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The genus *Miscophus* JURINE, 1807 in Arabian Peninsula and southern Israel with description of seven new species (Hymenoptera, Spheciformes)

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A b s t r a c t : The genus *Miscophus* JURINE, 1807 in southern Israel and Arabian Peninsula is revised. The following species are described: *Miscophus pseudolusitanicus* SCHMID-EGGER, nov.sp. from Yemen; *Miscophus alhashmii* SCHMID-EGGER & AL-JAHDHAMI nov.sp. from Oman and Jordan; *Miscophus qaboosi* SCHMID-EGGER & AL-JAHDHAMI nov.sp. from Oman and Israel; *Miscophus fuscoales* SCHMID-EGGER nov.sp. from Oman and Yemen; *Miscophus irwini* SCHMID-EGGER nov.sp. from Israel; *Miscophus luteoabdominalis* SCHMID-EGGER nov.sp. from Oman and Israel; *Miscophus yemenensis* SCHMID-EGGER nov.sp. A key for species of Arabian Peninsula and southern Israel is given.

K e y w o r d s : Hymenoptera, Spheciformes, *Miscophus*, taxonomy, new species, Arabina Peninsula, Israel.

Introduction

DE ANDRADE (1954, 1956a, b, 1960) revised the genus *Miscophus* in the Palaearctic region. In the meantime, numerous new species were described and new material was available. C. Schmid-Egger is currently revising the genus, and the project still needs some more time until it can be published. Only partial results were already published, as a revision of European species (SCHMID-EGGER & BITSCH 2021, SCHMID-EGGER & STRAKA 2019) or of species from the Canary islands (SCHMID-EGGER 2002). SCHMID-EGGER (2011, 2014) also reviewed the fauna of the United Arab Emirates and described two species. GADALLAH (2020) give a checklist of the species of Spheciformes wasps from Arabian Peninsula.

New material from Oman collected by both authors and by M. Halada, from Yemen collected by A. v. Harten and from other origins resulted in several undescribed species and requires a new and complete editing of the fauna of the Arabian Peninsula. It also turned out that many species from Arabia are also distributed into the Negev desert and the Arava Valley in southern Israel, as well as in Jordan. C. Schmid-Egger owns a large sample of specimens from southern Israel, collected by M. Irwin in 1995 and 1996 with malaise traps, which he generously left to us. These specimens were therefore taken into account here.

The present project is a revision of all species from the Arabian Peninsula including the northern adjoining regions up to the deserts in southern Israel. However, it is not a full

revision of species from Israel, because there are still several additional species mentioned from central and northern Israel or from Egypt in literature, as well as represented in coll. C. Schmid-Egger, which could not be considered here. Otherwise, the keys of DE ANDRADE (1954, 1956a, b, 1960) are helpful for identification.

Material and methods

All mentioned specimens were examined by C. Schmid-Egger. In some common and widespread species, only specimens from the examined area are listed. Additionally, the overall distribution is given by country records, based on material examined by C. Schmid-Egger or from reliable literature records (mostly by DE ANDRADE 1954, 1956a, b, 1960). Specimens from the United Arab Emirates already published and listed by SCHMID-EGGER (2011, 2014) are not mentioned here again.

Figures are only given for the new described species, apart from the two species of the *M. chrysis*-species group. See figures about remaining species in the previous literature. Most species are figured and described in detail by SCHMID-EGGER (2011, 2014). All photos of the females of the described species are based on the holotype.

Morphological terms are used according to BOHART & MENKE (1976). The following abbreviations are used in the morphological descriptions:

ACM.....Apical clypeal margin.

AS.....Antennal segments, segments are counted from the first segment (scape) = AS1

HD.....Hindocellar diameter

S.....Metasomal sternum

T.....Metasomal tergum

The episcrobal area means the portion of the mesopleuron above the scrobal groove and below the subalar fossa. BOHART & MENKE (1976) called it the hypoepimeral area, a morphologically inaccurate term meaning "area under the epimeron".

Acronyms of depositories and other institutions

AJ.....private collection. Ali Al-Jahdhami, Oman

CAS.....California Academy of Sciences, San Francisco, California, USA

CSE.....private coll. C. Schmid-Egger, Berlin, Germany

LUW.....Landbouwwuniversiteit Wageningen, Department of Entomology, Wageningen, the Netherlands

MHNB.....Muséum d'Histoire Naturelle de Bâle, Bâle (= Basel), Switzerland

MHNG.....Musée d'Histoire Naturelle, Genève, Switzerland

MNCN.....Museo Nacional de Ciencias Naturales, Madrid, Spain

MZL.....Musée Zoologique, Lausanne, Switzerland

NHMW.....Naturhistorisches Museum, Wien, Austria

RMNH.....Naturalis, Leiden, Netherlands

SAM	South African Museum, Cape Town, South Africa
USNM	United States National Museum (= National Museum of Natural History, Smithsonian Institution), Washington, USA
ZMHU	Museum für Naturkunde der Humboldt-Universität zu Berlin, Berlin, Germany
ZSM.....	Zoologische Sammlung des Bayerischen Staates, München, Germany.

The specimens from Oman were collected legally under the permit No. 6210/10/87 issued by ministry of environment and climate affair.

Identification key to *Miscophus* from Arabian Peninsula and southern Israel

In the key, only distribution in Arabian Peninsula and related areas is given.

Key to females

- 1 Body completely metallic green or blue (figs 12, 15) *M. chrysis* species group 6
- Body black, red or yellow. 2
- 2 Anterior margin of clypeus continuous, without indentations *M. mimeticus* species group 7
- Anterior margin of clypeus divided into three parts. 3
- 3 Propodeal surface smooth and markedly shiny, at most with some barely visible transverse striae near median carina; without any pilosity (figs 4, 6, 9). Mesonotum and frons shiny, with sparse punctation. Angle between surface and back of propodeum obtuse (fig. 9). *M. bytinskii* species group 8
- Propodeal surface dull with microsculpture or shiny with striation or honey-comb like sculpture, in some species with pilosity. Mesonotum and frons in most species microsculptured or densely punctured (interspaces at most 2 diameters). Angle between surface and back of propodeum about 90-100 degree (right angled)..... 4
- 4 At least lower half of temples (behind eyes, seen in dorsal view) with erect whitish pilosity. Foretarsal spines well developed, last spine of fore basitarsus as long as or longer than second tarsal segment. Larger species, mostly longer than 5 mm. *M. helveticus* species group 13
- Temples without (or with very short) pilosity. Spines of fore basitarsus in most species less developed or absent. Smaller species, rarely longer than 6 mm. 5
- 5 Propodeal surface and sides grainlike microsculptured or punctured, dull without shiny interspaces and without or only with few ridges. AS1 yellow below. AS 3 short, 1-1.5x as long as AS2. (Abdomen black. Body length less than 4 mm). Israel, UAE. *M. aenigma* HONORÉ (belongs to the *M. nevesi* species group
- Propodeal surface and sides striate or honey-comb like sculptured, with shiny interspaces (fig. 2). Scapus in most species black. AS3 2x as long as AS2. [*M. pseudolusitanicus* nov.sp. has finer striae on propodeal dorsum, abdomen is all red in this species]. *M. bicolor* species group 11

M. chrysis species group

- 6 Metallic colour of body predominantly blue (fig. 12). Coarsely reticulated zone of frons reaching midocellus or ending short below (cf. fig. 13). Pronotum evenly striate laterally. Yemen, Saudi Arabia, Israel. *M. chrysis* KOHL

- Metallic colour of body predominantly green (cf. fig. 15). Coarsely reticulated zone of frons ending in upper half of frons (cf. fig. 16). Pronotum laterally only with a few irregular striae. Israel..... *M. pseudochrysis* SIMON THOMAS

M. mimeticus species group

- 7 Mesopleuron below episcrobal area densely punctuate, punctures large, interspaces as large as puncture diameter. Episcrobal area with a few, scattered punctures. Lower mesopleuron in some specimens with horizontal wrinkles. Oman, UAE, Yemen.....
.....*M. mimeticus* HONORÉ
- Punctuation of mesopleuron less dense, interspaces larger than punctures. Episcrobal area without punctures, shiny, or with a few scattered punctures. UAE.....
.....*M. affinis* PULAWSKI

M. bytinskii species group

- 8 Fore basitarsus without spines. [Red are: mandible, AS1 below, first AS, foretibia. Mesopleuron with pubescence. Very small species, 4 mm]. Israel.
.....*M. bytinskii* VERHOEFF
- Fore basitarsus at least with three long spines.9
- 9 Mesopleuron and clypeus without any pubescence. Femora black. Propodeum smooth, without striation. [Body black except mandible, antenna, apical clypeal margin, tibiae and tarsi]. Oman, UAE.*M. paolorosai* SCHMID-EGGER
- Mesopleuron and clypeus with dense pubescence, hiding integument (fig. 4, 9). Femora red. Propodeum with fine, transverse striation (fig. 6).10
- 10 Abdomen completely orange red (fig. 9). Face and mesonotum with fine and dense punctuation (Fig. 10). Oman/northern provinces, Israel.....
.....*M. qaboosi* SCHMID-EGGER & AL-JAHDHAMI **nov.sp.**
- Abdomen black (fig. 4). Face and mesonotum impunctate (fig. 7). Oman/Dhofar, Jordan.*M. alhashmii* SCHMID-EGGER & AL-JAHDHAMI **nov.sp.**

M. bicolor species group

- 11 Abdomen all red (fig. 1). Propodeal dorsum with sparse pubescence (fig. 2). Lower mesopleuron impunctate or with a few punctures, interspaces distinctly shiny. [Apical clypeal margin widely rounded (fig. 3). Propodeal dorsum with distinct median line, laterally with indistinct diagonal striae (fig. 2)]. Yemen
.....*M. pseudohusitanicus* SCHMID-EGGER **nov.sp.**
- Abdomen black. Propodeal dorsum without pubescence. Lower mesopleuron densely punctured or reticulate.12
- 12 Frons markedly reticulated and wrinkled. Lower half of frons with 5-7 strong horizontal striae, upper half irregular striate. Striae of propodeal dorsum more or less subparallel to central line. Propodeal dorsum apically with lamelliforme edge in whole width, separating horizontal and vertical part of propodeum. Israel, UAE [here also *M. eatoni* E. SAUNDERS, 1903, from Israel, with less coarse face sculpture. The species is not included in the present contribution]..... *M. reticulatus* SCHMID-EGGER
- Frons punctured with shiny interspaces or at most finely sculptured. Propodeal dorsum otherwise wrinkled, without marked lamelliforme edge. [Propodeal surface and sides markedly striate or honey-comb like sculptured, with shiny interspaces. Scapus in most species black. Israel, Yemen, Oman, UAE.....*M. pharaonis* ANDRADE

M. helveticus species group

- 13 Spines of fore basitarsus long, thick, strongly spatulate apically. Apical spine of fore basitarsus at least as long as 2., 3. and half of 4. tarsal segment united.14
Spines of fore basitarsus not spatulate, evenly pointed apically, in most species shorter than in *M. ctenopus* and *M. sericeus* (figs 20, 24, 27, 32).15

- 14 Tegula and praecostal plate yellow. Wing venation yellow. Apical dark part of forewing markedly contrasting from transparent part. Eye as large as half face. 5-6 mm. UAE, Oman. *M. sericeus* RADOSZKOWSKI
- Tegula and/or praecostal plate with dark spot. Wing venation dark. Apical dark part of forewing with greyish transition zone versus transparent part. Eye larger than half face. 7-8 mm. Oman, Saudi Arabia, UAE, Yemen. *M. ctenopus* KOHL
- 15 Apex of forewing hyalin and colorless (fig. 25). [Whole face or at least in lower part with dense pilosity covering the integument]. 16
- Apex of forewing beyond the venation zone darkened (figs 18, 22, 29). 18
- 16 Only lower half of face with pilosity, upper half hairless and shiny. Distinct furrow in front of midocellus. Femora predominantly black, remaining parts dark red. [Fore basitarsus with 4 spines. Abdomen dark red or black] (some specimens of *M. mochii* also may have pilosity in whole face. They can be recognized by dark tegula and predominantly black femora). Israel, Yemen. *M. mochii* ARNOLD
- Whole face covered with dense pilosity, Frons without furrow. Femora in most specimens light red with yellow parts, or all yellow. [Tegulae light yellow] 17
- 17 Fore basitarsus with 3 spines. Lower half of clypeus yellow. Abdomen red [Tibiae with yellow stripe above, forefemora often with yellow parts.]. 6-7 mm. Israel. *M. flavopictus* PULWASKI
- Fore basitarsus with 4 spines (fig. 27). Clypeus dark (fig. 26). Abdomen with large yellow parts (fig. 25). Israel, Oman. 7-8 mm. *M. luteoabdominalis* Schmid-Egger **nov.sp.**
- 18 Inner eye margin convergent, eyes distinctly approached above, OOL 0.5x hindocellar diameter (fig. 19, 23). 19
- Eyes less approached, OOL at least 1.0x hindocellar diameter (fig. 30). 21
- 19 Mesosoma and legs completely black. Forewing distinctly infusate, with darker apex, the latter with metallic shimmer (fig. 18). [Fore basitarsus with 3 spines (fig. 20). Abdomen all red, hindfemora in specimens from Yemen with some red]. 7-8 mm. Oman/Dhofar, Yemen. *M. fuscoales* SCHMID-EGGER **nov.sp.**
- At least part of the legs red (fig. 22). Forewing weakly infusate, darker apex without metallic shimmer. 20
- 20 Fore basitarsus with 4-5 spines. Femora red, at most with some black above. Clypeus apically distinctly red. 6-8 mm. Israel. *M. dispersus* ANDRADE, 1954
- Fore basitarsus with 3 spines (fig. 24). Femora mostly black. Clypeus black, with some red on apex only (fig. 23). Israel. *M. irwni* SCHMID-EGGER **nov.sp.**
- 21 Fore basitarsus with 4-5 spines (including a small basal spine). *M. papyrus* ANDRADE
- Fore basitarsus with 3 spines. 22
- 22 Tegula all yellow, sometimes with dark basal spot, its outer edge translucent. Praecostal plate and upper costal vein yellow. [Face and thorax with long, silver-whitish pilosity]. 5.5-6.8 mm. Israel, UAE, Oman. *M. imitans* GINER
- Tegula, praecostal plate and upper costal vein not even yellow, tegula basally or medially brown. Pilosity of face otherwise. 23
- 23 Apex of forewing behind dark zone with hyaline zone (fig. 31). Terga black, apart from some parts laterally, sterna red. Legs dark, foretibia with red band above (fig. 29). Upper face without pilosity. Yemen. *M. yemenensis* SCHMID-EGGER **nov.sp.**
- Apex of forewing all darkened. Abdomen dark with some red parts on terga and sternites apically. Legs dark, tarsi apically with some red. Pilosity reaches ocellar region. *M. helveticus* KOHL

Key to males

Unknown for males: *M. pseudolusitanicus* nov.sp., *M. bytinskii*. The males of the *M. helveticus* species group cannot be recognized properly and are not keyed here.

- 1 Body completely metallic green or blue (fig. cf. 12, 15).*M. chrysis* species group 6
- Body black, red or yellow.2
- 2 Propodeal surface smooth and markedly shiny, at most with some barely visible transverse striae near median carina; without any pilosity. Mesonotum and frons shiny, with sparse punctation. Angle between surface and back of propodeum obtuse (fig. 5).*M. bytinskii* species group 7
- Propodeal surface dull with microsculpture or shiny with striation or honey-comb like sculpture, in some species with pilosity. Mesonotum and frons in most species microsculptured or densely punctured (interspaces at most 2 diameters). Angle between surface and back of propodeum about 90-100 degree (right angled).....3
- 3 At least lower half of temples (behind eyes, seen in dorsal view) with erect whitish pilosity. S8 bidentate. Larger species, mostly longer than 5 mm.*M. helveticus* species group, males not keyed here
- Temples without (or with very short) pilosity. S8 with four teeth. Smaller species, rarely longer than 6 mm.4
- 4 Propodeal dorsum shiny, without pubescence and with distinct striation.*M. bicolor* species group 9
- Propodeal dorsum dull, with fine striation or punctation, or with pubescence5
- 5 AS3 short, as long as AS2. Propodeal dorsum without striation. AS 1-4 white below. [Propodeal dorsum with fine pubescence. Body dull, finely sculptured, without punctation. Tegula and wing venation white]. 3.0-3.5 mm. Israel, UAE.....*M. aenigma* HONORÉ (*M. nevesi* species group)
- AS3 at least 1.5x as long as AS2. Propodeal dorsum with fine striation. AS 1-4 orange or black.*M. mimeticus* species group 10

M. chrysis species group

- 6 Gonostylus laterally with long and large hairbrush, apically curved backwards (fig. 14). Coarsely reticulated zone of frons reaching ocellar region. Fine punctation around ocelli sparse, most punctures 1-3 diameters apart. Face bluish-green (fig. 13). Yemen, Saudi Arabia, Israel.*M. chrysis* KOHL
- Gonostylus laterally with short hairbrush, apically straight (fig. 17). Coarsely reticulated zone of frons ending in upper half of frons, frons in upper part only with some larger puncture. Fine punctation around ocelli dense, most punctures 0.5-1 diameters apart. Face green (fig. 126). Israel*M. pseudochrysis* SIMON THOMAS

M. bytinskii species group

- 7 Mesopleuron and clypeus without any pubescence. Femora black. Propodeum smooth, without striation. [Body black except mandible, antenna, apical clypeous margin, tibiae and tarsi]. Oman, UAE.....*M. paolorosai* SCHMID-EGGER
- Mesopleuron and clypeus with dense pubescence, hiding integument. Femora red. Propodeum with very fine, crosswise striation.8
- 8 Abdominal base orange red (fig. 11). Face and mesonotum with fine and dense punctation. Oman/northern provinces, Israel.....*M. qaboosi* SCHMID-EGGER & AL-JAHDHAMI **nov.sp.**
- Abdomen black (fig. 5). Face and mesonotum impunctate. Oman/Dhofar, Jordan.....*M. alhashmii* SCHMID-EGGER & AL-JAHDHAMI **nov.sp.**

M. bicolor species group

- 9 Frons distinctly reticulate and wrinkled. Lower part of mesopleuron reticulate. Mesoscutum and scutellum with large punctures, larger than punctures on T2. [Here also *M. eatoni* E. SAUNDERS, 1903, from Israel, with less coarse face sculpture. The species is not included in the present contribution]. Israel, UAE.
 *M. reticulatus* SCHMID-EGGER
- Frons punctured with shiny interspaces or at most finely sculptured. Lower part of mesopleuron smooth and shiny. Mesoscutum and scutellum with fine and minute punctuation, punctures smaller than punctures on T2. Israel, Yemen, Oman, UAE.
 *M. pharaonis* ANDRADE

M. mimeticus species group

- 10 Propodeal dorsum covered with dense pubescence. AS 1-5 orange below, brown above. Tibiae orange. UAE *M. affinis* PULAWSKI
- Propodeal dorsum without pubescence. AS 1-5 brown, with some indistinct orange spots below. Tibiae brown. Oman, UAE, Yemen. *M. mimeticus* HONORÉ

Taxonomy

Miscophus bicolor species group*Miscophus pharaonis* ARNOLD, 1940

Miscophus pharaonis ARNOLD, 1940: 131. Holotype: 1♂, Egypt: Fayum (SAM). GADALLAH (2020), checklist for Arabian Peninsula. Schmid-Egger (2011, 2014), UAE.

M a t e r i a l e x a m i n e d : ISRAEL 1♀ 1♂ 31.iv.1995 Arava Valley, Ketura, 30,96N 35,06E; 3♀♀ 29.iv.1996 Negev, Wadi Mapalin; 5♀♀ 30.iv.1995 Elat Mountains 29°35' N 34°54' E (leg. M. Irvin in Malaise traps, CSE). OMAN, northern province: 1♀, 27.xii.2018 Al Mudhaibi, Samad Ashan, Aswareg 22,82 N 58,15 E (AJ); 1♂ 28.iii.1996 350 km S Muscat, Al Minjal al Film (CSE). OMAN, Dhofar province: 1♂ 29.viii.2019 Wadi Darbat near Highway 17,065 N 54,431 E (AJ); 6♂♂ 1♀ 30.ix.21 5 km NE Magsail 16,910 N 53,803 E; 14♂♂ 15♀♀ 12.x.2021 80 km SSW Salalah 16,857 N 53,420 E; 1♂ 15.x.2021, 75 km W Salalah 16,842 N 53,434 E (leg. M. Halada, coll. CSE & Halada). YEMEN: 7♀♀ January February, April, Oktober, November 1999-2001 Lahy, 2♀♀ February/April 1993 Al Kowd; Feb./March al Kadan 1998 (leg. Harten & Hajer, in malaise traps, RMNH)

D i s t r i b u t i o n : Egypt, Libya, Israel. **AP:** Yemen, Oman, UAE.

Miscophus pseudolusitanicus SCHMID-EGGER, nov.sp. (figs 1-3)

Holotype: Yemen: 1♀ 15.iii..2000 Al Kadan [15.25N 43.25E] (unknown collector, coll. CSE).

D i a g n o s i s : *Miscophus pseudolusitanicus* nov.sp. is very close to *M. lusitanicus* DE ANDRADE, 1952, from the mediterranean area and Central Asia. It differs from the latter mainly by smaller body size (5.1 mm versus 6.0-6.5 mm in *M. lusitanicus*), by a larger and more distinct punctuation on mesoscutum and by a shiny and impunctate lower mesopleuron (finely punctures and sculptured in *M. lusitanicus*). The abdomen is all red in *M. pseudolusitanicus* nov.sp., and at most apically black (or all black) in *M. lusitanicus*. The punctuation of frons consists on separate punctures, with (narrow and small) shiny interspaces, whereas the punctuation in *M. lusitanicus* is dense and grainlike, without shiny interspaces. *M. lusitanicus* belongs to the *M. bicolor* species group sensu ANDRADE (1960), however propodeal dorsum has a comparatively fine striation and

some pubescence and therefore the species show some transitions to other species groups. The same goes for *M. pseudolusitanicus* nov.sp. The latter is otherwise easily recognizable among the Arabian species of the *M. bicolor* species group by the red abdomen.

Description of female: Body length 5,1 mm. **Colour:** Black, red are: mandible except apex and lower margin, clypeus apicomediaally, AS1 below, some AS below (reming AS reddish-brown), pronotal lobe, apex of tegula, abdomen. Fore and midtibiae and -tarsi reddish, remaining legs dark with reddish shimmer. Wing venation brown, wings evenly infusate, apical zone somewhat darker than remaining wing. **Morphology:** Apical clypeal margin distinctly rounded, medial part somewhat advanced. Lower half of frons with sparse pubescence, upper half densely and finely punctured, with very small shiny interspaces. OOL = 2.0x hindocellar diameter, POL 2.5x this diameter. Punctuation of mesoscutum and scutellum larger, interspaces 0.5-2 puncture diameters, shiny. Upper mesopleuron densely and median third sparsely punctured, lower third impunctate and shiny. Propodeal dorsum with distinct medial keel, laterally with indistinct and fine diagonal striae, some striae subparallel to median keel, laterally with some fine pubescence. Propodeal declivity and propodeum laterally shiny, with distinct transverse rugae. Terga finely punctured, shiny. Fore basitarsus with three spines, apical spine somewhat longer than half tarsal segment 2.

Distribution: Yemen.

Etymology: The species name refers the close relationship of the species to *Miscophus lusitanicus*.

***M. reticulatus* SCHMID-EGGER, 2014**

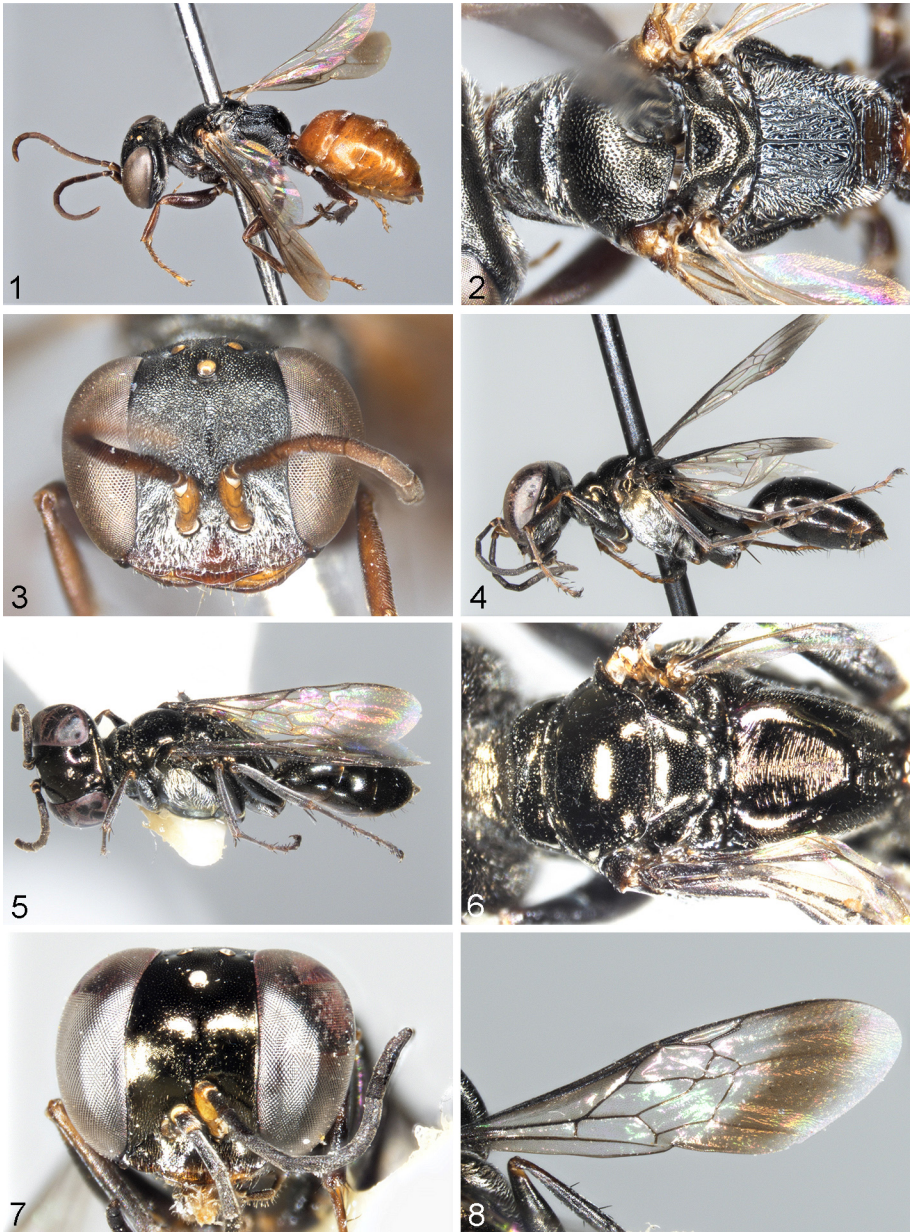
Miscophus reticulatus SCHMID-EGGER, 2014: 584 ♀ ♂, holotype ♀, Israel, (CSE), UAE. GADALLAH (2020), checklist for Arabian Peninsula.

Material examined: OMAN, Al Wusta province: 2♀♀ 5.iv.2019 Wadi Ronub 18.802 N 56.340 E (leg. Said Al Rashdi in yellow pan traps, AJ).

Distribution: Israel. **AP:** UAE, Oman.

***Miscophus bytinskii* species group**

DE ANDRADE (1960) did not assign *M. bytinskii* to any of his species groups but treated it as an isolated species. However, because there are now already five species with this particular character combination, the setting up of an own species group is justified. It is named *M. bytinskii*-species group after the first described species of this group. The *M. bytinskii*-species group is characterized by an all shiny and smooth body surface without striation or punctures (apart from some sculpture and pubescence of mesopleuron in two species) in combination with an obtuse angle between propodeal dorsum and propodeal declivity, seen in lateral view, without any edge or keel at the transition. Remaining species of *Miscophus* always have striation, punctuation or other sculpture at most on mesosoma. The propodeal angle is more or less right angled (or nearby), and often with edge on transition from horizontal to vertical part of propodeum. The *M. bytinskii* group is named after the first described species of the group *Misocophus grangeri* DE BEAUMONT, 1968, described from Algeria, also belongs to this species group. For recognition of it see below at *M. paolorosai*.



Figs 1-8: (1) *M. pseudolusitanicus*, ♀ lateral; (2) *M. pseudolusitanicus*, ♀ mesosoma; (3) *M. pseudolusitanicus*, ♀ face; (4) *M. alhashmii*, ♀ lateral; (5) *M. alhashmii*, ♂ lateral; (6) *M. alhashmii*, ♀ mesosoma; (7) *M. alhashmii*, ♀ face; (8) *M. alhashmii*, ♀ forewing.

Both new described species from Oman, *M. alhashmii* nov.sp. and *M. qaboosi* nov.sp., differ from the remaining species of the *M. bytinskii* species group by a dense pubescence on mesopleuron, and *M. qaboosi* nov.sp. also by a indistinct and very fine striation of propodeal declivity and propodeum laterally. They may represent transition forms to other species groups. Otherwise, they fulfill the above mentioned criteria what justifies to place them into this species group.

***Miscophus alhashmii* SCHMID-EGGER & AL-JAHDHAMI, nov.sp. (figs 4-8)**

Holotype: OMAN, Dhofar province; 1♀ 12.x.2021 80 km SSW Salalah 16,857 N 53,420 E (leg. M. Halada, coll. CSE). **Paratypes:** OMAN, Dhofar province: 1♀ 01.x.2019 18 km W Raysut, Ayn Ishat 16,997 N 53,821 E (AJ); 1♂ 1♀ 05.x.2019 13 km N Mirbat, Samhan mountain 17,111 N 54,711 E (AJ); 1♀ 04.x.2021; 1♀ 60 km W Salalah 16,818 N 53,620 E; 24♂♂ 12♀♀ 12.x.2021 80 km SSW Salalah 16,857 N 53,420 E (leg. M. Halada, coll. CSE); 1♀ 1♂ 2.x.2020 Ain Hamran, Taqah 17.098 N 54.283 E (AJ); OMAN, Adakhlyiah province: 2♀♀ 15.iv.2020 Al Akdher mountain, 23.100 N 57.674 E (AJ).

Material examined: JORDAN: 1♀ 27.iv.1996 Jordan, Valey, Mubalath (partly destroyed by *Anthrenus*, not designated as paratype).

Diagnosis: The species is closely related to *M. qaboosi* nov.sp., described from northern Oman and Israel. Both species are characterized by an all smooth, shiny and impunctate mesosoma and abdomen, with the exception of the finely microsculptured mesopleuron with fine pubescence. *M. alhashmii* differs from *M. qaboosi* by an all black body, whereas the latter has an all red abdomen and clypeus (in males is only abdominal base red). Head and mesoscutum is impunctate in *M. alhashmii*, and with some fine punctation in *M. qaboosi*.

Description of female: Body length 6.5 mm. **Colour:** Black with the following parts yellowish-red: mandible medially, AS1 below, apex of clypeus, parts of tibiae, hindfemora below on apex, S1-2 partly. Frons and propodeum with indistinct metallic shimmer. Mesopleuron with fine silver pubescence, in upper half less dense compared to lower half. Wing venation black, wing transparent and white, with infumate band near apex and a milky white apical zone. **Morphology:** medial part of ACM barley advanced, straight. Head, mesosoma and abdomen smooth, shiny, impunctate, apart from a fine microsculpture on mesopleuron (hidden below pubescence). Propodeal declivity and propodeum laterally with a few indistinct striae. Frons with fine longitudinal impressed line, crossing foreocellus. Fore basitarsus with 3 spines, apical spine somewhat shorter than second tarsal segment. Angle between propodeal dorsum and propodeal declivity about 140° (lateral view).

Variation in females paratypes: Body length 5.1-6.5 mm.

Description of male: Body length 4.5-5.0 mm. Agree in all aspects with the female. Forebasitarsus only with one short apical spine.

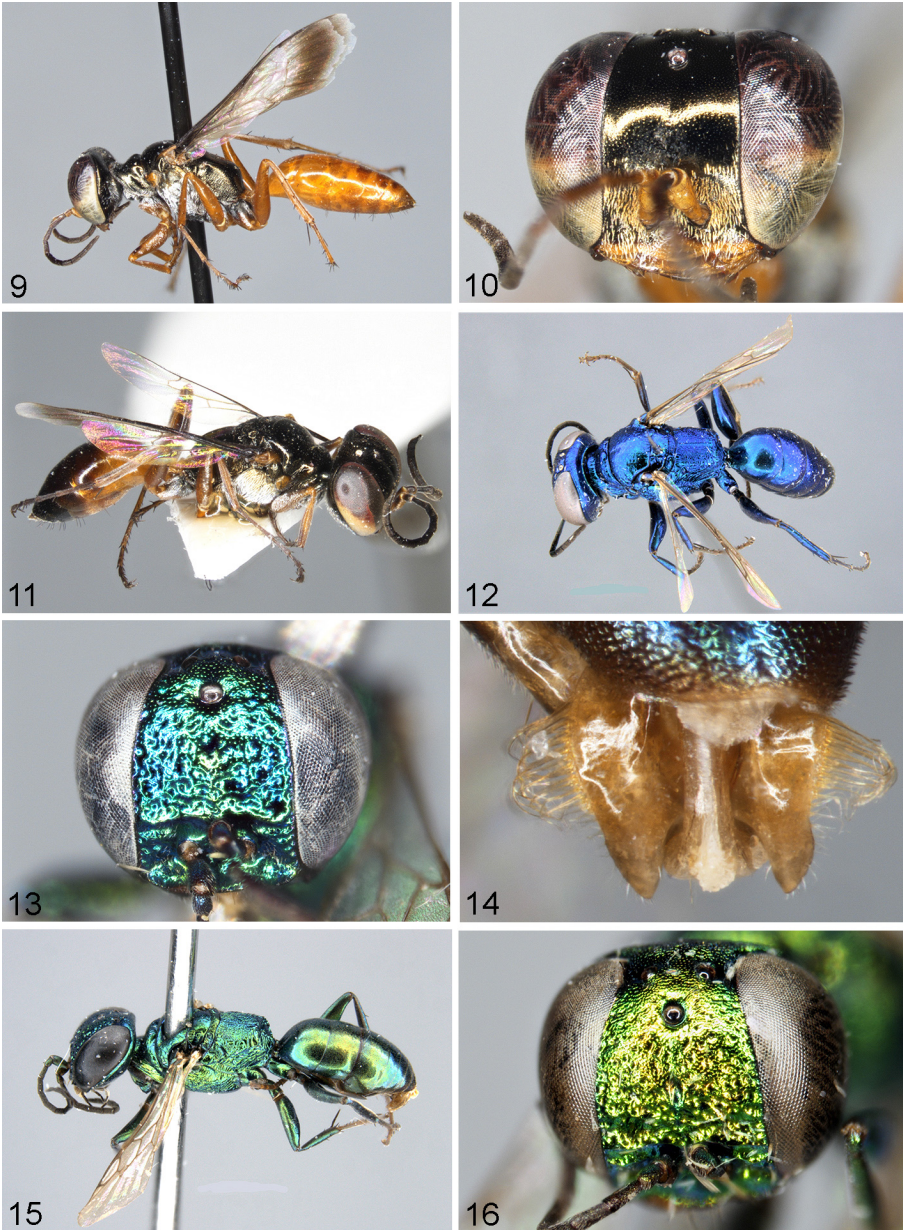
Distribution: Jordan. **AP:** Oman.

Etymology: The species is named in honour to the Omani ecologist Khalid Salim Al-Hashmi of Sultan Qaboos University.

***M. bytinskii* VERHOEFF, 1955**

Miscophus bytinskii P. VERHOEFF, 1955: 377. **Holotype:** ♀, Israel: Beersheba (RMNH).

Remark: Only known by the type specimens from northern Negev desert in Israel. See DE ANDRADE (1960) for revision and description.



Figs 9-16: (9) *M. qaboosi*, ♀ lateral; (10) *M. qaboosi*, ♀ face; (11) *M. qaboosi*, ♂ lateral; (12) *M. chrysis*, ♀ dorsal; (13) *M. chrysis*, ♂ face; (14) *M. chrysis*, ♂ genital; (15) *M. pseudochrysis*, ♂ lateral; (16) *M. pseudochrysis*, ♂ face.

***Miscophus paolorosai* SCHMID-EGGER, 2011**

Miscophus paolorosai SCHMID-EGGER, 2011: 552. ♀ ♂, holotype ♀ UAE (CSE). SCHMID-EGGER (2014), new records from UAE. GADALLAH (2020), checklist for Arabian Peninsula.

Material examined: OMAN, northern Provinces; 1♀ 07.iii.2022, 18 km SW Sur 22,463 N 59,387 E (CSE, in yellow pan traps); 1♀ 01.iv.2020, Al Kamel 22.257 N 59.169 E (AJ).

Remark: *M. grangeri*, described from Algeria, is very close to *M. paolorosai* and differs by a distinct bluish shimmer of head, mesosoma and abdomen (black in *M. paolorosai*). Propodeal dorsum lacks the fine longitudinal keel of *M. paolorosai*, the medial part is somewhat irregularly sculptured in *M. grangeri*; and AS3 is black in *M. grangeri*, and at least red below in *M. paolorosai*. POL of *M. grangeri* female is 2.0x HD, in *M. paolorosai* only 1.0x HD.

Distribution: AP: UAE, Oman.

***Miscophus qaboosi* SCHMID-EGGER & AL-JAHDHAMI nov.sp. (figs 9-11)**

Holotype: OMAN, northern provinces: 1♀ 22.vii.2018 Al Mudhaibi, Samad Ashan 22,844 N 58,170 E. (leg. AJ, coll CSE). **Paratypes:** 4♀ 3♂ same date as holotype (AJ): 2♀ 3.iv.2022 Ibra, 22.731 N 58.731 E (AJ); 4♀ 12.iii.2018; 22.xii.2018, 15.ii.2009; 7♂ 21.xii.2018, 28.xii.2018; 02.ii.2019; 07.ii.2019; 15.ii.2019. ISRAEL: 1♀ 16.vi.1996 Arava Valley, Iddan, 30.807N 35.298E; 1♀ 8.v.1996, 45 km SE Beer Sheva, Mezaad Agrabbim, 30,95N 35,15E; 2♂ 3.vi./16.vi.1995 Arava Valley, Moshav Hazeva, Wadi Shahak, 30.66N 35.24E; 1♂ 8.iv.1995 Arava Valley, Har Badad, Wadi Neqarot 30.48N 35.05E; 1♀ 1.v.1995 Nevev, Wadi Yamin 30.85N 35.08E (all. leg. M. Irvin in malaise traps, CSE).

Diagnosis: See *M. alhashmii* nov.sp. for diagnosis.

Description of female: Body length 6.3 mm. **Colour:** Black with the following parts orange-red: mandible except black apex, clypeus, AS 1-2, AS3 below, pronotal lobe, tegula, legs apart base of coxae, abdomen. Frons and propodeum with metallic shimmer. Mesopleuron with fine silver pubescence, in upper half less dense compared to lower half. Wing venation black, wing transparent and white, with infumate band near apex and a milky white apical zone. **Morphology:** medial part of ACM barley advanced, straight. Head, mesosoma and abdomen in general smooth and shiny. Frons with fine longitudinal impressed line, crossing foreocellus, and with indistinct and fine punctation; mesopleuron microsculptured (hidden below pubescence); propodeal dorsum with medial keel and fine transverse striation, declivity and propodeum with a few indistinct striae. Fore basitarsus with 3 spines, apical spine as long as second tarsal segment (basal spine lacks on one leg). Angel between propodeal dorsum and propodeal declivity about 140° (lateral view).

Variation in females paratypes: Body length 5.1-6.3 mm.

Description of male: Body length 4.5-5.5 mm. Agree in all aspects with the female, apart from a strong reduction of red colour of legs and abdomen. Femora and tarsi predominantly black, abdomen black, T 1-3 basally and laterally red, S1-3 all red. but colour is variable in all specimens. Forebasitarsus only with one short apical spine.

Distribution: Israel. AP: Oman.

Etymology: The species is named in honour to the late Sultan Qaboos who was president of Oman for 40 years and one of the very important persons in Oman.

Miscophus chrysis species group

KOHL (1894) described a completely green *Miscophus* female from Somalia under the name *Miscophus chrysis*. The species was never found later, until GADALLAH et al. (2021) published new records from southern Saudi Arabia, Jazan Province. The authors also described the previously unknown male. SIMON THOMAS (1995) described a second species from this species group from Senegal, *Miscophus pseudochrysis*, and gave recognition characters for both species.

C. Schmid-Egger found already in 1995 specimens from this species group in southern Israel, which agree with the description of *M. pseudochrysis*, apart from one male which is a true *M. chrysis*. Recognition of both species is difficult because of their similarity, but examination of male genitalia yielded a new recognition character and additionally confirmed the species status of *M. pseudochrysis*. The finding of *M. pseudochrysis* in Israel was unexpected because it is far from the type area. It led to the conclusion that *M. pseudochrysis* has a trans-saharian distribution (or disjunct distribution), whereas *M. chrysis* is an eastern Ethiopian species and reaches southern Arabia and southern Israel in the north. Probably the species spreads along the border of the Red Sea to the north. It is remarkable that both species occur together near Iddan in southern Israel.

Identification can be done with the characters given in the key. See also the detailed descriptions of GADALLAH et al. (2021) for *M. chrysis* and of SIMON THOMAS (1995) for *M. pseudochrysis*.

Miscophus chrysis KOHL, 1894) (figs 12-14)

Miscophus chrysis KOHL, 1894: 293, ♀. Holotype: 1♀, Somalia: Obock (Inst. Roy. Sci. Nat. Belgique). Gadallah et al. (2021), new for Saudi Arabia/Jazan Province, description of ♂.

Material examined: YEMEN: 1♀ Al Lahima 16.x. 2000 – 30.xii.2000 (leg. Harten & Hajer, in malaise traps, RMNH); ISRAEL: 1♂ 8.v.1996 Arava Valley, Iddan, 30.807N 35.298E (leg. M. Irvin in Malaise traps, CSE).

Distribution: Somalia. **AP**: Yemen, Saudi Arabia, Israel.

Miscophus pseudochrysis Simon THOMAS, 1995 (figs 15-17)

Miscophus pseudochrysis SIMON THOMAS, 1995: 129, ♂, ♀. Holotype: 1♀, Senegal: 25-35 km S Richard Toll (LUW), examined.

Material examined: SENEGAL: 1♀ 1♂, 13.ix./27.ix.1989 25-35 km S Richard Toll, in malaise traps [♀ Holotype, ♂ paratype] (RMNH); 1♀ 25.xii.1986 Mdzugan (CAS); 1♀ 20.ii.1988 F. Borgale (CAS). ISRAEL: 5♂♂ 5♀♀ 8.v.1996 Arava Valley, Iddan, 30.807N 35.298E; 1♀ 8.v.1996 45km SE Beer Sheva, Mezad Aqrabbim, 3♂♂ 16.vi.1995 Hazeva. (leg. M. Irvin in Malaise traps, CSE).

Distribution: Israel, Senegal.

Miscophus helveticus species group

The males of the *M. helveticus* species group are difficult or impossible to identify because they lack identification characters of the females as foretarsal spines or apical clypeal margin, and their colour pattern or wing colour is different from these of females. For that reason they are not keyed here. Two of the described species (females) were

collected together with clearly marked males, which are described together with the corresponding female. Because the species look very similar in most aspects, only the differentiating features are described here.

***Miscophus ctenopus* KOHL, 1885**

Miscophus ctenopus KOHL, 1885: 349, ♀, ♂. Syntypes: Egypt: Sinai: Tor (NHMW). GADALLAH (2020), checklist for Arabian Peninsula. Schmid-Egger (2011, 2014), UAE.

Material examined (only listed for Arabian Peninsula): OMAN, northern provinces: 1♀ 13.iii.2015, S of Qurun 12,47 N 59,33 E (leg. Cerny, OLL); 1♀ 27.ii.2019 Alseeb, Al Khoudh 23,632N 58,187E (AJ); 1♀ 14.v.2020 Samed Ashan 22,850 N 58,176 E (AJ). OMAN, Dhofar: 1♀ 06.x.2021 77 km W Salalah 17,035N 53,346E (leg. M. Halada, CSE). SAUDI ARABIA: 4♀♀ Wadi Daykah 1982; Abha-Gizan, Wadi Ad Dilla 1976; Jeddah 1979 (MHNB). YEMEN: 26♀♀ 5 ♂ April, Aug, Dez. 1999, Feb; April. 2001 Lahj; 3♀♀ Al Kowd April 1993 (leg. Harten & Hajer, in malaise traps, RMNH).

Distribution: Morocco, Tunisia, Algeria, Egypt, Israel, Jordan, Iran. **AP**: Oman, Saudi Arabia, UAE, Yemen.

***Miscophus dispersus* ANDRADE, 1954**

Miscophus dispersus ANDRADE, 1954: 86, ♀, ♂. Holotype: ♀, Morocco: Saquia el Hamra (MNCN).

Material examined: ISRAEL: 13♀♀ 8.v.1996 Arava Valley, Iddan, 30.807N 35.298E (leg. M. Irvin in Malaise traps, CSE).

Distribution: Morocco, Tunisia, Egypt, Israel.

***Miscophus flavopictus* PULAWSKI, 1964**

Miscophus flavopictus PULAWSKI, 1964: 126, ♀, ♂. Holotype: 1♀, Egypt: Sinai: Saint Catherine monastery (CAS).

Material examined: EGYPT: 1♀ 24.iv.1930 Wadi Digla (NHMW). IRAN: 4♂♂ 2♀♀ 5.vi.2010 Kerman prov., 20 km E Ghobira 1780 m. 30°10'N 56°59'E (OLL). ISRAEL: 4♀♀ 8.v.1996 Arava Valley, Iddan, 30.807N 35.298E; 1♀ 8.v.1996 50 km SE Beer Sheva, Wadi En Ayrabbim; 1♀ 5.v.1996 Aravat Valley, Hazeva (leg. M. Irvin in Malaise traps, CSE).

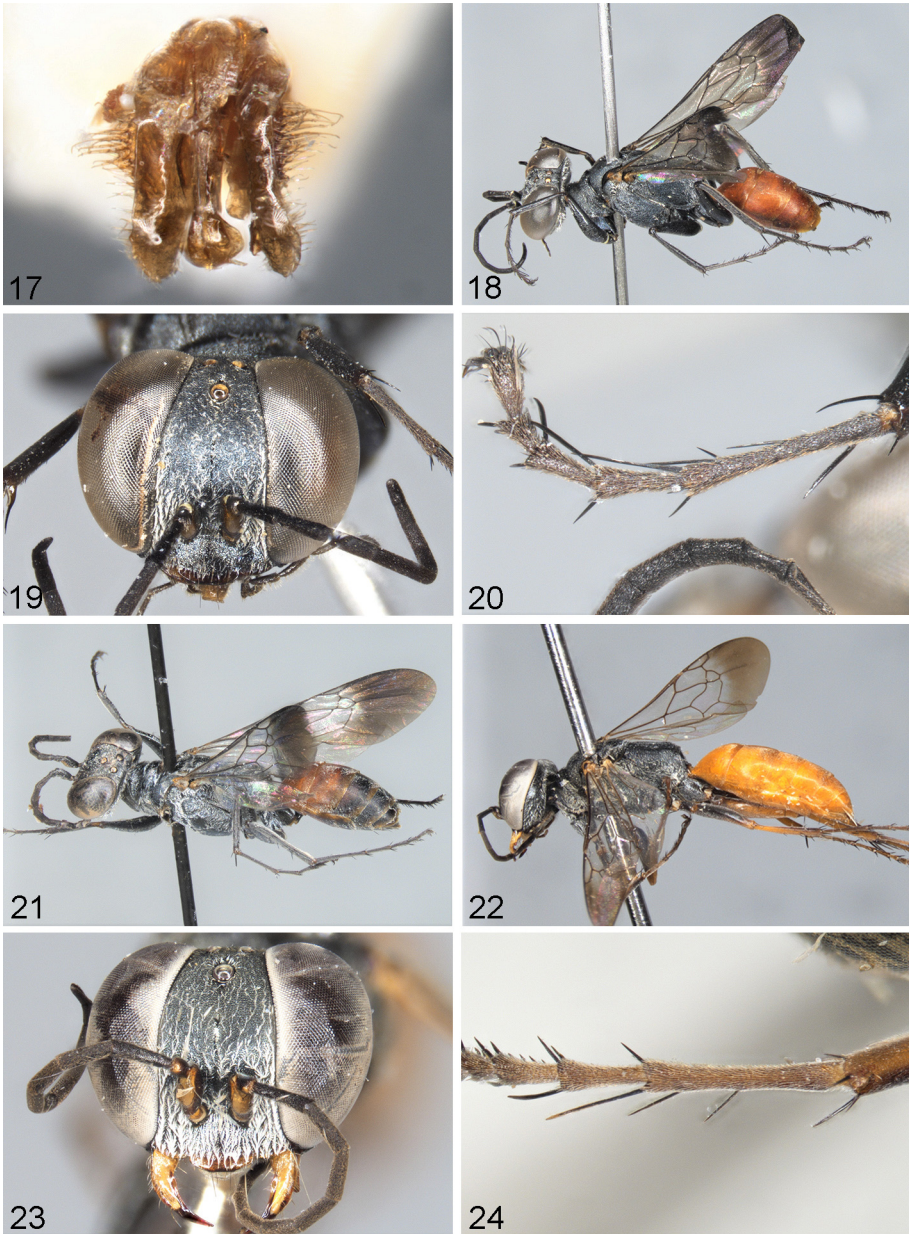
Distribution: Egypt, Israel, Iran, Turkmenistan (NEMKOV, pers. comm.).

***Miscophus fuscoales* SCHMID-EGGER nov.sp. (figs 18-21)**

Holotype: OMAN, Dhofar province: 1♀ 13.x.2021 80 km SSW Salalah, 16,857 N 53,420 E (leg. M. Halada, CSE). Paratypes: 1♀ 1♂ same data as holotype. YEMEN: 4♀♀ 1♂ Al Lahima l.i. 2001-9.iv.2001; 16.x.-31.xii.2000 (leg. Harten & Hajer, in malaise trap, RMNH).

Diagnosis: The female of *M. fuscoales* nov.sp. is unique by the combination of clearly convergent eye margins in upper face, by three basitarsal spines and by the black colour of head and mesosoma, in contrast to the all red abdomen, and the dark wings with bluish reflexions apically.

Description of female: Body length 7.8 mm. Colour: all black (mandible medially, apex of clypeus and apex of tegula with some red, AS1 partly yellow below), abdomen dark red. Face and mesosoma covered with scattered white pubescence. Wings strongly infusate, apex of forewing black with bluish reflexions. Morphology. Agree in general with the typical appearance of *M. helveticus*. Inner eye margin strongly convergent



Figs 17-24: (17) *M. pseudochrysis*, ♂ genital; (18) *M. fuscoales*, ♀ lateral; (19) *M. fuscoales*, ♀ face; (20) *M. fuscoales*, ♀ foretarsus; (21) *M. fuscoales*, ♂ lateral; (22) *M. irwini*, ♀ lateral; (23) *M. irwini*, ♀ face; (24) *M. irwini*, ♀ foretarsus.

above, OOL = 0,5x HD. Fore basitarsus with three spines, apical spines somewhat longer than second tarsal segment. Paratypes vary in body length 7.0-7.8 mm.

Description of male: Body length 6.5 mm. Agree with the female apart from the following differences: Mandible yellow apart from base and apex. Abdomen black, apart from T 1-2 and S 1-2.

Distribution: **AP:** Oman, Dhofar province. Yemen.

Etymology: The species name means "black winged" in latin language. It is a noun in apposition.

***Miscophus helveticus* KOHL, 1883, s.l.**

Miscophus helveticus KOHL, 1883: 673, ♀, Holotype or syntypes: ♀. Switzerland: Peney (MHNG). GADALLAH (2020), checklist for Arabian Peninsula. Schmid-Egger (2011, 2014), UAE.

Miscophus ceballosi DE ANDRADE, 1954: 67, ♀ ♂. Holotype: ♀, Morocco: Tinerhir (MZL), belongs to the *M. helveticus*-lineage with uncertain species state. GADALLAH (2020), checklist for Arabian Peninsula.

Material examined (only listed for Arabian Peninsula): OMAN, northern province: 1♀ 03.iv.2013 Al Bathina prov., Al Lajal, 23,50 N 57,93 E (leg. Cerny, OLL); 1♀ 24.vi.2017 Al Mudhaibi, Samad Ashan, Aswareg 22,82 N 58,15 E (AJ).

Remark: *Miscophus helveticus* s.l. consists of several species and is therefore a species complex, widespread in the Palearctic region. DE ANDRADE (1854) uses several names for it, which are partly valid and partly synonyms. The species complex requires revision. The species are difficult to recognize by morphology and the whole lineage expresses a high colour variability. The true identity of the Arabian specimens is not finally solved, and we summerized they here provisionally under "*M. helveticus* s.l. GUICHARD (1980) and others (see GADALLAH 2020) mention *M. ceballosi* from Oman and UAE. These records refers to the here mentioned *M. helveticus* s.l. However, the taxon name *M. ceballosi* is very unlikely for the Arabian specimens, because it was described from Morocco. *Miscophus helveticus* s.l. was also mentioned from the UAE by former authors (see GADALLAH (2020). The females are characterized by an all greyish abdomen, without red colour.

Distribution: *Miscophus helveticus* s.l. is widespread in the mediterranean area to Central Asia. **AP:** Oman, UAE.

***Miscophus imitans* GINER MARI, 1945**

Miscophus imitans GINER Mari, 1945: 240, ♀, ♂. Syntypes: Morocco: Saguia el Hamra area (MNCN). GADALLAH (2020), checklist for Arabian Peninsula.

Material examined (only listed for Arabian Peninsula): OMAN, Dhofar province: 2♀♀ 27.ix.2021 8 km W Taqah 17,046 N 54,331 E (leg. M. Halada; coll. CSE), SAUDI ARABIA: 1♀ 20.x.1979 Jeddah (MHNb). UAE: 1♀ 15.ii.2015 Abu Dhabi (CSE).

Distribution: Morocco, Algeria, Tunisia, Libya, Egypt, Israel. **AP:** Oman, Saudi Arabia, UAE.

Remark: Both examined females from Oman differ from females from Israel and north African by an all orange red abdomen (T4-6 black in other specimens) and by a small yellow band on AS3 below (all black). One specimens is also larger (8.3 mm) than avarage *M. imitans* from the Mediterranean area (7.0-7.5 mm).

***Miscophus irwini* SCHMID-EGGER nov.sp. (figs 22-24)**

Holotype: ISRAEL: 1♀ 8.v.1996 Arava Valley, Iddan, 30.807N 35.298E (leg. M. Irwin in malaise traps, CSE). Paratypes: ISRAEL: 7♀♀, data like Holotype; 5♀♀ 8.vi.1996 45km SE Beer Sheva, Mezaad (Wadi) Ayrabbim 30.95°N 35.15E; 1♀ 4.v.1995 Arava valley, Wadi Neqarot 30.60N 35.05E (leg. M. Irwin in malaise traps, CSE).

D i a g n o s i s: The female of *M. irwini* nov.sp. share the distinctly convergent inner eye margin with *M. fuscoales* nov.sp. and *M. dispersus*. *M. dispersus* has five forebasitarsal spines, in contrast to three in remaining species. Wings are greyish infusate without a black apex and without metallic reflexions in *M. irwini* nov.sp., and legs have some red parts, what distinguishes the species from *M. fuscoales* nov.sp.

D e s c r i p t i o n o f f e m a l e: Body length 7.5-8.0 mm. Colour: Black, red are: ACM, tegula, tibiae and tarsi, hindfemur, abdomen, praecostal plate (tegula and pr.pl. both with black center). Remaining femora and parts of tibiae partly or all black (leg colour in paratypes variable). Mandible except apex, AS1 below and pronotal lobe yellowish. Wings transparent, apex infusate. Morphology: Inner eye margin convergent, OOL = 0.5x HD, POL = 0.8-1x HD. Medial clypeal margin rounded, medially somewhat emarginated. Pilosity of lower face dense, of remaining body sparse. Fore basitarsus with 3 spines, apical spine somewhat longer than second tarsal segment.

V a r i a t i o n i n f e m a l e p a r a t y p e s: Body length 7.5-8.0 mm. Colour of legs variable.

M a l e: Unknown.

D i s t r i b u t i o n: Israel.

E t y m o l o g y: The species is named in honour to Mike Irwin from the University of Illinois in recognition of his services in research of Diptera and collecting of Hymenoptera. He collected most of the specimens from Israel, described here, with malaise traps during two field trips in 1995 and 1996.

***Miscophus luteoabdominalis* SCHMID-EGGER nov.sp. (figs 25-28)**

Holotype: OMAN, Dhofar province: 1♀ 13.x.2021, 80 km SSW Salalah 16,857 N 53,420 E (leg. M. Halada, CSE). Paratypes: OMAN, Al Wusta province: 1♀ 5.iv.2019 Wadi Ronub 18.802 N 56.340 E (leg. Said Al Rashdi in yellow pan traps, AJ); 4♂♂ 2♀♀, same data as holotype (CSE). ISRAEL: 1♀ 09.iv.1995 Arava Valley, Ketura, 30,96N 35,06E; 1♀ 10.iv.1995, Arava Valley, Moshav Hazeva 30.77 N 35.27 E; 2♀♀ 08.v.1996 45 km SE Beer Sheva, Mezaad Aqrabbim 30.930 N 35.149 E (leg. M. Irwin in Malaise traps, CSE).

D i a g n o s i s: *Miscophus luteoabdominalis* nov.sp. is characterised by transparent wings without infumate apex (*M. pretiosus* lineage sensu DE ANDRADE, 1954). It keys out with *M. pardoii* DE ANDRADE, 1854, in the key of DE ANDRADE (1954), described from Spanish Sahara in southern Morocco. Both species are unique among remaining *Miscophus* species by a predominantly yellow abdomen, yellow and reddish legs and by four forebasitarsal spines. *M. pardoii* is characterized by a distinctly shiny abdomen, whereas abdomen is dull and microsculptured in *M. luteoabdominalis*.

D e s c r i p t i o n f e m a l e H o l o t y p e: Body length 9.0 mm. Colour: Black with the following parts yellow. Mandible apart basally and apically, AS –6 below, pronotal lobe, tegula and wing base, wing venation, legs (coxa black with apex yellow), abdomen. Femora basally and above reddish with some black, tibia with some reddish parts. T1 basally, remaining terga and sterna apically with some darker yellow. Face and

mesosoma covered with dense short white pubescence, hiding integument. Wings transparent, apex milky white. Morphology: Fore basitarsus with three spines near apex and a shorter spine near tarsal base. OOL = 1.2x HD. Apical spine somewhat longer than second tarsal segment.

Variation in female paratypes: Body length 8.5-9.0 mm. T 2-5 are partly blackish in two females from Israel. Here, apex of wing is somewhat greyish. The other female from Israel agree with the specimens from Oman.

Description of male: Body length 6.0-6.5 mm. Agree in colour and general aspects with the female. AS1-3 yellow below, forebasitarsus with one short spine apically.

Distribution: **AP**. Oman, Israel.

Remark: GADALLAH (2020) mentions a record of *M. pardoi* DE ANDRADE, 1954, from Kuwait. This record probably refer to *M. luteoabdominalis*, because the occurrence of *M. pardoi* described from southern Morocco near the Atlantic coast is very unlikely in Arabian Peninsula. This specimen has to be re-examined.

Etyymology: The species name means "yellow abdomen" in latin language. It is a noun in apposition.

***Miscophus mochii* ARNOLD, 1940**

Miscophus mochii ARNOLD, 1940: 130, ♀, Holotype: 1 ♀, Egypt: Wadi Digla near Cairo (SAM).

Material examined: EGYPT: 1 ♀ 15.iv.1934, Ben Yusef (SAM, no ID labels, but probably a paratype and so designed. The specimen lacks the head); 1 ♀ 6.iv.1934 Wadi Digla (NHMW). ISRAEL: appr. 30 ♀♀: 8.v.1996 40km SE Beer Sheva, Mezaad Aqurabim; 9.v.1996 45 km N Elat, Qetura, 7.iv.1995 Arava Valley, Hazeva 30.78, 35.25E; 1 ♀ 8.v.1996 Arava Valley, Iddan, 30.807N 35.298E; Sede Boker 30.83N, 34.80E (leg. M. Irvin in Malaise traps, CSE); 1 ♀ 4.xii.1930 Jericho (ZMHU). MOROCCO: 1 ♀ 1.v.1947 Tafraout, AntiAtlas (femora red with black marks on innerside and above); ♀ 1.v.1947 Tafraout, Anti-Atlas (MZL); 1 ♀ 11.v.2003 Taroudant (OLL). YEMEN: 3 ♀♀ 17.xii.1974 Saana (leg. v.Harten, RMNH) (with complete pilosity on head and thorax)

Distribution: Morocco, Egypt, Israel, **AP**: Yemen. New to the Arabian Peninsula.

***Miscophus papyrus* ANDRADE, 1954**

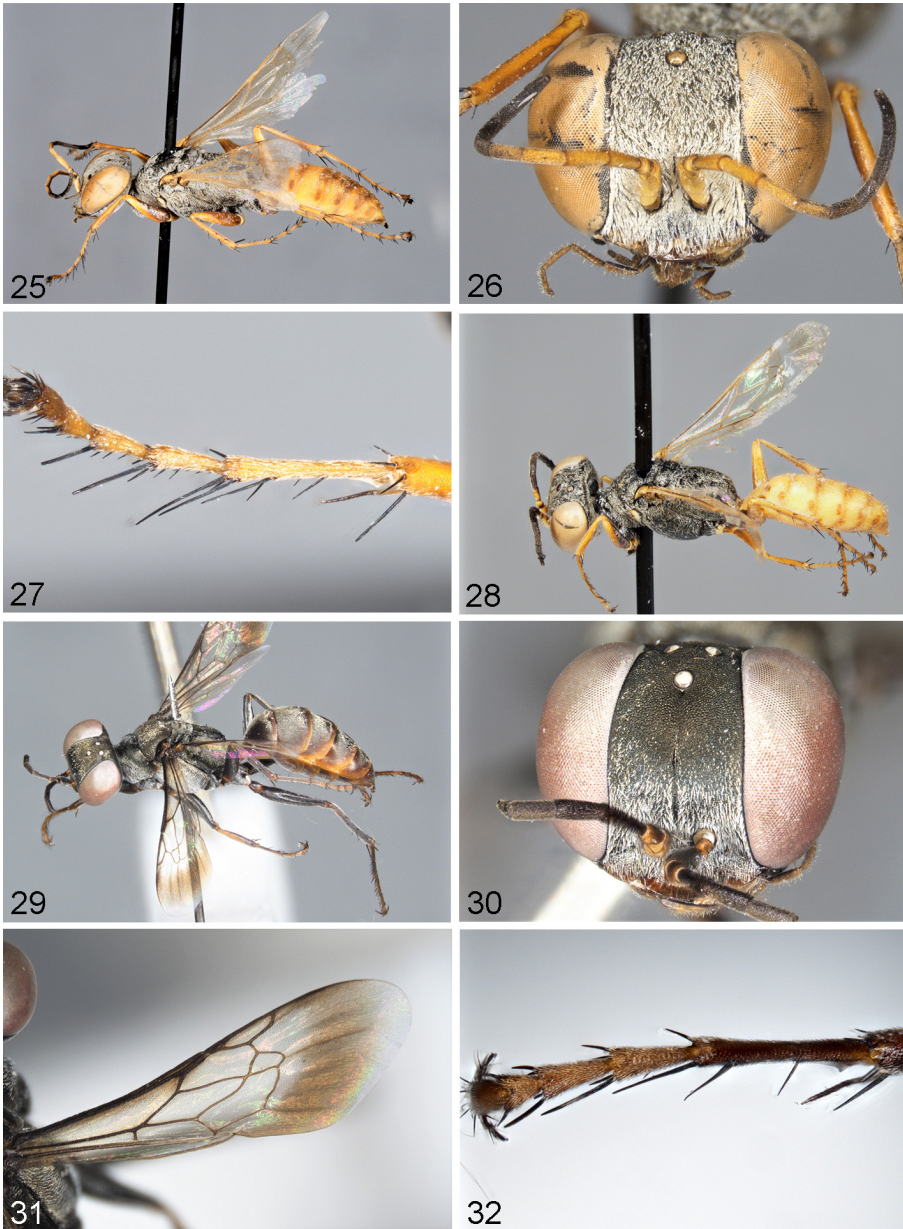
Miscophus papyrus ANDRADE, 1954: 42, Holotype: ♀, Egypt: Cairo (ZMHU). GADALLAH (2020), checklist for Arabian Peninsula.

Material examined (only listed for Arabian Peninsula): OMAN, northern provinces: 1 ♀ 27.iii.1995 250 km S Nizwa, 100 km SO Ghaba Hotel (CSE). SAUDIA ARABIA: 1 ♀ 2.viii.2002 S. Jeddah (leg. et coll. Gadallah).

Distribution: Algeria, Tunisia, Egypt, Libya. **AP**. Oman, Saudi Arabia, UAE.

***Miscophus sericeus* RADOSZKOWSKI, 1876**

Miscophus sericeus RADOSZKOWSKI, 1876: 134, sex not stated. Holotype or syntypes: Egypt: no specific locality (Kraków). GADALLAH (2020), checklist for Arabian Peninsula; SCHMID-EGGER (2011, 2014), UAE.



Figs 25-32: (25) *M. luteoabdominalis*, ♀ lateral; (26) *M. luteoabdominalis*, ♀ face; (27) *M. luteoabdominalis*, ♀ foretarsus; (28) *M. luteoabdominalis*, ♂ lateral; (29) *M. yemenensis*, ♀ lateral; (30) *M. yemenensis*, ♀ face; (31) *M. yemenensis*, ♀ forewing; (32) *M. yemenensis*, ♀ foretarsus.

Material examined: (only listed for Arabian Peninsula, Israel and Jordan): OMAN, Muscat: 1♂ 1♀ 19.iii.2019 Boshier Sand 23.557 N 58.405 E (AJ); ISRAEL: 1♀ 6.v.1996 Arava Valley, Ketura, 30,96N 35,06E (leg. M. Irvin in Malaise traps, CSE). JORDAN: 1♀ 5.v.1996 Vadi Rum (CSE).

Distribution: Mauritania, Morocco, Egypt, Israel, Jordan, Uzbekistan, Afghanistan.

AP: UAE, Oman.

***Miscophus yemenensis* SCHMID-EGGER nov.sp. (figs 29-32)**

Holotype: Yemen: 1♀ Al Lahima 16.x.–31.xii.2000 (leg. v.Harten & Hajer, in malaise traps, RMNH); **Paratype:** Yemen: 1♀ Al Lahima, 1.i.–9.iv.2001 (leg. v.Harten & Hajer, in malaise traps, RMNH)

Diagnosis: The female is characterised by three forebasitarsal spines and a transparent zone on forewing apically, behind the dark apical band. It shares the transparent zone with *M. funebris* HONORÉ, 1944, from Egypt, Sudan and other subsaharan origins. The zone is extended until the lower border of wing in *M. yemenensis* nov.sp., whereas it is restricted to the upper half of the wing in *M. funebris*. Also, the apical dark band in forewing touches the venation zone in *M. funebris*; and begins distinctly behind of it in *M. yemenensis* nov.sp. Terga are black dorsally, with large red zones laterally in *M. yemenensis* nov.sp.

Description of female: 6.5 mm. **Colour:** Black with the following parts yellowish-red: sterna, terga laterally, with dark red apical tergal margin, femora apically, tibiae below, tarsi partly. Mandible basally and AS1 below yellow. Wings greyish transparent, with dark apical band outside of venation zone, apex transparent. Face with spars pilosity only in lower third. Body covered with short, silver pilosity, pilosity of terga comparatively long. **Morphology:** OOL = HD, POL = 1.2 HD. Forebasitarus with three spines, apical spine as long as second basitarsal segment.

Male: Unknown.

Distribution: AP: Yemen.

Etymology: The species is named after its origin, Yemen in southern Arabian Peninsula.

***Miscophus mimeticus* species group**

***Miscophus affinis* PULAWSKI, 1964**

Miscophus affinis PULAWSKI, 1964: 116, ♀, ♂. **Holotype:** 1♀, Egypt: Abu Rawash near Cairo (CAS.). GADALLAH (2020), checklist for Arabian Peninsula.

Material examined: No new records from Arabia were examined:

Distribution: Morocco, Egypt, Israel, Turkmenistan. **AP:** UAE (SCHMID-EGGER 2011, 2014). GUICHARD (1980) mention the species also for Oman, but his determination is questionable.

***Miscophus mimeticus* HONORÉ, 1944**

Miscophus mimeticus HONORÉ, 1944: 133, ♀. Syntypes: Egypt: Dahshur and Kafr Faruk (USNM). GADALLAH (2020), checklist for Arabian Peninsula.

Material examined (only listed for Arabian Peninsula): OMAN, northern provinces: 1♀, 18.xi.2018 Batinah south, Rustaq, Jemma 23,54N 57,56E (AJ), 1♀ 5.iv.2019 Wadi Ronub 18.802N 56.340E (leg. Said Al Rashdi in yellow pan traps, AJ); YEMEN: 1♀ 8.ix.1998 Sana'a, in malaise trap (RMNH); 1♀ 3.xi.2005 Sana'a (CSE).

Distribution: Algeria, Tunisia, Egypt, Israel, Jordan, Mongolia. **AP**: Oman, UAE, Yemen.

Miscophus nevesi species group

Miscophus aenigma HONORÉ, 1944

Miscophus aenigma HONORÉ, 1944: 136. Holotype: ♀, Egypt: Hawamdieh (USNM). GADALLAH (2020), checklist for Arabian Peninsula.

Material examined: No new records from Arabia were examined.

Distribution: Tunisia, Egypt, Israel, Turkey. **AP**: UAE (SCHMID-EGGER, 2011, 2014).

Species not occurring in Arabian Peninsula

Miscophus pardoi DE ANDRADE, 1954

Remark: *Miscophus pardoi* belongs to the *M. helveticus* species group. GADALLAH et al. (2020) mention records of this species from Kuwait. However, *M. pardoi* was described from the southern Atlantic coast in Morocco, and the occurrence of this species in Arabian Peninsula is very unlikely. The record most probably refers to *M. luteoabdominalis* nov.sp. The species should therefore be removed from the checklist of Arabian species or has to be re-checked.

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Zusammenfassung

Die Gattung *Miscophus* JURINE, 1807 wird aus dem südlichen Israel und auf der Arabischen Halbinsel revidiert. Folgende Arten werden beschrieben: *Miscophus pseudolusitanicus* SCHMID-EGGER nov.sp. aus dem Jemen; *Miscophus alhashmii* SCHMID-EGGER & AL-JAHDHAMI, nov.sp. aus dem Oman und Jordanien, *Miscophus qaboosi* SCHMID-EGGER & AL-JAHDHAMI, nov.sp. aus Oman und Israel, *Miscophus fuscoales* SCHMID-EGGER nov.sp. aus Oman und Jemen, *Miscophus irwini* SCHMID-EGGER nov.sp. aus Israel, *Miscophus luteoabdominalis* SCHMID-EGGER nov.sp. aus Oman und Israel und *Miscophus yemenensis* SCHMID-EGGER nov.sp.. Ein Schlüssel für Arten der arabischen Halbinsel und Südisraels wurde erstellt.

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