

A NEW GENUS AND NINE NEW SPECIES OF PHILIPPINE BRACONIDAE (Hymenoptera)

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Abstract: Since the listing of 125 genera of Braconidae (Baltazar, 1962) known in the Philippines, 2 more genera may be added to the list, namely: *Macrobracon* Szepligeti and *Ischnobracon*, a new genus. Eleven species of braconids are discussed, 9 (8 ♀♀, 1 ♂) considered new. The ♀ of *Aphrastobracon philippinensis* and the ♂ of *Gronaulax semperi* (Roman) are recorded and described for the first time.

The few specimens studied were loan materials from the Bishop Museum, Honolulu; private collection of Dr. and Mrs. Henry Townes, University of Michigan, Ann Arbor, Michigan; collection of the late C. F. Baker deposited in the U. S. National Museum, Washington D. C.; and collection of the Bureau of Plant Industry, Manila. The location of types and other specimens studied are indicated in parenthesis as (BISHOP), (TOWNES), (USNM) or (MANILA).

For the loan of specimens I wish to thank Dr. J. Linsley Gressitt of Bishop Museum, Dr. and Mrs. H. Townes of the University of Michigan, and Mr. C. F. W. Muesebeck of the U. S. National Museum. I am also indebted to Dr. C. Watanabe of Hokkaido University at Sapporo who helped me with references and Mr. Muesebeck who carefully edited the manuscript.

Genus *Aphrastobracon* Ashmead

Aphrastobracon Ashmead, 1896, Proc. US Nat. Mus. 18: 646 (type: *Aphr. flavipennis* Ashmead; orig. design. and monobasic).

Synonyms: *Megalommum* Szepligeti and *Curriea* Ashmead.

The genus is readily distinguished from other Braconinae in having the nervulus antefurcal or inserted far anterior to the basal vein (fig. 2); abscissa 1 of cubitus strongly curved and with discoideus thickened; usually eyes large and inner orbit deeply emarginate.

While Watanabe¹ lumped all the species described in *Aphrastobracon*, *Megalommum* and *Curriea* into one genus *Aphrastobracon*, I suggest a regrouping of the 25 species mentioned in Watanabe's preliminary revision based on the presence or absence of the malar space, and the length and shape of the ovipositor (figs. 1, 7 & 8). The number of bristles found at the apex of the costella and the presence or absence of the brown spot on discoidal

1. Watanabe, C. 1950. A preliminary revision of the genus *Aphrastobracon* Ashmead (Hymenoptera, Braconidae). Jour. Fac. Agri. Hokkaido Univ. (Sapporo) 48 (3): 291-304.

cell 2, the shape and the sculpture of the abdominal tergites will have some significance in the classification of the species. Unlike Watanabe I believe that there is more than one genus involved and that this group of braconids deserves a tribal rank, *Aphrastobraconini*.

Judging from the description of *A. annulatus* (Turner) originally recorded from Australia and Tasmania, the species belongs to the group having eyes not so large, malar space present, ovipositor short and thickened (fig. 1), and discoidal cell 2 without brown markings. Two new species described below (*carinatus* and *monothrix*) are like *A. annulatus*, but different from *A. philippinensis* Baker in the characters pointed out in couplet 1 of the key. I am inclined to place the 3 species in a genus different from *Aphrastobracon* but refrain from doing so until more material is available for study.

KEY TO SPECIES OF PHILIPPINE APHRASTOBRACON

1. Malar space absent; eyes large and emarginate on inner orbit; discoidal cell 2 with brown marking on lower side; tergite 2 with basal triangular area large and reaching middle of tergite; ovipositor slender and long, about 1/2 as long as fore wing... 2
 - Malar space present; eyes not so large with inner orbit very slightly emarginate; discoidal cell 2 immaculate; tergite 2 with basal triangular area small and not reaching middle of tergite; ovipositor thick and short (fig. 1), 1/5-1/4 as long as fore wing..... 3
2. Hind leg dark; tergites 2-5 rugose with longitudinal striae; abscissa 1 of cubitus almost straight; hind wing with 4 bristles at apex of costella, subcostella continuous with radiella; ovipositor sheath about 0.45 as long as fore wing, ovipositor depressed with 2 constrictions before apex (fig. 7)..... **sinuatus**

Hind leg yellow; tergites 2-5 more or less smooth and finely pubescent; abscissa 1 of cubitus curved at middle; hind wing with 5 bristles at apex of costella, subcostella separated from radiella by a cross-vein; ovipositor sheath about 1/4 as long as fore wing, ovipositor tapering to a sharp point (fig. 8)..... **philippinensis**
3. Hind leg dark; hind wing with 2 bristles at apex of costella; propodeum with 3 longitudinal carinae on its mid-apical 1/2; nervulus curved and lower 1/2 perpendicular to submedius (fig. 2).....**carinatus**

Hind leg yellow; hind wing with 1 bristle at apex of costella; propodeum without carinae; nervulus straight and oblique.....**monothrix**

***Aphrastobracon philippinensis* Baker** Figs. 8 & 14.

Aphrastobracon philippinensis Bkr., 1917, Philip. Jour. Sci. (D) **12**: 213 (type: ♂, Mt. Maquiling, Laguna; USNM).—Ramakrishna, 1926, Bull. Ent. Res. **17**: 96, 98 (key, listed).—Watanabe, 1950, Jour. Fac. Agri. Hokkaido Univ. **48**: 295 (desc., dist., figs., key).—Baltazar, 1962, Pacific Ins. **4** (4): 758 (fig.).

Heretofore only the ♂ was known and it has been described in detail by Baker. Watanabe gave additional notes and its occurrence in Formosa, illustrated the fore and hind wings and had a key to differentiate it from 4 other species of Oriental *Aphrastobracon*. The ♀ is recorded for the first time and is represented by a single specimen (fig. 14).

Female: Fore wing 9.5 mm long. Bigger than ♂ and differs in the following characters: Width of face equals 3/5 its length (1/2 in ♂); distance of posterior ocellus to

eye equal to diameter of ocellus ($1/2$ diameter of ocellus in ♂); nervulus slightly antefurcal with basal vein, space between them equal to diameter of vein (antefurcal in ♂, its distance from basal vein equal to length of nervulus), brown spot in discoidal cell 2 dark (light brown in ♂); tergite 2 with wedge-shaped area more or less an isosceles triangle (in ♂ base of triangle $1/2$ as long as its height); tergite 3 with its length $2/5$ apical width and without transverse hairs near basal corner (in ♂ length of tergite equals $1/2$ apical width and transverse hairs conspicuous and arising from basolongitudinal carina); ovipositor sheath about $1/4$ as long as fore wing or $2/5$ as long as abdomen; ovipositor tip (fig. 8) tapering to a sharp point. As in the ♂, 6 segments are fully exposed with tergite 3 widest at apical width; tergite 1 with 2 sharp carinae on each side, above and below spiracle.

DISTRIBUTION: Philippines and Formosa.

SPECIMENS EXAMINED: ♂ (type), Mt. Maquiling, Laguna, Luzon, C. F. Baker (USNM); ♂, Sibuyan, C. F. Baker (MANILA); ♀, Cotabato, Cotabato, Mindanao, II. X. 1953, H. Townes (TOWNES), all Philippines.

Aphrastobracon sinuatus Baltazar, n. sp. Fig. 7.

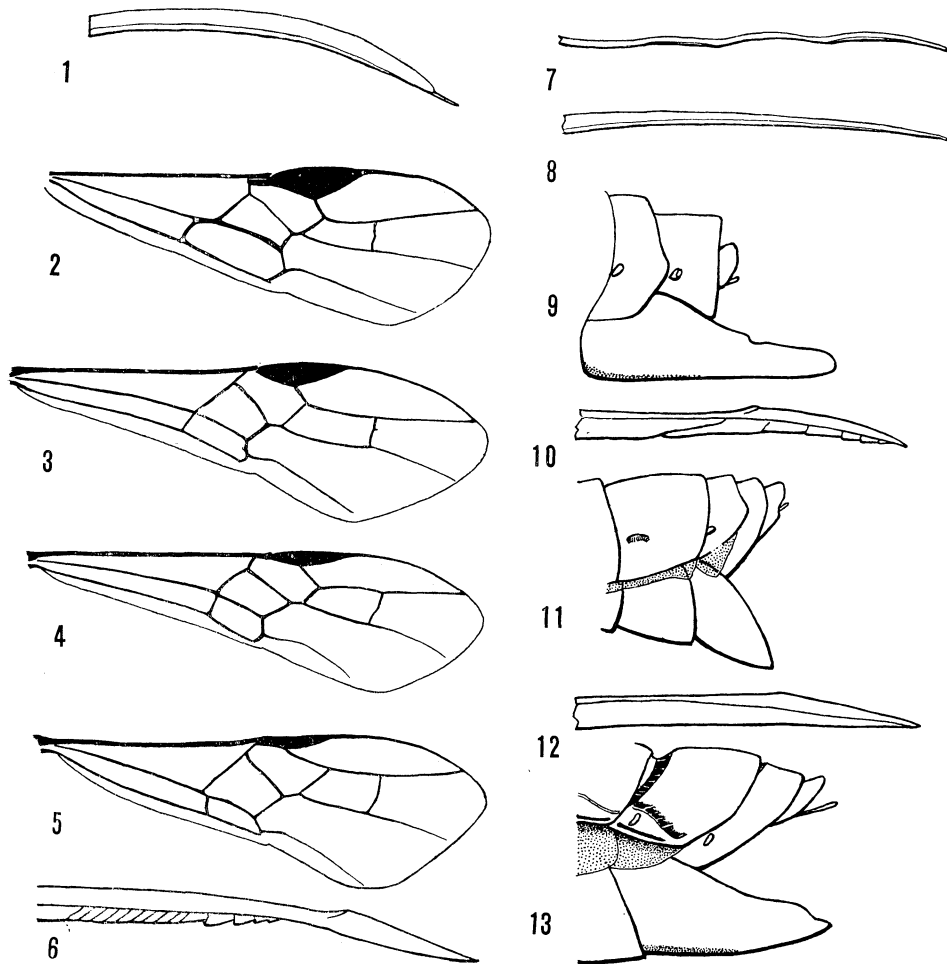
Female: Fore wing 8 mm long. Similar to ♀ of *philippinensis* Baker in the appearance of head and thorax except that the eyes are more deeply emarginate in *philippinensis*. Nervulus antefurcal, oblique, with its distance from basal vein about $3/4$ its length; discoidal cell 2 with brown spot on lower side; abscissa 1 of cubitus almost straight except for slight bend at base; subcostella continuous with radiella. Abdomen with 5 tergites fully exposed, depressed, with the tergite 3 widest; tergites 2–5 and raised triangular area on tergite 1 longitudinally striate; tergite 1 with 2 sharp carinae on each side, apical width about $2\times$ basal width; tergite 2, $3/5$ as long as apical width, with basal isosceles triangular area reaching $3/4$ of tergite, with longitudinal carina beyond apex of triangle; tergite 3 transverse, length about 0.3 apical width, basal corner marked off by an oblique depression; tergite 4 similar to 3 but slightly narrower and sides parallel; tergite 5 narrower than 4, length about $2/5$ basal width; succeeding tergites telescoped underneath 5; ovipositor sheath as long as abdomen or about 0.45 as long as fore wing; ovipositor depressed with its tip apically sinuate with 2 constrictions (fig. 7) (resembling ovipositor tip of *Bathyaulax*). Brownish yellow. Wings hyaline with a yellowish tinge, veins yellowish brown, stigma yellow; ovipositor sheath and antenna dark brown except for yellow scape and pedicel; ocellar triangle brown; hind leg dark brown to blackish except for yellow trochanter 2, basal ring on tibia, and 2 tibial spurs.

Male: Unknown.

Holotype ♀ (USNM), Los Baños, Laguna, Luzon, Philippines, C. F. Baker; right leg and tarsus of left hind leg missing.

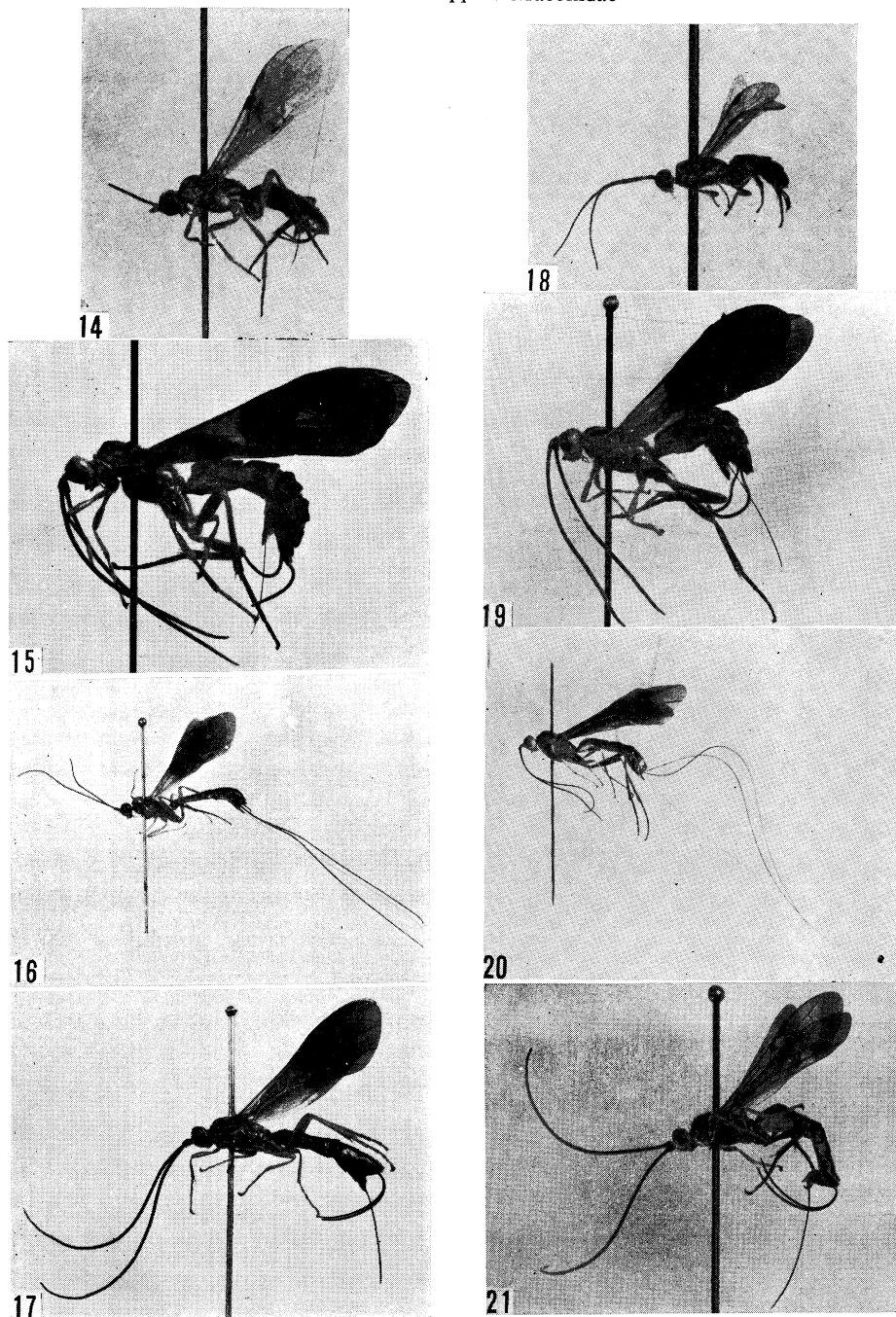
Aphrastobracon carinatus Baltazar, n. sp. Figs. 1, 2 & 18.

Female: Fore wing 4.6 mm long. Face squarish with a dorsal median cleft, finely rugose, with sparse pubescence; malar space $1.5\times$ basal width of mandible; frons, vertex and temple more or less smooth or very finely punctate under high magnification; eye very slightly emarginate near antennal base. Thorax moderately pubescent and minutely punc-



Figs. 1-13. Stipled areas are membranous. 1, *Aphrastobracon carinatus*, n. sp., entire ovipositor; 2, *Aphrastobracon carinatus*, n. sp., fore wing; 3, *Gronaulax semperi* (Roman), fore wing; 4, *Ischnobracon gressitti*, n. sp., fore wing; 5, *Macrobracon nigropilosus*, n. sp., fore wing; 6, *Macrobracon bicolor*, n. sp., tip of ovipositor; 7, *Aphrastobracon sinuatus*, n. sp., tip of ovipositor; 8, *Aphrastobracon philippinensis* Ashmead, tip of ovipositor; 9, *Gronaulax muesebecki*, n. sp., tip of abdomen; 10, *Gronaulax muesebecki*, n. sp., tip of ovipositor; 11, *Ischnobracon bakeri*, n. sp., tip of abdomen; 12, *Ischnobracon bakeri*, n. sp., tip of ovipositor; 13, *Macrobracon bicolor*, n. sp., tip of abdomen.

tate, interspaces 4-5 \times diameter of punctures; pronotal collar short, not prolonged into a neck, almost vertical like the anterior of mesoscutum, with a deep transverse groove; propodeum punctate with 3 longitudinal carinae on its mid-apical 2/5, its spiracle oval and situated at about mid length of propodeum; metapleural groove below propodeal spiracle deep and extending over entire length of metapleurum; fore wing as in fig. 2: nervulus antefurcal, curved but lower 1/2 perpendicular to submedius, its distance between basal vein equal to abscissa 1 of radius; cubital cell 1 subequal in size to discoidal cell 1, cubital vein in-



Figs. 14-21. Lateral view of ♂♂ (those marked with an asterisk are the type specimens). 14, *Aphrastobracon philippinensis* Ashmead; 15, **Macrobracon nigropilosus*, n. sp. (basal part of wings is entirely yellow but because of the horizontal position of the left hind wing in the specimen a dark spot appears in the picture); 16, *Gronaulax semperi* (Roman); 17, **Ischnobracon bakeri*, n. sp.; 18, **Aphrastobracon carinatus*, n. sp.; 19, **Macrobracon bicolor* n. sp.; 20, *Gronaulax muesebecki*, n. sp.; 21, **Ischnobracon gressitti*, n. sp.

serted to basal vein on upper $2/5$; abscissae 1–2 of discoideus and 1st recurrent thickened; subcostella continuous with radiella; apex of costella with 2 bristles. Tergite 1, 0.7 as long as apical width, rugose, with a sharp lateral carina above spiracle and extending over entire length of tergite, space between carina and side of tergite wider than in *philippinensis*; tergite 2, $2/5$ as long as apical width, rugose, with a small triangular area on midbasal 0.3 and median carina ending at apex, with 2 convergent carinae joining the sharp carina of tergite 1, with a lateral depression outside carinae; tergite 3–8 rugoso-punctate, each with apical rim smooth; tergite 3 widest, 0.3 as long as apical width, with a median carina, basal corner marked off by a deep groove extending to mid length of tergite; tergite 4 narrower than 3, $2/5$ as long as apical width; tergite 5 shorter and narrower than preceding, $2/5$ as long as apical width; succeeding tergites concealed underneath the 5th; ovipositor short, thick and slightly curved downward (fig. 1); ovipositor sheath $1/4$ as long as fore wing, basal 0.3 narrow, apically inflated. Head and thorax yellow, abdomen brownish yellow; antenna, ovipositor sheath and hind leg fuscous; wings clear, veins brown except for yellow spot on basal 0.3 of stigma, yellowish on submedian, basal $1/2$ of costa and median; hind leg fuscous except for yellow base of coxa, basal 0.15 of tibia, apical end of tarsal segments 1–4; brownish coloration on tergites 1 and 2 could be due to deterioration; tergite 5 with 2 large brown spots.

Male: Unknown.

Holotype ♀ (BISHOP 3461), Tarumpitao Pt., Palawan, Philippines, 24. VI. 1958, in jungle clearing, H. E. Milliron.

Aphrastobracon monothrix Baltazar, n. sp.

Female: Fore wing 5.4–6.4 mm long. Similar to *A. carinatus* in having eyes not so large and inner orbit slightly emarginate; malar space present; discoidal cell 2 without a brown spot, and the ovipositor thick and short. The main differences from *carinatus* are mentioned in couplet 3 of the key to species of *Aphrastobracon*. Other differences are as follows: tergite 2 with a small, narrow, triangular area reaching middle of tergite; ovipositor sheath $1/5$ as long as fore wing.

Male: Unknown.

Holotype ♀ (USNM), Sibuyan, C. F. Baker. Paratype ♀, Sibuyan, Baker (MANILA).

The name "monothrix" refers to the single bristle found at the apex of the costella.

Genus **Macrobracon** Szepligeti

Macrobracon Szpg., 1902, Term. Fuzet. **25**: 44 (type: *M. concolor* Szpg.; design. by Viebeck).

Macrobracon is unique in the subfamily Braconinae in being the only genus in the Philippines having bifid claws on all legs, inner tooth being smaller. It is readily recognizable because of a pimple-like elevation near the mid-basal margin of tergites 4 and 5 and the big bumps on each apical corner of tergites 2–4 (figs. 15 & 19). Other distinguishing features are as follows: Abdomen thickset or tergites wider than long; tergite 2 with a large triangular striate area at center, extending from base to apex of tergite; tergites 3–6 each with a lateral carina and groove above and beyond spiracle; epipleura large; ovipositor sheath short, about $2/5$ as long as wing; tip of ovipositor as in fig. 6; subgenital

plate large, with apex not extending beyond tip of tergites (fig. 13), its midtriangular area membranous.

These are large, robust, black and yellow species, with basal 2/5 of wings yellow and apical 3/5 black (figs. 15 & 19). The ovipositor is short, its sheaths not exceeding 1/2 the length of the fore wing.

The occurrence of this genus in the Philippines is noted for the first time. Only 3 specimens were available for study.

KEY TO SPECIES OF PHILIPPINE MACROBRACON

1. Thorax entirely flavous **flavotum**
 Thorax flavous with 1 or 3 black stripes dorsally 2
2. Tergites yellow, with black hairs except on tergite 1; mesoscutum with 1 black stripe on mid lobe; tergites, hind leg and subgenital plate mostly fulvous; tergite 2 with sharp median point protruding beyond apical margin; ovipositor sheath about 0.35 as long as fore wing **nigropilosus**
 Tergites black except for tergite 1 yellow; mesoscutum with 3 black stripes, 1 on each lobe; tergites, hind leg and subgenital plate mostly black; tergite 2 with a blunt median point slightly protruding beyond apical margin; ovipositor sheath about 0.45 as long as fore wing **bicolor**

Macrobracon nigropilosus Baltazar, n. sp. Figs. 5 & 15.

Female: Fore wing 19 mm long. Face flat, squarish, with a median groove on upper 2/5, somewhat microreticulate and not shiny; area around ocellar triangle smooth and impunctate; scape flat on inner side, length (excluding bulb) about 1.5× its apical width. Pronotum hairy on posterior 1/2; mesoscutum with mid lobe and central part of lateral lobes smooth and hairless, the rest of thorax with sparse long hairs and fine punctures, hairs longest and punctures coarsest on metapleurum and propodeum, interspaces 3–4 × diameter of punctures; nervulus slightly postfurcal, basal vein oblique and forming a 45° angle with subcosta; radius ending near apex of wing (fig. 5). Tergites with dark pilosity except for light hairs on tergite 1 and basal 1/2 of tergite 2; tergite 1 about as long as wide, its profile pyramidal, anterior face of pyramidal elevation perpendicular to posterior face, with a lateral groove that converges at base of tergite near base of pyramid, lateral carina sharp beyond spiracle; tergite 2, 1/2 as long as apical width, midtriangular area raised and longitudinally striate, its midapical projection beyond apical margin forming a 90° angle, apical corner of tergite elevated; tergite 3 subequal in length to tergite 2 but wider at apex, with a bump-like elevation on each apical corner (fig. 15), lateral carina beyond spiracle present as on tergites 4–6; tergite 4, 0.3 as long as apical width, with a pimple-like elevation on midbasal margin, basal corner of tergite depressed and marked off by a deep groove that connects with the basal transverse groove; tergite 5 as long as preceding but narrower, very similar in appearance to tergite 4; tergite 6, 0.3 as long as basal width gradually narrowing at apex, with a slight indication of a pimple-like elevation on mid-basal margin, transverse basal groove present; tergite 7 small, about 1/2 length of preceding, apical margin emarginate; tergite 8 very small, conical with a rounded apex, as long as preceding; subgenital plate large, folded at middle, with long black hairs except on membranous triangular area; ovipositor sheath about 0.35 as long as fore wing, ovipositor

tip similar to fig. 6. Yellow with black hairs on tergites; yellow on basal $2/5$ of fore wing and an equal area on hind wing, and basal spot on stigma; the rest of wings black. Black as follows: antenna except for yellow apical $1/4$, ocellar triangle, mandibular teeth, mid lobe of mesoscutum, ovipositor sheath and hind tarsus; brownish on lateral lobes of mesoscutum and a small spot on occiput behind ocellar triangle.

Male: Unknown.

Holotype ♀ (TOWNES), Gapan, Nueva Ecija, Luzon, Philippines, 1954, A. Concepcion.

Macrobracon bicolor Baltazar, n. sp. Figs. 6, 13 & 19.

Female: Fore wing 16 mm long. Its main differences from *nigropilosus* are as follows: Tergite 1 with apex of pyramidal elevation forming a 120° angle in profile; tergite 2 with apical point of midtriangular area slightly protruding beyond apical margin, area outside triangle longitudinally striate except for punctate and elevated apical corner; tergite 3 longitudinally striate except for closely punctate apical margin, with interspaces $1/2-1 \times$ diameter of punctures, apical corner punctate with interspaces $3-4 \times$ diameter of punctures, lateral carina and groove beyond spiracle distinct as on tergites 4-6; tergite 4 longitudinally carinate except for punctate apical 0.3 , the interspaces $1-2 \times$ diameter of punctures, its median tubercle on basal margin not as prominent as in *nigropilosus*; tergite 5 longitudinally striate with elongate punctures on basal $3/5$, apically punctate with interspaces $1-2 \times$ diameter of punctures, its midbasal tubercle not so conspicuous; tergite 6 entirely punctate, the interspaces $2-3 \times$ diameter of punctures; ovipositor sheath 0.45 as long as fore wing, ovipositor tip as in fig. 6; subgenital plate large as in fig. 13. Yellow and black; yellow on basal 0.3 of fore wing and an equal area on hind wing, the rest black. Black as follows: Antenna, vertex and upper part of occiput, mandibular teeth, 3 longitudinal stripes on mesoscutum, hind leg except for yellowish base and apex of coxa, trochanters and femur, tergites 2-8, subgenital plate except for membranous area at middle, lateral spot on sternites 4-6, and ovipositor sheath; brownish on metapleurum and propleurum; the rest yellow.

Male: Unknown.

Holotype ♀ (TOWNES), Gapan, Nueva Ecija, Luzon, Philippines, 1954, A. Concepcion.

Macrobracon flavonotum Baltazar, n. sp.

Male: Fore wing 14 mm long. Eyes large and dorsally convergent, outer orbit sinuate; face narrower dorsally with a median groove on upper $2/5$; frons small, and subequal in width to ocellar triangle, about 0.7 as long as wide; ocellar triangle centrally located on top of head and sandwiched between eyes; temple shiny and hairy, about 0.17 length of eye when measured at middle; scape compressed, length (excluding bulb) about $2 \times$ its apical width. Thorax and propodeum similar to other species of *Macrobracon*. Tergites narrower in ♂ than in ♀, tergites 3-6 subparallel with the 3rd slightly wider, tergites 2-6 with a lateral groove and carina beyond spiracle; tergite 1 with apex of elevation forming a 120° angle in profile; tergite 2 rugose-punctate and longitudinally striate on elevated triangular area, length equal to $4/5$ apical width, midapical point protruding slightly beyond apical margin; tergite 3 rugose-punctate with longitudinal striae except for close punctures on elevated apical corner, length equal to 0.7 apical width; tergite 4 rugose-punctate with

finer sculpture than preceding tergite, basal corner depressed and marked off by a deep groove that connects with basal transverse groove, with a bump on midbasal 0.3 of tergite, length equal to apical width; tergite 5 very similar in appearance to tergite 4, punctures elongate; tergite 6 as long as preceding but narrower, with closely spaced punctures, the interspaces equal to diameter of punctures; tergite 7, 1.3× as long as preceding, basal 1/2 smooth and apical 1/2 hairy; tergite 8 small with long hairs. Yellow and black. Wings black except for yellow median and submedian cells, and basal 1/2 of hind wing. Antenna dark brown; yellow on head, thorax, abdominal segment 1, and legs except for dark brown hind tarsus; abdomen reddish brown except for segment 1.

Female: Unknown.

Holotype ♂ (USNM), Davao, Mindanao, Philippines, C. F. Baker.

Genus *Gronaulax* Cameron

Gronaulax Cam., 1910, Soc. Ent. **25** (6): 23 (type: *Gr. pilosellus* Cam.; monobasic).

Synonym: *Neuraulax* Roman.

The genus may be recognized by a combination of characters: Tergite 1 long, about 1.5× its apical width; tergite 2 with a midbasal triangular area and 2 apically convergent lateral carinae; subgenital plate of ♀ pointed and extending beyond tip of last tergite (fig. 9); ovipositor sheath about 2× the length of fore wing (figs. 16 & 20); radial vein ending near apex of wing; abscissa 2 of discoideus with a spur at middle (fig. 3); scape about 2× as long as its diameter; notaulus deeply or slightly impressed.

These are slender species with long ovipositor. The 2 species from the Philippines may be differentiated thus:

Notaulus deeply impressed; yellow and black species, wings yellow and black; tergite 2 with apex of triangular area reaching basal 1/4 of tergite; tergites 5-6 without a midlateral dimple-like depression	semperi
Notaulus shallow; red and black species, wings entirely black; tergite 2 with apex of triangular area reaching middle of tergite; tergites 5-6 with a midlateral dimple-like depression	muesebecki

Gronaulax semperi (Roman) Figs. 3 & 16.

Neuraulax semperi Rom., 1913, Arkiv Zool. **8** (24): 4 (syntypes: 3 ♀ ♀, Philippines, "Saloc" (Sailoc) & Maputi, Surigao; STOCKHOLM).

Gronaulax semperi: Baltazar, 1961, Philip. Jour. Sci. **90** (3): 391 (Lectotype: ♀, labeled "Saloc u. Maputi, Mindanao, Sept. Oct. 64"; STOCKHOLM). Paralectotypes: 2 ♀ ♀, labeled "Ins. Philipp. "; STOCKHOLM).

Female: Fore wing 9.3-17.9 mm long. Face square and wrinkled; malar space about 3/5 basal width of mandible; scape about 2× as long as apical width; head with long hairs except on depressed frons and lower 1/3 of temple. Pronotum with a deep dorsal groove that ends ventrally, the groove ventrally bordered by a carina. Mesoscutum shiny and impunctate except for hairy areas bordering notaulus and beyond it; notaulus deeply impressed on anterior 0.7 of mesoscutum; the rest of thorax with sparsely scattered long hairs and punctures, the interspaces 3-5× diameter of punctures on metapleurum and pro-

podeum, punctures finest on mesothorax; nervulus interstitial with basal vein, abscissa 2 of discoideus with a spur at middle (fig. 3), intercubitus 2 sometimes with a spur on its upper 2/5. Tergites with long, sparsely scattered hairs; tergite 1, 1.75× as long as apical width, longitudinally wrinkled, with a lateral groove, spiracle situated on anterior 0.3 of tergite; tergite 2, 1.33× as long as apical width, slightly longer than tergite 1, elevated basal triangular area longitudinally wrinkled with apex reaching basal 1/4 of tergite, 2 lateral convergent carinae enclosing a wrinkled area with distinct hair sockets, lateral area with diagonal striae ending at apical corner; tergite 3 as long as apical width, sides subparallel, with longitudinal striae excluding apical 0.15, hair sockets distinct on center of tergite, with a transverse depression on apical 0.3; tergite 4 similar in size and sculpture to preceding segment except for weaker striae; tergite 5, 4/5 as long as preceding tergite, gradually narrowed at apex, punctures at base of hairs very fine; tergite 6, 1/2 as long as 5; tergite 7 subequal in length to 6, somewhat concave dorsally; tergite 8 smallest, about 1/2 as long as preceding; subgenital plate extending beyond tip of last tergite as in fig. 9; ovipositor sheath about 2× as long as fore wing (fig. 16). Brownish yellow and black; black as follows: antenna, mandibular teeth, ocellar triangle, hairs on top of head, tergites 3–8 (sometimes tergites 3 & 4 with a faint yellow stripe at middle), subgenital plate, ovipositor sheath, hind tibia and tarsus; the rest yellow. Fore wing with a clear spot below intercubitus 1; basal 0.3 of fore wing and an equal area on hind wing yellow, apical portion black.

Male: Fore wing 8.5–9.5 mm long. The ♂ is described for the first time. Differs from ♀ as follows: Smaller in size; abdomen with 6 tergites; tergite 1, 1.4× as long as apical width, spiracle situated slightly before middle of tergite; tergite 2 with sides parallel, length 1.25× apical width; tergite 3, 4/5 as long as tergite 2, length about 0.85 apical width; tergite 4 slightly wider than tergite 3, similar in length and sculpture to preceding except for impunctate apical 1/4; tergite 5 as wide as 4, with longitudinal striae on basal 2/5; the rest of tergite with widely scattered punctures; tergite 6 shortest, about 0.66 as long as preceding, apical margin rounded.

Similar to the ♀ in color except for the brownish antenna; 1♂ has the entire abdomen yellowish brown except for the black tergite 6.

SPECIMENS EXAMINED: ♀ (lectotype), Sailoc and Maputi, Surigao, Mindanao, IX, X, 1864 (STOCKHOLM); 2♀♀ (paralectotypes), Philippine Islands (STOCKHOLM); 2♀♀, Butuan Agusan; 2♂♂, 7♀♀, Davao; 1♀, Iligan, Lanao; 10♀♀, Dapitan, Zamboanga, Mindanao, C. F. Baker (USNM & MANILA: 1♂, 4♀♀); 1♀, Cotabato, Cotabato, 11. X. 1953, Henry Townes (TOWNES); 2♀♀, Basilan, Baker (USNM); 1♀, Biliran, Baker (USNM); 7♀♀, Sibuyan, Baker (USNM, MANILA: 2♀♀).

Gronaulax muesebecki Baltazar, n. sp. Figs. 9, 10 & 20.

Female: Fore wing 18–19.5 mm long. Face 1.2× as wide as high, wrinkled, with a groove above corner of clypeus; malar space 4/5 basal width of mandible; scape about 1.5× as long as wide; head with long hairs except on depressed frons and outer orbit of eye; frons finely and closely punctate on side; temple with widely scattered fine punctures. Pronotum with a deep dorsal groove that ends ventrally; mesoscutum shiny and impunctate except for hairy areas bordering notaulus; notaulus weakly impressed on anterior 1/2 of mesoscutum; the rest of thorax excluding middle part of mesopleurum with sparsely

scattered long hairs and punctures, the interspaces 3–5× diameter of punctures on propodeum and metapleurum, punctures finest on lower mesopleurum; wing venation similar to fig. 3: nervulus interstitial with basal vein, abscissa 2 of discoideus with a spur at middle. Tergites and ventral part of subgenital plate with sparsely scattered long hairs; tergite 1 about 1.4× as long as its apical width, longitudinally wrinkled, with a lateral groove, spiracle situated on anterior 0.3 of tergite; tergite 2 about 1.25× as long as its apical width, subequal in length to tergite 1, elevated basal triangular area longitudinally striate with its apex reaching middle of tergite, 2 lateral convergent carinae sharp on basal 1/2 of tergite and enclosing a wrinkled area, lateral area rugose-punctate with a gastrocoele slightly beyond middle of tergite; tergite 3 about 4/5 as long as apical width, sides subparallel, longitudinally striate medially but striae apically divergent, rugose-punctate laterally, apical corner smooth, with a gastrocoele at mid length of tergite; tergite 4 about 0.9× as long as preceding, with sides subparallel, sculpturation similar to tergite 3 except that wrinkled area not so sharp and apical 2/5 of tergite with sparsely scattered minute punctures, gastrocoele present at mid length of tergite; tergite 5, 4/5 as long as preceding, gradually narrowed at apex, punctures at base of hairs very fine, with a small gastrocoele at mid length of tergite; tergite 6 shorter, about 2/5 as long as preceding with very minute punctures; tergite 7 about 1.25× as long as tergite 6; tergite 8 conical with hairs longer than segment; subgenital plate large, medially folded and membranous, its apex produced and extending well beyond tip of last tergite (fig. 9); ovipositor sheath about 2.2× as long as fore wing (fig. 20); ovipositor tip as in fig. 10. Rufous and black; wings entirely black except for a small clear spot below intercubitus 1. Black as follows: antenna, mandibular teeth, hairs on top of head and thorax, apico-dorsal 2/5 of propodeum, hind leg, all tergites, ovipositor sheath, subgenital plate, sternite 1, lateral stripe on sternites 2–5; face and legs 1–2 yellowish orange; thorax and dorsal part of head reddish orange; mid tarsus brown.

Male: Unknown.

Holotype ♀ (BISHOP 3462), L. Balinsasayao, Negros Oriental, 1–7. X. 1959, L. W. Quate. Paratypes: 2♀ ♀, Mt. Canlaon, 3600 feet, Negros Oriental, 29. IV. & 7. V. 1953, H., M., & D. Townes (TOWNES; MANILA).

The species is named after the world-renowned Mr. C. F. W. Muesebeck of the U. S. National Museum, Washington, D. C.

Genus *Ischnobracon* Baltazar, n. gen.

The genus is readily recognizable from other braconine genera by a set of characters: Abdomen subcompressed; ovipositor sheath short (figs. 17 & 21), 0.5–0.66 as long as fore wing; tergite 2 with a shiny triangular area at base. Other features common to the species in the genus are as follows: inner orbit of eye slightly emarginate; frons medially sulcate; notaulus distinct; propodeum flattish dorsally; nervulus interstitial or slightly postfurcal with basal vein; radial vein ending near apex of wing (fig. 4); subgenital plate triangular (fig. 11), its apex not extending beyond tip of last tergite; ovipositor tip acute and without teeth (fig. 12).

Medium-sized, slender species, with ovipositor about 1/2 as long as fore wing or longer but not exceeding length of the wing. In the Philippines the species are either yellow with the wings yellow and black, or black with the wings almost hyaline except for the dusky

apical margin. A species from Borneo has the abdomen banded yellow.

Type of genus: *Ischnobracon bakeri* Baltazar, n. sp.

Two new species are described and differentiated as follows:

- Body yellow with black and yellow wings; tergite 2 with apex of triangular area ending before middle of tergite or basal triangle 0.44 as long as tergite; propodeum without a median carina..... **bakeri**
- Body black with clear wings except for dusky apical margin, tergite 2 with apex of triangular area extending beyond middle of tergite or basal triangle 0.66 as long as tergite; propodeum with a median carina on apical 1/2..... **gressitti**

Ischnobracon bakeri Baltazar, n. sp. Figs. 11, 12 & 17.

Female: Fore wing 12.5 mm long. Face 1.3× as wide as high, hairy and punctate, the interspaces 2–3× diameter of punctures; malar space subequal to basal width of mandible; scape suborbicular, about as long as apical width; frons with short pubescence except for bare median part; occiput and temple hairy and punctate, the interspaces 3–4× diameter of punctures. Pronotum with a deep median groove from dorsal to ventral side; notaulus impressed on anterior 0.6 of mesoscutum; thorax almost hairless on pronotum, middle area of lobes on mesoscutum, middle part of mesopleurum, hairs most dense on metapleurum and propodeum; metapleural groove below spiracle deep; nervulus slightly postfurcal with basal vein. Tergite 1 shiny, 2× as long as apical width, with sparse long hairs, with lateral groove deep; tergite 2 subcompressed, slightly shorter than preceding, about 1.75× as long as apical width, basal corner depressed, with a raised midbasal smooth and shiny triangular area whose apex reaches basal 0.44 of tergite followed by a median groove ending at apical 1/4 of tergite, with 2 lateral grooves above spiracle extending to apex of tergite, hairs sparsely scattered; tergite 3 subcompressed, about 4/5 as long as preceding and 4/5 as long as apical width, with a lateral groove reaching to apical 3/5 of tergite and continuous with groove in preceding tergite, with a broad transverse depression at middle of tergite so that upper quadrant of tergite looks elevated, hairs sparsely scattered; tergite 4 similar in length and appearance to 3 except for the absence of a lateral groove but with a basal V-shaped groove, hairs 2× as dense as in 3; tergite 5, 4/5 as long as preceding, with a basal transverse groove, hairs denser than on 4, the interspaces 3–4× diameter of punctures; tergites 6–8 together equals 3/4 as long as 5, compressed, tergites 6 and 7 as hairy as 5; subgenital plate triangular (fig. 11), folded ventrally; ovipositor sheath 1/2 as long as fore wing (fig. 17), ovipositor tip as in fig. 12. Body yellow; yellow on basal 0.45 of fore wing and an equal area on hind wing, distal area black. Black as follows: mandibular teeth, scape, ocellar triangle, ovipositor sheath; flagellar segments and tergites yellowish brown; the rest yellow.

Male: Unknown.

Holotype ♀ (USNM), Iligan, Lanao, Mindanao, Philippines, C. F. Baker. Paratypes: 2♀ ♀, Basilan, Baker (USNM, MANILA); ♀, Butuan, Agusan, Mindanao, Philippines, Baker (MANILA).

The species is dedicated to the late Charles Fuller Baker, entomologist and second dean of the College of Agriculture at Los Baños, Laguna, Philippines.

Ischnobracon gressitti Baltazar, n. sp. Figs. 4 & 21.

Female: Fore wing 11.5 mm long. Similar to *I. bakeri* in vestiture and sculpture except for the following: Nervulus interstitial with basal vein (fig. 4); propodeum with a median carina on apical 1/2; tergite 2 with a shiny, smooth, triangular area reaching basal 0.66 of tergite; tergite 3 with a dorsal median fold; tergites 5 & 6 with a longitudinal groove below elevated spiracular area; ovipositor sheath 0.66 as long as fore wing (fig. 21). Black. Wings clear with a yellowish tinge but apical margin brown, stigma and square spot at base of cubital cell 1 dark brown. Head yellow except for black square spot at center of face, middle of frons, ocellar triangle, vertex, upper 0.3 of temple and occiput, mandibular teeth, and basal 1/2 of antennae; thorax and abdomen black except for yellow parts: tegula, fore and mid legs, sternal membrane and ventral 1/2 of subgenital plate.

Male: Unknown.

Holotype ♀ (BISHOP 3463), 6.4 km N of Tarumpitao Pt., Palawan, Philippines, 30. V. 1958, caught in jungle, H. E. Milliron.

It is my pleasure to name the species after Dr. J. Linsley Gressitt, first recipient of the Linus Allen Bishop Distinguished Chair of Zoology, Bishop Museum, Honolulu, Hawaii.

RECENT LITERATURE ON PACIFIC INSECTS

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