

The European species of the genera *Zatypota* and *Sinarachna* (Hymenoptera: Ichneumonidae, Pimplinae, Polysphinctini)

Zatypota picticollis (Thomson, 1888) was reared from the araneid spider *Zilla diodia* (Walckenaer, 1802), found in The Netherlands. *Sinarachna anomala* (Holmgren, 1860) is transferred to the genus *Zatypota* Foerster, 1869. Two new synonyms are presented: *Sinarachna minor* Kolarov, 1982 = *Zatypota anomala* (Holmgren, 1860) and *Aerodactyla braconiformis* Kolarov, 1990 = *Aerodactyla carinator* (Aubert, 1965). *Ichneumon* (recte *Zatypota*) *aranearum* Retzius, 1783 is considered to be a nomen dubium. An identification key for the European *Sinarachna* and *Zatypota* species is presented.

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Introduction

Recently the arachnologist Mrs J.D. Prinsen reared some specimens of a polysphinctine ectoparasitoid from *Zilla diodia* (Walckenaer, 1802) (Araneae; Araneidae) found in The Netherlands, and turned to me for their identification.

Most of our knowledge about the spider hosts of the polysphinctines stems from papers by the Danish arachnologist E. Nielsen (Nielsen 1923, 1928, 1929, 1935, 1937). The survey of Fitton *et al.* (1987) summarizes these and other papers but does not mention a parasitoid reared from the genus *Zilla*. The reared specimens belong to the genus *Zatypota* Foerster, 1869. For the identification of *Zatypota* species (figure 1) two relatively recent keys are available: Kasparyan (1981) and Fitton *et al.* (1988), but neither key led to a result. An attempt with the key by Schmiedeknecht (1934) led to the name of *Z. picticollis* Thomson, 1888. According to Schmiedeknecht (based on Roman 1923) that name could be a junior synonym of *Z. anomala* Holmgren, 1860. Probably following this view, Sedivy (1963) treated *picticollis* as a dark morph of *Z. anomala*. However, Townes & Townes (1960), who studied the types of *Z. picticollis* and *Z. anomala*, treated them as two different species, even placing them in different genera. They placed *anomala* in the newly established genus *Sinarachna* Townes, 1960 (genotype *Polysphincta pallipes* Holmgren). Being a *Sinarachna* species (figure 2), *anomala* should have the me-

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soscutum 'evenly covered with moderately dense hairs' (Townes & Townes 1960). Apparently, Townes & Townes considered the pubescence on the mesoscutum to be an important distinctive character of *Sinarachna* and therefore placed *Z. anomala* in that genus, at the same time considering it to be a somewhat aberrant species in *Sinarachna*. This view was adopted by Yu & Horstmann (1997) and Yu (1998) in their catalogues.



Figure 1. *Zatypota percontatoria* Müller. Ede, 12 oktober 1963, leg. G. van Rossem. Foto: Kees van Achterberg
Zatypota percontatoria Müller. Ede, 12 October 1963, leg. G. van Rossem.

The Dutch specimens reared from *Zilla* show a highly polished mesoscutum completely devoid of any setae. Comparison with the lectotype of *Polysphincta picticollis* indicated that they are conspecific with *Z. picticollis*. A search for collection specimens under *Z. picticollis* or *Z. anomala* was successful in the collection of the Zoologische Staatssammlung in Munich (ZSM). Three female specimens of *Z. anomala* from Bulgaria are present, all collected by J. Kolarov. They indeed have the mesoscutum covered with dense pubescence.

As mentioned before, *Z. picticollis* shows a highly polished mesoscutum completely devoid of any pubescence, but in at least some *Zatypota* species (e.g. *Z. bohemani* (Holmgren, 1860)), the mesoscutum bears some pubescence; therefore the presence or absence of hairs seems not to be a suitable character for the distinction of the genera *Zatypota* and *Sinarachna*. A better choice is the shape of the occipital carina, which is interrupted centrally in *Sinarachna* (Fitton *et al.* 1988). Based on that criterion, in this paper *Z. anomala* is again transferred to the genus *Zatypota*.

The status of *Ichneumon araneorum* Retzius, 1783

In 1771 C. de Geer described how he reared an ectoparasitoid from a small spider found on an elder leaf. From his description of the parasitoid and his figure of the parasitoid's cocoon in the spider's web one can deduce that the species is identical with either *Z. picticollis* or *Z. anomala*. This identification is based on the size: 'as large as the gregarious parasites on the cabbage white', and on the colour pattern on head, thorax, legs and abdomen. Later on Retzius (1783) published scientific names for the species described by De Geer and named the aforementioned species *Ichneumon araneorum*.

Roman (1923) was the first to notice a possible synonymy of *Z. anomala* and *Z. araneorum*, but he did not formally synonymise the two names because the type of *Z. arane-*



Figure 2. *Sinarachna nigricornis* Holmgren. Dalarna, Zweden, 2-12 augustus 1982. Leg. G. van Rossem. Foto: Kees van Achterberg *Sinarachna nigricornis* Holmgren. Dalarna, Zweden, 2-12 August 1982. Leg. G. van Rossem.

arum had been lost. Schmiedeknecht (1934) considered *Z. araneorum* a junior (!) synonym of *Z. picticollis*.

Aubert (1965) described a new subspecies of *Z. picticollis*: *Z. meridionator*, characterised by a completely black mesoscutum. In 1967, and again in 1969, Aubert presented *Z. picticollis* as a new junior synonym of *Z. araneorum* de Geer, 1783. In 1989 Aubert indicated that the loss of the type of *Z. araneorum* made it impossible to establish its identity with certainty, used *Z. picticollis* as valid name and described a new subspecies: *Z. picticollis gallicator*, characterised by more extensive yellow markings on the mesoscutum and abdomen. He then renamed *Z. p. meridionator* Aubert, 1965 to *Z. p. meridiator* Aubert, 1989. As the extent of pale markings varies considerably in many polysphinctine species, those subspecies represent probably mere colour variations. Horstmann (2003) discusses *Polysphincta nielseni* Roman, 1923 as a possible synonym of *Z. araneorum*. This seems unlikely because that species is clearly larger and already Roman considered that species as different from *Z. anomala*.

De Geer lived about 100 km north of Stockholm, so the spider from which he reared his parasitoid was probably not *Zilla diodia*, as that species is known in Sweden from only one uncertain record in the south of the country (T. Kronestedt, pers. comm.). This does not rule out *Z. picticollis* as a synonym of *Z. araneorum* because *Z. picticollis* was described from the Swedish island Gotland, about 250 kilometres south of Stockholm, which indicates *Z. picticollis* lives in Sweden on a different spider. *Zatypota anomala* was also described from Sweden. Several Dytinidae are reported as host species for *Z. anomala*: Šedivý (1963) mentions *Dictyna pusilla* Thorell, 1856 from the Czech Republic and Howard (1889) reared *Z. anomala* from *Emblyna sublata* (Hentz, 1850) (as *Dictyna volupis* Keyserling, 1881) in Massachusetts (USA). It is not impossible De Geer's spider was a dyctinid.

New synonymy

Taking all this into account, *Z. araneorum* has to be considered a nomen dubium. On the basis of holotypes in the Zoologische Staatssammlung in Munich two new synonyms could be established:

Sinarachna minor Kolarov, 1982 = *Zatypota anomala* (Holmgren, 1860), **syn. nov.**

Kolarov (1982) described a new *Sinarachna* species after a single female specimen from Bulgaria as *S. minor*, which was characterised by the lack of the second recurrent vein in the forewing. It is obviously an aberrant specimen of *Z. anomala*.

Acrodactyla braconiformis Kolarov, 1990 = *Acrodactyla carinator* (Aubert, 1965), **syn. nov.**

Kolarov (1990) published the description of a new *Acrodactyla* species after a single female specimen also characterised by the lack of the second recurrent vein in the forewing: *Acrodactyla braconiformis*. It turned out to be an aberrant specimen of *A. carinator*.

Key to the European species of *Zatypota* and *Sinarachna*

In the Polysphinctini the genera *Zatypota* (figure 1) and *Sinarachna* (figure 2) are mainly characterised by a combination



Figuur 3. Abdomina van **a** ♀ *Zatyptota picticollis*, **b** ♂ *Zatyptota percontatoria*. Foto's: Kees Zwakhals
 Abdomens of **a** ♀ *Zatyptota picticollis*, **b** ♂ *Zatyptota percontatoria*.

of the following characters:

- mesoscutum without vertical carinae in front of the notauli,
- abdomen with oblique grooves delimiting a central rhombic area on the anterior tergites (figures 3a, b). In *Sinarachna* these areas are somewhat less clearly defined.

Terminology is after Townes (1969).

Index = greatest length/greatest width, Fwl = length of forewing, in mm.

- 1** Occipital carina interrupted medio-dorsally. Ovipositor sheath at least 0.8 times as long as hind tibia
 *Sinarachna* 7
 Nervulus interstitial. Subdiscoideus originating at or below middle of first brachial cell. Flagellum with 21-23 segments. Petiole about 1.5 times as long as apically broad. Mesoscutum covered with setae
- Occipital carina complete medio-dorsally. Ovipositor sheath at most 0.7 as long as hind tibia *Zatyptota* 2
 Setosity of mesoscutum variable
- 2** Mesoscutum covered with short setae. Discoidella variable
 3
 - Mesoscutum without any pubescence. Discoidella absent 4
- 3** Mesoscutum, dorsal part of propodeum and abdomen strongly coriaceous. Nervulus interstitial. Basal half of discoidella present but sometimes very weak (males). Flagellum with 21-23 segments. Subdiscoideus originating at about middle of first brachial cell *Z. bohemani*
 Face black. Median longitudinal carinae of propodeum usually absent or weakly developed. Malar space with shallow coriaceous groove as long as breadth of base of mandible. All trochanters, trochantelli, front and middle coxae white. Female with hind coxa and hind femur reddish, in male reddish tinge sometimes almost white. Hind tibia white, subbasal and apically fuscous. Mesoscutum, scutellum, mesopleurum, propodeum laterally, marked with red. Fwl ♀ 3.3-4.2, ♂ 3.3-4.0

- Mesoscutum, propodeum and abdomen rather polished. Nervulus postfurcad by about half its length. Discoidella absent. Flagellum with about 15 segments. Subdiscoideus originating far above middle of first brachial cell
 *Z. anomala*
 Male face yellowish, female face black with yellowish mark below antennae. Median longitudinal carinae of propodeum strong, diverging apically. Malar space with narrow, polished groove as long as breadth of base of mandible. Central polished rhombic area of tergites black, their surroundings more or less stramineous, cf. figure 3a. Legs uniformly pale-stramineous. Pronotum, mesoscutum and scutellum marked with pale-yellow. Fwl ♀ 2.1-2.2
- 4** Central rhombic part of terga 2-3 as smooth and polished as the apical border of the terga (figure 3a) 5
 - Central part of terga 2-3 somewhat reticulate-coriaceous, contrasting with the smooth polished apical border (figure 3b) 6
- 5** Facial- and frontal orbit yellowish-ivory. Central part of terga 2-4 usually more or less ivory with surroundings black. Subdiscoideus originating at or below middle of first brachial cell. Hind tibia white, basally and apically fuscous. Slender ovipositor slightly curved upwards. Flagellum with 23-25 (female) or 19-24 (male) segments. Malar space half as long as width of base of mandible and with a shallow coriaceous groove
 *Z. albicoxa* (Walker, 1874)
 Fwl ♀ 4.6-6.0, ♂ 3.9-4.8
- Frontal- and facial orbit black. Central part of terga 2-4 black, apical border of terga more or less marked with stramineous (figure 3a). Subdiscoideus originating far above middle of first brachial cell. Ovipositor straight. Flagellum with 15-16 (female) or 14-15 (male) segments. Face black, usually with yellowish spot below each antennal socket. Malar space as long as width of base of mandible and with narrow, polished groove
 *Z. picticollis* (Thomson, 1888)
 Body black. Mesoscutum with two stramineous longitudinal lines, varying from narrow to very broad, in which case mesoscutum almost completely yellowish. Legs yellowish with hind coxa somewhat darkened. Fwl ♀ 2.3-2.7, ♂ 2.3-2.4
- 6** Rather slender. Wings clear. Metapleuron smooth with at most short rugosities at base of hind coxa. ♂: index second flagellar segment: 3.0-4.0, index hind femur: 4.3-4.7 ♀: index second flagellar segment: 3.0-4.0, index hind femur: 4.3-5.7 *Z. percontatoria* (Mueller, 1776)
 Fwl ♀ 3.7-4.5, ♂ 3.2-4.2
- Rather robust. Wings slightly darkened. Metapleuron irregularly rugose. ♂: index second flagellar segment: 2.2-2.6, index hind femur: 3.5-4.0. ♀: index second flagellar segment: 2.0-2.6, index hind femur: 4.0-4.4
 *Z. discolor* (Holmgren, 1860)
 Fwl ♀ 4.0-4.2, ♂ 3.2-3.7
- 7** Antennae usually entirely blackish. Hind coxa mainly black to dark red. First tergite 1.4-1.7 (♀) or 1.4-1.8 (♂) times as long as broad. First/second flagellar segment = 1.2-1.5. Hair on abdomen somewhat longer and more abundant
 *S. nigricornis* (Holmgren, 1860)
 Fwl ♀ 4.1-4.6, ♂ 3.9-4.7
- Proximal ventral part of antennae usually pale or yellow.

Hind coxa yellowish. First tergite 1.4–1.8 times as long as broad. First/second flagellar segment = 1.6–1.8. Hair on abdomen somewhat shorter and less dense . . . *S. pallipes* (Holmgren, 1860)

Fwl ♀ 4.0–4.5. No male examined

The names '*discolor*' and '*percontatoria*' are used in accordance with Fitton *et al.* (1988) and Horstmann (2000). See for a discussion of the use of these names by various authors Horstmann (2000).

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Samenvatting

De Europese soorten van de genera *Zatypota* and *Sinarachna* (Hymenoptera: Ichneumonidae, Pimplinae, Polysphinctini)

In 2002 kweekte mevrouw J.D. Prinsen een ichneumonide ectoparasitoid, een *Zatypota*-soort, van de spin *Zilla diodia*. Van deze spin was tot dan toe geen parasiet bekend. Voor het genus *Zatypota* bestaan twee redelijk recente determinatietabellen maar de gekweekte soort bleek daarin niet voor te komen. Uiteindelijk kon de soort gedetermineerd worden als *Zatypota picticollis* (Thomson, 1888). De naam *Z. picticollis* is in de loop der tijden door verschillende auteurs verschillend opgevat. Zo is de naam als synoniem beschouwd van *Z. anomala* (Holmgren, 1860) en van *Z. araneorum* (Retzius, 1783). Deze laatste naam heeft betrekking op een dier dat door De Geer in 1771 gekweekt werd als ectoparasitoid van een spin. De Geer beschrijft uitvoerig hoe hij de spin meenam in zijn poederdoos en na enkele dagen daarin nog slechts een primitief 'web' met daarin de cocon van de sluipwesp aantrof. Mede op grond van zijn beschrijving van het kleurpatroon en de grootte van de uitgekweekte sluipwesp ('zo groot als de gregaire parasieten van het koolwitje') kan men concluderen dat het hier om *Z. picticollis* of *Z. anomala* moet gaan, maar een definitieve keuze tussen beide soorten is niet meer mogelijk. Daarom dient *Ichneumon* (recte *Zatypota*) *araneorum* als nomen dubium te worden beschouwd.

Zowel van *Z. picticollis* als van *Z. anomala* bevindt zich zeer weinig materiaal in musea en beide ontbreken in Nederlandse collecties. Eerst een zoektocht in de collectie van de Zoologische Staatssammlung in München had succes. Mede op grond daarvan wordt *Z. anomala* nu weer van het genus *Sinarachna* teruggeplaatst naar het genus *Zatypota*. Een determinatietabel voor de Europese soorten van de genera *Sinarachna* en *Zatypota* wordt gepresenteerd. Op grond van holotypen in de Zoologische Staatssammlung kunnen twee soorten gesynonimiseerd worden.