

Redescriptions of *Hadrodactylus tarsator* Ths., *H. gracilipes* Ths. and *H. nigrifemur* Ths., with notes on *H. bidentulus* Ths. and *H. villosulus* Ths. (Hym. Ichneumonidae)

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Abstract

IDAR, M. Redescriptions of *Hadrodactylus tarsator* Ths., *H. gracilipes* Ths. and *H. nigrifemur* Ths., with notes on *H. bidentulus* Ths. and *H. villosulus* Ths. (Hym. Ichneumonidae). — Ent. Tidskr. 95: 107–116, 1974.

Three species of *Hadrodactylus* described by C. G. Thomson are redescribed and re-established as valid. Notes are added on two other species of the genus previously redescribed by the writer.

Introduction

The species group, *Hadrodactylus typhae* auctt. coll., to which the species in this paper belong, has been discussed earlier by the writer (Idar 1974: 23 sqq.). In that paper types of all species of the genus in question described by C. G. Thomson were designated and two of these species, viz. *H. bidentulus* and *H. villosulus*, were redescribed. Here three further species, *H. tarsator* Ths., *H. gracilipes* Ths. and *H. nigrifemur* Ths., will be redescribed and additional notes given on the distribution of the earlier redescribed species.

Abbreviations

The collections to which the examined specimens belong are indicated by abbreviations as follows:

BM=British Museum (Nat. Hist.), London, UK.
Dei=Deutsches Entomologisches Institut, Eberswalde, DDR.

GCL=The "geographical collection", Institute of Systematic Zoology, Lund, Sweden.

HC=Dr. Rolf Hinz' collection, Einbeck, BRD.

IC=The writer's collection, Uppsala, Sweden.

MC=Zoologische Staatssammlung, Munich, BRD.

MNH=Museum of Natural History, Stockholm, Sweden.

TC=C. G. Thomson's collection, Institute of Systematic Zoology, Lund, Sweden.

ZMH=Zoologisches Museum, Museum für Naturkunde an der Humboldtuniversität, Berlin, DDR.

Hadrodactylus tarsator Ths.

Redescription (from the lectotype, ♀, des. M. Idar 1973)

Head in dorsal view with temples very weakly rounded, strongly converging backwards, diameter of compound eye 1.52 of length of temple, width of vertex, including the eyes, 2.30 of its length, moderately incised behind (Fig. 1 A); clypeus with margin delimited medially by a rather deep transverse

wrinkle, irregularly punctured, with small transverse wrinkles basi-laterally; face with punctures rather dense, coarser and longitudinally wrinkled along the mid-line; frons above the antennal sockets with irregularly wrinkled punctures and strong micro-reticulation; oral carina not much wider than genal carina; vertex with fine and rather sparse punctures and distinct micro-reticulation.

Pronotum laterally, downwards, with wrinkles at about right angles to the hind margin, upwards, with indistinct sparse punctures and irregular, partly fine, wrinkles and distinct micro-reticulation, shiny only in posterior corners, dorsally with a rather indistinct, transverse furrow posteriorly, hind margin with rather deep and rounded incision, shiny between hind margin and furrow; epomia rather distinct, spread into small wrinkles on top; mesonotum with rather fine and rather sparse punctures, except in notauli, there with coarser, irregular punctures, wrinkles and trace of micro-reticulation; mesopleura with distinct, shiny speculum, though with a trace of micro-reticulation, anteriorly with rather coarse and dense punctures, below this and speculum with coarse, irregularly longitudinally wrinkled punctures; mesosternum with dense and rather fine punctures; ventral portion of prepectal carina a little widened, weakly bilobed, width about 0.6 of that of fifth tarsal segment of fore leg (Fig. 1 B); scutellum on top with moderately coarse and moderately dense punctures with weak but distinct micro-reticulation; metapleura with a little indistinct, moderately coarse, moderately dense punctures, interspace about twice their diameter, weakly wrinkled and with rather strong micro-reticulation.

Propodeum with median longitudinal carinae backwards spread into wrinkles but mainly rather strongly diverging, i.e. joining lateral portions of apical transverse carina, thus joining lateral longitudinal carinae; petiolar area with distinct wrinkles, largely or longitudinal orientation, especially in the

middle, and very indistinct micro-reticulation; lateral and pleural areas with distinct micro-reticulation, very fine punctures and, the latter, with transverse wrinkles (Fig. 1 C).

Gaster¹ with petiolar segment moderately slender with a slight tendency to a pair of dorsal, median, longitudinal ridges between spiracles, these protruding; postpetiole constricted in anterior fourth, evenly and rather weakly widening backwards; length of petiolar segment 4.57 of its maximum width and 9.41 of width of petiole (Fig. 1 D); length of second segment 1.64 of maximum width.

Tibia of fore leg very weakly bent towards base, its length 6.25 of maximum width, fifth segment of fore tarsus with length 2.54 of that of fourth; fifth segment of middle tarsus 2.33 of that of fourth; hind femur (Fig. 1 G) with length 4.67 of maximum width and hind tarsus with fifth segment 1.81 of that of fourth.

Wings with portions of postnervulus forming a very indistinct angle, anterior portion with length about equal to posterior.

Colour black; antennae with scape and pedicel blackish brown dorsally and yellow ventrally, flagellum dorsally dark brown towards base and reddish brown towards apex, ventrally yellowish red towards base and brownish red towards apex; face and clypeus yellow, former without dark marking at clypeus except for clypeal foveae; mandibles and palpi yellow, former brown apically; gaster red dorsally from second to fifth tergite, former with darkish marking apically, leaving lateral margin red, connected with a median double spot to a pair of forwards directed tips (Fig. 1 F), latter apically black, on each side with indistinctly reddish stained spot; legs with coxae reddish black, yellow at extreme apex, a little more on the fore ones; trochanters and trochantelli yellow with hind trochanters reddish dorsally; fore and middle femora reddish yellow, hind femur red with dark apex extending almost

¹ Gaster=abdomen without propodeum.

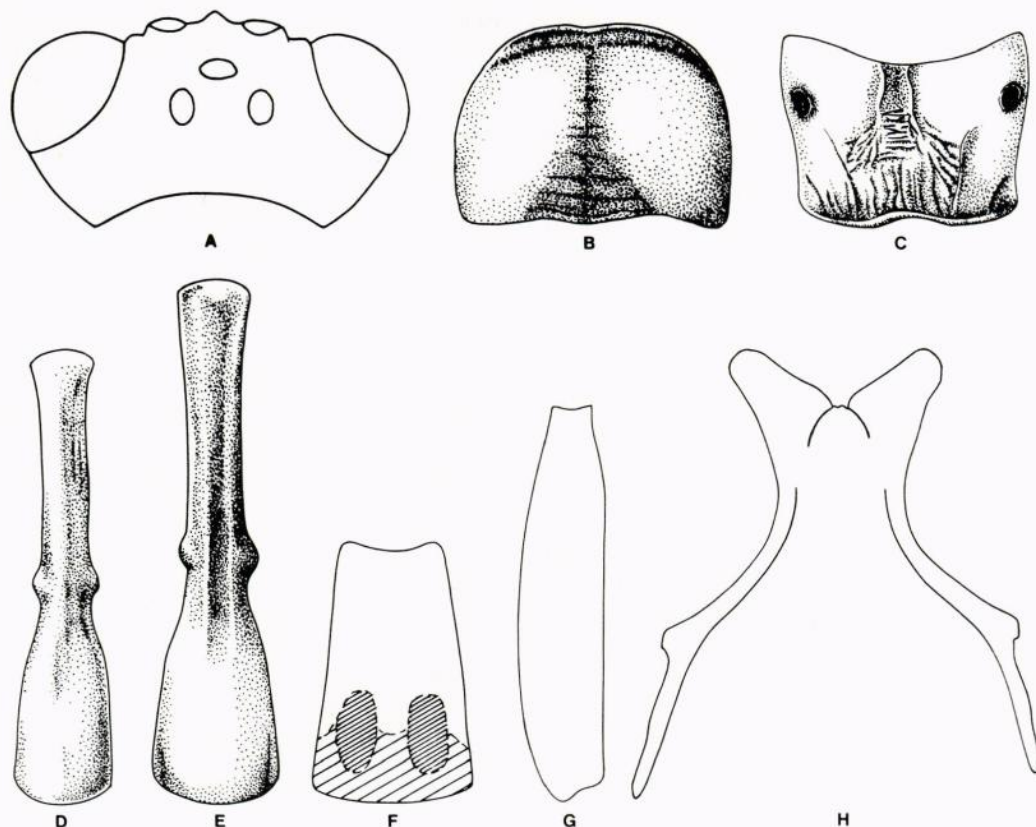


Fig. 1. *Hadrodactylus tarsator* Ths. ♀ (lectotype). A. Head in dorsal view. B. Mesosternum in posteroventral view. C. Propodeum in dorsal view. D. Petiolar segment in dorsal view. E. Same of another ♀ (Nr 2446, IC). F. Second tergite. G. Hind femur in lateral view. — H. ♂ (Nr 2418, IC). Valvulae of penis, each in lateral view.

as broadly as width of petiolus; fore and middle tibiae reddish yellow, yellow basally, hind tibia dark brown dorsally, brownish red ventrally and with extreme base yellow; fore and middle tarsi yellow, latter brownish apically, hind tarsus brown, segments each a little lighter at extreme base and apex; wings without conspicuous shade, stigma yellowish brown, yellow basally.

Diagnosis

Recognized from *H. bidentulus* by, e.g., the shape of oral carina and the ventral portion of prepectal carina; from *H. villosus*

by coarser and denser punctures on scutellum, longitudinal wrinkles on apical area of propodeum, usually black marking on the second gastral tergite and less blunt apex of penis (Fig. 1 H); from *gracilipes* usually by the shape of petiolar segment of gaster, by the proportions of the last two hind tarsal segments, by distinctly stouter hind femora of the female and by practically all black middle coxae and blunter penis apex of male and from *nigrifemur* by distinctly widened ventral portion of prepectal carina, shape of petiolar segment and coloration of second gastral segment and hind femora.

Variation

Petiole segment sometimes very slender, practically without longitudinal ridges between the spiracles but usually as in Fig. 1 E. Gaster usually with dark marking on second segment a little more extended, sometimes the segment all red, sometimes all black with only third and fourth segments a little red basally. Females very often have face marked with black at clypeus.

Material studied

Sweden: Skåne, Örtofta, 1♀ 2♂♂; Västra Vram, 1♂; Rösjöholm, 16.vi., 1♂; »Scania», 2♀♀ 1♂ (TC); Hälsingborg, 18.v.1918, 1♀, Ringdahl leg.; Ystad, 7.vi.1917, 1♀, Ammitzböll leg. (GCL); Ystad, 31.v.1912, 1♀, 2.vi.1916, 1♂, Ammitzböll leg. (MNH); Örtofta, Benstorp, 3.vi.1972, 1♂ (2034); Hardeberga, Tygelsjö, at the water reservoir, 5.vi.1972, 2♀♀ (2094—95), M. Idar leg. (IC). — Blekinge, 1♀, Boheman leg. (MNH). — Småland, 1♂, Boheman leg. (MNH). — Öland, Torslunda, Skogsby, 12.vi.1972, 1♀ (2228); 15.vi.1972, 4♀♀ 1♂, (2317—19, 2349—50); 18.vi.1972, 1♂, (2532); Eriksöre, sea-shore, 13.vi.1972, 2♀♀ 5♂♂ (2259—60, 2262, 2264—67); Karlevi, sea-shore, 16.vi.1972, 16♀♀ 33♂♂ (2376—79, 2382—83, 2389, 2391, 2395—2413, 2415, 2417, 2419—29, 2445—52, 2454, 2462), M. Idar leg. (IC). — Östergötland, Källstad, Hångerudden, 24.vi.1967, 1♀, U. Lohm leg. (IC). — Västergötland, 1♂, Boheman leg. (MNH). — Bohuslän, 1♀, Boheman leg. (MNH); Tanum, Grebbestad, Glyskilen, 10.vi.1973, 1♂ 1♀ (3799, 3800); 15.vi.1973, 2♂♂ 1♀ (3956—58); Tanum, Djupevattnet, 17.vi.1973, 2♂♂ 2♀♀ (4031, 4056, 4068—69); 18.vi.1973, 1♂ 2♀♀ (4126—28); 19.vi.1973, 2♂♂ 2♀♀ (4162, 4175—76, 4189), M. Idar leg. (IC). — Stockholm, 1♂, Boheman leg. (MNH). — Uppland, Uppsala, Nästen, 15.vi.1970, 1♂ (61); 21.vi.1970, 1♂ (1041); Stavby, Väsby, 20.vi.1971, 2♂♂ (1357, 1372); Uppsala, Kvarnbolund, 29.vi.1971, 1♀ (1591), M. Idar leg. (IC). — Värmland, Östra Fågelvik, Björknästorps creek, 23.vi.1973, 5♂♂ 2♀♀ (4313—18, 4329); 29.vi.1973, 1♀ (4510); Karlstad, Alster, Busterud, 24.vi.1973, 1♀ (4310), M. Idar leg. (IC). — Dalarna, 1♂, Boheman leg. (MNH); Floda,

Ennäsmyra, 18.vi.1937, 1♂, T. Tjeder leg. (GCL). — Gästrikland, 1♀, ?Boheman leg. (MNH). — »Lappland», 25.vii, 1♀; 28.vii, 1♂, Boheman leg. (MNH). Lycksele Lapmark, Sorsele, Gargnäs village, 7.vii.1928; Sorsele, Ammarnäs village, 25.vii.1928, 1♀, Gaunitz leg. (GCL). Lule Lapmark, Kvikkjokk, 5.viii.1972, 1♀ (2890); 6.viii.1972, 2♀♀ (2931, 3046), M. Idar leg. (IC); Gällivare, 16.vii.1963, 1♀, R. Hinz leg. (IC). Torne Lapmark, Kiruna, 16.vii.1963, 1♀; 18.vii.1963, 1♂, R. Hinz leg. (IC).

Norway: Vest Agder, »Sireosen» (at Sire Elv), 1♀, Strand leg. (DEI).

Denmark: Schleswig, Spandet, 11.vi.1916, »e coll. Pfankuch» (ZMH).

BRD: Niedersachsen, Hannover, 28.vi.1912, leg.?, from HC, IC; Celle, 1.vi.1941, 1♀; 20.vi.1942, 1♂, R. Hinz leg. (IC). »Deutschland», 1♂, »e coll. Reinhard» (DEI).

DDR: Mecklenburg, Müritzhof, 31.v.1967, 1♂, J. Oehlke leg. (DEI). Berlin, Finkenkrug, 27.v.1965, 1♂, Bollow leg. (DEI).

CSSR: Prague district, 15.vi.1966, 1♂, J. Oehlke leg. (DEI).

USSR: Lithuania, Ignalina, 5.vi.1916, 1♀, W. Horn leg. (DEI).

Biological remarks

In Sweden mainly found in June by the writer and always in *Carex* vegetation, but often in rather low, scattered, limited or isolated clumps and mostly on rather firm, not too damp ground, often on *C. nigra*. It seems to be less susceptible to wind exposition than others of the species group.

Hadrodactylus gracilipes Ths.

Redescription (from the lectotype, ♀, des. M. Idar 1973)

Head in dorsal view with temples weakly rounded, rather strongly converging backwards, diameter of compound eye 1.41 of length of temple, width of vertex, including the eyes, 2.27 of its length, with moderately deep incision behind (Fig. 2 A); clypeus apically shiny, with coarse, irregular punc-

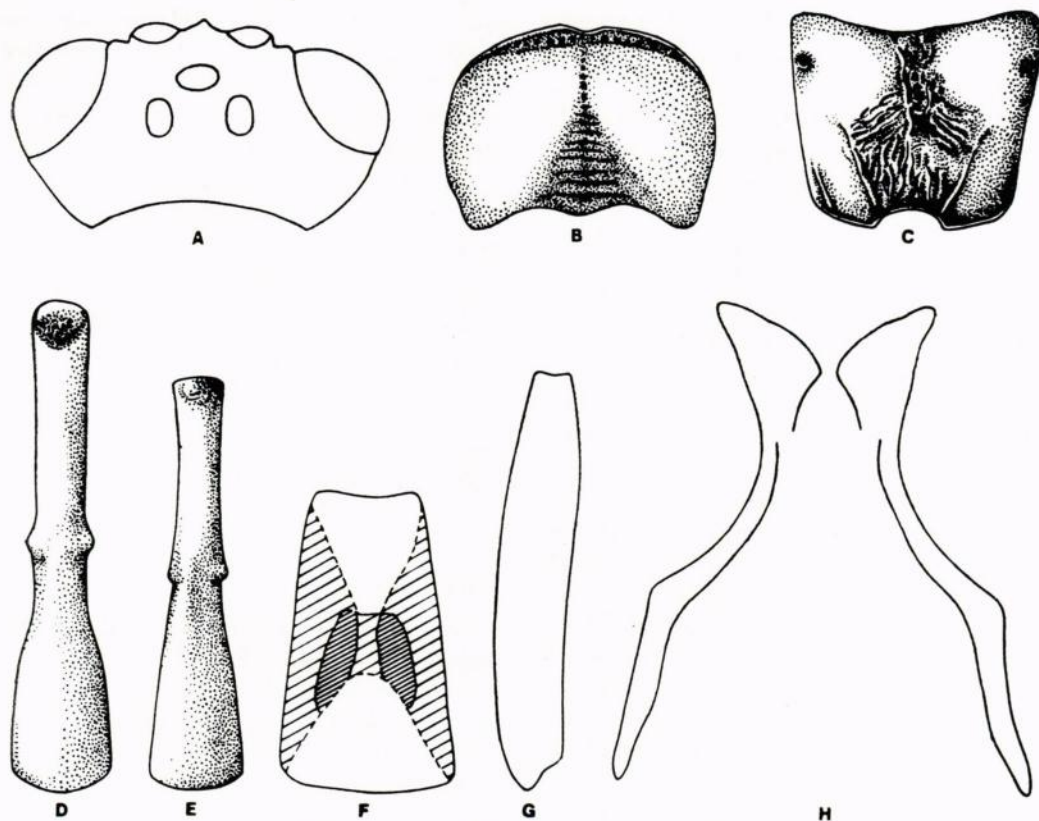


Fig. 2. *Hadrodactylus gracilipes* Ths. ♀ (lectotype). A. Head in dorsal view. B. Mesosternum in posternoventral view. C. Propodeum in dorsal view. D. Petiolar segment in dorsal view. E. Same of ♂ (Ilstorp, TC). F. Second tergite. G. Hind femur in lateral view. H. ♂ (Berchtesgaden 5. VII. 1957, IC). Valvulae of penis, each in lateral view.

tures, basally with finer and denser punctures and a trace of micro-reticulation; face with dense, wrinkled punctures and a trace of micro-reticulation; frons above antennal sockets strongly wrinkled, with distinct micro-reticulation, with some coarse punctures distinguishable, vertex with rather sparse and fine punctures and distinct, partly strong, micro-reticulation, the punctures leaving a small, subtriangular, unpunctured area at outer side of each lateral ocellus; oral carina not much wider than genal carina.

Pronotum laterally downwards with irregular wrinkles, to the hind margin more parallel and about right-angled to the margin,

upwards more finely and densely wrinkled, with some indistinct punctures and indistinct micro-reticulation; epomia rather strong but irregularly dissolved on top; mesonotum with rather fine, moderately dense punctures, except in the rather deep but forwards indistinct notauli, there only with irregular wrinkles; mesopleura with distinct, shiny speculum, almost without trace of micro-reticulation, in front of it with irregular, partly coarse punctures, below this and speculum with irregularly, longitudinally wrinkled punctures; mesosternum with rather fine and dense punctures, with a trace of micro-reticulation; ventral portion of prepectal carina weakly widened, width about

0.5 of that of fifth tarsal segment of fore leg (Fig. 2 B); scutellum on top with punctures rather fine and sparse, with a very slight trace of micro-reticulation; metapleura with mixed fine and rather coarse, irregular wrinkles, almost without punctures and micro-reticulation.

Propodeum with median, longitudinal carinae weak and disturbed by wrinkles, not diverging backwards; petiolar area with rather strong, mainly longitudinal wrinkles, posterior pleural areae with mainly transverse wrinkles, anterior lateral areae rather shiny but uneven, without distinct micro-reticulation (Fig. 2 C).

Gaster with petiolar segment slender, without longitudinal ridges, spiracles protruding but small; its postpetiolus rather strongly constricted in the anterior 0.4, posteriorly subparallel, not constricted; length of petiolar segment 4.67 of its maximum width and 9.33 of width of petiole (Fig. 2 D); length of second segment 1.61 of its maximum width.

Fore leg with tibia almost straight, its length 6.63 of maximum width, length of fifth tarsal segment 2.0 of that of fourth; middle leg with length of fifth tarsal segment 1.80 of that of fourth; hind leg with length of femur (Fig. 2 G) 5.36 of its maximum width and length of fifth tarsal segment 1.50 of that of fourth.

Wings with the two portions of postnervulus forming a very wide but distinct angle, anterior portion 0.87 of posterior.

Colour black; antennae with scape blackish brown dorsally, yellow ventrally, pedicel and flagellum brown dorsally, yellow—reddish yellow ventrally; face and clypeus yellow, the former with dark transverse marking bordering clypeus and a black triangular tip downwards between the antennal sockets; mandibles and palpi yellow, former brown apically; gaster with third and fourth tergites all red, second tergite blackish red, lightest medio-basally and medio-apically (Fig. 2 F), fifth tergite black, red anteriorly and laterally; legs with fore and middle coxae conspicuously marked with yellow, trochanters

and trochantelli yellow, rest of fore and middle legs and, dorsally, hind trochanters reddish yellow, rest of hind leg red with femoral apex weakly darkened and tibia and tarsus brownish dorsally.

Diagnosis

Recognized from all other species in the species group by the slender hind femora (conspicuous only by ♀♀) and the proportions of the last two tarsal segments. ♂♂ are recognized from *H. tarsator* and *H. nigri-femur* by predominantly yellow middle coxae and by the penis apex (Fig. 2 H).

Variation

Face by females with or without dark marking at clypeus. Males with hind femora less slender and petiolar segment (Fig. 2 E) less constricted behind the spiracles (occasionally also by ♀♀). Gaster of males often all black.

Material studied

Sweden: Skåne, 1 ♂; Bökeberg, 1 ♂; Ilstorp, 2 ♂♂ (TC). Dalby, 27.v.1938, 1 ♀, D.M.S.P. & J.F. Perkins leg. (BM). — Småland, Korsberga, 26.vi.1924, 1 ♀, Gaunitz leg. (GCL). — Stockholm, 1 ♀, Boheman leg. (MNH). — Uppland, 1 ♂, Stål leg. (MNH). — Värmland, Karlstad, Ringsåker, 26.vi.1973, 1 ♀ (4417); Busterud, 30.vi.1973, 1 ♀ (4573), M. Idar leg. (IC). — Dalarna, Falun, 1917, 1 ♀, Tjeder leg. (GCL); Ludvika, 16.vi.1938, 1 ♂, Wieslander leg. (MNH); Lima, 15.vii.1927, 1 ♂, E. Dahl leg. (GCL). — Lycksele lapmark, Sorsele, Tjulträsk, 14.vii.1921, 1 ♂ 1 ♀, Gaunitz leg. (GCL). Luleå lapmark, Sarek, Rapa valley, 21.viii.1904, 1 ♂; 22.viii.1904, 1 ♀, A. Roman leg. (MNH); Kvikkjokk, 11.vii.1964, 1 ♀, R. Hinz leg. (IC); Kvikkjokk, 13.viii.1972, 1 ♀ (3616), M. Idar leg. (IC). Torneå lapmark, Abisko, 19.vii.1973, 1 ♂, B. G. Svensson leg. (IC).

Norway: Dovre, 1 ♂, Boheman leg. (MNH).

UK: "British Isles", "68—52", 1 ♂, Desvignes

leg. (BM) Lincoln, Louth, 9.vi.1912, 1♀, Morley leg. (BM).

BRD: Niedersachsen, Hannover, 7.v.1948, 1♂; 15.v.1948, 2♀♀; Harz, 2.viii.1957, 4♂♂ 4♀♀; 5.viii.1957, 1♀; Goslar, 18.v.1924, 1♀, E. Bauer leg. (MC). — Hessen, Eschwege, 23.v.1965, 1♂, R. Hinz leg. (IC). — Baden-Württemberg, Mergentheim, 30.vi.1956, 1♂, R. Hinz leg. (IC). — Oberbayern, Zwiesel, 15.viii.1959, 1♂ 1♀; Berchtesgaden, 2–7.vii.1957, 4♂♂ 2♀♀, R. Hinz leg. (IC); Berchtesgaden, vii.1932, 1♀, Lüdeke leg. (ZMH); Berchtesgaden, 21.vi.1925, 1♀, Lüdeke leg. (DEI); Mittenwald, 23.vi.1922, 1♀; 2.vii.1922, 1♀; 8.vii.1923, 1♀; 2.viii.1922, 1♀; Garmisch, Kreuzeck, 18.vii.1952, 1♀; 24.vii.1926, 1♀; 2.viii.1927, 1♀; 5.viii.1927, 1♀; 10.viii.1928, 1♀, E. Bauer leg. (MC).

DDR: Schwerin, 3♀♀, Brauns leg. (ZMH).

Austria: Tirol, Karwendel valley, 24.vii.1923, 1♀, E. Bauer leg. (MC).

France: Auvergne, Puy-de Dôme, Le Mont-Dore, 24.vi–6.vii.1934, M. E. Mosely leg. (BM).

Italy: Cortina d'Ampezzo, 27.vii.1933, 1♀, San Martino di Castrozza, 18.vii.1934, 1♀, E. Bauer, MC.

Spain: Pyrénées, Parque Nacional de Ordesa, 10.vii.1961, 1♀, R. Hinz leg. (IC).

Biological remarks

In Sweden, found by the writer on more or less shaded localities, on lush ground vegetation among trees and bushes, with *Equisetum arvense* always as a prominent element of the vegetation. Thus, it should be a parasite on larvae of Dolerini feeding on this plant.

Hadrodactylus nigrifemur Ths.

Redescription (from the lectotype, ♀, des. (as holotype) M. Idar 1973)

Head in dorsal view with temples very weakly rounded, rather strongly converging backwards, diameter of compound eye 1.35 of length of temple, width of vertex, including the eyes, 2.26 of its length, rather weakly incised behind (Fig. 3 A); clypeus with margin delimited by an indistinct sub-

marginal furrow, with sparse, irregular wrinkles apically of it and rather fine and regular punctures basally and with fine transverse wrinkles basi-laterally; face with dense, wrinkled punctures, almost completely free from micro-reticulation except for some shiny, longitudinal wrinkles along the mid-line just above clypeus; frons above antennal sockets with irregular, mostly transverse wrinkling and very strong micro-reticulation; vertex with fine and rather sparse punctures, with distinct, partly strong, micro-reticulation.

Pronotum with lateral portions with wrinkles at about right angles to the hind margin; epomia distinct but dissolving into wrinkles on top; mesonotum with moderately fine and moderately sparse punctures except in the rather deep but forwards blunted notauli, there indistinct, disturbed by irregular wrinkles and distinct micro-reticulation; mesopleura with speculum rather restricted, not very shiny, with distinct micro-reticulation; punctures in front of and below speculum very dense and wrinkled, everywhere mixed with more or less distinct micro-reticulation; mesosternum with rather dense, moderately coarse punctures; ventral portion of prepectal carina not more widened than lateral portions (Fig. 3 B); scutellum on top with fine openly spaced punctures, only with a trace of micro-reticulation; metapleura with punctures very coarse, dense and wrinkled, interspace mainly less than diameter of punctures, in posterior 0.3 practically transformed into wrinkles, with distinct micro-reticulation.

Propodeum with median longitudinal carinae rather weak and disturbed by wrinkles, rather early dissolved, not diverging backwards, petiolar area with strong, irregular, but mainly longitudinal wrinkles, pleural areae with rather fine, mainly transverse wrinkles; with distinct micro-reticulation all over (Fig. 3 C).

Gaster with petiolar segment moderately slender, without dorsal, longitudinal ridges, spiracles protruding; its postpetiolus strongly constricted in the anterior 0.3, in the middle

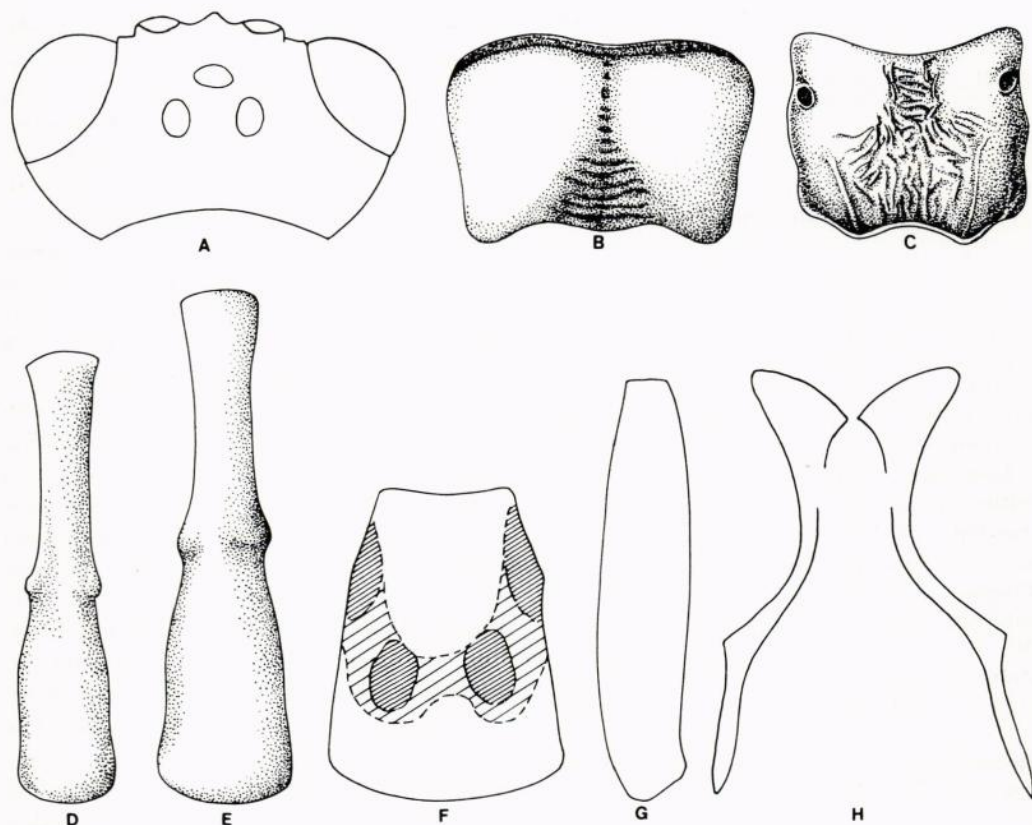


Fig. 3. *Hadrodactylus nigrifemur* Ths. ♀ (lectotype). A. Head in dorsal view. B. Mesosternum in posteroventral view. C. Propodeum in dorsal view. D. Petiolar segment in dorsal view. E. Same of another ♀ (Nr 1386, IC). F. Second tergite (Nr 1386, IC). G. Hind femur in lateral view. — H. ♂ (Celle, 24. vi. 1942, IC). Valvulae of penis, each in lateral view.

0.3 a little swollen and apically with a little widened lateral margins, thus giving the impression of a very slight constriction behind the middle; length of petiolar segment 5.0 of its maximum width and 8.89 of width of petiole (Fig. 3 D); length of second segment 1.57 of its width.

Fore leg with tibia almost straight, only indistinctly bent basally, its length 7.57 of maximum width, fifth tarsal segment with length 2.43 of that of fourth; middle leg with length of fifth tarsal segment 2.13 of that of fourth; hind leg with length of femur (Fig. 3 G) 4.69 of its maximum width and length of fifth tarsal segment 1.77 of that of fourth.

Wings with the two portions of postnervulus forming a very indistinct, rounded angle, anterior portion 0.94 of posterior one.

Colour black; antennae with scape and pedicel blackish dorsally and yellow ventrally, segments of flagellum dorsally reddish brown—brownish red, ventrally reddish yellow—yellowish red; face and clypeus yellow, only with a shortened median band between antennal sockets; mandibles and palpi yellow, the former brown apically; gaster with second segment reddish black, darkest medially, third segment red with a slight dark shade medially, fourth all red and fifth red laterally; legs with coxae black, trochanters and trochantelli yellowish, the

former on hind leg brownish dorsally, fore and middle legs for the rest yellowish red, hind femur all blackish dorsally, dark brown ventrally, hind tibia yellowish red with dorsal blackish shade not reaching extreme base and extreme apex, base light yellow; wings not conspicuously shaded; stigma dark brown with a basal whitish yellow spot.

Diagnosis

Distinguished from all other forms of the species group by the non-widened ventral portion of prepectal carina. Differing from *tarsator* and *gracilipes* by unicolorous, black or red hind femora, those species usually having hind femora with distinct dark apices. Also differing from *tarsator* by on the average stronger micro-reticulation and non-diverging median longitudinal carinae of propodeum and from *gracilipes* by practically all black middle coxae. Dark markings on second tergite (Fig. 3 F) and shape of penis apex by male (Fig. 3 H) also rather characteristic.

Variation

Petiole segment variable in shape and proportions, usually stouter than in the lectotype (Fig. 3 E), slight constriction on posterior 0.5 of postpetiolus often not present. Gaster very variable in colour, especially second and third tergite. The former can be all red—all black. Hind femora often all red, about twice as often as black.

Material studied

Sweden: ?Skåne, (2♂♂ without labels under "laticeps") (CT). — Småland, 1♀, Boheman leg. (MNH). — Östergötland, "Bjerka", 4.vi.1911, 1♀, ?Nordenström leg. (MNH). — Bohuslän, Tanum, Säm, 14.vi.1973, 1♀ 1♂ (3851, 3951); Tanum, Djupevattnet, 17.vi.1973, 1♀ (4062); 18.vi.1973, 13♀♀ 3♂♂ (4100—4115); 19.vi.1973, 2♀♀ 4♂♂ (4182—83, 4194—97), M.

Idar leg. (IC). — Närke, Hallsberg, 9.vi.1973, 1♀ 1♂ (3765—66), M. Idar leg. (IC). — Stockholm, 2♂♂, Boheman leg. (MNH). — Uppland, 16.vi.1911, 1♂, A. Roman leg.; 7.vi.1918, 1♀, R. Malaise leg. (MNH); Uppsala, Rosendal, 18.vi.1969, 1♀ (8), 23.vi.1970, 1♀ (75); Uppsala, Stadsskogen, 11.vi.1970, 1♀ (60); Heby, 13.vi.1971, 1♀ (1233); Läby, 18.vi.1971, 2♂♂ 1♀ (1254—56); 24.vi.1971, 1♀ (1386); M. Idar leg. (IC). — Västmanland, Kärrobo, Solbacken, 26.vi.1969, 1♀ 1♂ (17, 19); Kärrobo, Ångsjön, 4.viii.1973, 2♀♀ (4998—99), M. Idar leg. (IC). — Värmland, Karlstad, Kroppkärrsjön, 22.vi.1973, 10♂♂ (4237—44, 4262, 4264); Östra Fågelvik, Björknästorps, 23.vi.1973, 1♀ (4344); Karlstad, Alster, Busterud, 24.vi.1973, 6♂♂ 1♀ (4354—57, 4362—63, 4371); Karlstad, Välsviken, 25.vi.1973, 1♀ (4400); Busterud, 30.vi.1973, 8♂♂ 2♀♀ (4535—44); 1.vii.1973, 7♂♂ 1♀ (4596—4603); Kroppkärrsjön, 2.vii.1973, 1♂ (4627), M. Idar leg. (IC). — Dalarna, "Fulfjället", 1918, 1♀, Tjeder leg.; Falun, 1917, 1♂, Klefbeck leg. (MNH); Falun, Norslund, 7.vii.1933, 1♀; Stora Kopparberg, Karlberg, 13.vi.1926, 1♂, Tjeder leg. (GCL). — Norrbotten, Haparanda, 27.vii.1964, 1♂, R. Hinz leg. (IC).

?Norway: "Bjerkeng" (= ?Björkeng in Finland), 1♂ (ZMH).

?Denmark: "Sondbg" (= ?Söndbjerg), 1♂ (TC).

Finland: Mikkeli, Parikkala, "3430", 1♂, I. Hellén leg. (GCL).

BRD: Niedersachsen, Göttingen, 12.v.1946, 3♂♂ 1♀; 19.v.1946, 2♂♂ 2♀♀; 20.v.1946, 1♂; 2.vi.1946, 1♂; Celle, 31.v.1942, 1♂; 20.vi.1942, 1♀; 24.vi.1942, 1♂; 28.vi.1942, 1♂ 1♀; Hannover, 15.v.1948, 1♂; Iburg, 1.vi.1950, 1♀; 4.vi.1949, 1♂; Harz, 14.vii.1965, 1♂; Einbeck, 21.v.1956, 1♂; 27.v.1957, 1♂; 2.vi.1957, 1♂, R. Hinz leg. (IC); Goslar a.H., Grauhöfer, Holz, 12.v.1934, 1♂; 13.v.1925, 2♂♂; 17.v.1952, 1♀; 23.v.1937, 1♂; 28.v.1928, 1♂; 29.v.1927, 1♂; 31.v.1930, 4♂♂; 1.vi.1935, 1♂ 1♀; 5.vi.1933, 1♂; Goslar, Waldkamp, 15.v.1921, 1♂; 24.v.1919, 1♀; Goslar, Bärenkopf, 31.v.1924, 1♂; Goslar, Harli, 8.vi.1938, 1♀, E. Bauer leg. (MC); Rochlitz, 28.v.1890, 1♀, Krieger leg. (ZMH); Bremen, vii.1922, 1♂, Lüdeke leg. (DEI). — Hessen, Eschwege, 19.v.1959, 1♂; 23.v.1965, 2♂♂, R. Hinz leg. (IC). — Baden-Württemberg, Mergentheim, 26.vi.1956, 2♀♀, R. Hinz leg. (IC). — Nordrhein-Westfalen, Krefeld, 10.vi.1910, 1♂; 17.vi.1910, 1♂, Puhmann leg., 1♂, Ulbricht leg. (ZMH). — Ober-

bayern, Berchtesgaden, 5.vii.1957, 1♀, R. Hinz leg. (IC); Garmisch, Kreuzeck, 21.vii.1927, 1♀; Ellinau, 18.vii.1925, 1♀, E. Bauer leg. (MC); Spessart, 15.vii.1919, 1♀, leg.? (DEI).

DDR: Mecklenburg, Schwerin, 2♂♂ 1♀, Brauns leg.? (ZMH); Meckl., 22.vii.1891, 1♀, leg.? (DEI); Meckl., Müritzhof, 31.v.1967, 1♂, Prerow, 7.vii.1967, 1♀, J. Oehlke leg. (DEI). — Berlin, (?DDR), 1♂, "J. P. Fr. Steins" leg.? (ZMH).

USSR: Latvia, Kurland, Wezkukul, 15.vi.1916, 1♂ 1♀, Bischoff leg. (ZMH).

Spain: Pyrénées, Parque Nacional de Ordesa, 10.vii.1961, 1♀, R. Hinz leg. (IC).

Biological notes

In Sweden usually found by the writer in clumps of high grass, often *Alopecurus pratensis*, in sun-exposed localities but among trees and bushes, often far from water.

Notes on the distribution of *Hadrodactylus bidentulus* Ths. and *H. villosulus* Ths.

H. bidentulus

Poland: Bialowiecza, 1♂, Bischoff leg. (ZMH).

DDR: Thüringen, 2♀♀, Schmiedeknecht leg.; Schwerin, 1♂, Brauns leg. (ZMH).

H. villosulus

Sweden: Södermanland, Stockholm, Stora Sköndal, 15.vii.1918, 1♂, Gaunitz leg.; Nacka, 1.vii.1923, 1♀, F. Nordström leg. (GCL). — Värmland, Karlstad, Kroppkärrsjön, 22.

vi.1973, 5♀♀ (4257—61); Östra Fågelvik, Björknästorp, 23.vi.1973, 5♀♀ (4319—23); Karlstad, Välsviken, 25.vi.1973, 1♀ (4395); Väse, Glumman, 29.vi.1973, 2♂♂ 2♀♀ (4495—98); Björknästorp, 29.vi.1973, 1♀ (4527), M. Idar leg. (IC). — Dalarna, Falun, Pilsundet, 24.vii.1931, 1♀, Tjeder leg. (GCL).

BRD: Nordrhein-Westfalen, Krefeld, 1.vi.1910, 1♂, Puhlmann leg. (ZMH).

DDR: Berlin, Lichtwardt, 9.v.1918, 1♂, leg.? (DEI).

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