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## **New records of *Bembecinus* COSTA 1859 (Hymenoptera, Crabronidae) from the Palaearctic region with description of a new species from Yemen**

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**A b s t r a c t :** New records of *Bembecinus* species from the Palaearctic region are presented. Female of *Bembecinus yemenensis* new species is described from Yemen. New recognition characters for females of *B. meridionalis/cyprius* and *B. rhodius/anatolicus* are given. A new color form of *bernardi* from Tunisia is described. The hitherto unknown female of *B. schlaeflei* from Morocco is described.

**K e y w o r d s :** *Bembecinus* Crabronidae, Sphecids, Palaearctic region, new species, Yemen.

### **Introduction**

The genus *Bembecinus* was recently revised by SCHMID-EGGER (2004). 51 species are recognized from the western and central Palaearctic region, a few of them in one sex only. In the meantime I could examine a large number of additional specimens from various collections (see material and methods). They resulted in new information about distribution and taxonomy of species. I found an undescribed species from Yemen. Also, the unknown female of *Bembecinus schlaeflei* SCHMID-EGGER could be described. Distinction characters of the *B. cyprius/meridionalis* female group and of *B. rhodius* DE BEAUMONT could be re-examined.

### **Material and Methods**

Material of the following collections was examined. The here given abbreviations are used in the text. Specimens are deposited in the mentioned collections, a few double specimens also in the collection of the author (SE):

Jacobs ..... coll. Achim Jacobs, Ranzin, Germany  
Liebig ..... coll. W.-H. Liebig, Bad Muskau/Germany  
Ljubomirov..... coll. Toshko Ljubomirov, Sofia/Bulgaria  
OLL ..... coll. Oberösterreichisches Landesmuseum/Biologiezentrum Linz/Austria (F. Gusenleitner)  
Schlaefle ..... coll. Wolfgang Schlaefle, Kaiseraugst, Switzerland  
Teheran ..... coll. Teheran/Iran (Dr. E. Ebrahimi)

The species are identified with the key of SCHMID-EGGER (2004), the morphological terminology employed here follows this paper. Species are listed in alphabetic order within their species group. Geographic distribution is mentioned in each species and also refers to SCHMID-EGGER (2004). New records on country level are mentioned. Collecting dates are given as follows: day, month, year (2.7.2008).

## Checklist of species

### *Bembecinus loriculatus* species group

#### *Bembecinus gracilicornis* HANDLIRSCH

**Distribution:** Iran and Central Asia. First record for the fauna of Turkey. The finding in western Turkey is surprisingly, because it is far outside of the known distribution area of the species.

**Remark:** The female from Khorasan is much darker than previously examined specimens: labrum and clypeus reddish, remaining face black except two reddish spots between antennal socket and inner eye margin, mesonotum medially and lower part of mesopleuron black. The remaining color pattern is similar to specimens from northern Iran. The females from Turkey have a reddish face.

**Records:** Iran: female, Khorasan (Teheran). Turkey: 9 ♂ 3 ♀ 2.7.2006 Mansisa, 15 km SE Salihi 38°26'N 28°19'E (OLL).

#### *Bembecinus discolor* HANDLIRSCH

**Distribution:** Morocco, Algeria. First record for the fauna of Tunisia.

**Records:** Tunisia: 2 ♂ 7 ♀ 23.6.2004 Tamerza (Schlaefle).

### *Bembecinus tridens* species group

#### *Bembecinus asiaticus asiaticus* GUSSAKOWSKI

**Distribution:** Central Asia.

**Records:** Kyrgyzstan: female, 16.7.1999 Naryn-Tal 41.23 N 75.51 E (with all black clypeus, coll. Jacobs). - Uzbekistan: 2 ♂ 22.7.1999 Hissar-Mt. Yakkabag 38.56 N 66.53 E (Jacobs).

#### *Bembecinus asiaticus iranicus* SCHMID-EGGER

**Distribution:** Turkey to Pakistan and Arabian Peninsula.

**Records:** Iran: female, Khorasan (Teheran).

#### *Bembecinus barbarus* DE BEAUMONT

**Distribution:** Algeria, Morocco.

**Records:** Morocco: ♀ ♂ Rissani, 15.6.2007 (Schlaefle).

***Bembecinus bytinskii* DE BEAUMONT**

**Distribution:** Arabian Peninsula to Southern Israel.

**Records:** Oman: 2♀ 26.5.2004 Muscat; ♀ 13.5.2004 Muslimat; ♂ ♀ 14.5.2004 Solrai; ♂ 17.5.2004 Nizwa (Schlaefle). - Saudi Arabia: 4♀ ♀ 2♂♂ 3.4.1960 Riad (Schlaefle). - Yemen: ♂ W. Jabal Bura, NNE Al Hudaydah 14°52'N 43°24'E (OLL).

***Bembecinus hungaricus* FRIVALDZKY**

**Distribution:** From Southern Europe to eastern Asia.

**Records:** Kazakhstan: ♂ 21.8.1978 (label in russian letters) [det as *sibiricus* by Kazenas] (CAS). Mongolia: about 20 specimens 2.8.2005 75 km W Ulaanbaatar; about 30 specimens, reservation on 47°24'N 103°39'E (OLL) - Hungaria: ♂ ♀ 2005 Örkény (OLL).

***Bembecinus tridens* FABRICIUS**

**Distribution:** Widespread in the Palaearctic region.

**Records:** Many new records from Turkey, Morocco and southern Europe in OLL, Schlaefle and other collections.

***Bembecinus yemenensis* SCHMID-EGGER, new species**

**Distribution:** Yemen.

**Diagnosis:** The female of *B. yemenensis* is a member of the *B. tridens* species group sensu SCHMID-EGGER (2004). It is unique by the following color pattern: terga I, II and IV with pale yellow band, tergum III and VI black, tergum V with medial spot, clypeus yellow with large brownish medial spot. Propodeal emargination deeply U-shaped. In the similar *B. proximus* HANDLIRSCH, also recorded from Yemen, tergal band I is largely interrupted medially, propodeal emargination lacks. Another similar species with a deep propodeal emargination is *B. corpulentus* ARNOLD from southern Africa. Here, tergal band I is also largely interrupted. *Bembecinus bytinskii* DE BEAUMONT from the Arabian peninsula differs by having a full band on tergum III and a black tergum IV.

**Identification:** With the key of SCHMID-EGGER (2004), the female keys out in Nr. 14a, *B. proximus* HANDLIRSCH, in the female key. It can be identified by the following addition (replace *B. proximus* with 14a.)

- 14a Tergal band I widely interrupted medially. No propodeal emargination. ....  
 ..... *B. proximus* HANDLIRSCH  
 - Tergal band I complete. Propodeal emargination deep and U-shaped. ....  
 ..... *B. yemenensis* SCHMID-EGGER nov.sp.

**Female:** 6-6.5 mm. Color: pale yellow are: Labrum, clypeus, space above clypeus, narrow band on lower half of inner eye margin, scape and flagellum below; pronotal apex, band on pronotal base including pronotal lobe, small spot on outer-apical corner of mesonotum, small triangular spot on scutellum laterally, narrow band on metanotum, spot on outer corner of propodeum, narrow bands on terga I, II, IV, band on tergum IV not reaching lateral margin, medial spot on tergum V, small triangular spot on apical outer corner of sternum II. Forefemora below with large spot, midfemora below with

small apical spot, upperside of fore- and midtibia all yellow, hindtibia with spot on 2/3 of upper basal surface, foretarsi yellow except outer side of basitarsus. Last tarsal segments with some red or yellow. Clypeus with large medial spot, which differs in size and covers between 20-60 % of clypeal surface. Size of black clypeal spot and of yellow spot above clypeus is variable.

**Morphology:** Clypeus 0,6× as long as minimal distance between eyes. Flagellum I appr. 2× as long as apical width. Forebasitarsal spines as long as basitarsal width. Propodeal emargination deeply V/U-shaped, emargination larger than midocellus. Body covered with fine, silver and appressed pubescence, frons with some long erect pale setae.

**Male:** unknown.

**Records:** Holotype and 2 paratypes: Yemen-SW: 3 ♀♀, 24.10.2005 20 km S Taizz 1200 m, N 13°30' E 43°57' leg. Halada (OLL, 1 paratype in coll. SE).

### ***Bembecinus peregrinus* species group**

#### ***Bembecinus adeni* SCHMID-EGGER**

**Distribution:** Yemen, Oman, first record for the fauna of Syria.

**Remark:** The examined female is similar to the female from Oman, mentioned by SCHMID-EGGER (2004). There is some doubt about the true identity of the Oman female, and it was not described as a paratype in the description of *B. adeni*, because its relationship to the type males of *B. adeni* from Yemen is not finally clear.

By color pattern, the *B. adeni* females resembles the female of *B. bernardi* DE BEAUMONT from Tunisia, described below. Form of clypeus is different between both taxa. It is markedly bulged in lower third in *B. adeni* female, whereas it is flat in *B. bernardi*.

**Records:** Syria: ♀ 11.6.2006 Dayr az Zawr, Palmira (Schlaefle).

#### ***Bembecinus anatolicus* DE BEAUMONT**

**Distribution:** Turkey, first record for the fauna of Greece.

**Records:** Greece: 2 ♂♂ 15.6.1997 Samos, Larzarus/Katvounis 700 m NN (SE).

#### ***Bembecinus bernardi* DE BEAUMONT**

**Distribution:** Algeria, Mauritania, first record for the fauna of Tunisia.

**Discussion:** The here examined specimens from Tunisia agree with typical *B. bernardi* by morphology, but differ markedly in color pattern. *Bembecinus bernardi* was described from Central Sahara (Tassili des Aijer) and is also recorded from Mauritania (SCHMID-EGGER 2004). The Sahara specimens are darker colored than specimens from Tunisia, females are not touched by red as in the Tunisian female. Nevertheless I will treat the specimens from Tunisia as conspecific with *B. bernardi* s.str., because it does not seem useful to describe them as new because of their different color pattern only. Color is highly variable, and differs often geographically in *Bembecinus*.

The males from Tunisia are easily to recognize by an all yellow thorax except median part of mesonotum. Remaining species from Northern Africa have a darker colored thorax.

In Central Sahara occur two species, *B. monodi* BERLAND and *B. kotschy* HANDLIRSCH, with a similar thorax color. They also share the form of hindfemora (apically rectangular, with single spine) and the simple sterna with *B. bernardi*. Both are somewhat larger than *B. bernardi*, males can be distinguished by a prolonged tergum VII (short in *B. bernardi*). *Bembecinus monodi* and *B. kotschy* are not treated in the revision of SCHMID-EGGER (2004).

The female of *B. bernardi* from Tunisia can be recognized by the reddish base of terga I and II, which is black in remaining female taxa from Northern Africa. It is similar with the female of *B. adeni* SCHMID-EGGER from Syria and Oman and can be distinguished by form of clypeus (see remarks above).

DE BEAUMONT (1954) mentions a *B. bernardi* female from Biskra/Algeria, which is somewhat larger and more yellow colored than type specimens. It was not examined and belongs perhaps also to the here described form of *B. bernardi*.

**Description of male from Tunisia:** 10-11 mm. Color: Markedly yellow are: Face, also above antennal socket, lateral band along inner eye margin, reaching a line passing midocellus, above pointed. Antenna above darkened. Thorax including propodeum all yellow, mesonotum medially in greater part black. Tergum I yellow except basally, terga II-VI with large bands, medially double emarginated. Sterna I and II all yellow, remaining sterna with apical bands. Legs all yellow, tarsi somewhat reddish-yellowish: Morphology similar to *B. bernardi* as described in SCHMID-EGGER (2004), especially in form of antennal apex, hindfemora and tergum VII.

**Description of female from Tunisia:** 11 mm. Color: Markedly yellow are: Face to antennal socket, band on inner eye margin (a medial spot below antennal socket is black), thorax including propodeum except greater part of mesonotum (mesonotum laterally with large yellow bands), large apical bands on terga I and II; narrow bands on terga II-V. Base of terga I and II reddish, touching yellow bands. Sterna reddish and yellowish. Hindfemora reddish.

**Records:** Tunisia, 5 ♂ ♂ ♀ 26.6.2004 Tamesrest/W Matmata (Schlaefle).

### ***Bembecinus carpetanus* MERCET**

**Distribution:** Spain and Portugal.

**Records:** Spain: 3 ♂ ♂ 12.5.2003 Murcia, 25 km SW Cartagena; ♂ 7.5.2003 Andalucia, Sierra Nevada, near Alboloduy (OLL).

### ***Bembecinus cyprius* DE BEAUMONT**

**Distribution:** Eastern Mediterranean area from Greece to Israel.

**Remarks:** The female recognition of *B. cyprius/meridionalis* is still difficult. In the meantime I could examine several specimens of both species from Eastern Greece and Western Turkey. The species identification was confirmed by the finding of unambiguous males together with females from the same location. The females keys out as *B. meridionalis* (SCHMID-EGGER 2004, key nr. 54./56, specimens with space above clypeus yellow.). New distinction characters between *B. meridionalis* and *B. cyprius* are listed in table 1.

**Table 1.** Distinction characters for *Bembecinus meridionalis* and *B. cyprius* females from western Turkey:

<i>B. meridionalis</i> female	<i>B. cyprius</i> female
Scape (seen in frontal view) predominantly yellow, with small brownish part at innerside.	Scape in greater part brownish.
Apex of sternum VI with reddish setae	Apex of sternum VI with brownish setae
Apical innerside of tibia III black.	Apical innerside of tibia III reddish.
Tergum VI black	Tergum VI in some specimens with small yellow spot
Tergal bands II-IV medially only slightly enlarged.	Tergal bands II-IV medially with large, rectangular enlargement
Body size in average larger than 10 mm.	Body size in average 9-10 mm

A female of *B. cyprius* from Bodrum agree with the below described form, but has an predominantly yellow scape and is somewhat larger (11 mm) than females from Isparta and Burdur. Tergum VI has a large yellow spot. *Bembecinus meridionalis* females from southern Turkey and Israel have an all yellow hindtibia and differ in color from western Turkish specimens (SCHMID-EGGER 2004). It is not sure how to distinguish these females from *B. cyprius* in southern Turkey.

**Records:** Greece: 7♂♂ 2♀♀ Lesbos, various locations, 2005 (Aegean University). - Turkey: ♀ 14.7.2001 Bodrum, Salmakis (SE) - ♂ ♀ 9.7.2006 8 km NE Isparta; ♀ 6.7.2006 Burdur 5 km NE Yesilova (OLL) - ♀ ♀ 16.7.2008 NE Isparta, University campus (Ljubomirov).

### ***Bembecinus decoratus* GUICHARD**

**Distribution:** Oman, United Arab Emirates.

**Records:** Oman: ♀ 17.5.2004 Nizwa (Schlaefle).

### ***Bembecinus gynandromorphus* HANDLIRSCH**

**Distribution:** Turkey, Syria, Israel and Jordan.

**Records:** Jordan: ♂ 19.4.2002 Irbid region, Saham (OLL) - Syria 8♀♀ 8.6.2006 Ebla (Schlaefle) - Turkey: 2♀♀ 9.7.2006 8 km NE Isparta; ♀ 6.7.2006 Burdur 5 km NE Yesilova (OLL).

### ***Bembecinus meridionalis* COSTA**

**Distribution:** Eastern Mediterranean area from Italy and Turkey to Israel.

**Records:** Syria: Al Suwayda ♂ 4.6.2006 (Schlaefle) - Turkey: ♂ 3♀♀ 9.7.2006 8 km NE Isparta; 10♀♀ 6.7.2006 Burdur 5 km NE Yesilova (OLL).

### ***Bembecinus podager* DE BEAUMONT**

**Distribution:** Morocco.

**Records** : Morocco: ♂ ♀ 30.5.2007 Volubilis 2.5 m NW Moulay Idris (leg. Prosi, in coll. SE).

***Bembecinus peregrinus* SMITH**

**Distribution** : Eastern Mediterranean area from Albania and Bulgaria to eastern Turkey and Armenia, southwards to Israel and Jordan.

**Records** : Armenia: male, Ashtarak (OLL). - Greece: ♂ 40 km NE Larissa (OLL) - 26 ♀ ♀ Lesbos, various locations, 2005 (Aegean University 7 ♀ ♀, 3 ♂ ♂ Samos 2000, various locations (SE) - Jordan: ♂ Aljun env. 32°19'N 35°43'E (OLL) - Turkey: ♂ ♀ 20 km NEE Kutayha; 3 ♀ ♀ Mansissa, 15 km SE Salihi 38°26'N 28°19'E; ♀ ♀ ♂ ♂ 9.7.2006 8 km NE Isparta; ♀ ♀ ♂ ♂ 6.7.2006 Burdur 5 km NE Yesilova (OLL) - ♀ 11.6.2007 Aydin, Adnan (Scheuchl) - 8 ♂ ♂ Karakaya 41°46'N 36°30'E (Liebig).

***Bembecinus revindicatus* SCHULZ**

**Distribution** : Syria, Israel and Jordan.

**Records** : Jordan: ♂ 25.4.2002 Irbid region, Saham (OLL).

***Bembecinus rhodius* DE BEAUMONT**

**Distribution** : Greece, Western Turkey.

**Remark** : The female of *B. rhodius* from Kreta is different from specimens from other origins. It is markedly lemon yellow, tergum VI has a large yellow spot, and body size is 12 mm. Females from eastern Greece Islands and Turkey differ in body size (9-11 mm) and in color (pale yellow, color less extended, tergum II black). With the key of Schmid-Egger (2004), they key out with *B. anatolicus* DE BEAUMONT (key nr. 41.). In direct comparison, clypeus of *B. rhodius* is somewhat longer than in *B. anatolicus*, but it is not sure whether this character is confirmed. I could only examine one 'true' female from Karpathos. Remaining females may be confused with *B. anatolicus*, and distribution pattern of both species overlap in Western Turkey and the Aegean Islands. So for the moment, distinction of *B. anatolicus* and *B. rhodius* female Turkey is not possible.

**Records** : Greece: ♂ 2 ♀ ♀ 8.6.2004 Karpathos, Amopi (OLL) - Turkey: 3 ♂ ♂ Mansissa, 15 km SE Salihi 38°26'N 28°19'E (OLL) - 4 ♂ ♂ 16.7.2008 NE Isparta, University campus.; ♀ 19.7.2008 Isparta, Yukari Gökdere Vill. (Ljubomirov).

***Bembecinus schlaeflei* SCHMID-EGGER**

**Distribution** : Morocco.

**Remark** : The species was known by a single male from Morocco only (SCHMID-EGGER 2004). The new examined male agrees in all details with the type specimen. The female was unknown and is described below.

**Description and diagnosis of female** : In the key of SCHMID-EGGER (2004), the female of *B. schlaeflei* keys out at *B. decoratus* GUICHARD (Nr. 37a). It agrees with *B. decoratus* in color pattern and morphology and can be distinguished as follows: Basal third of clypeus and space above clypeus black, narrow yellow band on inner eye margin (clypeus black with some yellow in baso-medial part in *B. decoratus*), clypeus in profile flat (somewhat bulged medially in basal third in *B. decoratus*). *Bembecinus decoratus* is known from the Arabian Peninsula. Female of *B. acanthomerus*

MORICE from Morocco has an all yellow clypeus and large yellow spots on propodeum laterally (propodeum all black in *B. schlaeflei*).

R e c o r d s : Morocco: ♂ and ♀ 11.6.2007 Tizi n Tinifit 1500 m NN (Schlaefle).

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### Zusammenfassung

Neue Funde von Grabwespen der Gattung *Bembecinus* aus dem Mittelmeerraum sowie West- und Zentralasien werden vorgestellt. *Bembecinus yemenensis* wird im weiblichen Geschlecht neu aus dem Yemen beschrieben. Weiterhin werden neue Unterscheidungsmerkmale für die Weibchen der Artenpaare *B. meridionalis/cyprius* und *B. rhodius/anatolicus* diskutiert. Aus Tunesien wird eine neue Farbform von *bernadi* beschrieben. Außerdem wird das bisher unbekannten Weibchen von *B. schlaeflei* aus Marokko beschrieben.

### Literature

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