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Contribution to the knowledge of Italian cleptoparasitic Bees. X. The genus *Sphecodes* LATREILLE, '*pinguiculus* PÉREZ' group, with description of new species

(Hymenoptera, Apoidea, Halictidae)

Vittorio NOBILE & Giuseppe Fabrizio TURRISI

Abstract

The authors propose the institution of a "*pinguiculus* PÉREZ" group, belonging to the genus *Sphecodes* LATREILLE, and describe 7 new species of this group: 3 from peninsular Italy (*S. campadellii* **sp. nov.**, *S. combai* **sp. nov.**, *S. banaszaki* **sp. nov.**) and 4 from Sicily (*S. marcellinoi* **sp. nov.**, *S. walteri* **sp. nov.**, *S. iosephi* **sp. nov.**, *S. tomarchioi* **sp. nov.**). A key for the identification of the ♂♂ of the W-palaearctic species of the genus *Sphecodes pinguiculus* group is provided.

Key words: Italy, *Sphecodes pinguiculus* group, Halictidae, new species.

Zusammenfassung

Die Verfasser schlagen die Errichtung einer "*pinguiculus* PÉREZ-Gruppe" in der Gattung *Sphecodes* vor mit der Präsentation von 7 neuen Arten: 3 von der Halbinsel Italien (*S. campadellii* **sp. nov.**, *S. combai* **sp. nov.**, *S. banaszaki* **sp. nov.**) und 4 von Sizilien (*S. marcellinoi* **sp. nov.**, *S. walteri* **sp. nov.**, *S. iosephi* **sp. nov.**, *S. tomarchioi* **sp. nov.**). Es wird ein Bestimmungsschlüssel für die ♂♂ der westpaläarktischen Arten der *Sphecodes pinguiculus*-Gruppe angeboten.

Introduction

In the genus *Sphecodes* LATREILLE, 1804, the "*pinguiculus* PÉREZ" group, for which the institution is proposed, is characterised by the fact that the small white setae which

cover the posterior part of the male antennae of the species are regularly and uniformly distributed on the articles of the flagellum, rather than densely packed together in particular areas at the base of these articles, as it is the case in the majority of the other species of Sphecodini. The dislocation and the size of these setaceous areas, in fact, are specific and constitute a good aid for the distinction of the various species. Another common character of the males of this group is that the parameral plates of the genital capsule, dorsally and longitudinally, have a deep, wide groove (unlike other groups in which the parameral plates appear full and compact). This character is also shared by other groups, but the fact that the *pinguiculus* group comprises species with specimens of small dimension, never exceeding 7 mm, is noteworthy. A further characteristic of the group (with the exception of *Sphecodes campadellii* sp. n.) is that the tarsi, the proximal and distal parts of the tibiae and the distal part of femora, are yellow-reddish: lighter in colour than the rest of the legs; hairs on the surface of the body white as generally.

In the Western sector of the Palearctic region, the genus *Sphecodes*, "*pinguiculus*" group, has been known for only two species: *S. pinguiculus* PÉREZ, 1903 and *S. intermedius* BLÜTHGEN, 1923, both present also in Europe; of these, however, only the former was part of the Italian fauna. In fact, WARNCKE (1992) reported it in Sardinia with the subspecies *S. pinguiculus sareptensis* MEYER, 1922 and NOBILE & CAMPADELLI (1998) reported it also for Sicily with the same subspecies.

Material and methods

The recent opportunity to examine some collections both public and private of Apoidea Sphecodini, allows us to increase greatly the number of species of the *pinguiculus* group not only in Sicily, but also to report the presence of some of them (the first time for this group) also in peninsular Italy. In fact, the species found are all new for science, 3 species from Italy and 4 from Sicily.

The studied material was generously provided by public institutions and private collections, for which we are grateful:

- Guido CAMPADELLI, Institute of Entomology "G. Grandi", University of Bologna.
- Mario COMBA (Cecchina, Rome).
- Salvatore TOMARCHIO (Catania).

Results and discussion

Sphecodes pinguiculus PÉREZ, 1903 ssp. *sareptensis* MEYER, 1922 (fig. 8)
Sphecodes sareptensis MEYER, 1922.- Arch. Naturg. 88A (8): 170-171 (Russia).
Sphecodes pinguiculus ssp. *sareptensis*: WARNCKE 1992: 32, 52, 61 (Sardinia: Cagliari).
Sphecodes pinguiculus ssp. *sareptensis*: NOBILE & CAMPADELLI 1998: 96 (Sicily).

Mediterranean-turanian-central Asian distribution, extending to the Canary Islands but excluding Spain where the nominal subspecies is present.

Sphecodes campadellii sp. nov. (fig. 1)

Holotypus ♂. Italy: Emilia Romagna, Zocca (Modena), 8.VIII.1962 (coll. Institute of Entomology "G. Grandi", University of Bologna).

♂. Length 5.0 mm. Head black, antennal scape dark brown; antennal flagellum brown

posteriorly, dark brown anteriorly; mandibles black. Thorax black, tegulae brownish. Wings slightly but uniformly dark, with blackish stigma and brown veins; legs brown, tibial spines whitish. Abdomen brown although not uniformly so, with a darker tone on disc of tergites.

Head roundish, a little wider than long; antennae short, robust and slightly knotties: the median antennomeres (4^{th}-11^{th}) have a wide impression on posterior face, not very deep, which can occupy up to 3/4 of the surface of the antennomeres, giving the flagellum a knotted appearance; 2^{nd} antennomere 0.5 times shorter than wide, 3^{rd} antennomere 1.2 times longer than wide, 4^{th} antennomere as long as the 3^{rd}, the remaining antennomeres a little longer than wide; clypeus almost flat; punctuation of the clypeus large, irregular, deep and dense (distance between the punctures generally equal to the diameter of one puncture); frons shagreened with coarse punctures, irregular, dense and deep (distance between the punctures less than the diameter of one puncture); vertex with small and superficial punctures, irregularly placed and sparse (distance between punctures 1-3 times the diameter of one puncture).

Mesothorax smooth, with large punctuation, deep, irregular and sparse on disc, denser on margins (distance between the punctures generally equal to the diameter of one puncture); scutellum with large punctures, deep, irregularly spaced and sparser than those of the thorax disc (distance between punctures greater than the diameter of one puncture); postscutellum shagreened with an irregular structure, with medium-large punctures, very dense; median field of the propodeum as long as the scutellum, almost bluntly triangular in shape, with the distal corner replaced by a cavity; margins of the median field distinct, forming a ridge, raised, and its internal structure is irregular honey-comb like; lateral and posterior parts of the propodeum with large unequal alveoli with a honey-comb structure, similar to that of the median field; mesopleurae shagreened, with an irregular honey-comb structure. Wings with the first discoidal vein terminating just before the second cubital vein; second cubital cell longer than wide.

Abdomen very shiny; T_1 with few small punctures, superficial and sparse, irregularly spaced; T_{2-4} with less sparse punctures; successive tergites with not very evident punctures, substituted by wrinkles. Distal part of all the tergites without punctures, transparent and shiny.

Face with medium length setae, sparse (the underlying punctures are visible); scape with medium length setae and averagely dense; vertex with medium length sparse setae: postgena with medium sparse setae; mesothorax and scutellum with short, sparse setae: postscutellum with long sparse setae, propodeum with medium, sparse setae; mesopleurae with medium sparse setae, ventral parts of the thorax with short, sparse setae; abdomen, dorsally, with very sparse short setae, tergites with short, sparse lashes, sternites with short, sparse setae together with short, sparse lashes.

♀ unknown.

Derivatio nominis: We dedicate this species to the late colleague and friend Guido CAMPADELLI (University of Bologna).

Sphecodes combai sp. nov. (fig. 2)

Holotypus ♂. Italy: Latium, Albani hills, Cecchina, Poggio Ameno, 280 m, 1.X.1990. M. COMBA leg., on *Hedera helix* L. (Zoologische Staatssammlung München).

♂. Length 4.0 mm. Head black, antennal scape dark brown; flagellum posteriorly brown, slightly darker anteriorly; mandibles brown at base and light-brown for the rest. Thorax black, tegulae brownish. Wings slightly darkened, with stigma and veins brown; legs brown except the tarsi and the proximal and distal tips of the tibiae, which are yellow-orange; tibial spines yellow-orange. Abdomen brown, not uniformly.

Head roundish, a little wider than long; antennae short and robust; 2nd antennomere 0.6 times shorter than wide, 3rd antennomere 1.2 times longer than wide, 4th antennomere as long as the 3rd, the remaining antennomeres a little longer than wide; clypeus slightly curved. Punctuation on clypeus large, irregular, deep and dense (distance between the punctures generally equal to the diameter of one puncture); frons with largish punctuation, almost regular, dense and deep (distance between the punctures less than the diameter of one puncture); vertex with largish punctures, superficial and sparse, irregularly placed (distance between punctures 1-3 times the diameter of one puncture).

Mesothorax smooth, with large punctuation, deep, irregular and sparse on the disc, denser at margins (distance between the punctures generally equal to the diameter of one puncture); scutellum with large punctures, deep, moderately dense, irregularly placed (distance between punctures generally less than the diameter of one puncture); postscutellum shagreened with an irregular structure, with medium large punctures, very dense; median field of propodeum as long as the scutellum, half-moon shaped, with distinct margins, forming a very raised ridge: inside, the alveoli are delimited by a subparallel ridge, with a radial course and by few transversal ridges. Lateral and posterior parts of the propodeum with large alveoli with an irregular honey-comb structure; mesopleurae shagreened, with an irregular honey-comb structure, with a smooth ridge. Wings with the first discoidal, almost interstitial vein, terminating just before the second cubital vein; second cubital cell longer than wide.

Abdomen shiny; disc of T_1 with few small sparse punctures (distance between the punctures 1-3 times the diameter of one puncture); the declivous part of T_1 with punctures even more sparse; T_{2-3} disc with denser and more regular punctuation (distance between punctures about a diameter of one puncture); the remaining tergites with not very evident punctures, replaced by wrinkles; distal part of all the tergites without punctures, transparent and shiny.

Face with medium length setae, sparse (the underlying punctures are visible); scape with medium setae and not very dense; vertex with medium length sparse setae; postgena with medium sparse setae; mesothorax and scutellum with medium, sparse setae; postscutellum with long setae averagely dense; propodeum with medium, sparse setae; mesopleurae with medium sparse setae; ventral parts of the thorax with medium, not very dense setae; abdomen, dorsally, with very sparse short setae; tergites with short, sparse setae; T_{3-7} with short lashes; sternites with short, sparse setae together with short, sparse lashes.

♀ unknown.

Derivatio nominis: We dedicate this species to Mario COMBA from Cecchina (Rome).

Sphecodes banaszaki sp. nov. (fig. 3)

Holotypus ♂. Italy, Lazio, Albani hills, Communal forest of Albano, 480 m, 23.VI. 1995, M. COMBA leg. (Zoologische Staatssammlung München).

♂. Length 5.0 mm. Head and antennal scape black, 1st and 2nd antennomeres dark

brown; remaining part of the flagellum light brown posteriorly, dark brown anteriorly; mandibles black at base, yellow medially and red apically. Thorax black, tegulae brownish; wings hyaline, with stigma black and veins blackish; legs black, except the tarsi, the proximal and distal parts of the tibiae and the distal parts of the femura, which are orange; tibial spines yellow-orange. Abdomen dorsally black, with reddish transparencies on the distal margins of T_{1-2} and on the proximal margins of T_{2-3}.

Head roundish, a little wider than long; antenna short and robust, 2nd antennomere 0.6 times shorter than wide, 3rd antennomere 1.2 times longer than wide, 4th antennomere 1.1 times longer than wide, the remaining antennomeres slightly longer than wide; clypeus curved, with large punctuation, irregular, deep, dense (distance between the punctures generally equal to the diameter of one puncture); frons shagreened, with large punctuation, irregular, dense and deep (distance between the punctures less than the diameter of one puncture); vertex shagreened, with large punctures, deep, sparse and irregularly placed (distance between the punctures 1-3 times the diameter of one puncture).

Mesothorax and scutellum shagreened, with large punctuation, deep, irregular and not very dense (distance between the punctures generally less than the diameter of one puncture); postscutellum shagreened, with large punctures, very dense; median field of the propodeum as long as the scutellum, half-moon shaped, with clear margins, ridge very raised, with a very irregular honey-comb structure inside; lateral and posterior parts of the propodeum with irregular honey-comb structure, with alveoli smaller than those of the median field; mesopleurae shagreened, with irregular honey-comb structure, with raised ridges. Wings with the first discoidal vein terminating at 1/3 before the second cubital vein; second cubital cell a little longer than wide.

Abdomen opaque; surfaces of all the tergites shagreened; disc of T_{1-2} with medium small punctures and not very dense (distance between the punctures 1 - 1.5 times the diameter of one puncture); disc of T_3 with punctuation a little more sparse and more superficial than the preceding tergites; distal part of all the tergites without punctures, transparent, not very shiny.

Face with setae of medium length, averagely dense (the underlying punctures are visible); antennal scape with medium setae and not very dense; vertex with sparse, medium length setae; postgena with medium setae, not very dense; mesothorax and scutellum with short and sparse setae; postscutellum with long setae not very dense; propodeum with medium, sparse setae; mesopleurae with medium, not very dense setae; ventral parts of the thorax with medium length setae not very dense; abdomen, dorsally, with very sparse short setae and with short lashes on T_{3-7}, not very sparse; all the sternites with short setae and short, sparse lashes.

♀ unknown.

Derivatio nominis: We dedicate this species to Jòzef BANASZAK from the University of Bydgoszcz (Poland).

Sphecodes marcellinoi sp. nov. (fig. 4)

Holotypus ♂. Italy, Sicily: Mount Etna, Piano Vetore, 1700 m (Ragalna), 2.V.1999, S. TOMARCHIO leg. (Zoologische Staatssammlung München).

♂. Length 4.2 mm. Head, antennal scape and 1st and 2nd antennomeres black; remaining flagellum light brown posteriorly, slightly darker anteriorly; mandibles black at base, me-

dially yellow and red apically. Thorax black; tegulae hyaline, transparent; wings hyaline with dark stigma and brown veins; legs black, except tarsi, the proximal and distal tips of tibiae, the distal tips of femura and the tibial spines, yellow-orange in colour. Abdomen dorsally black, except the distal margins of T_{1-3} and the proximal margins of T_{2-4}, reddish and transparent.

Head roundish, a little wider than long; 2nd antennomere 0.5 times shorter than wide; 3rd antennomere 1.3 times longer than wide; 4th antennomere as long as 3rd, the remaining antennomeres slightly longer than wide (almost square); clypeus slightly curved; large punctuation of clypeus, irregular, deep and dense (distance between the punctures generally equal to the diameter of one puncture); frons with fine punctures, almost regular, sparse and superficial (distance between the punctures about two punctures diameters); vertex with small punctures, superficial and sparse, irregularly placed (distance between the punctures about two punctures diameters).

Mesothorax with large punctuation, deep, irregular and not very dense (distance between the punctures generally less than the diameter of one puncture); scutellum with large punctures, deep and sparse, irregularly placed (distance between the punctures generally about one diameter); postscutellum shagreened, with irregular honey-comb structure; median field of the propodeum a little shorter than the scutellum, half-moon shaped with clear margins (with a very raised ridge), with grooves and subparallel longitudinal ridges; lateral and posterior parts of the propodeum with large, unequal alveoli and a honey-comb structure; mesopleurae shagreened with irregular honey-comb structure. Wings with the first discoidal vein terminating at 1/4 before the second cubital vein; second cubital cell longer than wide.

Abdomen averagely shiny; disc, and declivous part of T_1, with medium small sparse punctures, irregularly placed (distance between punctures 1-2 diameters of one puncture); disc of T_2 with similar punctures as T_1 but slightly denser; discs of the remaining tergites with punctuation and shagreening; distal part of all the tergites without punctures, transparent and not very shiny.

Face with medium length setae, dense (hiding the underlying punctuation); scape with medium, sparse setae; vertex with long, sparse setae; postgena with medium length not very dense setae; mesothorax with medium, sparse setae; scutellum with short, sparse setae; postscutellum with long averagely dense setae; propodeum with short, sparse setae; mesopleurae with medium length not very dense setae; ventral parts of the thorax with dense medium length setae; abdomen, dorsally, with very sparse short setae, T_{4-7} with lashes; sternites with sparse, short setae; short lashes on all the sternites.

♀ unknown.

Derivatio nominis: We dedicate this species to Italo MARCELLINO, Arachnologist, of the University of Catania.

Sphecodes walteri sp. nov. (fig. 5)

Holotypus ♂. Italy, Sicily, Mount Etna south slope, c.da Milia, 1500 m (Ragalna), 10.VIII.1999, S. TOMARCHIO leg. (Zoologische Staatssammlung München).

♂. Length 5.0 mm. Head, antennal scape and 1st and 2nd antennomeres black; remaining flagellum dark brown posteriorly, much darker, almost black, anteriorly; mandibles black at base, medially yellow and red apically. Thorax black, tegulae hyaline; wings hyaline

with stigma and veins brownish; legs black, except tarsi, the proximal and distal tips of tibiae and the distal tips of femura, brown in colour; tibial spines whitish. Abdomen, dorsally, black, except the distal margin of T_{1-3} and the proximal margin of T_{2-3}, reddish and transparent.

Head wider than long; 2nd antennomere 0.6 times shorter than wide, 3rd antennomere 1.3 times longer than wide, 4th antennomere as long as 3rd, the remaining antennomeres a little longer than wide; clypeus notably arcuate; punctuation of the clypeus large, irregular, deep and dense (distance between the punctures generally equal to the diameter of one puncture); frons with irregular punctuation, irregular, deep and not very dense (distance between the punctures equal to 1-2 diameters of one puncture); vertex with irregular punctures, nor very deep and not dense, irregularly placed (distance between the punctures equal to 1-3 diameters of one puncture).

Mesothorax smooth with large punctuation, deep, irregular and dense on disc, denser on margins (distance between the punctures generally less than a puncture diameter); scutellum with large punctures, deep and dense, irregularly placed as on disc of mesothorax; postscutellum shagreened, with large, deep punctures, very dense and irregularly placed; median field of propodeum as long as scutellum, half-moon shaped, with clear margins, forming a prominent ridge, and with an internal irregular honey-comb structure; lateral and posterior parts of the propodeum with large alveoli with an irregular honey-comb structure, similar to that of the median field; mesopleurae shagreened with an irregular honey-comb structure. Wings with the first discoidal vein terminating just in front of the second cubital vein; second cubital cell longer than wide.

Abdomen shiny; T_1 with not very dense punctures, irregularly placed (distance between the punctures equal to 1-2 diameters of one puncture); T_{2-3} with deeper punctures, a little denser than on T_1; the remaining tergites with not very evident punctuation, substituted by roughness; distal part of all the tergites without punctures, transparent and shiny.

Face with medium length setae, not very dense (they do not hide the underlying punctures); antennal scape with medium length setae, average density; vertex with long, sparse setae; postgena with short medium length setae, not very dense; mesothorax and scutellum with short setae, generally dense; postscutellum with long, not very dense setae; propodeum with short, sparse setae; mesopleurae with medium setae, generally dense; ventral parts of thorax with medium length setae, generally dense; abdomen, dorsally, with very sparse, short setae, and sparse lashes on all the tergites, including the declivous part of T_1; all the sternites with setae and sparse, short lashes.

♀ unknown.

Derivatio nominis: We dedicate this species to Walter DE LEONARDIS, Palinologist at the University of Catania.

Sphecodes iosephi sp. nov. (fig. 6)

Holotypus ♂. Italy, Sicily, Mount Etna, south slope, c.da Milia, 1400 m (Ragalna), 10.VIII.1999, S. TOMARCHIO leg. (Zoologische Staatssammlung München).

♂. Length 5.0 mm. Head, antennal scape and successive two antennomeres black; remaining part of flagellum dark brown posteriorly, notably darker anteriorly; mandibles black. Thorax black, tegulae brownish. Wings slightly and uniformly darkened, with stigma and veins brownish. Legs black, except tarsi, the proximal and distal tips of tibiae

and the distal tips of femura, brownish in colour; tibial spines whitish. Abdomen dorsally black, but with the distal margin of T_{1-3} and the proximal margin of T_{2-4} brownish and transparent.

Head roundish, a little wider than long; antenna robust; the antennomeres, at about 2/3 from base, are bulging like a small barrel, giving the flagellum a knotty appearance; 2nd antennomere 0.6 times shorter than wide, 3rd antennomere 1.4 times longer than wide, 4th antennomere as long as 3rd, the remaining antennomeres longer than wide; clypeus arcuate; punctuation of the clypeus large, irregular, dense and deep (distance between the punctures generally equal to the diameter of one puncture); frons shagreened with largish punctures, irregular, very dense and deep (distance between the punctures notably less than the diameter of one puncture); vertex shagreened; on it the large, dense and deep punctuation coexists with the transverse prominent ridge structure, which is similar to the structure of the median field.

Mesothorax slightly shagreened, with large, deep, irregular, dense punctuation on disc, slightly denser on margins (distance between punctures generally less than the diameter of one puncture); scutellum with deep punctures, irregularly placed, less dense and smaller than those of the mesothorax disc (distance between punctures about as the diameter of one puncture); postscutellum shagreened with an irregular structure, with large, deep and very dense punctures; median field of the propodeum slightly longer than scutellum, half-moon shaped, with clear margins, with well raised ridges, and inside having an irregular honey-comb structure; lateral and posterior parts of the propodeum with large alveoli with an irregular honey-comb structure similar to that of the median field; mesopleurae slightly shagreened with an irregular honey-comb structure. Wings with the first discoidal vein terminating at 1/5 before the second cubital vein; second cubital cell almost as wide as long.

Abdomen shagreened, opaque; disc of T_1 with small, superficial punctures, irregularly placed and sparse (distance between punctures 1-3 diameters of one puncture); disc of T_{2-3} with punctuation slightly denser and deeper (distance between punctures 1-2 diameters of one puncture); remaining tergites with punctuation not very clear, substituted by roughness; distal part of all the tergites without punctures and transparent.

Face with medium length setae, and averagely dense (the underlying punctuation is visible); antennal scape with medium length setae and rather dense; vertex with medium length, sparse setae; postgena with short, medium length not very dense setae; mesothorax and scutellum with short and sparse setae; postscutellum with long, not very dense setae; propodeum with short, sparse setae; mesopleurae with medium length setae which are generally dense; the ventral parts of the thorax with medium length setae and averagely dense; abdomen dorsally with short, sparse setae and with lashes on all the tergites, though longer and denser on the last four; sternites with short, dense setae.

♀ unknown.

Derivatio nominis: We dedicate this species to Giuseppe NOBILE, son of the first author.

Sphecodes tomarchioi sp. nov. (fig. 7)

Holotypus ♂. Italy, Sicily, Mount Etna, south slope, c.da Milia, 1400 m (Ragalna), 10.VIII.1999, S. TOMARCHIO leg. (Zoologische Staatssammlung München).

♂. Length 4.6 mm. Head, antennal scape and 1st and 2nd antennomeres black; remaining part of the flagellum dark brown posteriorly, black anteriorly; mandible black at base, medially yellow, red apically. Thorax black, tegulae hyaline. Wings slightly and uniformly darkened, with stigma and veins brownish; legs dark brown except the tarsi, the proximal and distal tips of tibiae and the distal tips of femura light brown in colour; tibial spines whitish. Abdomen dorsally black, except the distal hollow of the tergites, brownish and transparent.

Head wider than long; antenna short and robust; 2nd antennomere 0.5 times shorter than wide, 3rd antennomere 1.4 times longer than wide, 4th antennomere 1.3 times longer than wide, remaining antennomeres longer than wide; clypeus arcuate; punctuation of the clypeus large, irregular, deep and very dense (distance between punctures less than the diameter of one puncture); frons with largish punctures, irregular, very dense and deep (distance between the punctures notably less than the diameter of one puncture); vertex shagreened with largish punctures, dense and deep, irregularly placed (distance between the punctures less than the diameter of one puncture).

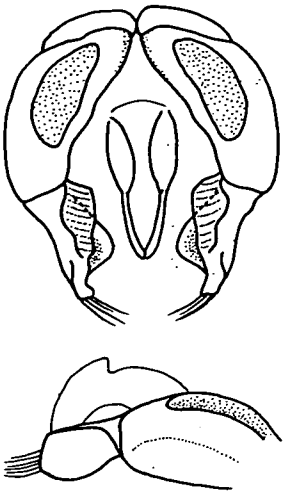
Mesothorax smooth, with large punctuation, deep, irregular and dense (distance between the punctures generally less than the diameter of one puncture); scutellum shagreened, with large punctures on the disc, less in the periphery, deep, irregularly placed and a little denser than on disc of mesothorax (distance between the punctures generally less than the diameter of one puncture); postscutellum shagreened with an irregular structure, with medium large punctures, deep and very dense; median field of the propodeum a little longer than the scutellum, half-moon shaped, with clear margins, forming a very raised ridge with an internal irregular honey-comb structure; lateral and posterior parts of the propodeum with an irregular honey-comb structure and alveoli as large as those of the median field; mesopleurae shagreened with an irregular honey-comb structure. Wings with the first discoidal vein terminating at 1/4 before the second cubital vein; second cubital cell a little longer than wide.

Abdomen shiny; T_1 with punctures small, superficial, irregularly distributed and sparse (distance between the punctures 2-4 diameters of one puncture); T_2 with punctures less superficial and less sparse than on T_1 (distance between the punctures equal to 2-3 times the diameter of one puncture); T_{3-4} with punctures slightly denser than T_2, but less deep and less evident; the remaining tergites rough; distal part of the tergites without punctures, transparent and shiny.

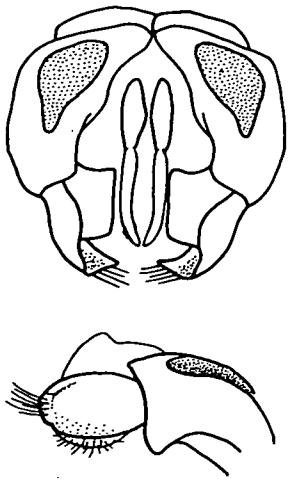
Face with medium length setae, generally dense (the underlying punctures are still visible); scape with medium length setae and generally dense; vertex with medium length, sparse setae; postgena with medium length setae and not very dense; mesothorax and scutellum with short, sparse setae; postscutellum with long, not very dense setae; propodeum with short, sparse setae; mesopleurae with medium length setae and generally dense; ventral parts of thorax with medium length setae and generally dense; abdomen, dorsally with short, sparse setae and short, sparse lashes; sternites with short, sparse setae.

♀ unknown.

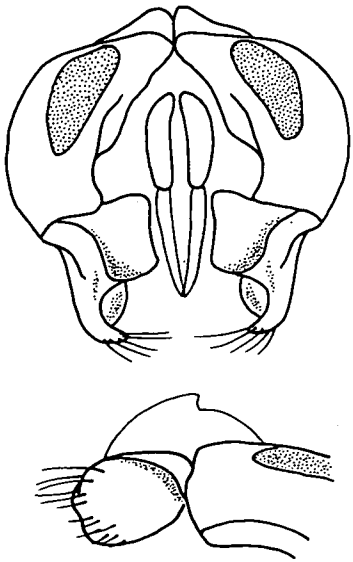
Derivatio nominis: We dedicate this species to Salvatore TOMARCHIO, friend and colleague of the authors.



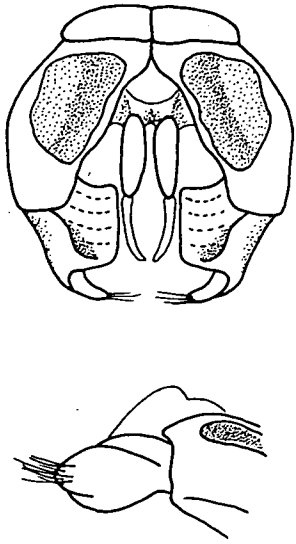
1 – Sphec. campadellii sp. n.



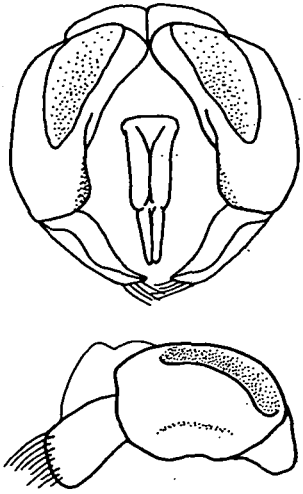
2 – Sphec. combai sp. n.



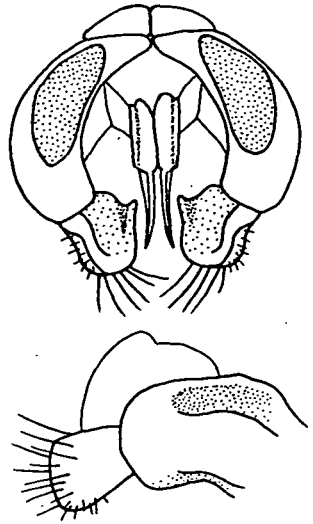
3 – Sphec. banaszaki sp. n.



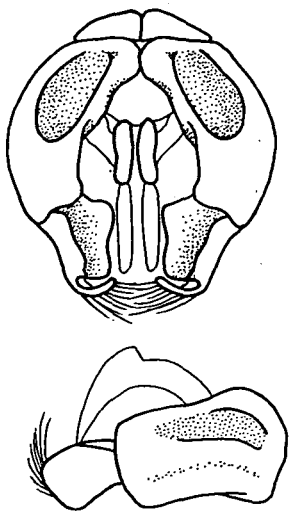
4 – Sphec. marcellinoi sp. n.



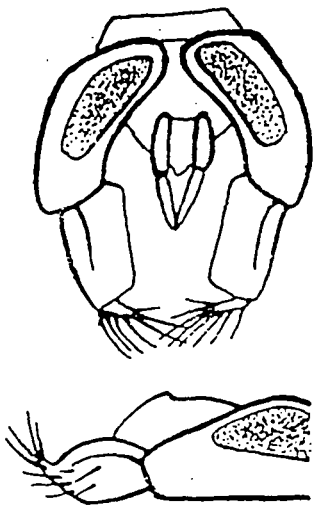
5 – Sphec. walteri sp. n.



6 – Sphec. iosephi sp. n.



7 – Sphec. tomarchioi sp. n.



8 – Sphec. pinguiculus Pérez

Drawings by M.C. LA ROCCA, except for fig. 8, drawn from WARNCKE (1992).

Remarks

The small Sphecodini, as those of the genus *Sphecodes pinguiculus* group, are cleptoparasitic of collecting bees of the tribes Colletini, Andrenini and Halictini (RADCHENKO & PESENKO 1994), and also small in size. As there are about 200 species of collecting bees present in Italy with these characteristics, it is believed that probably, in the future, other species of the *pinguiculus* group and other species of other groups of Sphecodini will be found.

Key for the identification of the ♂♂ of the W-palaearctic species of the *Sphecodes* LATREILLE, "*pinguiculus* PÉREZ" group

1 Third article of the flagellum twice as long as wide; length of the body 6-7 mm ..... *S. intermedius* BL.
- Third article of the flagellum shorter; length of the body shorter 2
2 Mandibles black 3
- Mandibles with three colours: black at base, red distally and orange medially 4
3 Surface of T_1 very shiny, smooth; punctuation very sparse; length of the body 5 mm (genital capsule fig. 1) ..... *S. campadellii* sp. nov.
- Surface of T_1 opaque due to the shagreening, punctuation dense; length of the body 5 mm (genital capsule fig. 6) ..... *S. iosephi* sp. nov.
4 Surface of T_1 opaque due to the shagreening; length of the body 5 mm (genital capsule fig. 3) ..... *S. banaszaki* sp. nov.
- Surface of T_1 shiny and smooth 5
5 T_{1-3} black and opaque apically, dark red and transparent distally; length of the body 4,6 mm (genital capsule fig. 7) ..... *S. tomarchioi* sp. nov.
- Tergites of different colour 6
6 Disc of the tergites brown, with distal margins transparent, light brown in colour; length of the body 4 mm (genital capsule fig. 2) ..... *S. combai* sp. nov.
- Abdomen of different colour; length of the body also greater 7
7 Antenna long, third antennomere 1.5 times longer than wide; body appearance robust; length of the body 4 - 5.5 mm (genital capsule fig. 8) ..... *S. pinguiculus* PÉREZ
- Antenna shorter; third antennomere shorter; appearance of the body graceful 8
8 Posterior part of the flagellum and tarsi orange in colour; length of the body 4.2 mm (genital capsule fig. 4) ..... *S. marcellinoi* sp. nov.
- Posterior part of the flagellum and tarsi brown in colour; length of the body 5 mm (genital capsule fig. 5) ..... *S. walteri* sp. nov.

Bibliography

NOBILE, V. & CAMPADELLI, G. - 1998. Il genere *Sphecodes* LATREILLE, 1804 in Italia (Hymenoptera, Apoidea, Halictidae). - Boll. Ist. Ent. "G. Grandi", Univ. Bologna 52: 85-103.

RADCHENKO V.G. & PESENKO, Y.A. - 1994. Biology of Bees (Hymenoptera, Apoidea). - Russian Acad. Sciences, Zool. Institute, St. Petersburg: 350 pp. (in Russian).

WARNCKE, K. - 1992. Die westpalaearktischen Arten der Bienengattung *Sphecodes* LATR. (Hymenoptera, Apidae, Halictinae). - Ber. Naturf. Ges., Augsburg 52: 9-64.

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Literaturbesprechung

GEISSMANN, T. 2002: Verhaltensbiologische Forschungsmethoden. Eine Einführung. - Schüling Verlag, Münster. 54 S.

Dieses kompakte Büchlein führt in leicht verständlicher und gut lesbarer Art in die gedanklichen Grundlagen der Erhebung, Auswertung und Präsentation verhaltensbiologischer Daten ein. Es ist besonders für Studienanfänger, Diplomanden und Doktoranden geschrieben worden, die so gut wie keine Vorkenntnisse für dieses Fachgebiet mitbringen. Es ist somit als Einstiegshilfe und Leitfaden zu sehen, wie Daten erhoben, wie sie am besten ausgewertet und wie sie anschließend präsentiert werden können. Relativ ausführlich werden dabei "statistische Tests" behandelt, aber ebenso werden Beobachtungstechniken, Verhaltensanalyse, das Abfassen wissenschaftlicher Manuskripte bis hin zum Halten von Vorträgen und Posterdarstellung besprochen. Dieser Leitfaden kann natürlich nicht die Spezialliteratur zu den jeweiligen Themenbereichen ersetzen, aber er weckt die Neugierde, fördert den Einstieg und gibt erste Denkanstöße. Allen "Neulingen" auf dem Gebiet der ethologischen Forschung kann er nur wärmstens empfohlen werden.

R. GERSTMEIER

WEHNELT, S. & BEYER, K.-P. 2002: Ethologie in der Praxis. Eine Anleitung zur angewandten Ethologie im Zoo für Schüler und Studenten. - Filander Verlag, Fürth. 79 S.

In einer Zeit, in der die organismische Biologie vielfach auf molekularbiologische Laborarbeiten "reduziert" ist, gewinnen solche Bücher, die einen Einstieg in die "begreifende" und "erlebte" Biologie liefern zunehmend an Bedeutung. Sie sind vor allem als Unterstützung für die Lehrenden, sei es an Schulen oder Universitäten, wichtig. Die Begeisterung für Biologie und speziell Verhaltensbiologie ist meist nur über das berühmte "Aha-Erlebnis" zu vermitteln. Im Klassenverband sind Freilandbeobachtungen von Wildtieren wohl kaum durchführbar, Verhaltensbeobachtungen im Zoo bieten in der Regel optimale Voraussetzungen. "Ethologie in der Praxis" vermittelt in idealer Weise eine Anleitung zur qualitativen und quantitativen Erfassung des Verhaltens von Zootieren. Der Text ist sehr gut lesbar, die Abbildungen und Grafiken vermitteln wesentliche Zusatzinformationen und vorgeschlagene "Musterprotokolle" regen zum kreativen, problemorientierten und praxisnahen Handeln an. - Eine kompakte und sehr empfehlenswerte Einstiegslektüre. R. GERSTMEIER

KLEINERT, R., RUPPERT, W. & STRATIL, F.X. 2003: Biologie. Verhalten. Methoden, Mechanismen und Ursachen. - mentor Abiturhilfe, mentor Verlag, München. 208 S.

Anhand klassischer wie moderner Beispiele wird in diesem Buch versucht, Grundideen und Grundthesen der Verhaltensforschung darzustellen. Fragen nach Struktur und Mechanismen sind zugleich eine wesentliche Voraussetzung von Verhalten; nach diesem ethologischen Grundsatz ist dieses Buch auch aufgebaut. Die Hauptkapitel beschreiben die "Methoden der Verhaltensforschung", "Vorwiegend erbbedingte Verhaltensweisen", "Lernen - erfahrungsbedingte Änderung von Verhaltensweisen", "Die soziobiologische Sichtweise" und das "Sozialverhalten bei Tier und Mensch". Dabei bietet diese kompakte "Abiturhilfe" alles, was ein modernes "Lehr- und Arbeitsbuch" auszeichnet: einen gut verständlichen Text, einleuchtende Grafiken und Abbildungen, erfreulich viele Orginalzitate, blau hinterlegte Begriffsdefinitionen, zahlreiche Aufgaben zum Selberlösen, den dazugehörigen, ausführlichen Lösungsteil sowie Glossar und Stichwortverzeichnis. Durch das relativ hohe Niveau ist dieses Buch durchaus auch an Universitäten als Einstiegslektüre geeignet. Hier stimmt das Preis-Leistungsverhältnis und eine uneingeschränkte Empfehlung kann ausgesprochen werden. R. GERSTMEIER

WESTHEIDE, W., RIEGER, R. 2003: Spezielle Zoologie. Teil 2: Wirbel- oder Schädeltiere. - Spektrum Akademischer Verlag, Heidelberg-Berlin. 712 S.

Nach Erscheinen des ersten Bandes über Einzeller und Wirbellose Tiere 1996 liegt nun der lange erwartete Band über die Schädeltiere (Craniota) vor. 32 Spezialisten beschreiben die Vielfalt dieser Tiergruppe anhand von Bau, Funktion und Leistung ihrer Organsysteme und ordnen sie - zum ersten Mal in einem "Lehrbuch" konsequent - nach Gesichtspunkten einer modernen phylogenetischen Systematik.

Anders als im Band I (Wirbellose) erlaubte es die Konzentration auf eine einzelne Tiergruppe, dem speziellen Teil mit der Beschreibung der einzelnen Teiltaxa einen allgemeinen Teil (Organsysteme) voranzustellen (= "zusammenfassende Morphologie der Craniota"). Die Kapitel im speziellen Teil charakterisieren dann detailliert Bau und Leistung der Organe, Fortpflanzung und Entwicklung, Verhalten und Systematik der

Subtaxa einschließlich des Fossilberichts, der inneren phylogenetischen Systematik (soweit möglich) und einer Beschreibung einzelner systematisch, wirtschaftlich oder in sonstiger Weise wichtiger Arten. Das vollständige Weglassen der Linnéschen Kategorien einer hierarischen Ordnung ist von den Nutzern des ersten Bandes generell akzeptiert worden und wird in konsequenter Weise in diesem Band fortgesetzt.

Eine hochmoderne, konsequente und damit überaus empfehlenswerte Darstellung der Speziellen Zoologie. R. GERSTMEIER

VIÑOLAS, A. & CARTAGENA, M.C. 2003: Revisión del género *Phylan* STEPHENS, 1857 (Coleoptera: Tenebrionidae: Dendarini). - Entomological Monographs of Argania edito 1, Barcelona. 93 S.

Ein hervorragendes Werk, das sich mit einer überwiegend im westlichen Mediterraneum verbreiteten Gattung befasst. Über 75% der bekannten Arten und Unterarten kommen auf spanischem Territorium vor, so ist es nicht verwunderlich, dass die Bearbeitung der Gattung durch ein spanisches Autorenpaar erfolgt ist. Auch wenn der spanische Text für so manchen mangels entsprechender Sprachkenntnisse unverständlich bleibt, wird das Arbeiten mit der Revision durch die zahlreiche Bebilderung mit Genitalstrukturen und weiteren Differentialmerkmalen sowie Habitusbildern der meisten und Verbreitungskarten fast aller Arten und Unterarten erleichtert. Nach Bestimmungsschlüsseln zu den Untergattungen, Arten und Unterarten, werden diese ausführlich in systematischer Reihenfolge behandelt. Neben den Beschreibungen werden Angaben zur Verbreitung gemacht. Eine Liste der Synonyme und Kombinationen schließt den systematischen Teil ab. Abgerundet wird das Werk durch eine umfassende Literaturliste, ein systematisches Inhaltsverzeichnis und die bereits erwähnten Verbreitungskarten, Zeichnungen und Fotos. Insbesondere auf Grund der gut illustrierten Bestimmungsschlüssel, ist den Autoren zweifellos ein hervorragendes Bestimmungswerk für die teilweise sehr schwer determinierbaren Arten der Gattung gelungen. R. GERSTMEIER & R. GRIMM

NEUMANN, G.H. & SCHARF, K.H. (Hrsg.) 1999: Verhaltensbiologie in Forschung und Unterricht. Ethologie - Soziobiologie - Verhaltensökologie. - Aulis Verlag Deubner, Köln. 295 S.

Verhaltensbiologie ist für Schüler und Studenten im Rahmen der Biologieausbildung ein sehr attraktives Fach. Es beschäftigt sich einerseits im Bereich der Tierethologie mit Lebewesen, die eine komplexe Vielfalt von Verhaltensweisen zeigen, die sich meist auch bei zahlreichen Haustieren beobachten lassen, zum anderen sind tierethologische Verhaltensäußerungen und Fragestellungen von großer Bedeutung in der Humanethologie.

Dieses für die beiden Sekundarstufen konzipierte Unterrichtsbuch verfolgt im wesentlichen zwei Zielsetzungen: es soll den heutigen Stand fachwissenschaftlicher Grundlagen vermitteln, aus denen didaktische Konzepte entwickelt werden können und es gibt konkrete Anregungen und inhaltliche Vorschläge für die Unterrichtsarbeit. Eingebettet sind diese Komplexe in eine Einführung "zur Situation der Verhaltensbiologie und deren Behandlung im gegenwärtigen Biologieunterricht" und einem historischen Aufsatzes von TINBERGEN "Aus der Geschichte der Verhaltensbiologie". Die Fachbeiträge befassen sich mit "Muster in Verhalten und Umwelt", dem "Schlüsselreizkonzept", der "Biologie der Aggression", "Fortpflanzungssystem, Partnerbindung und Eltern-Kind-Beziehung", der

"Soziobiologie, Verhaltensökologie und Paarungssysteme der Primaten", "Lernen, Gedächtnis, Einsicht und "Sprache" im Tierreich", "Spezifisch Menschliches in verhaltensbiologischer Sicht" und "Tinbergens Konzept der Gestalt-Wahrnehmung für die Auslösung von Verhaltensweisen durch Schlüsselreize".

Die Beiträge sind durchwegs von beachtlichem Niveau, wenn auch die grafische Illustrierung heute etwas antiquiert erscheint. Unbestritten positiv ist die kritische Auseinandersetzung mit Fragen und Problemen zu bewerten, die in den meisten Schulbüchern relativ unreflektiert behandelt werden. Für Lehrende der Verhaltensbiologie somit uneingeschränkt empfehlenswert. R. GERSTMEIER

SETCHELL, J.M. & CURTIS, D.J. (eds.) 2003: Field and Laboratory Methods in Primatology. A Practical Guide. - Cambridge University Press, Cambridge. 343 S.

"Field and Laboratory Methods in Primatology" ist ein praktisches Handbuch für Studenten und Forscher, die speziell mit Primaten arbeiten. Fortschritte in der Aufbewahrung ermöglichen heute das Sammeln und Konservieren eines breiten Datensatzes im Feld, um dann später im Labor die entsprechenden Analysen durchzuführen. Neue Ideen und Techniken erlauben den nicht-invasiven "Eingriff" auf Individuen und Populationen, die bis vor kurzem noch "unerreichbar" schienen. Beginnend mit dem Prozess der Habituierung, der Habitatbeschreibung, Phänologie, GPS, GIS und der Aufnahme von Wetter- und Klimadaten, werden Beobachtungs- und Zählmethoden, das Fangen von Primaten, Betäubung und Gesundheitscheck, Radio-Tracking, nahrungsökologische Untersuchungen, Nahrungsanalysen, akustische und photographische Aufnahmen, Feld-Endokrinologie bis hin zum Sammeln und Analysieren genetischer Proben vorgestellt.

Vermisst werden hierbei allerdings parasitologische und virologische Untersuchungen, die doch heute eigentlich unter hoher Brisanz stehen. Für ein praktisches Handbuch hätte man sich durchaus auch eine entsprechende grafische Illustration vorstellen können.

Nichtsdestotrotz liegt hier ein außerordentlich empfehlenswertes Buch vor, welches den Feldforscher von der Planung eines Trips, über die Auswahl der Methoden bis hin zu deren praktischen Durchführung begleitet. R. GERSTMEIER

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