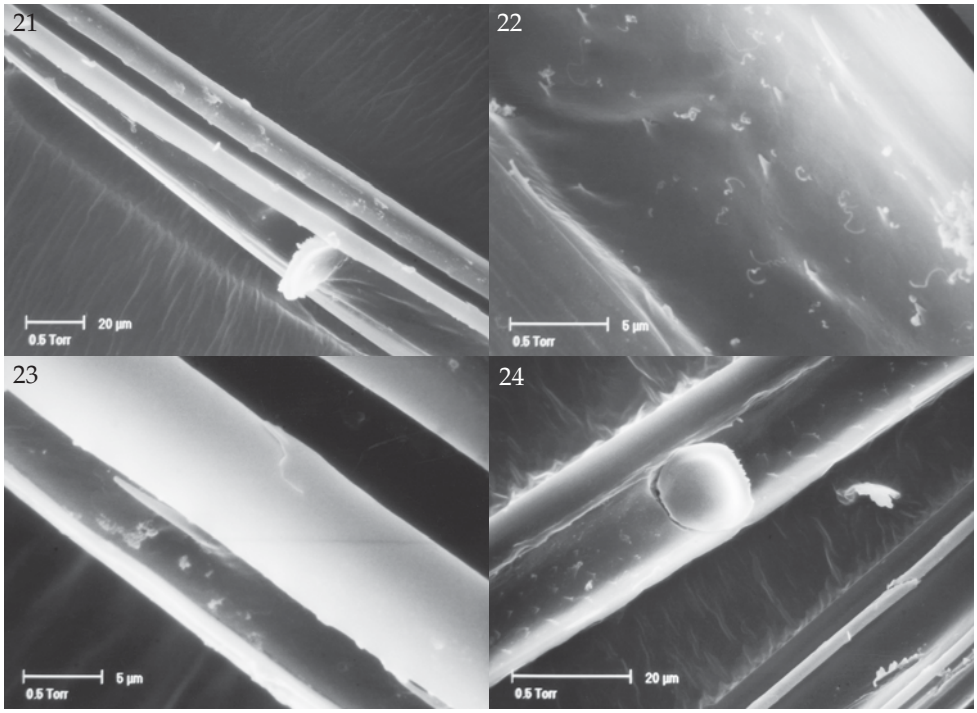
Legs.— Hind coxa punctate dorsally and largely smooth ventrally; hind trochantel-



Figs 15-20, *Doryctorgilus morvanae* gen. nov. & spec. nov., holotype, ♀. 15, head, dorsal aspect; 16, head, frontal aspect; 17, head, lateral aspect; 18, mesosoma, dorsal aspect; 19, mesosoma, lateral aspect; 20, first-third metasomal tergites, dorsal aspect.

lus 1.7 times as long as hind trochanter (fig. 11); length of femur, tibia and basitarsus of hind leg 3.8, 13.5 and 12 times their maximum width, respectively; length of outer and inner tibial spurs 0.20 and 0.25 times basitarsus, respectively; fore tibia with 6 stout spines (fig. 17); middle tibia with a row of 6 stout spines (fig. 13); hind tibia with comb of 9 small apical teeth (fig. 8).

Metasoma.— Length of first tergite 2.0 times its apical width, apical third of its surface weakly irregularly rugose; second tergite irregularly rugose anteriorly and rugulose posteriorly (figs 12, 20); second tergite 1.4 times as long as third tergite; second



Figs 21-23, *Doryctorgilus morvanae* gen. nov. & spec. nov., holotype, ♀; fig. 24, *Orgilus niger* Penteado-Dias, ♀, French Guyana. 21, 24, valvillus; 22, surface near valvillus; 23, detail of ctenidia.

suture narrow, with some crenulae, straight; ovipositor sheath 1.56 times as long as fore wing; OIM consists of long triangularly shaped ctenidia in aval of valvilli (fig. 23) and a very short one in amont of valvilli (figs 21-22).

Colour.— Black; basal 0.15 of hind and middle tibiae, base of hind basitarsus, mandible, tibial spurs and second tergite (except laterally) ivory or white; mesosoma and coxae yellowish-brown, but prothorax anteriorly, pronotum dorsally, and mesoscutum (except posteriorly) black; fore and middle tarsi dark brown; hind tarsus mainly blackish; palpi, tegulae, trochanters and trochantelli, femora (but apical quarter of hind femur dark brown), remainder of fore and middle tibiae (but subbasally with wide dark brown band) pale yellowish; pterostigma and veins dark brown; wing membrane subhyaline, but slightly darkened apically.

Etymology.— Named in honour of Mrs Odette Morvan, amateur coleopterist (Cerambicidae) in Patawa (French Guyana).

Genus *Podorgilus* van Achterberg, 1994

Key to species of the genus *Podorgilus* van Achterberg

1. Apex of hind basitarsus white; second metasomal tergite 0.9-1.0 times as long as third tergite; length of hind basitarsus less than 5 times its maximum width; shape

of scapus variable 2
- Apex of hind basitarsus black; second tergite 1.1 times as long as third tergite; length of hind basitarsus about 5.3 times its maximum width; scapus oblique apically; (Brazil) ..... ***P. luteus*** spec. nov.

2. Metapleural flange absent or obsolescent; subbasal cell of hind wing with some setae; scapus oblique apically (fig. 27); second metasomal tergite about as long as third tergite; (French Guyana) ..... ***P. nemorensis*** spec. nov.
- Metapleural flange present and distinct; subbasal cell of hind wing glabrous; scapus slightly concave apically; second tergite 0.9 times as long as third tergite; (Costa Rica, Bolivia, Brazil) ..... ***P. brevitarsus*** van Achterberg, 1994

Podorgilus nemorensis spec. nov.
(figs 25-34)

Material.— Holotype, ♀ (FUSAGx), "**Guyane française**: Montagne de Kaw, Relais Patawa, xi.2000, Malaise trap; 4°32'42''N 52°09'09''W, A.E.I. guyane-J. Cerda legs".

Holotype, ♀, length of body 7.8 mm, of fore wing 8.4 mm.

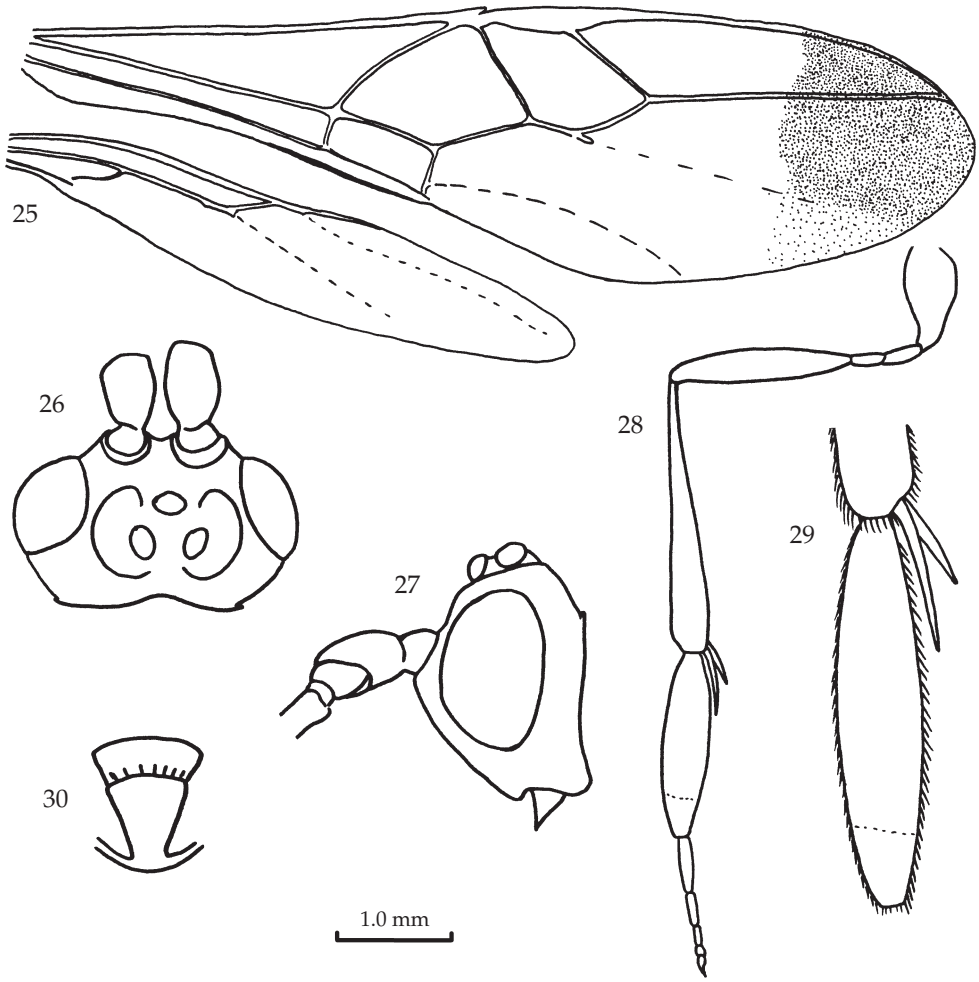
Head.— Antenna incomplete, remaining segments 24, length of third segment as long as fourth segment, length of third and fourth segments 3.1 times their maximum width; maxillary palp about as long as height of head; in dorsal view length of eye 1.8 times temple; temple directly narrowed posteriorly (fig. 26), weakly coriaceous ventrally and smooth dorsally; OOL:diameter of ocellus:POL = 10:7:6; frons smooth medially, coarsely punctate laterally and dorsally; vertex flattened and smooth near stemmaticum (fig. 26); face rather flat, densely and coarsely punctate; clypeus convex and with some punctures; length of malar space 1.5 times basal width of mandible; occipital flange small (fig. 27).

Mesosoma.— Length of mesosoma 1.4 times its maximum height; side of pronotum smooth, medially punctate near pronope; mesopleuron largely punctate but smooth near precoxal sulcus; precoxal sulcus complete and finely crenulate anteriorly and posteriorly (fig. 31); metapleuron smooth and shiny; mesoscutum coarsely punctate, depressed posteriorly at junction of notauli; notauli complete; scutellum smooth with some punctures laterally; scutellar sulcus large and smooth with short carinae posteriorly (fig. 30); surface of propodeum smooth with sparse weak and fine punctures anteriorly; metapleural flange thin and straight.

Wings (fig. 25).— Fore wing: r:SR1+3-SR:2-SR = 23:65:18; 1-SR+M slightly sinuate; sub-basal cell largely glabrous; vein 3-CU1 twice as long as vein CU1b. Hind wing: 2-M pigmented; subbasal cell glabrous; M+CU:1-M = 30:30.

Legs (figs 28, 29).— Hind coxa smooth dorsally and weakly punctate laterally; length of femur, tibia and basitarsus of hind leg 5.7, 7.5 and 4.3 times their maximum width, respectively; length of tibial spurs 0.3 and 0.2 times basitarsus; hind tibia with one apical peg.

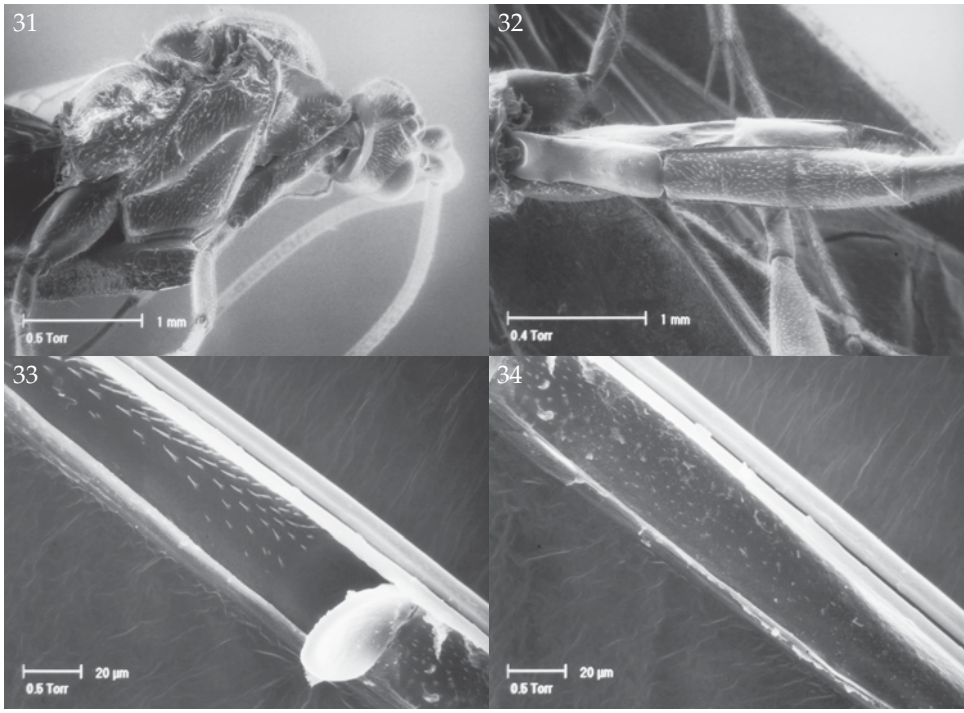
Metasoma.— Length of first tergite 3.5 times its apical width, its surface shiny and smooth, spiracles weakly protruding, laterope large (fig. 31); second and third tergites smooth and shiny with sparse punctures, with numerous setae on third tergite; second tergite about as long as third tergite; second suture smooth, straight; ovipositor sheath 1.1 times as long as fore wing, valvilli present subapically; OIM



Figs 25-30, *Podorgilus nemorensis* spec. nov., holotype, ♀. 25, wings; 26, head, dorsal aspect; 27, head, lateral aspect; 28, hind leg; 29, hind basitarsus, lateral aspect; 30, scutellum, dorsal aspect. 25: 1.0× scale-line; 26-28: 0.5 ×; 29: 1.2 ×; 30: 1.5 ×.

consists of long to very long triangularly shaped ctenidia in aval of valvilli and smaller in amont of valvilli (figs 33, 34).

Colour.— Pale yellowish; frons medially, vertex (except near eyes), scapus and flagellomeres, middle lobe of mesoscutum anteriorly (except near notauli), lateral lobes of mesoscutum (except lateral inner part), propodeum (except a small posterior band), mesopleuron below precoxal sulcus, hind coxa largely (except basally and apically), hind trochanter (except apically), hind trochantellus, hind femur, apical half of hind tibia, hind tibial spurs, hind basitarsus (except its apical fifth), apical half of first tergite, second tergite, following tergites basally, and ovipositor sheath blackish; apex of fore



Figs 31-34, *Podorgilus nemorensis* spec. nov., holotype, ♀. 31, mesosoma, lateral aspect; 32, metasoma, dorsal aspect; 33, inner side of ovipositor, aval of valvillus; 34, id., but in amont of valvillus.

and middle tibiae, inner middle tibial spurs, apex of middle basitarsus, second middle tarsus, and hind tibia subbasally infuscate; upper part of temple, mesoscutum medially at junction of notauli, remaining part of third-seventh tergites, and first-third sternites brownish; apex of hind basitarsus and following segments white; base of first tergite pale yelowish; fore wing subhyaline but with dark apical patch (fig. 25).

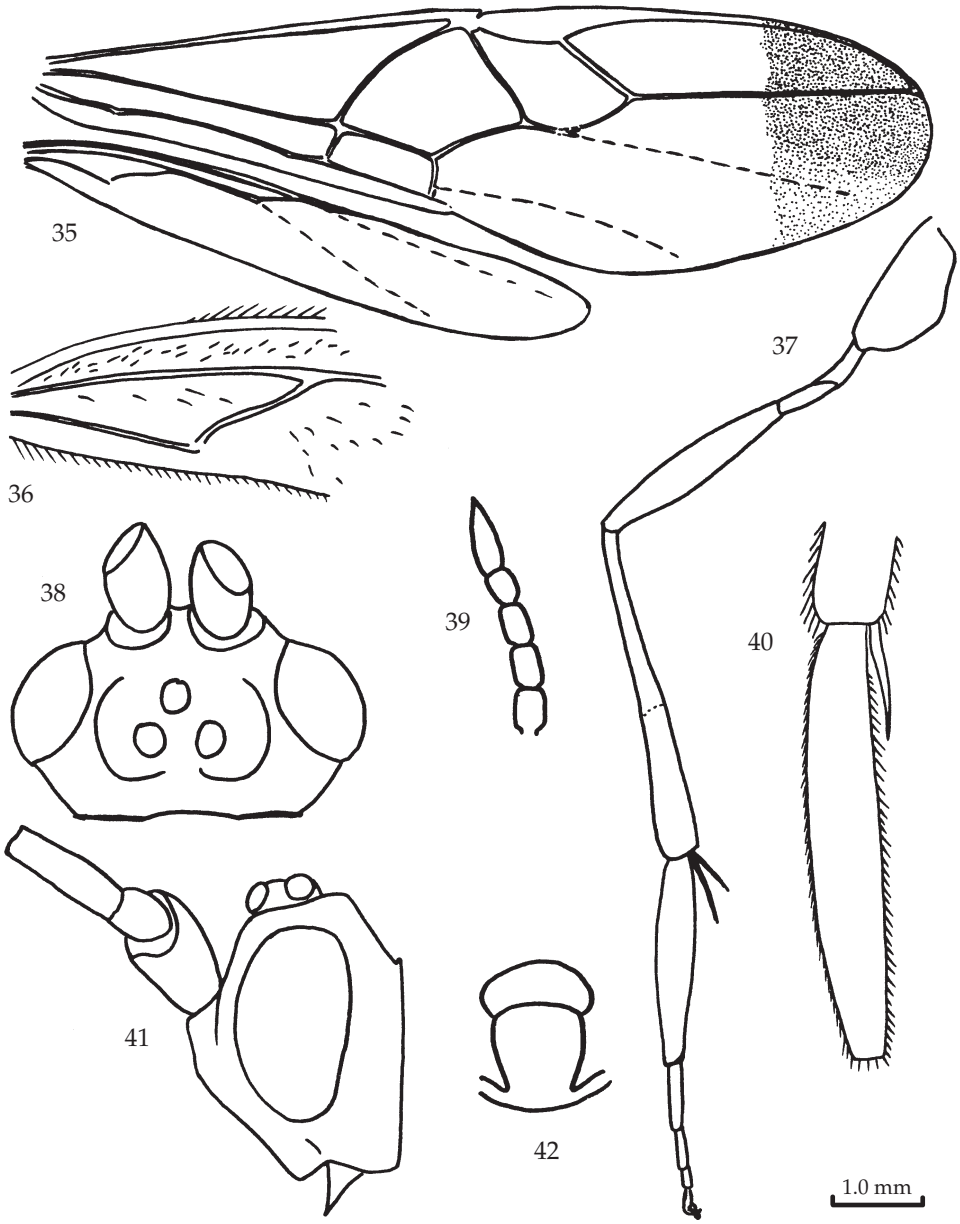
Etymology.— From the Latin for "from the forest".

Podorgilus luteus spec. nov.
(figs 35-44)

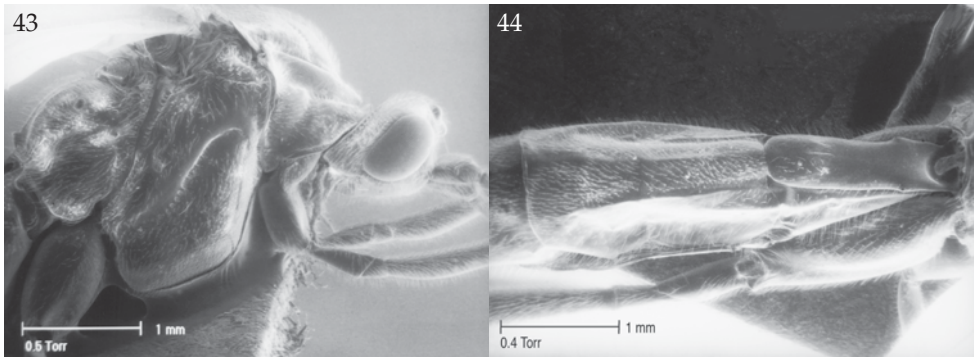
Material.— Holotype, ♀ (MNHN), "Muséum Paris, **Brésil**, Espirito Santo, Piège Malaise, C. Villemant", "Res[erve] de Sooretama, IBAMA, S 19°03'20.7'' - W 40°08'49.0'' (Sta. 3), 11-17.x.1999, 44 km NNE Linhares, Forêt semi-décidue".

Holotype, ♀, length of body 9 mm, of fore wing 9.7 mm.

Head.— Antenna with 49 segments, its length 1.3 times fore wing, length of third segment 1.2 times fourth segment, length of third, fourth and penultimate segments 3.7, 3.2, and 1.6 times their maximum width, apical segment 3 times as long as its maximum width (fig. 39); maxillary palp as long as height of head; in dorsal view length of eye 2.5 times temple; temple directly narrowed posteriorly (fig. 38), punctate;



Figs 35-42, *Podorgilus luteus* spec. nov., holotype, ♀. 35, wings; 36, detail of base of hind wing; 37, hind leg; 38, head, dorsal aspect; 39, apex of antenna; 40, hind basitarsus, lateral aspect; 41, head, lateral aspect; 42, scutellum, dorsal aspect. 35: 1.0×scale-line; 36, 42: 2.0 ×; 37, 38, 41: 0.7 ×; 39: 3.5 ×; 40: 1.6 ×.



Figs 43, 44, *Podorgilus luteus* spec. nov., holotype, ♀. 43, head and mesosoma, lateral aspect; 44, basal half of metasoma, dorsal aspect.

OOL:diameter of ocellus:POL = 10:6:7 (fig. 38); frons smooth medially, coarsely punctate laterally and dorsally; vertex flattened and smooth near stemmaticum; face rather flat, punctate; clypeus weakly convex; length of malar space subequal to basal width of mandible; occipital flange small (fig. 41).

Mesosoma.— Length of mesosoma 1.4 times its maximum height; side of pronotum smooth; mesopleuron sparsely finely punctate but smooth near precoxal sulcus; precoxal sulcus complete and distinctly crenulate; metapleuron punctate, and shiny (fig. 43); mesoscutum coarsely punctate, depressed posteriorly at junction of notauli; scutellum largely smooth, with some punctures; scutellar sulcus large, smooth (fig. 42); surface of propodeum smooth except for some punctures; metapleural flange rounded.

Wings (figs. 35, 36).— Fore wing: r:SR1+3-SR:2-SR = 22:82:19; subbasal cell glabrous anteriorly; vein 3-CU1 longer than vein CU1b. Hind wing: 2-M pigmented; membrane largely glabrous basally but with some setae present in subbasal cell (fig. 36); M+CU:1-M = 40:25.

Legs.— Surface of hind coxa finely punctate; length of femur, tibia and basitarsus of hind leg 6.3, 7.7, 5.3 times their maximum width, respectively (figs 37, 40); length of tibial spurs 0.37 and 0.25 times basitarsus; hind tibia without apical pegs.

Metasoma.— Length of first tergite 3.4 times its apical width, its surface shiny and smooth (fig. 44), spiracles weakly protruding, laterope large; second and third tergites smooth and shiny with sparse punctures; length of second tergite 1.1 times third tergite; second suture smooth, straight; ovipositor sheath subequal to length of fore wing, valvilli present subapically.

Colour.— Yellowish; antenna, frons medially, stemmaticum, vertex medially, middle lobe of mesoscutum (except posteriorly and laterally), lateral lobes of mesoscutum (except near center of depression), apical half of hind tibia, hind tibial spurs, hind basitarsus, telotarsi and ovipositor sheath blackish; vertex laterally, apex of middle tibia, apical four segments of middle tarsus, hind tibia subbasally, second and third segments of hind tarsus more or less infuscate; fourth segment of hind tarsus whitish; propodeum, remainder of hind leg brownish; tergites orange-yellowish; fore wing subhyaline but with a black patch apically (fig. 35).

Etymology.— Luteus because of the yellowish colour of the holotype.

Genus *Stantonia* Ashmead, 1904

Stantonia bezarki Braet, 2001

Stantonia bezarki Braet, 2001: 647, figs 1-4.

Material.— 1 ♀ (IHC), "**Colombia**, Putumayo, PNN La playa Cabaña Viviano, 5°21'S 67°51'W, 100 m, Malaise [trap], 5-14.i.2001, W. Villalba, M1384".

Genus *Orgilus* Haliday, 1833

Orgilus quadricolor Braet & van Achterberg, 2001

Orgilus quadricolor Braet & van Achterberg, 2001: 98-100, figs 7, 10, 12, 13.

Material.— 1 ♀ (IHC), "**Colombia**, Bolivar, SFF Los Colorados Venado, 9°54'N °07'W, 320 m, Malaise [trap], 2-16.xi.2000, E. Delofeut, 930"; 1 ♀ (IHC), "Colombia, Amazonas, Km 22, via Calderon t. firme, 4°2'52''S 64°59'32''W, 4.ix.1997, Malaise [trap], [M.J.] Sharkey".

Subfamily Agathidiinae Haliday, 1833

Genus *Agathis* Latreille, 1804

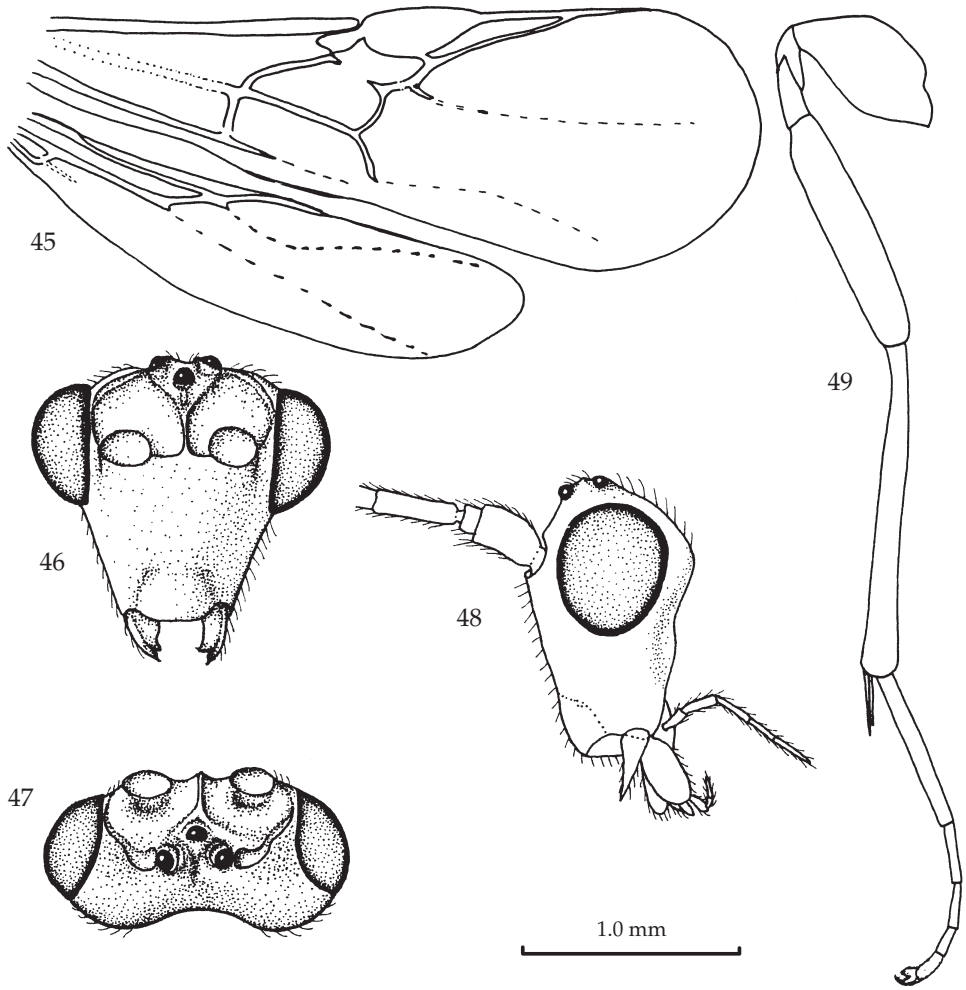
Agathis depressifrons spec. nov.
(figs 45-54)

Material.— Holotype, ♀ (RMNH), "**Guyane française**: Sinnamary, Pointe Combi, 2-9.xi.2000, Malaise trap; 5°18'N-52°57'W), P. Cerdan - lab. Hydrobiologie".

Holotype, ♀, length of body 4.5 mm, of fore wing 3.5 mm, of ovipositor sheath 4 mm.

Head (figs 46-48).— Antenna incomplete, remaining 28 segments, length of third segment 0.7 times fourth segment, length of third and fourth segments 2.5 and 1.8 times their maximum width; length of maxillary palp subequal to height of head; in dorsal view length of eye 4 times temple; temple directly narrowed posteriorly, smooth; OOL:diameter of ocellus:POL = 10:3:8; frons medially smooth, medio-anteriorly with longitudinal crest, postero-laterally weakly punctate and posteriorly with curved shallow depression reaching stemmaticum (fig. 47); stemmaticum distinctly protruding and area around ocelli protuberant; vertex rather flat and superficially granulate anteriorly and with some punctures; face rather flat, smooth with long white setae; clypeus strongly convex; length of malar space 3.5 times basal width of mandible; occipital flange small to absent; maxillary palp twice as long as glossa; head distinctly elongate (fig. 46), vertical axis of malar triangle 2.5 times horizontal axis, part of head below eyes gradually narrowed ventrally.

Mesosoma.— Length of mesosoma 1.4 times its maximum height; side of pronotum finely granulate, medially crenulate, subpronope present, pronope absent; mesopleuron punctate with long setae; precoxal sulcus absent anteriorly, crenulate medially and posteriorly; metapleuron finely granulate; middle lobe of mesoscutum very coarsely punctate, lateral lobes punctate laterally and finely granulate-coriaceous near notauli;



Figs 45-49, *Agathis depressifrons* spec. nov., holotype, ♀. 45, wings; 46, head, frontal aspect; 47, head, dorsal aspect; 48, head, lateral aspect; 49, hind leg. 45, 49: 1.0 × scale-line; 46-48: 1.6 ×.

notauli complete and crenulate, meeting near scutellar sulcus (fig. 50); scutellum smooth medially, with some punctures anteriorly and posteriorly; scutellar sulcus wide, with three carinae; surface of propodeum granulate with some rugae medially; metapleural flange thin and small.

Wings (fig. 45).— Fore wing: r:SR1+3-SR:2-SR = 3:45:8; 1-SR+M largely absent; second submarginal cell absent; cu-a antefurcal. Hind wing: 2-M transparent; M+CU:1-M = 3:15.

Legs.— Hind coxa coriaceous-granulate; length of femur, tibia and basitarsus of hind leg 5.0, 7.7 and 10.0 times their maximum width, respectively (fig. 49); hind femur finely coriaceous; length of inner and outer tibial spurs 0.5 and 0.4 times basitarsus, respectively; hind tibia with three apical pegs; tarsal claws with medium-

sized rounded lobe.

Metasoma.— Length of first tergite 2.1 times its apical width, its surface coriaceous-granulous but smooth medio-apically, spiracles weakly protruding (fig. 50), laterope large, convex in lateral view; second tergite completely and third tergite anteriorly finely granulate; third tergite medially and apically smooth and shiny; length of second tergite 1.6 times third tergite; second suture smooth, straight; ovipositor sheath 1.1 times fore wing, valvilli present subapically (at one third from apex of ovipositor); OIM short basally up to near valvilli, then long and setiform till after valvilli, becoming shorter in aval of valvilli, valvilli with small fringe of setae apically (figs 53, 54), upper valve without subapical notch and with fringe of setae on ventral wall of upper valve apically (figs 50, 51).

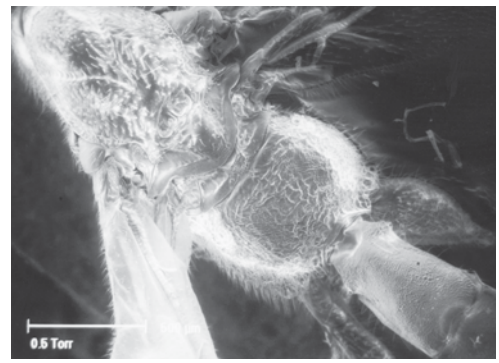


Fig. 50, *Agathis depressifrons* spec. nov., holotype, ♀, mesosoma, dorsal aspect.

Colour.— Black; fore leg (except coxa), middle femur medially and apically, tibial spurs, and basal half of second tergite yellowish; middle tibia and tarsus light brownish; hind leg, and tergites dark brown; fore tarsus weakly infuscate; wing membrane moderately infuscate.

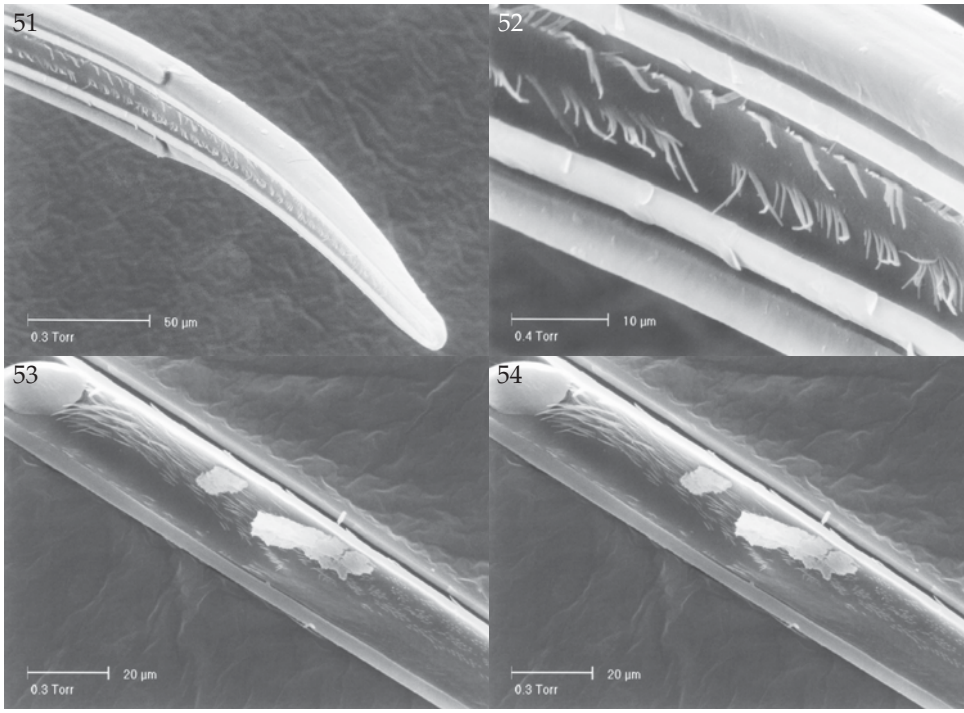
Etymology.— Depressifrons because of the posterior depressions of the frons.

Notes.— This species is characterised by the pair of curved depressions of the frons posteriorly, the protruding stemmaticum and partly protruding area around ocelli, the absence of the second submarginal cell of the fore wing, the very coarsely punctate middle lobe of the mesoscutum and the antero-median crest of the frons. It is distinct from the Neotropical *Plesiocoelus bassiformis* van Achterberg, 1990, because of the presence of the vein SR1+3-SR of fore wing and the elongate head. It shares with *P. bassiformis* the lack of second submarginal cell of fore wing and the presence of a median crest on the frons.

Internal microsculpture of the ovipositor in the subfamily Orgilinae

Rahman et al. (1998a, b) has shown that the internal microsculpture of the ovipositor (OIM) could supply several informative characters for the study of the phylogeny. Recently, the concept of subfamily Orgilinae has been enlarged by the inclusion of several new genera and species. The relationships between some of them still remain uncertain. In an attempt to find some new characters for cladistic analysis, the OIM has been examined for 15 species belonging to 11 genera of this subfamily. Our observations showed a larger diversity in the subfamily Orgilinae than suggested by the results of Rahman et al. (1998a). The results presented here refer solely to the distal (= posterior) two thirds of the ovipositor because no significant features were observed anteriorly to this part.

Of the valvilli the position, the shape and their fringe have been studied. All the examined genera, except for *Eleonoria* Braet & van Achterberg, 2000, possess one pair of



Figs 51-54, *Agathis depressifrons* spec. nov., holotype, ♀. 51, apical part of ventral wall of upper valve of ovipositor; 52, id., detail of ctenidia; 53, area aval of valvilli of lower valve of ovipositor; 54, area amont of valvilli of lower valve of ovipositor.

valvilli and these are inserted laterally in the egg canal with a submarginal (concealed) stalk. This confirms the characters C, D and E for the Orgilinae as indicated by Rahman et al. (1998a). Normally, each valvillus possess a complete fringe of setae (figs 55, 57, 64; characters F and G of Rahman et al., 1998a), except for the genus *Bentonia* (data not shown) and at least one species of *Orgilus* (fig. 64) where the fringe is present only on the upper edge of the valvillus. The shape of valvillus is circular and is weakly spoon-shaped, except for the clearly elongate one in the genus *Bentonia* (data not shown).

In general, valvilli are in a subapical position in species with a long ovipositor (= ovipositor about as long as fore wing), as in *Orgilonia* and *Orgilus* species, *Stantonia* spec. 1, *Clotildea lucida, Doryctorgilus morvanae* spec. nov. and in *Podorgilus* species (table 1, character 19). In species of Orgilinae with a short ovipositor (= ovipositor about half as long as fore wing or less; e.g., *Stantonia* spec. 2, *Bentonia* species and *Orgilus niger*), the valvilli are always in a medial or submedial position. The ventral surface of the upper valve of the ovipositor in Orgilinae was examined but failed to reveal any small structures or ctenidia in the egg canal. These structures are present in *A. depressifrons* spec. nov. (figs 51-54), which corroborates its inclusion in the subfamily Agathidinae.

We follow Rahman et al. (1998a) using the valvilli as a reference point, or the area where it whould normally be present but appears lost (i.e. *Eleonoria*), because the main variation in the position and shape of the ctenidia are observed around this point. In all

Table 1. Data matrix used for the phylogenetic analysis.

		1 1111111112 2
		1234567890 1234567890 1
Outgroups	*Chelonus* spec.	0000001100 000??10010 2
	Macrocentrus spec.	0300000102 0000?00001 2
Subfamily Orgilinae	*Antestrix* spec.	0201000100 1001001020 ?
	Bentonia longicornis van Achterberg	2121000101 2210111011 2
	Clotildea lucida Enderlein	2121101001 3001001001 0
	Declotila albomarginata van Achterberg	0301011000 3001001020 ?
	Doryctorgilus morvanae gen. nov. & spec. nov.	2111101000 3000?01101 1
	Eleonoria spec.	1320010111 32??0111?0 2
	Orgilonia spec.	0121100111 321?011000 0
	Orgilus quadricolor Braet & van Achterberg	0101000001 3000?01011 2
	Kerorgilus longicaudis van Achterberg	0101100001 3000?0102?1 ?
	Petiorgilus schmiedeknechti van Achterberg	2111100011 3001011021 ?
	Podorgilus nemorensis sp. n.	2111000001 3101101001 1
	Stantonia spec.1 (Neotropical with long ovipositor)	2121001001 2210??1001 1
	Stantonia spec.2 (Neotropical with short ovipositor)	2121000101 2211111011 2
	Sulorgilus reclinervis van Achterberg	0101??0101 2100?0102?1 2

examined taxa OIM is present both proximally and distally of the valvilli (and always near the tip of the ovipositor), but there is a considerable variation in density and distribution of the ctenidia. The density of the OIM is high in *Clotildea lucida* (fig. 55), with the OIM reaching the valvilli, but it is usually moderate as in *Orgilonia* species (fig. 58), *Stantonia* spec. 1 (fig. 61) and *Orgilus niger* (fig. 24). In several cases in species with a long ovipositor, the OIM disappeared basally of the valvilli, as in *Orgilus podus* Braet & van Achterberg and *Orgilus* spec. (figs 63, 64) and *Doryctorgilus morvanae* spec. nov. (fig. 21). Sometimes the OIM is also absent distally as in an undescribed *Orgilus* species (data not shown); as a result the OIM is present only on the dorsal edge of the egg canal of the lower valve. In this case, the density of the OIM is usually higher just near the limit of the smooth area (fig. 63). The observed OIM consists of some folds on the wall of the egg canal, with ctenidia present basally to the valvillus (but absent in this part in *D. morvanae* (fig. 21)), and, most commonly, with ctenidia-like teeth.

The ctenidia present in the egg canal belong to four types:

– Type 1: ctenidia are scale-like with teeth arranged around the scale forming a more or less semicircular arc (figs 55, 56). This structure is similar to the structure observed in Cardiochilinae, Cheloninae, Ichneutinae and Aphidiinae (character I, 4 of Rahman et al., 1998a). This type of ctenidia has been observed only in *Clotildea lucida* basally to the valvillus.
– Type 2: ctenidia are scale-like bordered with several triangular teeth of the same size (figs 57, 62). The number of teeth ranges from 4 to 6. This type has been found basally to the valvilli in *Clotildea lucida*, but on both sides of the valvillus in *Stantonia* spec. (species with long ovipositor) and *Orgilus niger*.
– Type 3: similar to type 2, but at least one tooth is bigger than the others, and the number of teeth is reduced, in general 4 or less (figs 24, 57, 59, 61). *Bentonia* spec.

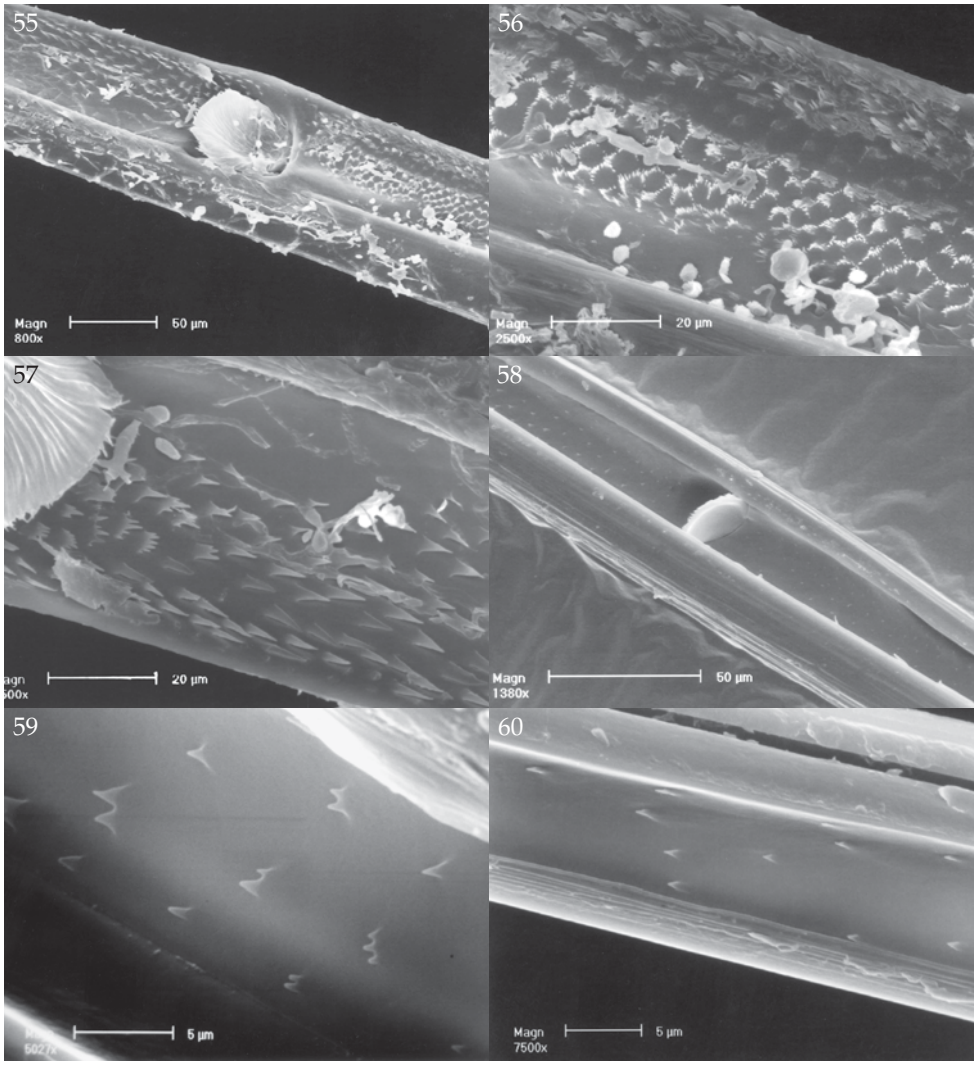
(data not shown), *Clotildea lucida*, *Orgilonia* species. and *Stantonia* spec. display this type of ctenidia.

– Type 4: ctenidia form a single triangular scale of which three subtypes can be identified:
  i) subtype a: ctenidia medium sized, its height is 2-3 times its basal width (figs 24, 57-61, 63, 64). Commonly encountered in all genera basally to the valvilli but absent distally in *Podorgilus nemorensis* spec. nov. and in *Doryctorgilus morvanae* spec. nov. This subtype could be related to the character L, 6 described by Rahman et al. (1998a; fig. 2, d).
  ii) subtype b: ctenidia triangular but much shorter than subtype a (its height less than 1.5 times its basal width) as in *P. nemorensis* (fig. 34). This form is commonly encountered between the base of the ovipositor and the valvilli.
  iii) subtype c: similar to subtype a but much longer, its height 5-10 times its basal width. This subtype is present in *D. morvanae* and *P. nemorensis* (figs 21, 23, 33). It could be related to the form previously described (fig. 3,e; character L, 7 of Rahman et al., 1998a) for Afrotropical *Orgilus* species, because the ctenidium is shaped finger-like. During our study this subtype has been found also in only one Neotropical *Stantonia* species (data not shown).

The supposed functional implications of the differences observed between the OIM of the species belonging to different genera are speculative. Members of the subfamilly Orgilinae are koinobiont endoparasitoids of weakly concealed lepidopterous larvae (Braet et al., 2000) and probably lay small alecithal eggs as do most other koinobionts braconids. The results observed during our study, e.g. the presence of a fringe on the lip of valvilli, the petiolate insertion of the valvilli, the presence of ctenidia along the entire length of the egg canal, suggest that the eggs emerge near the tip of the ovipositor. The presence of the folds basally to the valvillus in *Doryctorgilus morvanae* is unexpected and difficult to explain. Possibly they play the same rôle as the ctenidia, if we suppose that they help to drag the egg chorion. Diversity of the shapes of the ctenida could be related to the size of ovipositor, the size of egg and the way the substrate is penetrated (when the host is more or less weakly concealed, e.g. a leaf-miner). The most interesting result is the observation that the types of ctenidia can be linked in an transformation series. Indeed, in *Clotildea lucida* we observed several intermediate forms between the types 1 to 4 (subtype a). To show the phylogenetic value of the new observations and despite the lack of information about the OIM of several genera of the Orgilinae, we have performed a cladistic analysis on all the genera now included in the Orgilinae. The outgroups, the subfamilies Cheloninae Foerster, 1862, and Macrocentrinae Foerster, 1862, were chosen because these subfamilies were found to be related to the Orgilinae in previous cladistic analyses (van Achterberg, 1984; Quicke & van Achterberg, 1990; Wharton et al., 1992; van Achterberg & Quicke, 1992; Dowton et al., 1998).

The following characters have been included in our analysis:

1. Ultimate segment of labial palp: 0 = apically inserted on the penultimate segment; 1 = medially inserted on the penultimate segment (which is sometimes reduced); 2 = basally inserted on the shortened penultimate segment (which is always reduced).
2. Occipital carina: 0 = complete; 1 = reduced medio-dorsally; 2 = reduced latero-ventrally and latero-dorsally; 3 = completely absent.



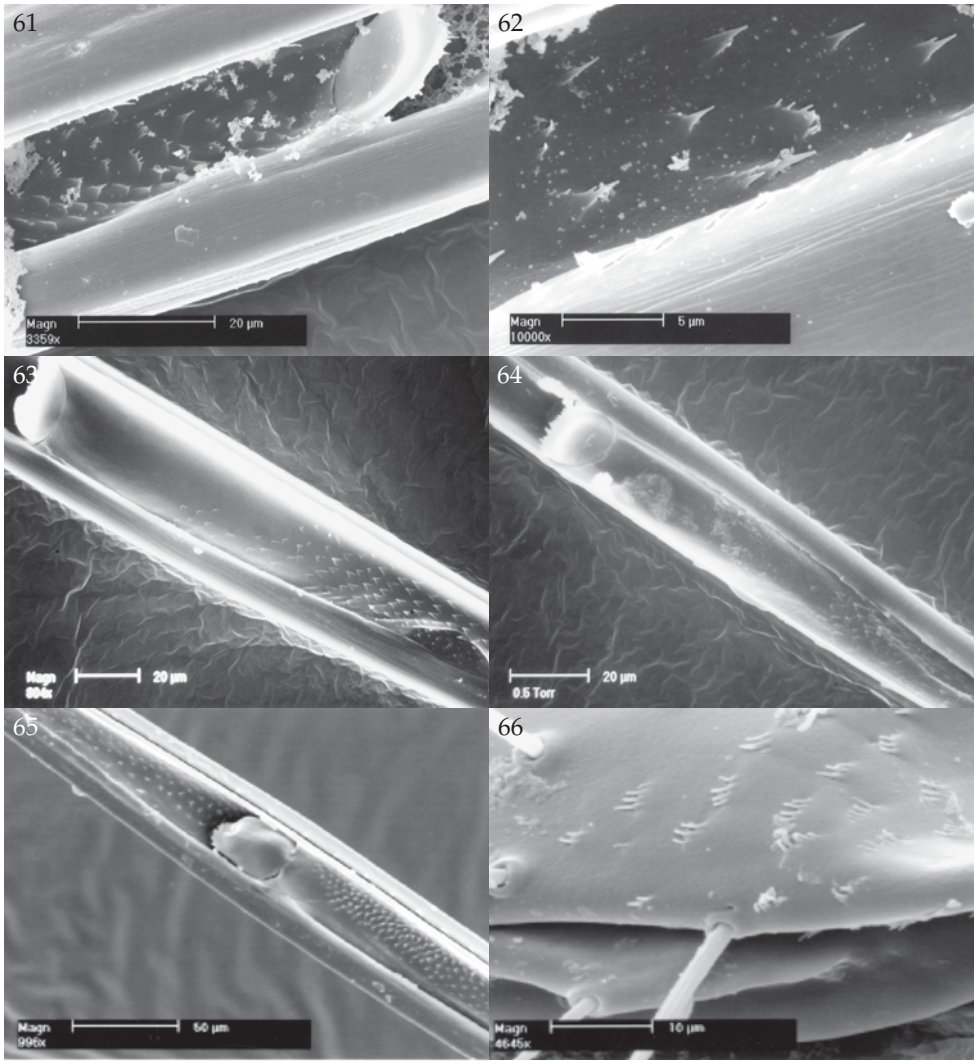
Figs 55-57, *Clotildea lucida* Szépligeti, ♀, Ivory Coast; fig. 58, *Orgilonia striata* van Achterberg, ♀, Dem. Rep. of Congo; fig. 59, *O. kiliwa* Braet, ♀, Dem. Rep. of Congo; fig. 60, *Eleonoria* spec. near *E. japonica* Braet, van Achterberg & Chen, ♀, (?locality). 55, 58, general view of wall of egg canal of lower valve of ovipositor; 56, 59, detail of ctenidia aval of valvillus; 57, area in aval of valvillus; 60, detail of area in amont of valvillus.

3. Scapus apically: 0 = truncate; 1 = weakly oblique; 2 = strongly oblique.
4. Pronope: 0 = absent; 1 = present.
5. Prepectal carina, if present: 0 = reaching anterior border of mesopleuron; 1 = far from the anterior border of mesopleuron.
6. Prepectal carina, if present: 0 = complete; 1 = reduced.
7. Metapleural flange: 0 = present; 1 = absent.

8. Sculpture of propodeum: 0 = absent, at most punctate; 1 = present (but not punctate).
9. Sharp lateral crease of third tergite: 0 = absent or present only anteriorly; 1 = complete.
10. Vein 2A of fore wing: 0 = clearly present (sclerotized or spectral); 1 = absent.
11. Second submarginal cell of fore wing: 0 = present and largely rectangular; 1 = present and trapezoidal; 2 = present and triangular (r-m sometimes missing but 2-M present); 3 = absent.
12. Subbasal cell of hind wing: 0 = large (M+CU longer than 1-M); 1 = medium-sized (M+CU equal or subequal to 1-M); 2 = short (M+CU less than 0.3 times 1-M).
13. Shape of posterior border of hind wing: 0 = straigth or convex; 1 = concave.
14. Fore wing: 0 = hyaline; 1 = infuscate.
15. Fore wing infuscate, if present: 0 = completely; 1 = only apically.
16. Sculpture (rugae or coriaceous) of hind coxae: 0 = absent; 1 = present.
17. Hind tibial pegs: 0 = absent apically; 1 = present apically.
18. Length of hind trochantellus: 0 = equal or shorter than the hind trochanter; 1 = longer than hind trochanter.
19. Valvilli of ovipositor (character C of Rahman, 1998a): 0 = subapically situated; 1 = medially or submedially situated; 2 = basally situated.
20. Preapical notch of ovipositor: 0 = absent; 1 = present.
21. Number of type of ctenidia inside the egg canal: 0 = 3 or more; 1 = 2; 2 = 1.

The analysis resulted in 26 trees with length of 58, ci = 0.50, ri = 0.60 and a consensus tree of length of 63, ci = 0.46, ri = 0.54 (fig. 67). The inclusion of other specimens of *Orgilus*, and/or *Homolobus* species as additional outgroup, does not modify the topology of consensus tree.

Monophyly of the Orgilinae is supported by the presence of a pronope, the reduction of the second submarginal cell of the fore wing and the presence of apical hind tibial pegs (characters 4, 10, 16). In the subfamily Orgilinae three clades are observed. The first clade (the tribe Mimagathidini) includes the genera *Bentonia* and *Stantonia*, *Orgilonia* and *Eleonoria.* This clade is supported by two apomorphous character states: a very short subbasal cell of hind wing and the posterior margin of hind wing concave (characters 12, 13). Among this clade, *Orgilonia* and *Eleonoria* are found to be the sister-group of *Bentonia* + *Stantonia*. Four characters divide the two groups: third tergite with a sharp lateral crease and no preapical notch of the ovipositor (characters 9, 20) for *Orgilonia* + *Eleonoria*; the apical segment of the labial palp is basally inserted on the shortened penultimate segment and the presence of a triangular second submarginal cell of the fore wing (characters 1, 11, but second submarginal cell may be absent in *Stantonia*) for *Bentonia* + *Stantonia*. In this view, the absence of an ovipositor notch could be a reversion inside the Mimagathidini. *Bentonia* is here inserted between two species groups of *Stantonia*, differing by the length of ovipositor. Inclusion of additional autapomorphous character states of *Bentonia* does not change the topology of the resulting tree (data not shown). This suggests that *Bentonia* has to be included in *Stantonia* (as a junior synonym of *Stantonia* and probably as a subgenus). We prefer to postpone the decision until a full analysis of the *Stantonia* + *Bentonia* complex has been



Figs 61, 62, *Stantonia* spec. 1, ♀ (spec. C; Neotropical specimen with long ovipositor); fig. 63, *Orgilus podus* Braet & van Achterberg, ♀, French Guyana; fig. 64, *O.* spec. (with long ovipositor), ♀, French Guyana; fig. 65, *Bentonia longicornis* van Achterberg, ♀, French Guyana; fig. 66, *Stantonia* spec. nov. P, ♂, French Guyana. 61-64, general view of wall of egg canal of lower valve of ovipositor and detail in amont of valvillus; 65, inner side near valvillus; 66, detail of ctenidia on outer side of male genitalia.

completed. The genus *Eleonoria* showed up close to *Orgilonia* which is in agreement with the morphological observations and the comments by Braet et al. (2000). The elongate hind trochantellus is also present in the genus *Doryctorgilus*.

The second clade is supported by only one apomorphous character state (the presence of weakly oblique scapus: character 3) and includes the genera *Petiorgilus*, *Clotildea*, *Doryctorgilus* and *Podorgilus*. These genera all have the apical segment of

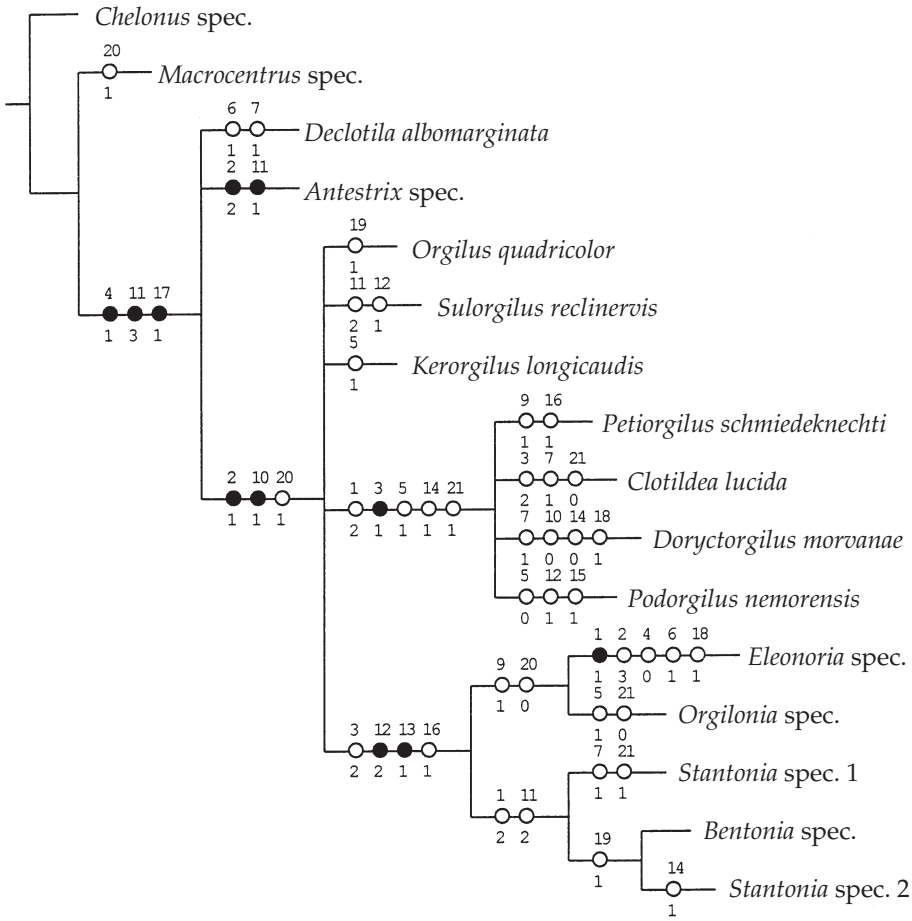


Fig. 67. Consensus tree resulting of the cladistic analysis of the taxa listed in table 1. Length = 58; ci = 0.50; ri = 60.

labial palp basally inserted on the penultimate segment (as in *Stantonia* and *Bentonia*), the prepectal carina far from the anterior border of the mesopleuron, the fore wing with some infuscation and at least with two types of ctenidia on the wall of the egg canal of the lower valve (characters 1, 5, 14, 21). Considering the last character, *Clotildea* seems to be the more derived genus because it possesses three types of OIM. The close relationship of *Doryctorgilus* and *Podorgilus* is supported by the similar shape of the OIM (figs 23, 33). Both taxa possess aval of the valvilli several very long triangular ctenidia, but with a narrow base. No derived characters support the basal position of the genera *Orgilus*, *Kerorgilus* and *Sulorgilus*. The group of seven genera (*Orgilus* up to *Podorgilus:* fig. 67) share the absence of specialized sculpture (at most punctate) on the propodeum. The seven genera form the tribe Orgilini. The excentric position of the genus *Declotila*, near the genus *Antestrix*, may be an artefact because of the choice of the used characters. In general, (except of *Declotila*), the group of the

Mimagathidini and Orgilini are supported by the presence of a medio-dorsally reduced occipital carina and the absence of vein 2A of the fore wing (characters 2, 10). Secondarily, both character states are absent in the Orgilini.

The third clade formed by the genera *Declotila* and *Antestrix* is united by the more or less infuscate fore wing and the presence of vein 2A on fore wing (characters 13, 10), but both are probably plesiomorphous and highly variable character states, the same counts for the presence of a long vein 2-M of the fore wing. This result seems to suggest the placement of *Declotila* near the tribe Antestrigini. Until the discovery of apomorphous character states supporting this placement, we prefer to consider *Antestrix* as the only genus of Antestrigini and we retain the genus *Declotila* provisionally in the Orgilini.

In conclusion, the subfamily Orgilinae is subdivided in three tribes. The tribe of Mimagathidini Enderlein, 1905, (excluding the genera *Mesocoelus, Aneurobracon* and *Plesiocoelus*, because of the OIM of the ventral wall of the upper valve of theovipositor; still needs to be assessed for *Aneurobracon*), is defined by having the apical segment of labial palp usually basally inserted on the shortened penultimate segment (but apically attached in *Orgilonia* and medially attached in *Eleonoria*); the scapus strongly oblique apically, the posterior border of the hind wing concave (but straigth to weakly convex in *Eleonoria*), the subbasal cell of the hind wing small, and vein cu-a of hind wing reclivous to strongly reclivous. The tribe includes the genera *Bentonia*, *Eleonoria*, *Orgilonia* and *Stantonia*. The definitions of tribes Orgilini Ashmead, 1900, and Antestrigini van Achterberg, 1987 (van Achterberg, 1987) do not need modification.

The consensus tree suggests the following evolutionary trends in subfamily Orgilinae: i) the reduction of the number of sclerotized veins (loss of second submarginal cell of fore wing, in the Orgilini); ii) the acquisition of other types of ctenidia on the wall of the egg canal, the plesiomorphous state is only one type of ctenidia; iii) the shortening of the ovipositor in *Bentonia* and *Stantonia* (usually 0.1-0.2 times as long as fore wing). The short ovipositor is absent in the other Mimagathidini and Orgilinae, but an intermediate reduction of the ovipositor length occurs in some species of *Orgilus* (e.g., *O. niger* with ovipositor about 0.5 times as long as the fore wing); iv) the reduction of the third segment of the labial palp and the insertion of the fourth near the base of the third segment; it developed twice independently in the subfamily: in some Orgilini and in the Mimagathidini; v) the development of an oblique apex of the scapus; it developed twice independently: in the tribes Orgilini and Mimagathidini; vi) the presence of an elongate hind trochantellus; it is present in the tribe Mimagathidini (*Eleonoria*) and in the tribe Orgilini (*Doryctorgilus*).

Key to tribes and genera of the subfamily Orgilinae Ashmead
(modified after van Achterberg, 1994b)

1. Vein 1-SR of fore wing present; occipital flange strongly protruding posteriorly; occipital carina absent ventrally; pronope slit-shaped and anteriorly situated on pronotum; scutellum with distinct depression medio-posteriorly; (Neotropical); tribe Antestrigini van Achterberg, 1987 ..... ***Antestrix*** van Achterberg, 1987
- Vein 1-SR of fore wing absent; occipital flange not or sligthly protruding posteriorly; occipital carina usually present ventrally or totally absent; pronope (if present)

round, semicircular or elliptical, if distinctly transverse or slit-like then situated near middle of pronotum; scutellum without depression medio-posteriorly or only narrowed developed (as in *Petiorgilus*) 2

2. Subbasal cell of hind wing small; scapus usually oblique apically; apical segment of labial palp basally (*Stantonia*) or medially (*Eleonoria*) inserted on penultimate segment, if apically inserted, then subbasal cell of hind wing very small and vein cu-a strongly reclivous (*Orgilonia*); vein r-m of fore wing often present (with or without second submarginal cell); (Pantropical); tribe Mimagathidini Enderlein, 1905 3
- Subbasal cell of hind wing medium-size to large; scapus usualy truncate apically but sometimes weakly oblique (as in some *Podorgilus* species); ultimate segment of labial palps basally or apically inserted on the penultimate ones; subbasal cell of hind wing large with vertical reclivous (no more than 45°) vein cu-a; second submarginal cell of fore wing absent (except in *Sulorgilus*) and all veins sclerotized; (Cosmopolitan); tribe Orgilini, Ashmead, 1900 5
3. Hind trochantellus nearly equal to the length of hind trochanter; posterior margin of hind wing concave or straight 4
- Hind trochantellus longer than hind trochanter and usually with apical teeth; posterior margin of hind wing straight or weakly convex ..... ***Eleonoria*** Braet & van Achterberg, 2000
4. Third and fourth metasomal tergites with sharp lateral crease; sclerotized part of vein 2-M of fore wing absent or nearly so; vein r-m of fore wing absent, and second submarginal cell of hind wing absent; fourth segment of labial palp apically attached to third segment ..... ***Orgilonia*** van Achterberg, 1987
- Third and fourth metasomal tergites without sharp lateral crease; sclerotized part of vein 2-M of fore wing distinct; vein r-m of fore wing usually present, resulting in a triangular second submarginal cell; fourth segment of labial palp attached basally to third segment, and inserted together on second segment (including *Bentonia* van Achterberg, 1992) ..... ***Stantonia*** Ashmead, 1904
5. Length of fore wing more than 12 mm and its membrane dark brown; second metasomal tergite with pair of depressions; metapleuron not differentiated from propodeum; dorsal carina of first tergite completely absent; scutellar and pleural sulci smooth; metapleural flange absent 6
- Length of fore wing less than 10 mm and its membrane largely hyaline, at most with apical dark spot or slightly infuscate; second tergite without depressions; metapleuron differentiated from propodeum; dorsal carinae of first tergite nearly always present basally; pleural sulcus, and nearly always also scutellar sulcus sculptured; metapleural flange present (except in *Doryctorgilus*) 7
6. Occipital carina completely and main part of prepectal carina absent; second metasomal tergite only with a pair of diverging depressions; surroundings of stemmaticum normal, flat; notauli absent on mesoscutal disc; vein 2A of fore wing distinct; scapus truncate apically ..... ***Declotila*** van Achterberg & Quicke, 1992
- Occipital carina strong up to middle level of eyes and complete prepectal carina present; second metasomal tergite with X-shaped depressions; stemmaticum situated in a wide depression; notauli present on mesoscutal disc; vein 2A of fore wing absent; scapus oblique apically ..... ***Clotildea*** Szépligeti, 1914

7. Propleuron concave ventrally, and in lateral view with straight ventral margin; first metasomal tergite petiolate and flat basally; laterope absent; scutellum with narrow transverse depression medio-posteriorly ..... ***Petiorgilus*** van Achterberg, 1987
- Propleuron convex ventrally, and in lateral view usually with curved ventral margin; first metasomal tergite (sub)sessile and usually concave medio-basally; laterope more or less developed; scutellum without distinct transverse depression medio-posteriorly 8
8. Clypeus with a pair of upwardly bent tubercles dorsally; tarsal claws very slender; hind tarsus slender and long ..... ***Kerorgilus*** van Achterberg, 1985
- Clypeus without tubercles; tarsal claws less slender; hind tarsus usually less slender and shorter 9
9. Hind trochantellus distinctly longer than hind trochanter, elongate (fig. 11); fore and middle tibiae with row of spines; metapleural flange absent (fig. 4) ..... ***Doryctorgilus*** gen. nov.
- Hind trochantellus about as long as hind trochanter, robust; fore and middle tibiae without row of spines; metapleural flange present 10
10. Hind basitarsus strongly widened; pronope very wide and deep, slit-like (fig. 31); vein cu-a of hind wing distinctly sinuate (figs 25, 36) ..... ***Podorgilus*** van Achterberg, 1994
- Hind basitarsus slender; pronope small and comparatively shallow, elliptical; vein cu-a of hind wing straight 11
11. Vein cu-a of hind wing strongly reclivous; vein r-m of fore wing present; tarsal claws bifurcate; scutellum strongly convex; vein 1-M of hind wing widened, and linearly connected to vein 1r-m, both veins about of equal length; prepectal carina absent ..... ***Sulorgilus*** van Achterberg, 1994
- Vein cu-a of hind wing vertical or slightly reclivous; vein r-m of fore wing absent, at most with short remnant; tarsal claws simple; scutellum slightly convex; vein 1-M of hind wing slender and angled with vein 1r-m, and much longer than vein 1 r-m; prepectal carina usually present ..... ***Orgilus*** Haliday, 1833

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