

New Oriental species of *Symmorphus* Wesmael, with description of a new subgenus (Hymenoptera: Vespidae, Eumeninae)

by

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ABSTRACT. — The subgenus *Parasymmorphus* of the genus *Symmorphus* Wesmael is newly described to accomodate *S. negrosensis* new species, *S. momunganensis* (Schulthess) and *S. parvilineatus* (Cameron) (new combination for *Eumenes parvilineata* Cameron). The remaining species of *Symmorphus*, including *S. alkimus* new species, are assigned to *Symmorphus sensu stricto*. The subgenus *Koptodynerus* Blüthgen, proposed for *S. declivis* Harttig, is newly synonymized with *Symmorphus sensu stricto*.

Introduction

The eumenine genus *Symmorphus* Wesmael is distributed throughout the Nearctic, Palearctic and Oriental regions, but is rarely encountered in the latter region. Study of some Oriental specimens of *Symmorphus* in the U.S. National Museum, Washington, D.C. and the Henry Townes collection, Gainesville, Florida, first by the junior author and later by the senior author, who is currently revising the genus, revealed two new species. Both are described below, along with a new subgenus to accomodate three Oriental species, including one of the new species.

Some terms used in the descriptions require definition or comment. The ocular ocellar line (OOL) is the minimum distance between the inner eye margin and the outer margin of the posterior ocellus. The posterior ocellar line (POL) is the minimum distance between the inner margins of the posterior ocelli, while the lateral ocellar line (LOL) is the minimum distance between the inner margins of the anterior and posterior ocelli. The length of the trans-scutal sulcus on the mesonotum is measured medially from its posterior margin to the trans-scutal articulation, which runs along the anterior edge of the sulcus. Description of surface sculpture and punctuation follows Harris (1979) and should be discernible by comparison with the photomicrographs presented in that work.

Symmorphus (*Parasymmorphus*) new subgenus

Type species. — *Odynerus* (*Symmorphus*) *momunganensis* Schulthess, 1934.

Diagnosis. — Members of this subgenus can be separated from those of the nominate subgenus by presence of a 4-toothed mandible in females, dorsally complete epicnemial carina, distally free posteriorly produced valvula, narrowly acute propodeal orifice dorsally, and well developed depressed apical margin of metasomal segment 2.

Female. — Clypeus shallowly emarginate apically. Vertex with cephalic foveae small, maximum foveal diameter no greater than 0.50 trans-scutal sulcus length; widely to very widely spaced, minimum interval between foveae 0.71 to 1.02 POL; each fovea bordered posteriorly by a sharp carina. Mandible 4-toothed (figs. 1a, 2a).

Pronotum with carina at crest of anterior face complete (somewhat faint medially in *S. negrosensis*); humeral angle obtusely rounded, not projected. Notaulus obsolete or faint medially, deep posteriorly. Mesepisternum with epicnemial carina complete dorsally, extended to posterolateral margin of pronotum. Metanotum nearly vertical with narrow dorsal surface. Propodeum with posteriorly produced valvula, free distally from posterolaterally projected submarginal carina (figs. 1c, 2c); propodeal orifice narrowly acute dorsally (figs. 1c, 2c).

Metasomal tergum 1 with broad shallow longitudinal furrow, without deeper narrow medial sulcus. Metasomal sternum 2 in profile, strongly convex (figs. 1d, 2d) or abruptly truncate posterioriad of basal sulcus (cf. fig. 3f); apical margin of segment 2 depressed, well developed, its

maximum length 2.22 to 2.50 length of trans-scutal sulcus (figs. 1d, 1e, 2d, 2e).

Relatively large wasps, length to apex of metasomal tergum 2, 10.5 to 13.5 mm, with moderately dense foveolate to foveate major punctation on metasomal sternum 1 (median transverse carina and longitudinal carinae absent), uniform foveolate major punctation on metasomal segment 2 (somewhat sparser medially in *S. parvilineatus*), moderately dense pubescence, and lightly to moderately infusate wings.

Male. — Unknown.

Included taxa and geographical distribution. — *S. (Parasymmorphus)* contains *S. parvilineatus* and *S. momunganensis*, in addition to the new species described below, and is entirely Oriental in distribution.

S. (Parasymmorphus) parvilineatus (Cameron) new combination

Eumenes parvilineata Cameron, 1904.

Nortonia parvilineata (Cameron). Transferred to *Nortonia* Saussure, by Bequaert, 1928.

Pseudonortonia parvilineata (Cameron). Transferred to *Pseudonortonia* Giordani Soika, by Giordani Soika, 1941.

Material examined. — Holotype: female, B.M. Type 18.969.

Diagnosis. — Specimens of *S. parvilineatus* can be separated from those of the remaining two species of *S. (Parasymmorphus)* by the presence of an unraised interocellar area, unreduced ocelli with maximum diameter of median ocellus 1.25 trans-scutal sulcus length, occipital carina with posterior margin incised by two submedial depressions, medially obsolete notaulus, non-crenate metanotum, propodeum with short nearly horizontal superior shelf, relatively elongate narrow metasomal tergum 1 with medial postcarinal length 0.73 apical width and with short depressed apical margin, metasomal sternum 1 with impunctate polished apex, base of metasomal segment 2 with tergum obtusely angulate in profile and sternum abruptly truncate posteriad of basal sulcus (see Soika, 1941: fig. 21-3), slightly sparser medial foveolate punctation on metasomal segment 2, and entirely black coloration (except small white interantennal spot and narrow medially interrupted white border on metasomal tergum 1).

Geographical distribution. — The holotype lacks locality labels, but was described from Sikkim. A second female of the same species from Shillong (Assam), reported on by Bequaert (1928) and Giordani Soika (1941), can no longer be located in the collection of the British Museum.

S. (Parasymmorphus) momunganensis (Schulthess)

Odynerus (Symmorphus) momunganensis Schulthess, 1934.

Material examined. — Holotype: female labelled "Momungan/Mindanao" [Entomologisches Institut, E.T.H., Zürich]. Additional material: 1 female labelled "Kolambugan/Mindanao/Baker" [USNM].

Diagnosis. — Specimens of *S. momunganensis* can be differentiated from those of *S. parvilineatus* by presence of a raised interocellar area vertically elevated directly posteriad of anterior ocellus, reduced ocelli with maximum diameter of median ocellus 0.89 trans-scutal sulcus length, occipital carina without submedial incisions, complete medially faint notaulus, nearly crenate metanotum, propodeum without superior shelf medially, broad metasomal tergum 1 with medial postcarinal length 0.50 to 0.56 apical width (fig. 1e) and without depressed apical margin, metasomal sternum 1 with uniform punctation to apex, base of metasomal segment 2 with tergum gradually rounded in profile and sternum strongly convex posteriad of basal sulcus (fig. 1d), uniform foveolate major punctation on metasomal segment 2, and black coloration with yellow maculation. *S. momunganensis* differs from *S. negrosensis* in possessing a medially raised pronotal carina (fig. 1b), somewhat apically truncate valvula and broad less elongate posterolateral projection of submarginal carina (fig. 1c), metasomal tergum 1 with sides slightly

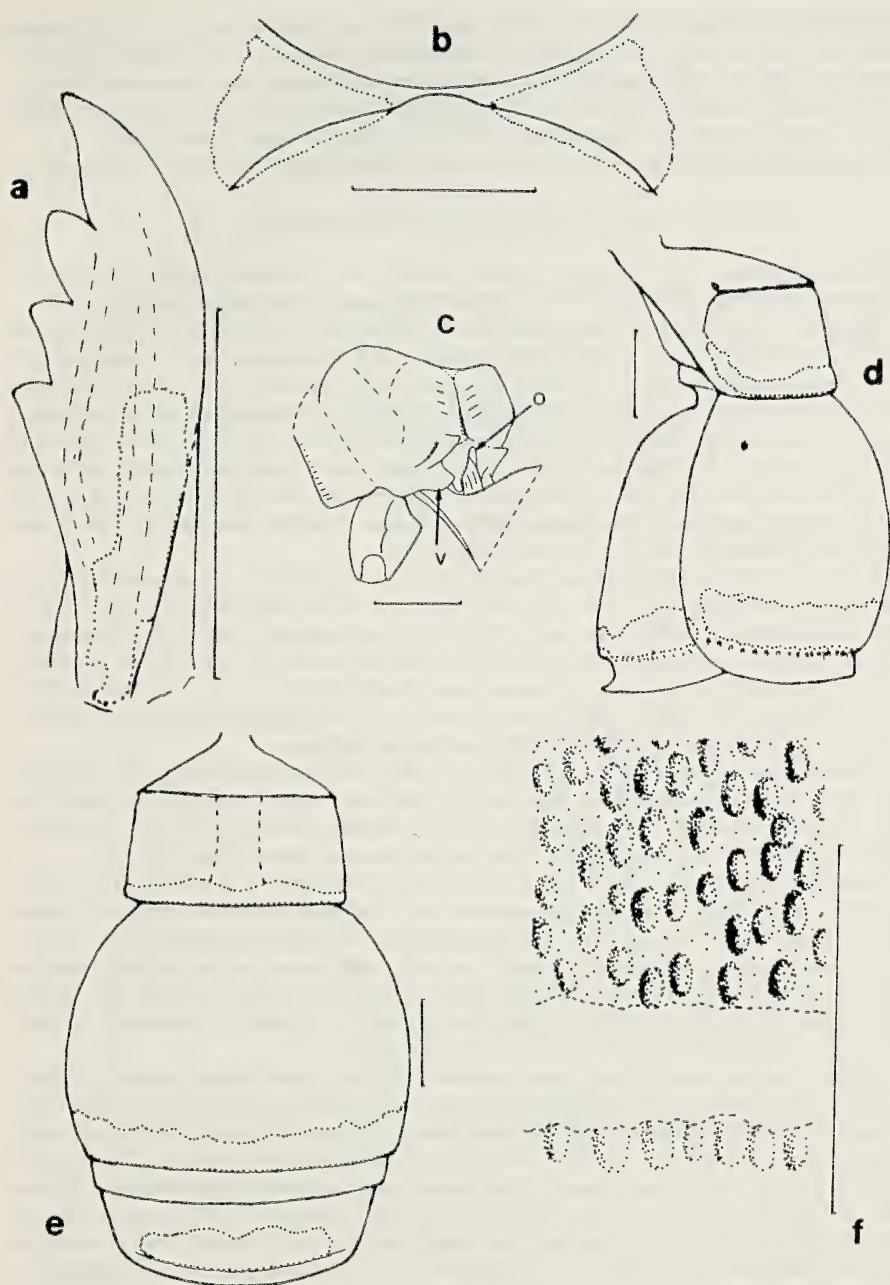


Fig. 1. *Symmorphus* (*Parasymmorphus*) *momunganensis* (Schulthess), female. a, right mandible; b, anterior face of pronotum; c, posterolateral view of propodeum, o = orifice, v = valvula; d, lateral view of metasomal segments 1-2; e, dorsal view of metasomal terga 1-3; f, apex of metasomal tergum 2. Scale bars = 1.0 mm.

convergent towards base (width at transverse carina 0.83 to 0.85 apical width, fig. 1e), obsolete transverse carina at base of metasomal sternum 1, metasomal tergum 2 with length 0.87 to 0.93 maximum width and with closely spaced deeply impressed foveolate major punctation (figs. 1e, 1f), metasomal sternum 2 with convexity posteriad of basal sulcus evenly rounded in profile (fig. 1d), mandible with large basal yellow mark (fig. 1a) and metanotum entirely black.

Geographical distribution. — Known only from the island of Mindanao in the Philippines.

S. (Parasymmorphus) negrosensis new species

Material examined. — Holotype: female labelled "Mt. Canlaon 3600'[ft.]/Negros Or. [Oriental], Phil./May 8, 1953/H, M, & D. Townes". Deposited in the Townes collection.

Diagnosis. — Specimens of *S. negrosensis* can be differentiated from those of *S. parvilineatus* by the same characters as those given in the diagnosis of *S. momunganensis*. *S. negrosensis* differs from *S. momunganensis* in possessing an evenly arcuate pronotal carina, apically rounded valvula and narrow more elongate posterolateral projection of submarginal carina, metasomal tergum 1 with sides distinctly convergent towards base, distinct transverse carina at base of metasomal sternum 1, metasomal tergum 2 with length about equal to maximum width and with moderately spaced moderately impressed foveolate major punctation, metasomal sternum 2 with convexity posteriad of basal sulcus slightly angulate in profile, mandible with small basal yellow mark and metanotum with two small yellow spots.

Female. — Head including clypeus nearly as high as wide (0.95). Clypeus with length 0.70 maximum width, moderately convex in profile with more flattened apical border. Interantennal carina moderately to strongly elevated, with median keel ventrally. Interocellar area raised, abruptly elevated vertically directly posteriad of anterior ocellus. Ocelli reduced, maximum diameter of median ocellus 0.75 trans-scutal sulcus length. OOL 0.95 POL; LOL 0.50 POL. Vertex with cephalic foveae widely spaced, minimum interval between foveae 0.71 POL. Occipital carina slightly pointed medially, without submedial incisions.

Pronotum with carina at crest of anterior face evenly arcuate dorsally (fig. 2b), somewhat faint medially. Notaulus complete, faint medially. Metanotum with dorsal surface nearly crenate. Propodeum without horizontal superior shelf medially; valvula of propodeum apically rounded, posterolateral projection of submarginal carina narrow and elongate (fig. 2c).

Metasomal tergum 1 moderately broad, medial postcarinal length 0.55 apical width; sides of postcarinal area distinctly convergent towards base, width at transverse carina 0.77 apical width (fig. 2e); tergum without depressed apical margin. Metasomal sternum 1 basally with distinct transverse carina. Metasomal segment 2 in profile with base of tergum gradually rounded and sternum with strong convexity slightly angulate posteriad of basal sulcus (fig. 2d); tergum with length 0.99 maximum width; depressed apical margin of segment 2 translucent, its maximum length 2.22 length of trans-scutal sulcus (figs. 2d, 2e).

Clypeus foveolate-puncticulate, major punctures shallow; apical border smooth, obscurely coriarius. Frons and vertex foveolate-puncticulate; major punctures densely spaced on frons, sparse and irregular on vertex; minor punctures irregularly spaced, indistinct. Pronotum except anterior face, foveolate-puncticulate, with major punctures densely spaced, more or less costate laterally; anterior face smooth. Mesoscutum foveolate-puncticulate with major punctures densely spaced anteriorly, sparse posteriorly. Mesepisternum ventrally and mesepimeron both foveolate-puncticulate, major punctures moderately to widely spaced, minor punctures indistinct. Mesepisternum dorsally and mesoscutellum both nearly impunctate. Metanotum foveate dorsally, obscurely imbricate ventrally. Propodeum rugose laterally, areolate-rugose dorsally; posterior face nearly smooth, with some shallow indistinct rugosity and obscure imbricate subsculpture. Metasomal tergum 1 and sternum 1 each with postcarinal area foveolate-puncticulate to foveate-puncticulate, major punctures moderately dense. Segment 2 foveolate-puncticulate; major punctures uniformly distributed, moderately spaced and impressed (fig. 2f); minor punctures obscure medially on sternum 2. Segments 3 to 6 with imbricate subsculpture.

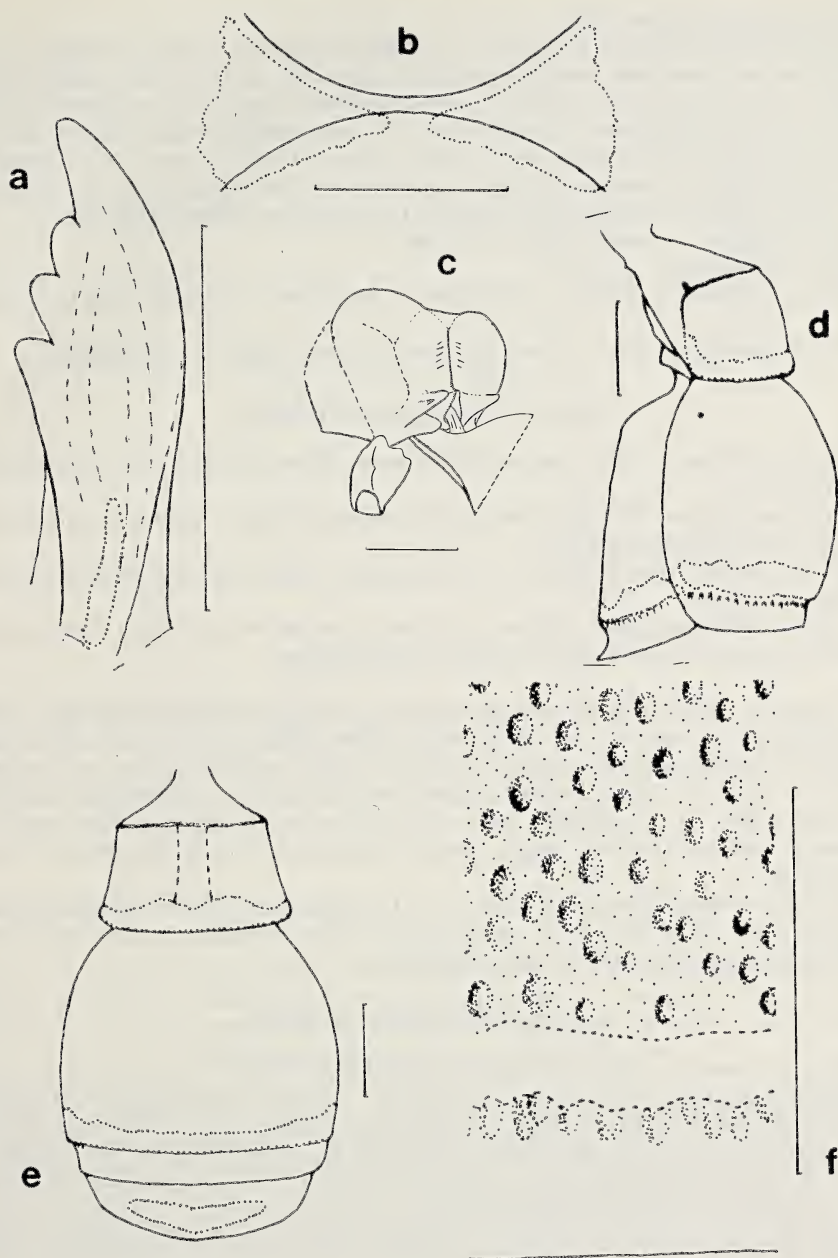


Fig. 2. *Symmorphus* (*Parasymmorphus*) *negrosensis* new species, female. a, right mandible; b, anterior face of pronotum; c, posterolateral view of propodeum; d, lateral view of metasomal segments 1-2; e, dorsal view of metasomal terga 1-3; f, apex of metasomal tergum 2. Scale bars = 1.0 mm.

Pubescence pale yellow to white.

Coloration black with yellow as follows: clypeus with large basal band, interantennal spot, postocular spot, small basal mandibular mark (fig. 2a), scape anteroventrally, medially interrupted dorsal pronotal band (thickened towards humerus), large dorsal mesepisternal spot, tegula, two large approximate mesoscutellar spots, two small metanotal spots, apex of fore and mid femora (less on mid femur), line on outer surface of tibiae (on hind tibia not reaching apex), apical border of metasomal tergum 1, subapical border of metasomal terga 2, 3 and sternum 2 (on tergum 3 not reaching lateral margin). Tarsi pale brown. Wings lightly infusate.

Length to apex of metasomal tergum 2, 10.5 mm.

Male. — Unknown.

Derivation of specific epithet. — Latin adjective, *negrosensis*, in reference to the type locality.

Geographical distribution. — Known only from the island of Negros in the Philippines.

Symmorphus (Symmorphus) Wesmael

Symmorphus Wesmael, 1836. Type-species: *Odynerus elegans* Wesmael, 1833 (designated by Richards, 1935).

Protodynerus Saussure, 1855. New name for *Symmorphus* Wesmael, based on supposed homonymy with *Symmorpha* Klug, 1807.

Odynerus Latreille sensu Blüthgen, 1938. Type-species: *Vespa muraria* Linnaeus, 1758 according to Blüthgen.

Koptodynerus Blüthgen, 1943. Subgenus of *Odynerus* Latreille sensu Blüthgen. Type-species: *Symmorphus declivis* Hartig, 1932 (monotypic). New synonymy.

Diagnosis. — Members of the nominate subgenus can be separated from those of *S. (Parasymmorphus)* by presence of a 5-toothed mandible in females (fig. 3a) (4-toothed in males, but unknown in *Parasymmorphus*), dorsally or entirely obsolete epicnemial carina, short distally fused valvula (fig. 3c), broadly rounded propodeal orifice dorsally (fig. 3c) (although somewhat narrowed dorsally in a few species), and more attenuated rarely depressed apical margin of metasomal segment 2 (maximum length of margin usually much less than twice length of trans-culteral sulcus).

Included taxa and geographical distribution. — This subgenus contains the remaining species of *Symmorphus* (to be listed in the senior author's revision), including the new species described below and is primarily Holarctic in distribution.

S. (Symmorphus) alkimus new species

Material examined. — Holotype: female labelled "SRI LANKA: Kan. [Kandy] Dist./Udawattakele/26-30 March 1975/S. & P. B. Karunaratne". Allotype: male labelled "W. Haputale, 6000' [ft.]/Ceylon, 2-7-VIII-37". Holotype and allotype deposited in the USNM (allotype on long term loan from the National Museum, Colombo, Sri Lanka). Paratypes: "SRI LANKA, Kan. [Kandy Dist.]/Kandy/20-30 July 1976/S. Karunaratne", "Udawattakele/Sanctuary/2100 feet" [1 female]; "Goatfell./Kandapola/Ceylon 13-17-IV-33" [1 female]; "CEYLON C.P./Kandy/Lady Horton's/22.XI.53 F. Keiser" [1 female]. Paratypes deposited respectively in the USNM; the National Museum, Colombo (currently on long term loan to the USNM); and the Naturhistorisches Museum, Basel, Switzerland.

Diagnosis. — Specimens of this species can be differentiated from all other known *S. (Symmorphus)* by the combination of a non-incised occipital carina, nearly vertical metanotum, broad metasomal tergum 1, base of metasomal segment 2 with tergum obtusely angulate and sternum abruptly truncate, depressed apical margin of metasomal segment 2, and absence of yellow on mesosoma.

Female. — Head including clypeus nearly as high as wide (0.92 to 0.96). Clypeus with length

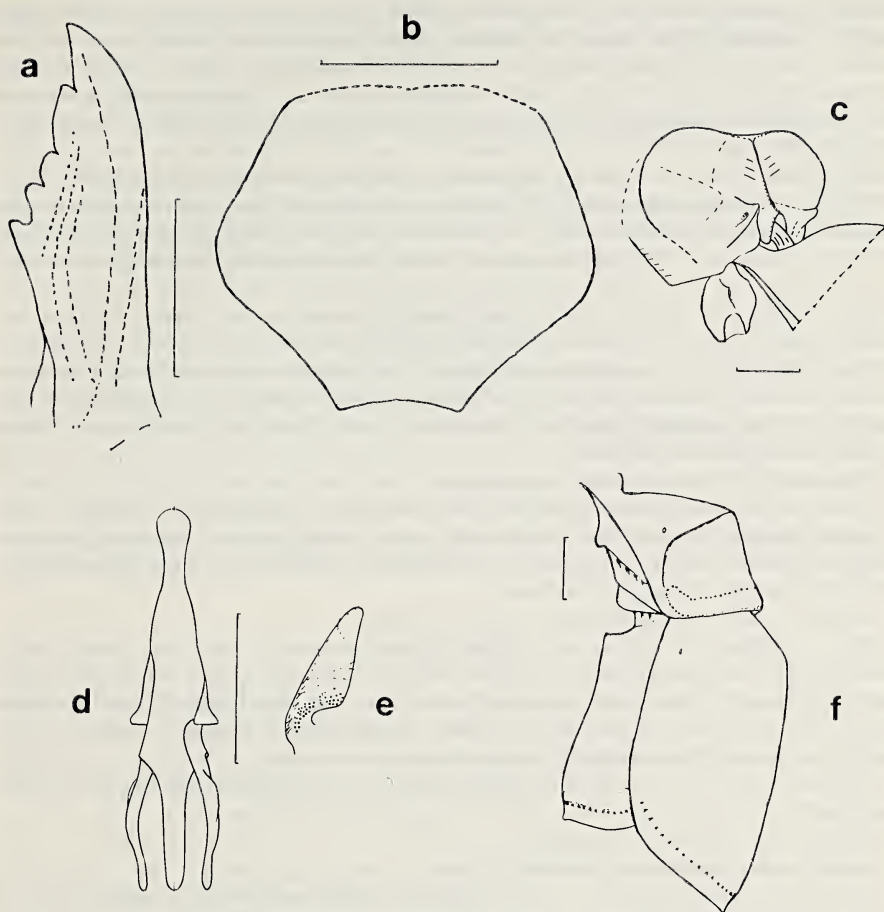


Fig. 3. *Symmorphus* (*Symmorphus*) *alkimus* new species. a, right mandible of female; b, clypeus of female; c, posterolateral view of female propodeum; d, aedeagus of male, left side dorsal view, right side ventral view; e, lateral view of right digitus of male; f, lateral view of male metasomal segments 1-2. Scale bars = 0.5 mm.

0.68 to 0.72 maximum width, shallowly emarginate apically (fig. 3b), slightly convex in profile. Interantennal carina slightly to moderately elevated, with short median keel ventrally. Ocelli unreduced, maximum diameter of median ocellus 1.19 to 1.50 trans-scutal sulcus length. OOL 0.80 to 0.94 POL; LOL 0.47 to 0.50 POL. Vertex with cephalic foveae of moderate size, maximum foveal diameter 0.72 to 0.88 trans-scutal sulcus length; moderately to widely spaced, minimum interval between foveae 0.57 to 0.75 POL; each fovea without posteriorly bordered carina. Occipital carina pointed medially, without submedial incisions.

Pronotum with carina at crest of anterior face complete, evenly arcuate dorsally; humeral angle obtuse, barely projected. Notaulus very faint, medially obsolete. Mesepisternum with epicnemial carina obsolete dorsally. Metanotum nearly vertical, with narrow irregular dorsal surface. Propodeum with short obliquely horizontal medially depressed superior shelf, medial length of shelf 0.78 to 1.00 length of trans-scutal sulcus; valvula of propodeum abruptly narrowed anteriorly of posterolateral projection of submarginal carina (fig. 3c).

Metasomal tergum 1 broad, medial postcarinal length 0.47 to 0.49 apical width; sides of post-

carinal area barely convergent towards base, width at transverse carina 0.90 to 0.94 apical width; longitudinal furrow broad and shallow, without deeper narrow medial sulcus. Metasomal segment 2 in profile with base of tergum obtusely angulate and sternum abruptly truncate posteriad of basal sulcus (fig. 3f); tergum with length 1.07 to 1.11 maximum width; apical margin of segment 2 translucent, depressed, its maximum length 1.22 to 1.38 length of trans-scutal sulcus (fig. 3f).

Clypeus moderately to densely punctulate to punctate, punctures sparse medially. Frons and vertex foveolate-punctulate. Pronotum, except anterior face, foveolate-punctulate, more or less costate laterally; anterior face obscurely imbricate. Mesopleuron and mesonotum foveolate-punctulate, with major punctures widely spaced on mesepisternum, posterior half of mesoscutum and on scutellum. Metanotum foveolate-punctulate dorsally, obscurely punctulate ventrally. Propodeum finely striate laterally, areolate-rugose dorsally; posterior face nearly smooth, with some shallow indistinct rugosity and obscure imbricate subsculpture. Metasomal segments with imbricate subsculpture. Tergum 1 with postcarinal area foveolate to foveate; sternum 1 anteriorly rugose, scrobiculate posteriad of median transverse carina. Segment 2 foveolate, punctures larger and closer towards apex. Terga 3 to 5 and sternum 3 sparsely punctate or foveolate subapically.

Pubescence pale yellow to white, inconspicuous.

Coloration black with yellow as follows: interantennal spot, postocular dot, faint line on outer surface of tibiae (on hind tibia not extended to apex), apical border of metasomal tergum 1, subapical border of metasomal tergum 2 and sternum 2. Tarsi pale brown basally to dark reddish brown apically. Wings lightly infusate.

Length to apex of metasomal tergum 2, 8.0 to 8.5 mm.

Male. — Similar to female except as follows: clypeus moderately emarginate apically; metasomal tergum 1 with postcarinal area foveate; sternum 3 primarily foveate subapically; mandible yellow basally; clypeus with large basal yellow spot; legs slightly lighter, reddish to dark brown, mid tibia with yellow line not extended to apex, hind tibia with basal yellow spot, tarsi pale brown to reddish brown apically, fore leg with basitarsus yellow.

Antennal articles 10 to 13 each with single tyloid, article 13 in profile with length 0.81 maximum width.

Aedeagus and digitus as in figs. 3d, 3e.

Length to apex of metasomal tergum 2, 7.5 mm.

Derivation of specific epithet. — Derived from the Greek word *alkimos*, meaning stout, in reference to the relatively broad first metasomal tergum in members of this species.

Geographical distribution. — Known only from the central highlands of Sri Lanka.

Discussion

Although the three species placed here in *S. (Parasymmorphus)* are as dissimilar from many Holarctic species of *Symmorphus* as some eumenine genera are from each other, we have chosen to combine them at subgeneric rank within *Symmorphus* for two reasons. Firstly, they share the major apomorphies which define this rather isolated genus (see Carpenter & Cumming, in press). The condition of the male antennal apex is unknown, however they possess a first metasomal tergum with both a transverse carina and median longitudinal furrow, in addition to widely separated cephalic foveae filled with setae (see Cumming & Leggett, in press). Secondly, in certain characters some Oriental species of *S. (Symmorphus)* approach the condition of, or are similar to those in *S. (Parasymmorphus)*. For example, *S. hoozanensis* described from Formosa by Schulthess (1934) and *S. alkimus* possess a broad shallow longitudinal furrow on metasomal tergum 1 and a depressed (although shorter) apical margin on metasomal segment 2, both characteristic features of *S. (Parasymmorphus)*.

Furthermore, the appearance in profile of an obtusely angulate tergum and abruptly truncate sternum at the base of metasomal segment 2 in *S. parvilineatus*, an undoubted member of *S. (Parasymmorphus)* and some species of *S. (Symmorphus)* (i.e. *S. declivis*, *S. hoozanensis*

and *S. alkimus*), indicates that this condition has evolved at least twice within *Symmorphus*. As such, this state by itself is probably not a strong indicator of relationship and does not warrant retention of the subgenus *Koptodynerus*, erected for *S. declivis* primarily on the basis of this character, by Blüthgen (1943).

Hypotheses on the relationships of the species described or diagnosed in this paper should await a rigorous analysis based on all species of *Symmorphus* (part of the senior author's revision). However it appears that based on overall similarity *S. negrosensis* is more closely related to *S. momunganensis* than to *S. parvilineatus* within *S. (Parasymmorphus)*, while *S. alkimus* is close to *S. hoozanensis*, the only other known species of *S. (Symmorphus)* with both a similarly modified base and depressed apical margin on metasomal segment 2.

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ZAHRADNÍK, J. 1985. KÄFER MITTEL- UND NORDWESTEUROPAS. EIN BESTIMMUNGSBUCH FÜR BIOLOGEN UND NATURFREUNDE. — Vertaling en bewerking: M. Rosch, I. Jung, D. Jung. Illustr.: J. Hoberlandtová, I. Zpěvák. — Hamburg, Berlin, Parey, 498 pp., incl. meer dan 160 fig. en 64 kleurenpl. ISBN 3-490-27118-1.

Er zijn al een stuk of 10 handgidsen op de markt voor de determinatie van Europese kevers. De kwaliteit en kwantiteit van de tekst en de illustraties lopen sterk uiteen. Het bovengenoemde werk is de laatste aanwinst. De meer doorgewinterde coleopteroloog staat meestal nogal sceptisch tegenover deze uitgaven, maar men dient het doel ervan voor ogen te houden: de niet-specialisten een inleiding te geven in een grote, moeilijk toegankelijke soortenrijkdom. Het boek van Zahradník zal ook wel enigszins aan dit doel beantwoorden. Het ziet er zeer gedetailleerd uit — zo zelfs dat een bespreking op steekproeven gebaseerd moet zijn. De keverbeschrijvingen zijn tamelijk uitgebreid, maar of de determinator ze veel zal gebruiken vraag ik me af. De talrijke illustraties zijn nl. heel behoorlijk (soms te flets) en maken de gegeven beschrijvingen vaak overbodig. De geïllustreerde vormenrijkdom is echter geringer dan in een vergelijkbaar boekje als „Der Kosmos-Käferführer” van Harde & Severa (in Nederlandse vertaling bij Thieme verschenen), waarvan de illustraties ook uit de Tsjechische insektenplaatjesfabriek komen. Vergelijk bijv. de platen maar van willekeurig welke familie ook: met de Thieme-gids zijn allerlei opvallende kevers onmiddellijk te herkennen die in de Parey-gids misschien met moeite in de tekst te vinden zijn. De tekst van Zahradníks boek bevat diverse onnauwkeurigheden. De familieclassificatie en -nomenclatuur worden behandeld op een manier die de serieuze gebruiker wanneer hij er nog een ander boek bijhaalt, volstrekt in verwarring moet brengen (terwijl de auteur toch, blijkens het voorwoord, door de meest ervaren specialisten op dit gebied geholpen is, zoals Crowson — zo’n man werkt toch niet voor niets 40 jaar aan de verbetering van de familieclassificatie). De Elmidae zijn met moeite te vinden, o.a. onder de Dryopidae; de Aesalinae staan in alle andere handgidsen onder de Lucanidae, bij Zahradník daarentegen staan ze als aparte familie. Dit soort inconsistenties wrekt zich: het voor de Britse eilanden opgegeven soortenaantal voor de Dryopidae + Elmidae is te laag, zelfs als dit aantal alleen op de Dryopidae zou slaan. Dat komt misschien ook door het refereren aan de Britse naamlijst van 1945 i.p.v. aan de nieuwe editie van 1977. Zo is er meer. De registers zijn zeer gedetailleerd, maar, zo te zien, achteraf door de redactie gemaakt: men vindt in het gastheer- en voedselplantenregister de Halipidae niet terug via de „Algenfresser”, daarentegen wel via de „Algen”; omzichtig gebruiken dus, dit register! De Parey-gids kost in de Nederlandse boekhandel vermoedelijk ca. 78 gulden. Mijn advies kan alleen maar zijn: kijk en vergelijk! — J. Krikken.