

B.

**Image key to the Western Palearctic Nanophyini
(Brentidae: Nanophyinae)**

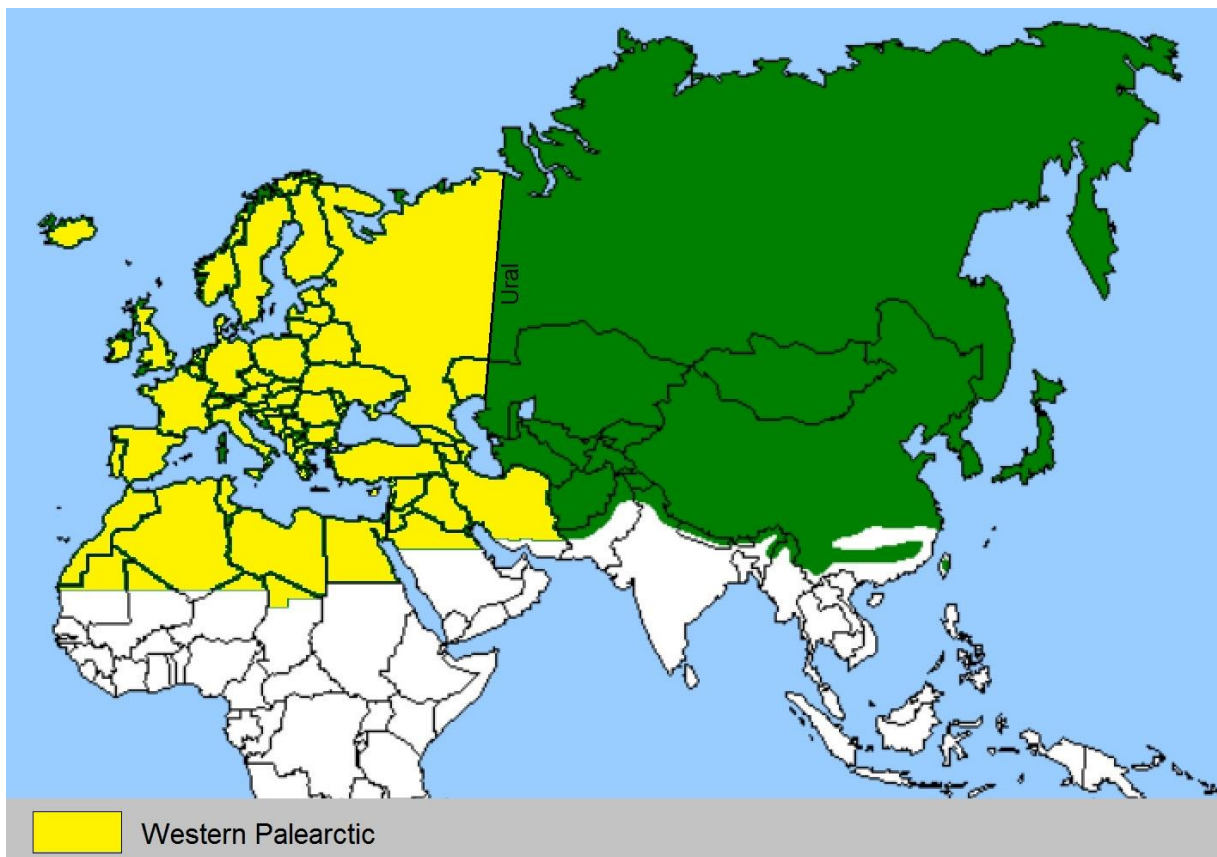
by

Peter E. Stüben

Status: 1.2.2024

Preliminary note

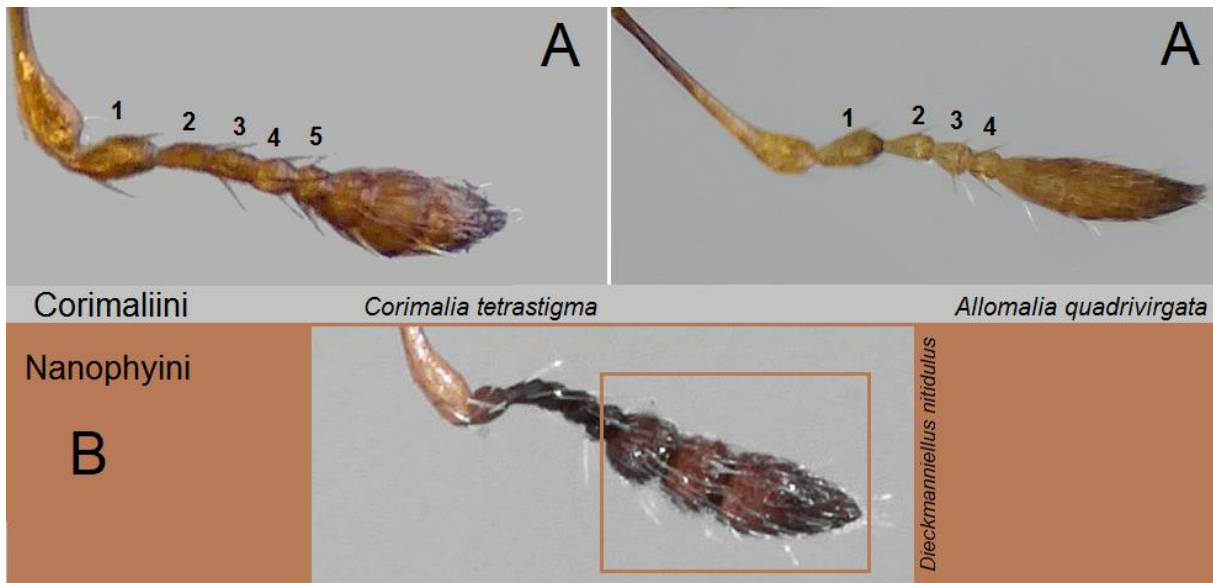
1. Region: Western Palearctic.



2. I was unable to study or loan type material for some very rare species, therefore the key is still in progress. The following (sub-)species are still unknown to me:

- *Dieckmanniellus nigratarsis* (Aubé, 1862), Nanophyes, E: FR IT (Sardegna, Sicilia)
- *Nanomimus yvonnae* (A. Hoffmann, 1932), Nanophyes, E: FR [probably the older name of a younger synonym: *Nanomimus smreczynski* (Dieckmann, 1963); see comment there!]
- *Nanophyes aegyptiacus* Pic, 1900, N: Egypt
- *Nanophyes longipilis* Pic, 1919, E: "Caucasus"
- *Nanophyes pallidipes* Pic, 1897, E: "Caucasus"
- *Pericartiellus luteonotatus* (Pic, 1919), Nanophyes, E: "Caucasus"
- *Pericartiellus palaestinus* (Pic, 1900) Nanophyes, A: Israel

3. You will find many more high resolution photos of the habitus, the female and male genital apparatus, biotopes and distribution maps in the main catalogue.



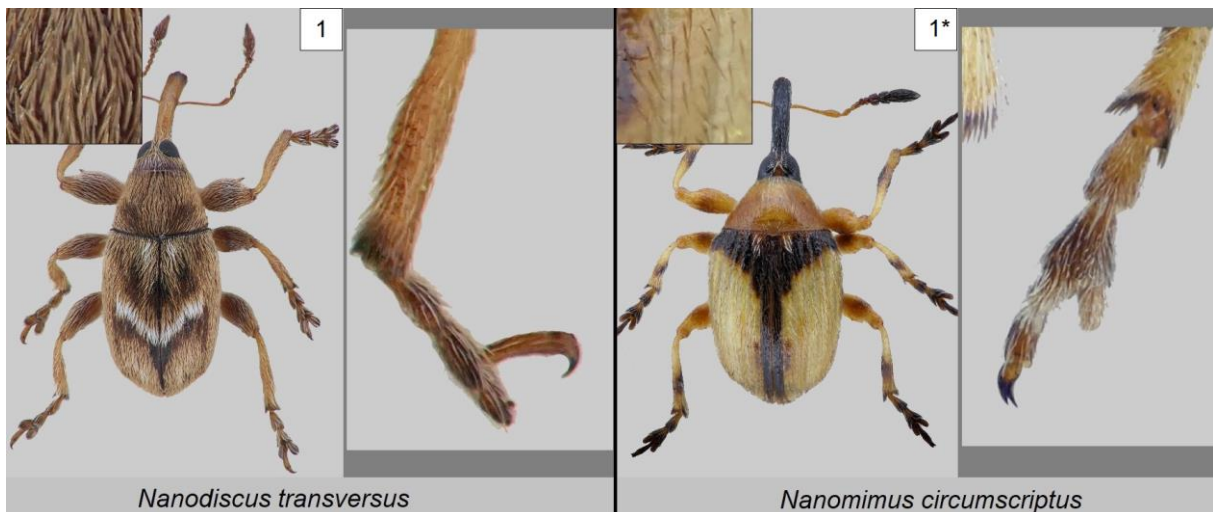
- A. Corimaliini: The antennae with oval club, the segments separated only by sutures.
 B. Nanophyini: The antennal club with segments, these clearly separated from each other.

B

Key to the Nanophyini:

Ctenomeropsis, *Dieckmaniellus*, *Microon*, *Nanodiscus*, *Nanomimus*,
Nanophyes and *Pericartiellus*,

Note. Knowledge of the male genital is indispensable for this key.

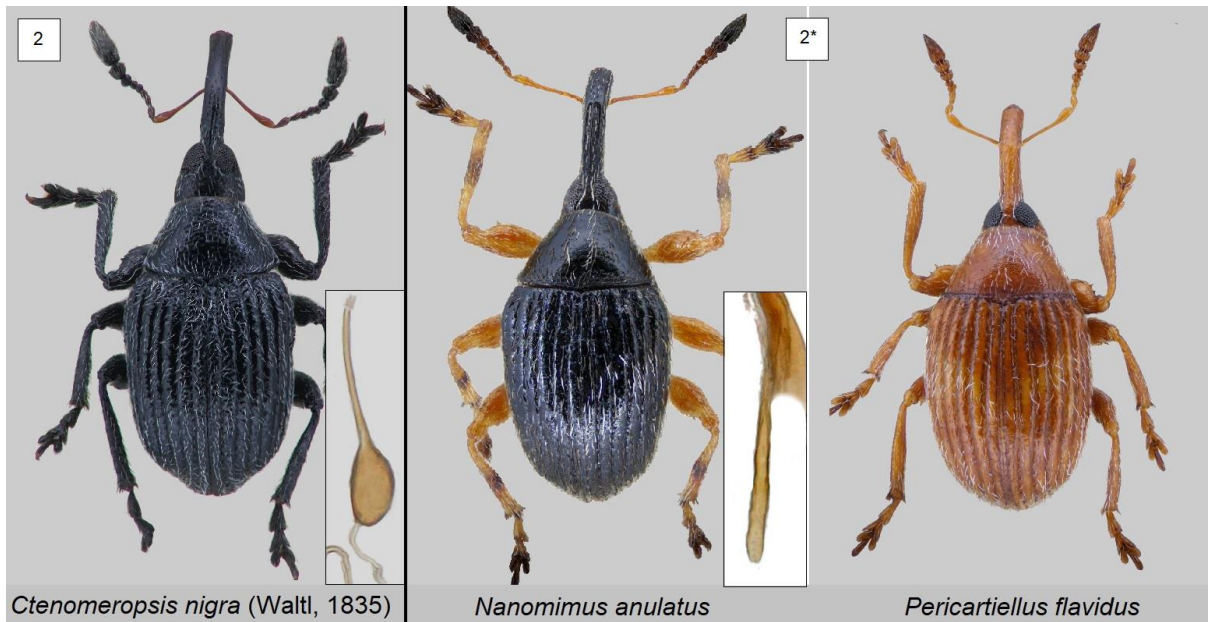


1 Tarsi with only one claw. Elytra and pronotum densely covered with adjacent hairs almost completely covering the integument. Size: 2.2 - 2.7 mm; Host plant: Cupressaceae: *Juniperus* spp.; Distribution: **E:** FR GR HU IT SP **N:** AG CI LB MO TU.

..... ***Nanodiscus transversus* (Aubé, 1850)**

1* Tarsi with two claws fused at the base. Elytra and pronotum much more sparsely covered with hairs, which make the shiny integument clearly visible everywhere.

..... 2



2 Body entirely black; tarsi short; first anterior tarsomere at most 1.5x longer than wide; flagellum of aedeagus bulbous. Size: 1.7 - 2.1 mm; Host plant: Ericaceae: *Erica* spp.; Distribution: **E:** CR FR GR IT PT SP UK **N:** AG MO TU.

..... *Ctenomeropsis nigra* (Waltl, 1835)

2* Body not unicolored black, predominantly with distinctly lighter, patches of color **or** with yellow-red legs (as in *Nanomimus anulatus*, see below); tarsi longer, 1st. anterior tarsomere at least 1.5x longer than wide; flagellum bar-like, not bulbous at base.

..... 3



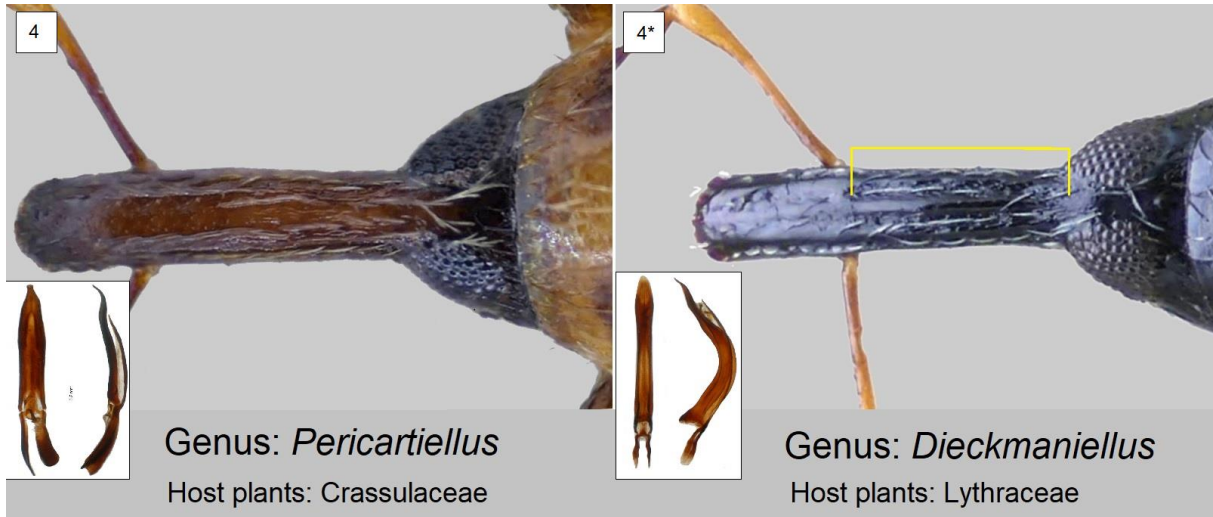
3 Fore femora with at least 2 teeth, of which the proximal tooth is strongly developed.

..... 4

3* Fore femora without teeth or with a single minute denticle.

..... 11

Fore femora with 2 or 3 denticles



4 Rostrum without or at most in basal part with an indistinct median keel; smooth-glossy in front of the antennal insertions. Median lobe of aedeagus (ventrally) broader, 3x - 5x longer than broad; when viewed laterally, straight in middle section, at most weakly wavy, never with a right-angled curved tip.

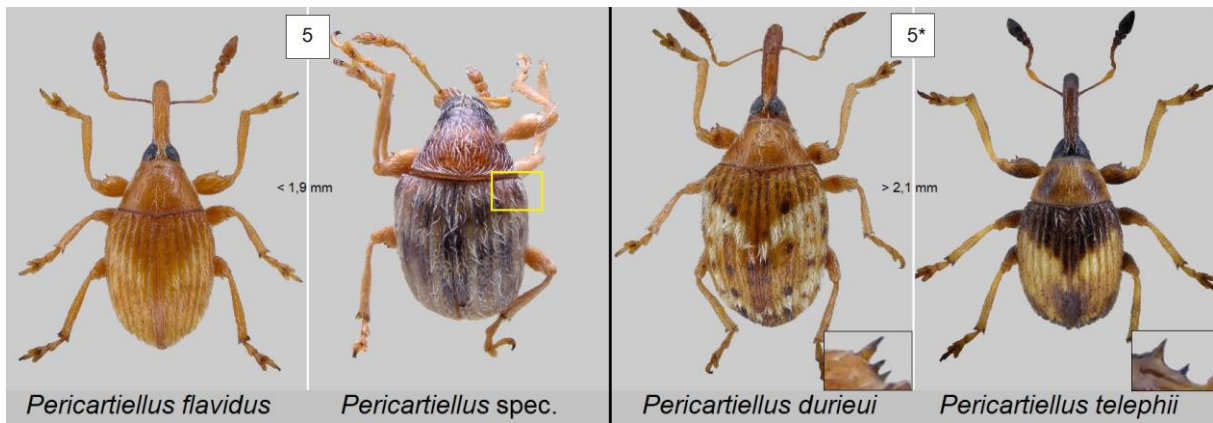
Genus: *Pericartiellus* 5

4* Rostrum with a long, strong median keel reaching almost to the antennal insertions. Median lobe of aedeagus (ventral) narrower, at least 8x longer than wide; when viewed laterally, more or less strongly angulate or curved in middle section; if aedeagus broader (similar to *Pericartiellus*), then curved almost at a right angle behind the apex (never nearly straight or only weakly wavy over entire length).

Genus: *Dieckmaniellus* 8

Genus: *Pericartiellus*

Note: *Pericartiellus luteonotatus* (Pic, 1919) and *Pericartiellus palaestinus* (Pic, 1900) are missing here. Please contact the Muséum national d'Histoire naturelle (Paris) to be allowed to see the types in the Pic collection!



5 Smaller species: < 1.9 mm. Elytra with little contrast between markings, without a clearly defined darker basal patch.

..... **6**

5* Larger species: > 2.1 mm. Elytra contrastingly bisected: with a (dark) brown triangular patch behind the base and the predominantly yellow, often brown speckled, area behind the middle.

..... **7**

6 Body with little colour contrast; humeri weakly developed; elytra distinctly widest far behind base, longer and predominantly unicolored yellow-red to reddish-brown; only with a yellowish fascia extending from middle of suture to behind the shoulder; rostrum parallel-sided in both sexes (see Fig. 5, left); median lobe of aedeagus longer with wavy sides. Larger species: 1.5 - 1.9 mm; host plant: *Sedum* spp.; distribution: **E**: FR GE SP ST SZ **A**: TR.

..... ***Pericartiellus flavidus* (Aubé, 1850)**

6* Body somewhat more contrastingly marked; with strong humeri; elytra widest at base, shorter, stockier, and with numerous broad, somewhat dark longitudinal stripes on intervals (see Fig. 5, right); rostrum of males continuously broadening toward apex; median lobes of aedeagus parallel-sided. Smaller species: 1.4 mm; Distribution: **A**: Iraq.

..... ***Pericartiellus spec.***

7 Fore femora with at least 3 denticles (see Fig. 5*, left). Often with small, freckle-like, dark spots on the elytral intervals, especially behind the centre. Size: 2.1 - 2.5 mm; Host plants: Crassulaceae: *Umbilicus horizontalis*, *U. rupestris*; Distribution: **E**: FR PT SP **N**: AG TU.

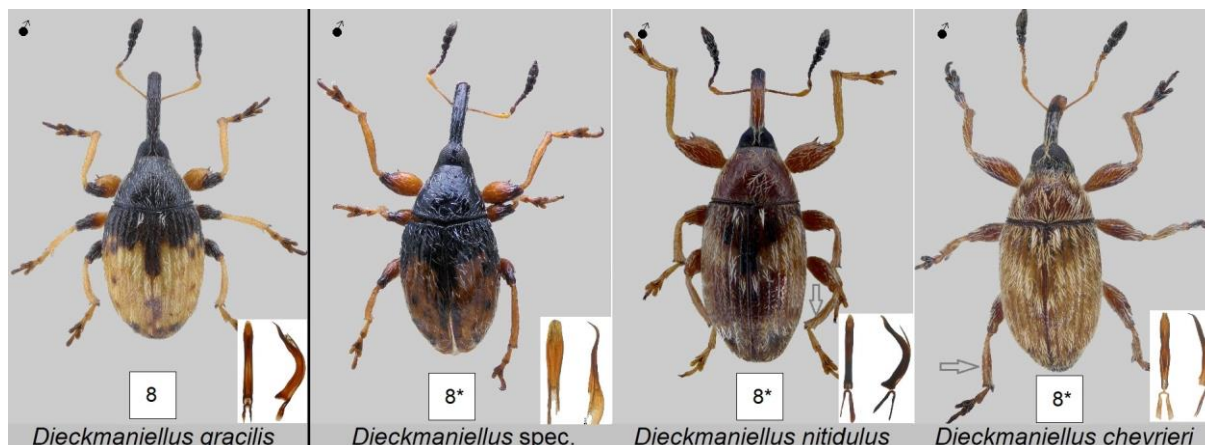
..... ***Pericartiellus durieui* (P.H. Lucas, 1846)**

7* Fore femora with at least 2 denticles (see Fig. 5*, right). Occasionally with a large quadrangular spot on the elytral decline in front of the apex. Size: 2.1 - 2.5 mm; Host plant: *Hylotelephium telephium* (L.); Distribution: **E**: CZ FR HU SK ST **N**: AG **A**: KZ WS.

..... ***Pericartiellus telephii* (Bedel, 1900)**

Genus: *Dieckmaniellus*

Note: *Dieckmaniellus nigrirtarsis* (Aubé, 1862) is missing here. Please contact the Muséum national d'Histoire naturelle (Paris) to be able to see the types in the Aubé collection!



8 Body shape (elytra, pronotum, and head) rather short oval; elytra at most 1.25x longer than wide; (like the following, but distinctly **long-oval** species *Dieckmaniellus spec.*, anterior half of body, rostrum, head, pronotum and basal third of elytra entirely black and contrasting with posterior, yellow-red part of elytra). Size: 1.3 - 1.9 mm; host plant: *Lythrum portula* L. (= *Peplis portula*); distribution: **E:** AU BH BU CR CZ FR GB GE GR HU IT PL PT SK SP ST UK **N:** AG TU.

..... *Dieckmaniellus gracilis* (L. Redtenbacher, 1847)

8* Body shape distinctly long oval; elytra at least 1.30x longer than wide.

..... **9**

9 Anterior half of body, rostrum, head, pronotum, and basal third of elytra entirely black (see Fig. 8*, left); rostrum of males only weakly curved and > 5.3 x longer than wide; median lobe of aedeagus (ventral) broadened in middle section, convex. (Except for the fore femoral tooth and the completely different shape of the aedeagus, this species resembles the black variant of *N. marmoratus*); size: 1.65 mm; distribution: PT.

..... *Dieckmaniellus spec.*

9* Anterior half of body predominantly yellow-red-brown (rarely with dark colouration) (see Fig. 8*, centre & right); the more curved rostrum of males shorter, < 4.5x longer than wide; median lobe of aedeagus (ventral) constricted in middle section, distinctly concave (two species that are easily confused without knowledge of male genitalia).

..... **10**

10 Rostrum parallel-sided; aedeagus curved at right angle when viewed laterally (similar to *D. gracilis*); apex rounded (ventral view); hind tibiae of males curved inward (see Fig. 8*, centre). Sexual dimorphism: The males are more slender, the

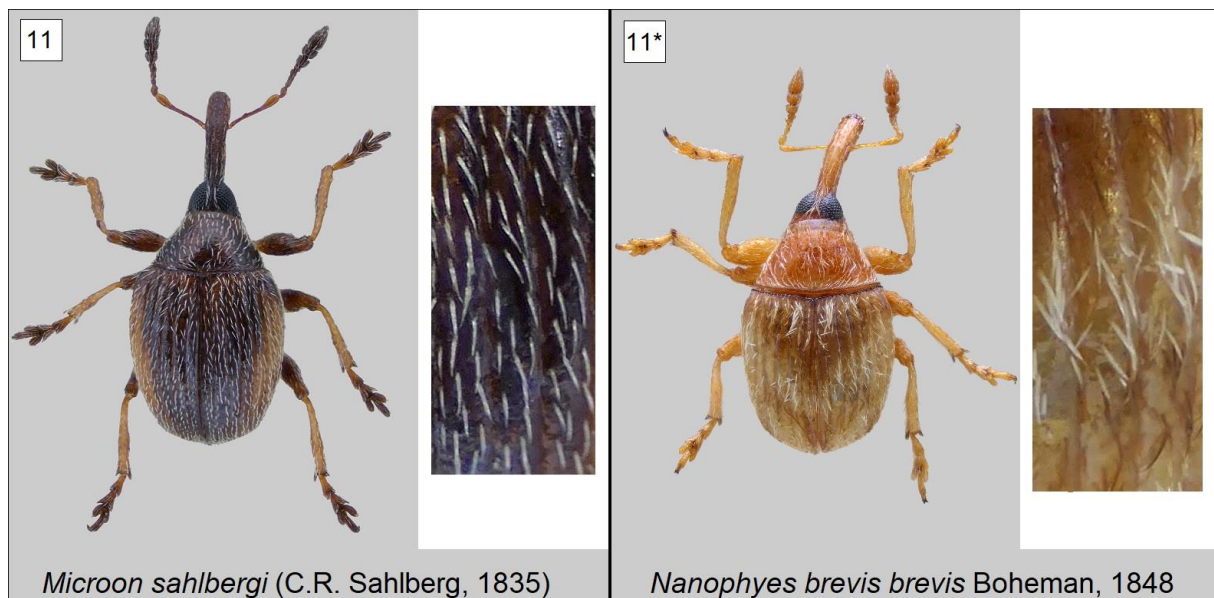
females are slightly shorter oval and the hind tibiae almost straight. Size: 1.4 - 2.1 mm; host plants: *Lythrum* spp.; Distribution: **E:** AL AU BE BU CR CT CZ FR GE GR HU IT MA PL PT RO SK SP ST SZ UK **N:** AG CI EG MO TU **A:** AB AR CY ES IS KZ SY TR UZ WS.

..... *Dieckmaniellus nitidulus* (Gyllenhal, 1838)

10* Rostrum broadening towards the apex, narrower at base than at apex; aedeagus obtusely curved (to almost straight) when viewed laterally, apex flat (ventral view); hind tibiae of males straight (see Fig. 8*, right). Size: 1.4 - 2.1 mm; host plant: *Lythrum salicaria* L.; distribution: **E:** AL AU BU CZ FR GE GR HU IT MC PL PT RO SB SK SP ST SZ **N:** EG TU **A:** AB AR IS.

..... *Dieckmaniellus chevrieri* (GBoheman, 1845)
= *Nanophyes helveticus* Tourn.

Fore femora at most with one tiny denticle



11 Elytra without markings (sides sometimes a little bit lighter); vestiture consists of unicolored, pale, short hairs, which are strictly orientated towards the tip of the elytra. Fore femora always untoothed. Size: 1.2 - 1.5 mm; host plant: *Lythrum portula* L.; distribution: **E:** AU CT CZ DE EN FI FR GB GE HU IT (Sardegna) NT PL SK SP ST SV SZ **A:** TR WS.

..... *Microon sahlbergi* (C.R. Sahlberg, 1835)

= *Nanodes villaticus* Gistel, 1857: 17 syn. nov. According to the first description by Gistel, this is clearly a younger synonym of *Rhynchaenus sahlbergi* C.R. Sahlberg, 1835, a very small species that also occurs in Bavaria (Sprick & Schmidl 2005).

11* Elytra with markings (V-shaped bands, spots, suture stripe), vestiture often bicolored with lighter and darker, longer and disordered hairs. Predominantly larger species 1.3 - 2.5 mm.

[The following genus-specific differences repeatedly mentioned in the literature (length of the median keel on the rostrum, male pygidium or differences in the endophallus) do not lead to a

comprehensible, morphological separation into the two genera *Nanomimus* and *Nanophyes*, neither in theory nor in practical application in all species here. Furthermore, there are no significant differences in the host plants (mainly *Lythrum* spp.). What remains are most likely the differences in size. The author therefore suggests that *Nanomimus* Alonso-Zarazaga, 1989 should be synonymized with *Nanophyes* Schoenherr, 1838, if molecular studies confirm this!].

..... 12

12 Larger species: 2.0 - 2.5 mm.

Genus: *Nanomimus* 13

12* Smaller species: 1.0 - 2.0 mm. (the largest species *Nanophyes globiformis* at 1.6 - 2.2 mm, looks very similar in habitus to the species around *Nanomimus circumscriptus* and is considered twice).

Genus: *Nanophyes* 17

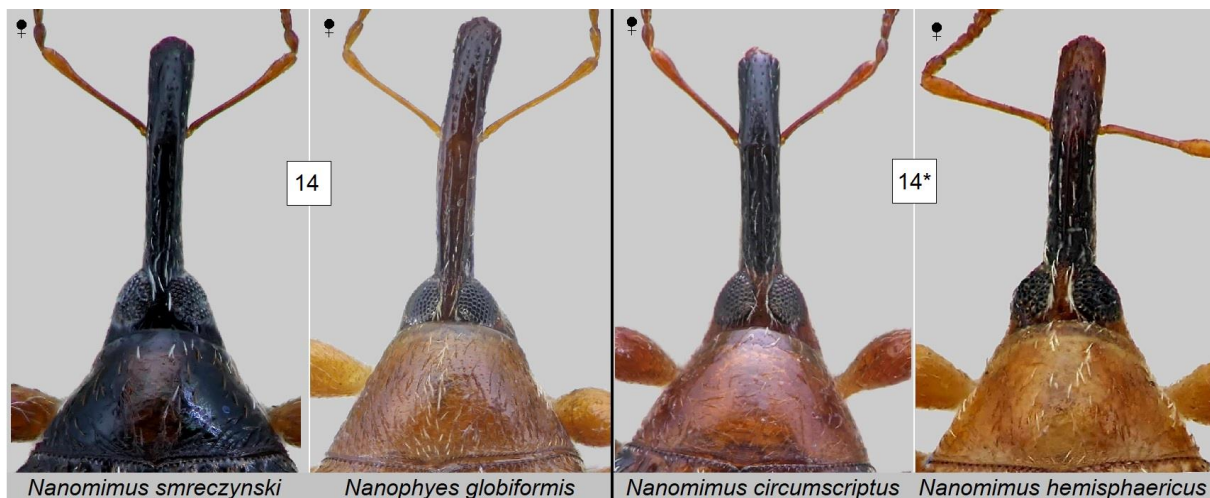
Genus: *Nanomimus* / *Nanophyes* pars

13 Body completely black except for the yellow-brown, black ringed legs and at least the yellow scape (see Fig. 2*, left; only in var. *maritimus* Hoffm. is there a faint reddish spot in the middle of the elytra in the area of the 4th, 5th and 6th interval). Size: 2.1 - 2.5 mm; host plant: *Lythrum salicaria* L. and *L. graefferi* Ten.; distribution: E: AU CR FR GR HU IT SB SZ N: AG.

..... *Nanomimus anulatus* (Aragona, 1830)

13* Most of the elytra yellow or yellow-red (see Fig. 2*, right). [As with most Nanophyini, further colour differentiation is not possible here, as the species show an enormous color and pattern variability, and do not provide the observer with any features to distinguish the species with certainty].

..... 14



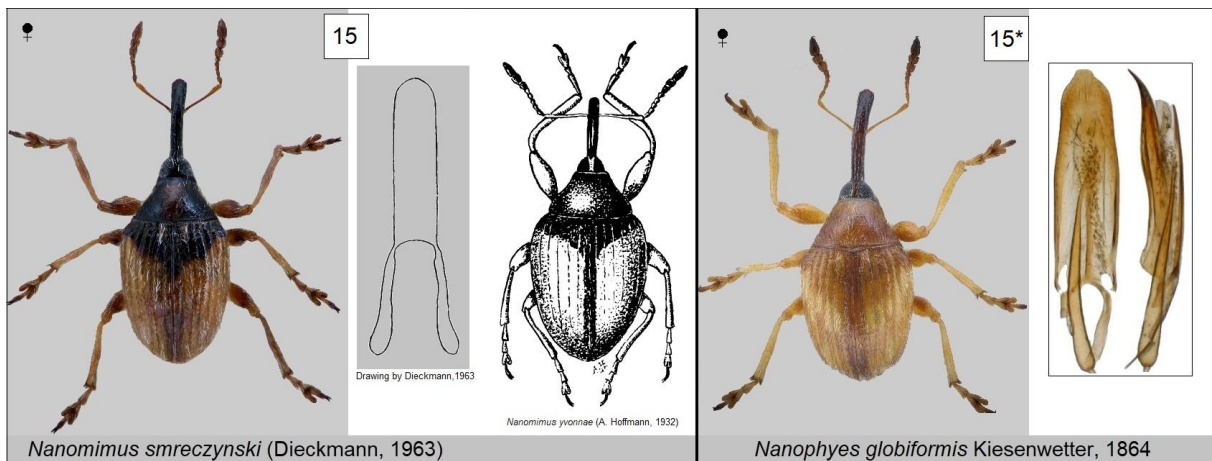
14 Rostrum in both sexes strongly curved and widened towards the tip (clearly narrower at the base); rostrum of females clearly longer than head and pronotum

together, narrower, but at least 5.8x longer than the width between the antennal insertions (in habitus the two species are very similar!).

..... 15

14* Rostrum in both sexes straight or only slightly curved, parallel-sided (not narrowed at the base); rostrum of females significantly shorter, thicker, at most as long as head and pronotum together or insignificantly longer: at most 5.3x longer than the width between the antennal insertions.

..... 16



15 Pronotum black or, in the middle of the black pronotal disc, often with a broad, yellow longitudinal band surrounded by long, adjacent hairs; suture interval sometimes not darkened throughout (or completely black) or occasionally even uniformly yellow like the elytra behind the triangular basal macula; median lobe of aedeagus (pointed) rounded; larger species: 2.3 - 2.4 mm; Host plant: *Lythrum* spp.; Distribution: **E:** F? **BU A:** TR.

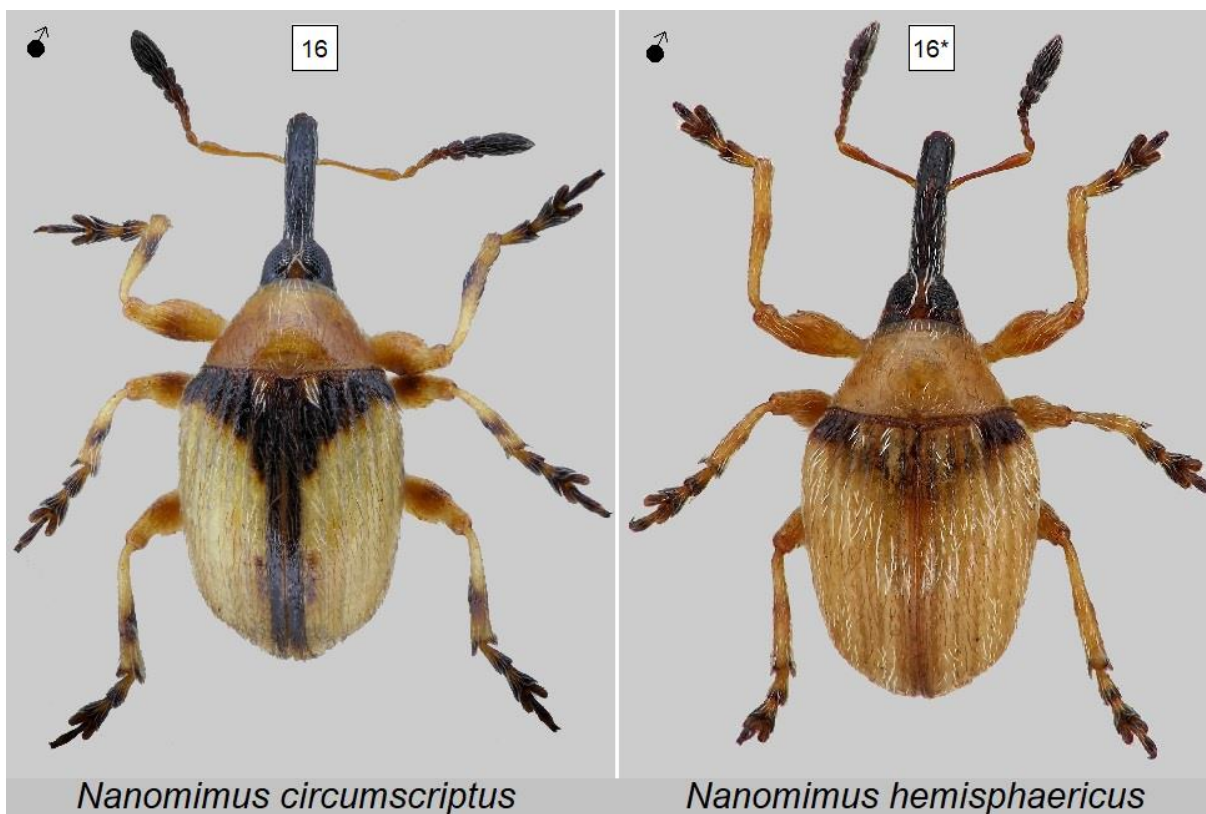
..... ***Nanomimus smreczynski* (Dieckmann, 1963)**

This species is probably a synonym of *Nanomimus yvonnae* (A. Hoffmann, 1932), a species described from France (Seine et Oise and Isère). It is incomprehensible why Dieckmann did not refer to the similar illustration and description by Hoffmann (1958: 1242) in his new description of *N. smreczynski* (see Fig. 15), because this species also has a black rostrum, head, pronotum and a black triangular basal elytral macula on a yellow ground colour, as well as a similarly long antennal club. Perhaps the continuous black suture stripe in *N. yvonnae* and (then) the obviously disjunct distribution (so far not proven in Central Europe) prevented him from doing so. However, neither of these are convincing arguments!

Conclusion: In view of the numerous colour transitions in the *Nanomimus* species around *Nanomimus hemisphaericus*, it is left to molecular biology to shed light into the 'morphological colour play'.

15* Pronotum uniformly red-yellow; suture interval of elytra yellow-brown or black like the triangular basal macula; median lobe of aedeagus constricted slightly (like a false-neck) before the partially flattened apex (similar to *N. marmoratus*, apodemes (= temones) however at most half as long); smaller species: 1.6 - 2.2 mm; host plant: *Lythrum salicaria* L., *L. hyssopifolia* L. and *L. acutangulum* Lag; Distribution: **E:** AL AU BH BU CT CZ EN FR GE GR HU IT LA PL PT RO SB SK SP ST SZ UK **N:** MO **A:** FE.

..... ***Nanophyes globiformis* Kiesenwetter, 1864**



16 Elytra without strong humeri, the sides curving towards the tip (short oval). Elytra yellow; the black, rarely brown, suture stripe sharply and contrastingly set off from the yellow elytra. Size: 2.2 - 2.5 mm; host plant: *Lythrum salicaria* L. and *L. hyssopifolia* L; distribution: **E:** AU CT CZ EN FI FR GE GR HU KZ LA PL SK ST SV SZ UK **A:** AR TR WS.

..... ***Nanomimus circumscriptus* (Aubé, 1864)**

16* Elytra with strongly developed humeri, narrowed in a straight line towards the apex (forming a triangle in overall impression); suture stripes of elytra much lighter, yellowish brown, never contrastingly separated from the brown-yellow elytra on the rear half (often absent altogether); size: 2.0 - 2.5 mm; host plant: *Lythrum* spp. (e.g. *L. salicaria* L. and *L. tribracteatum* Salzm.); Distribution: **E:** AU BH BU CR CZ FR GE GR HU IT MA PL PT SB SK SL SP ST SZ TR UK **N:** AG EG MO TU **A:** AB GG KZ LE TR WS.

..... ***Nanomimus hemisphaericus* (Olivier, 1807)**

Genus: *Nanophyes*



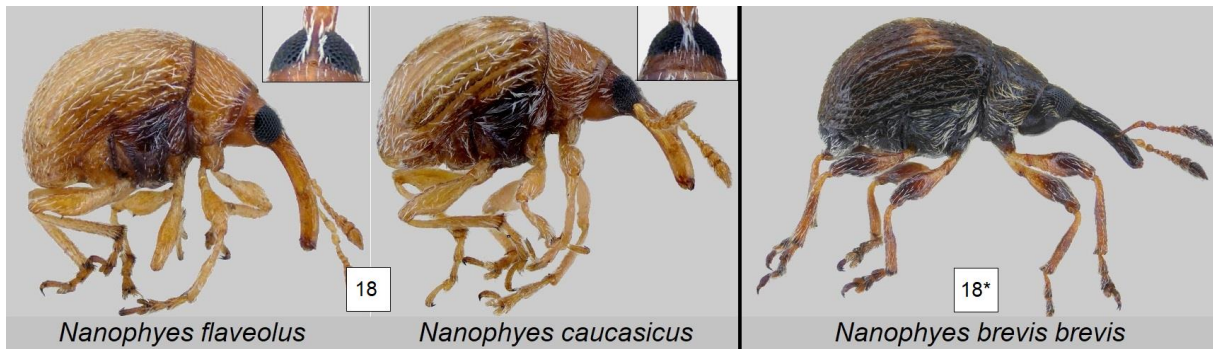
Variants of *Nanophyes marmoratus marmoratus* (Goeze, 1777)

17 Easily distinguished from all other species by the slender, elongated, spindle-like body with acuminate elytra and **fore femora without denticles**. The trapezoidal shiny pronotum, almost always abraded, the intervals keeled and shiny; aedeagus with a flattened tip. (The most common species on *Lythrum salicaria* L. and *L. hyssopifolia* L. is extremely variable in elytra markings: there are all conceivable transitions from nearly monochrome black to nearly monochrome red-yellow specimens. Lighter-coloured specimens with a reddish-yellow pronotum can be sometimes confused with the somewhat shorter species *N. globiformis*: Since both species occasionally occur sympatrically on the same *Lythrum* plant, it is often helpful to compare the aedoeagi, whose apodemes in *N. marmoratus* are almost as long as the median lobus - in *N. globiformis* not even half as long). Size: 1.4 - 2.0 mm; Distribution: **E:** AL AU BU CR CT CZ DE EN FI FR GB GE GR HU IR IT LA LS LT LU MD NL NR NT PT RO SB SK SP ST SV SZ UK **A:** AB ES GG KZ LE SC SY TR WS **NARI**

..... *Nanophyes marmoratus marmoratus* (Goeze, 1777)

= *Nanodes triptolemus* Gistel, 1857: 17 syn. nov. According to the first description by Gistel, this is clearly a younger synonym of *Curculio marmoratus* Goeze, 1777, here a reddish brown, gray-white felted variant of this species with a black rostrum (see also the last variant in Fig. 17).

17* Body stockier, broader; elytra almost hemispherical (lateral view) and/or with strong humeri.



18 Elytra and pronotum form a hemisphere in lateral view. Two very small species < 1.2 mm from the Caucasus and Near East.

..... **19**

18* Elytra **and** pronotum do not form a hemisphere. More elongate and larger. Larger species, well over 1.3 mm.

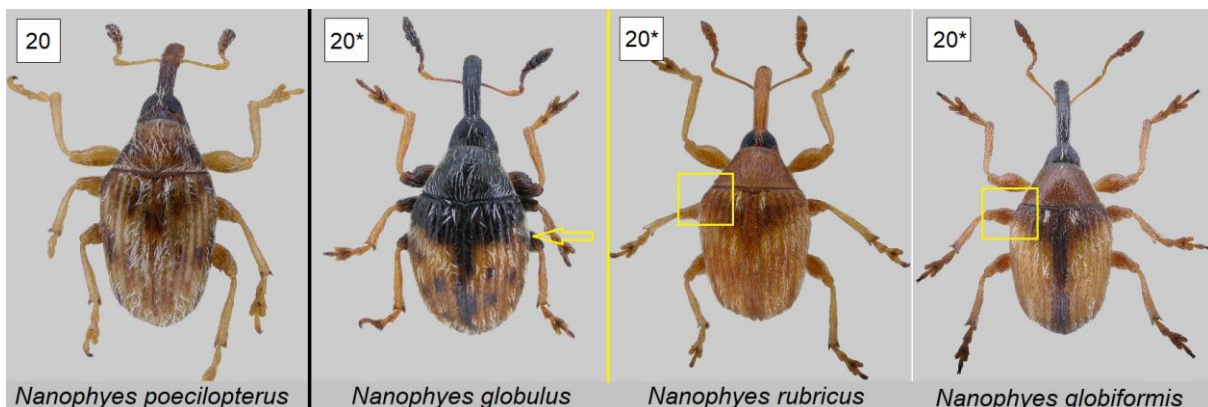
..... **20**

19 Forehead broad between the eyes, of at least half the width of the rostrum (see Fig. 18, left); tarsi very short. Little colour contrast in the markings, more or less unicoloured yellow-red (as a result, can be easily confused with a small Corimaliini; note antennal club!). Size: 1.0 - 1.2 mm; distribution: **A**: SA TR YE **AFR**.

..... **Nanophyes flaveolus** Formánek & Melichar, 1916

19* Forehead narrow between eyes, at most ¼ the width of rostrum (see Fig. 18, right); tarsi longer, almost as long as tibiae. Markings with greater contrast; head, pronotum and the basal elytral triangle strongly darkened. Size: 1.0 - 1.2 mm; distribution: **E**: "Caucasus" **A**: TR.

..... **Nanophyes caucasicus** Pic, 1898



20 Elytra elongate, with sides that narrow straight toward the tip; apex of the aedeagus forms an acute angle (ventral view); so far known only from North Africa and the Iberian Peninsula. (Determination of the specimen shown here from Morocco (Tangier) by R. Ruter, coll. SDEI). Size: ca. 1.3mm; Distribution: **E**: SP **N**: AG MO **AFR**

..... ***Nanophyes poecilopterus* H. Brisout de Barneville, 1869**

20* Elytra shorter, stockier, broader; apex of aedeagus flattened or almost forming a right angle.

..... **21**

21 Elytra short-oval and laterally much more rounded (see Fig. 20*, left), with barely developed humeri (hence widest part far behind the elytral base); rostrum subparallel; in addition to the head and rostrum, at least the pronotum always deep black; small species: 1.3 - 1.5 mm; host plant: *Lythrum portula* L.; distribution: **E:** AU BH CR CT CZ FR GE HU IT NL PL RO SK SP SV SZ UK **A:** FE.

..... ***Nanophyes globulus* (Germar, 1821)**

= *Nanophyes suavis* Gistel, 1857: 17 **syn. nov.** According to the first description by Gistel, it is a younger synonym of *Cionus globulus* Germar, 1821, a species that also occurs in Bavaria, Germany (Sprick & Schmidl 2005).

21* Elytra with distinctly developed humeri, widest part immediately behind the elytral base and sides only weakly convexly tapering towards the apex; rostrum distinctly narrower at the base than at the apex (see Fig. 20*, centre & right); pronotum often yellow-red or red-brown, more rarely individuals in the same population may be mostly black (like in *N. brevis brevis*); larger species: > 1.6 mm.

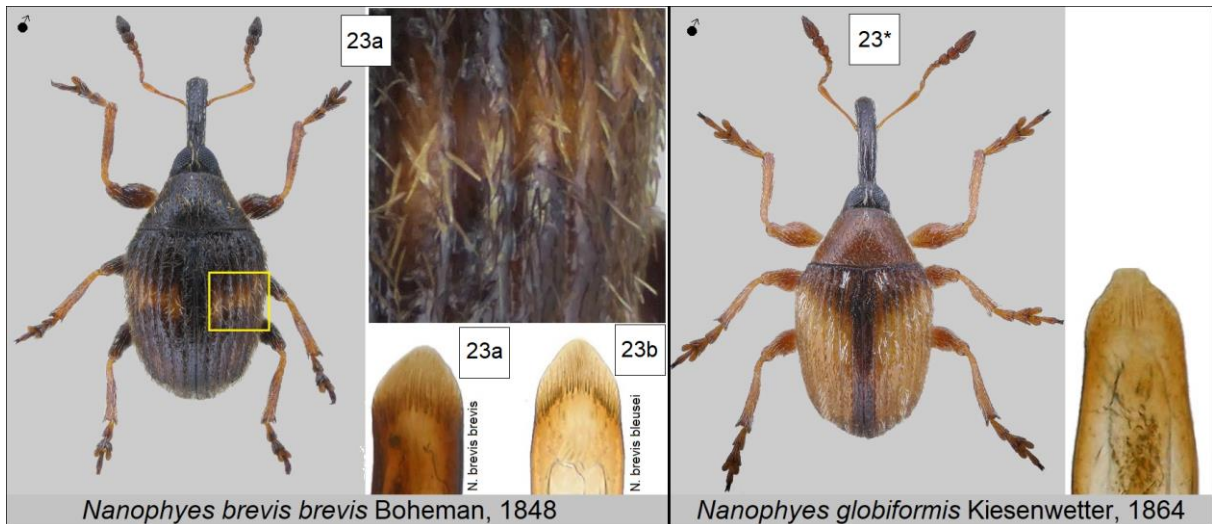
..... **22**

22 Body nearly unicoloured red-yellow; elytra with a **V**-shaped band of a few white hairs; otherwise sparsely covered with adjacent hairs; strongly developed humeri (see Fig. 20*, centre). Size: 1.4 -1.9 mm; distribution: **E:** FR GR IT SP **N:** AG MO MR TU.

..... ***Nanophyes rubricus* Rosenhauer, 1856**

22* Body more contrastingly marked (see Fig. 20*, right); elytra predominantly with appressed hairs and on some intervals with 2 to 5 fine, vertically projecting hairs (especially numerous and easily recognisable in *N. brevis brevis*).

..... **23**



23a Smaller species: 1.6 - 1.8 mm; elytra somewhat shorter (stockier), with stronger humeri, apex more flat rounded; Rostrum especially in females steadily and clearly broadening from the very narrow base to the tip; rostrum of males thick, shorter than head and pronotum combined; Elytra on the odd intervals with distinctly upright, isolated, very fine hairs; median lobe of aedeagus tapering; Host plant: *Lythrum salicaria* L.; Distribution: **E:** AL AU BE BH BU CR CT CZ FR GE GR HU IT LU PL RO SB SK ST SZ UK **N:** EG **A:** AB IN TR.

..... ***Nanophyes brevis brevis* Boheman, 1848**

23b The nominotypic taxon must be distinguished from the following subspecies from the Iberian Peninsula and northwestern Africa, whose male has an acuminate median lobus of the aedeagus (see Fig. 23b). Distribution: **E:** PT SP **N:** AG

..... ***Nanophyes brevis bleusei* Pic, 1900**

23c Another dubious subspecies is reported from southern France, northern Italy and Switzerland (Tessin). Distribution: **E:** FR IT SZ.

..... ***Nanophyes brevis fallax* Rey, 1893**

23* Larger species: 1.6 - 2.2 mm; elytra somewhat more long-oval, with flatter humeri, apex tapering; Rostrum subparallel (compared to *N. brevis*, only slightly broadening towards the tip); rostrum of males distinctly more slender, as long or slightly longer than head and pronotum together; elytra with only a few (in the vicinity of the humeri) vertically erect hairs; median lobe of the aedeagus tapering like a bottle-neck before the somewhat flattened apex (similar to *N. marmoratus*; however, apodemes (= temones) of *N. globiformis* at most half as long); note the possibility of confusion with species from the genus *Nanomimus* around *N. smreczynski* (see Fig. 15 / 15*); host plants: *Lythrum salicaria* L., *L. hyssopifolia* L. and *L. acutangulum* Lag; distribution: **E:** AL AU BH BU CT CZ EN FR GE GR HU IT LA PL PT RO SB SK SP ST SZ UK **N:** MO **A:** FE

..... ***Nanophyes globiformis* Kiesenwetter, 1864**

Acknowledgements

I would like to thank Lutz Behne from Senckenberg, German Entomological Institute (Müncheberg) for providing me with numerous, excellently prepared Nanophyini species from L. Dieckmann's collection, which he himself determined and used as the basis for his work in 1963. I am also indebted to H.

Schillhammer from the Natural History Museum in Vienna, who entrusted me with 1,400 hitherto largely unidentified Nanophyinae specimens for determination. This also applies to many other European museums, such as the Museum König (ZFMK, Bonn, D. Ahrens) or the Natural History Museum Basel (NMB, Ch. Germann). In this way, they all support taxonomic research in an exemplary manner up to the present day. My very special thanks also go to my Czech colleague Karel Schön, who provided me with his location data on the Nanophyini for distribution information.

I would like to expressly exclude from this acknowledgment the Muséum national d'Histoire naturelle (Paris), which - despite countless requests - was neither willing nor able to provide me with the type material that was still missing (especially from the Pic collection). Here, hope dies last, that this will perhaps still be possible at some point.

References

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