

## Subspecies distribution of the tiger beetle *Cylindera (Eugrapha) sublacerata* in northwestern Iran and new locality records of *C. s. levithoracica* from eastern Turkey (Coleoptera: Cicindelidae)

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**Abstract.** A population of *Cylindera (Eugrapha) sublacerata* from extreme northwestern Iran (S of Hoy, Azarbayjan-e Gharbi prov.) belongs to *C. s. levithoracica*, whereas a sample from a more southeastern locality (E of Ebrahimabad [Miyane], Azarbayjan-e Sharqi prov.) seems to represent *C. s. sublacerata* x *levithoracica* intergrades. Additionally, new Turkish localities of *C. s. levithoracica* are presented from the Aras valley between Köprüköy (Erzurum prov.) and Kağızman (Kars prov.). The Köprüköy site extends the species' known western distribution limit some 150 km to the west. Finally, the habitats at these new Turkish localities are described.

**Kurzfassung.** Unterartenverbreitung des Sandlaufkäfers *Cylindera (Eugrapha) sublacerata* in Norwest-Iran und neue Fundortmeldungen von *C. s. levithoracica* aus der Ost-Türkei (Coleoptera: Cicindelidae). Eine Population von *Cylindera (Eugrapha) sublacerata* aus dem äußersten nordwestlichen Iran (südl. Hoy, Prov. Azarbayjan-e Gharbi) wird *C. s. levithoracica* zugeordnet, während eine Stichprobe von einem weiter südöstlich gelegenen Fundort (östl. Ebrahimabad [Miyane], Prov. Azarbayjan-e Sharqi) *C. s. sublacerata* x *levithoracica*-Intergrades zu repräsentieren scheint. Zusätzlich werden neue türkische Fundorte von *C. s. levithoracica* aus dem Aras-Tal zwischen Köprüköy (Prov. Erzurum) und Kağızman (Prov. Kars) vorgestellt. Der Köprüköy-Fundort erweitert die bekannte westliche Verbreitungsgrenze der Art etwa 150 km nach Westen. Schließlich werden die Habitate an den neuen türkischen Fundstellen beschrieben.

**Key words.** Coleoptera, Cicindelidae, *Cylindera (Eugrapha) sublacerata sublacerata*, *Cylindera (Eugrapha) sublacerata levithoracica*, distribution, habitat, Turkey, Iran.

### Introduction

In a recent paper, FRANZEN (1998) resurrected the Caucasian-Transcaucasian *Cylindera (Eugrapha) sublacerata levithoracica* (HORN, 1891) and presented data on its distribution in eastern Turkey. The author distinguished *C. s. sublacerata* (SOLSKY, 1874) and *C. s. levithoracica* using the following characters: *C. s. sublacerata*: ratio pronotum width/length less than 1.14; apical part of middle band mostly triangular or longitudinal; elytrae under magnification shiny (Central Asia; east of the Caspian Sea). *C. s. levithoracica*: ratio pronotum width/length more than 1.14; apical part of middle band mostly rounded; elytrae under magnification less shiny (Caucasia, Transcaucasia, west of the Caspian Sea). However, distribution limits of this two subspecies in northwestern Iran remained unclear due to the lack of material from that area.

Field work in easternmost Turkey and the examination of large series collected by E. & P. Hajdaj (Jezov) in northwestern Iran revealed new material of this comparably rare species and we are now able to present new data on its subspecies distribution.

We examined 31 specimens of *C. sublacerata* from northwestern Iran from two localities: Sefid-rud 5 km E Ebrahimabad (= Miyane; Azarbayjan-e Sharqi prov.) and 10 km S Hoy (Azarbayjan-e Gharbi prov.), as well as new material from two localities in the Aras valley of eastern Turkey (17 specimens) and compared them with series from Central Asia (see Fig. 1 and material paragraph for comprehensive collection data). Characters considered are the ratio pronotum width/length (PW/PL) and the shape of the apical part of the middle band (see FRANZEN 1998).

Abbreviations used are: CFO = coll. Franzen, Oberneuching; CGR = coll. Gebert, Schleife-Rohne; CHJ = coll. Hajdaj, Jezov; CLT = coll. Lorenz, Tutzing; ZSM = Zoologische Staatssammlung, München.

## Material examined

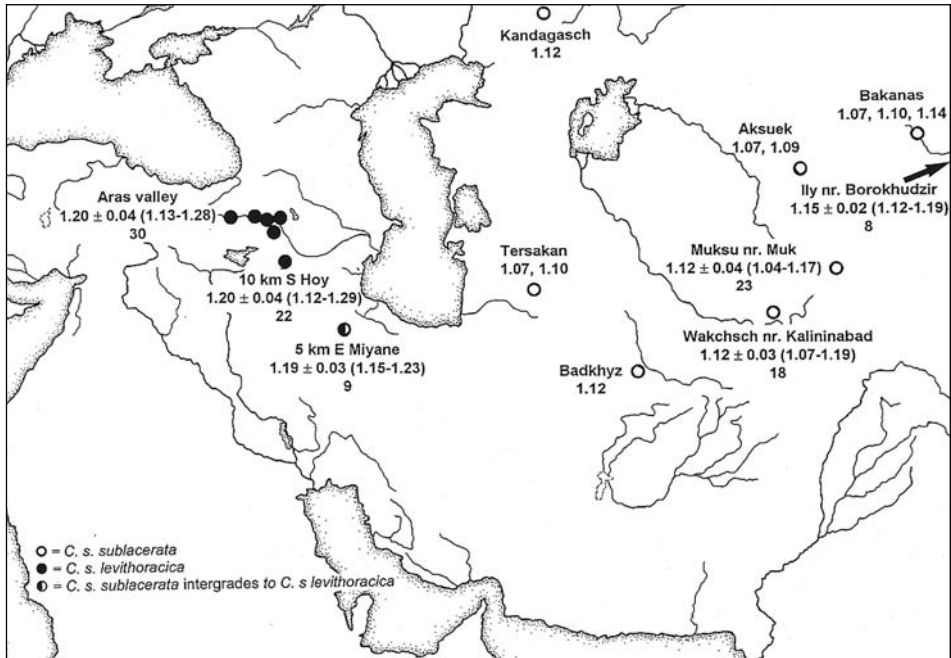
***Cylindera (Eugrapha) sublacerata sublacerata*. TADJIKISTAN**, Pamir-Alai, Mukra, Muk, Dshirgatal'sk Rj. (39°09'28"N, 71°33'46"E), 2000 m, 08.1989, J. Schmidt leg. (11 males, 9 females CGR; 1 male, 2 females CFO); valley of Wakchsch river near Kalininabad (39°45'04"N, 69°08'53"E), 300 m, 30.05.1990, 31.05.1989, 05.1989, 12.06.1994, O. Legezin leg. (part.) (4 males, 3 females CGR, 7 males, 4 females CFO). **KAZAKHSTAN**: Taldy-Kurgan Alatau: Illy valley near Borokhudzir (43°58'09"N, 79°34'47"E), 450–500 m, 04.06.1993, 08.06.1996, V. Lukhtanov leg. (3 males, 4 females CGR); Ryn-Kum sandy steppe NW Kandagasch (48°59'13"N, 55°14'09"E), 11.06.1999, Karalin & Miatleuski leg. (1 male CGR); Tschundsha env. (= Chundzha, 43°29'N, 79°27'E), 06.07.1993 (1 male CGR); Moynkum distr., Aksuek, 07.06.1993, A. TILLY leg. (1 male, 1 female CFO); Bakanas vill., 04.1993, Saldaitis leg. (2 males, 1 female CFO). **TURKMENISTAN**: Badkhyz 5 km N Kuschka (35°20'34"N, 62°23'35"E), 05.-08.07.1994, HAUCK & Cizek leg. (1 male CGR); Kopetdag, Sumbar riv. valley, Tersakan, 20.-23.05.1994, J. Miatleuski leg. (2 males CFO).

***Cylindera (Eugrapha) sublacerata levithoracica*. TURKEY**, Erzurum prov.: Aras nehri east of Köprüköy (east of Pa'ınler), 1600 m, 11.07.1997, Franzen & Rischel leg. (2 females CFO); Kars prov.: Aras nehri west of Kağızman, 1200 m, 13.07.1997, Franzen & Rischel leg. (6 males, 9 females CFO); "Russ. Arm., Kulp" [= Tuzluca], 1901, KORB leg. (4 males, 1 female ZSM); Ağrı prov.: Saz gölü east of Karabulak (north of Doğubayazıt), 1500 m, 26.06.1990, M. Franzen leg. (2 males, 2 females CFO, 1 male CLT). **ARMENIA**: Yerevan, 1898, Korb leg. (2 females ZSM, 1 male CLT). **IRAN**, Azarbayjan-e Gharbi prov.: 10 km S Hoy, 1200 m (38°25'N, 44°54'E), 07.06.2000, E. & P. Hajdaj leg. (5 males, 2 females CGR, 7 males, 8 females CHJ).

***Cylindera (Eugrapha) sublacerata sublacerata* x *levithoracica* intergrades. IRAN**, Azarbayjan-e Sharqi prov.: Sefid-rud 5 km E Ebrahimabad (Miyane), 1050 m (36°26'N, 47°51'E), 19.06.2000, E. & P. Hajdaj leg. (1 male, 2 females CGR, 2 males, 4 females CHJ).

## Taxonomic status of northwest Iranian populations

These new specimens from eastern Turkey and northwestern Iran possess relatively short pronota (mean PW/PL ratios 1.20 and 1.19, respectively; range 1.12–1.29; Fig. 1), which is a typical character for *C. s. levithoracia* (FRANZEN 1998). In Central Asian samples, PW/PL range from 1.04 to 1.19, with the mean values usually 1.12. There is only a single Central Asian population among our comparative material that also has comparatively high PW/PL values (Ily River near Borokhudzir, eastern Kazakhstan; Fig. 1). However, specimens from this locality near the Chinese border may represent *C. s. vicaria*, which is distributed over much of western China and Mongolia (e.g., WIESNER 1992). Because we have no compara-



**Fig. 1:** Record map Pronotum width/length ratios (PW/PL) among the *C. sublacerata* material examined. Data are presented as mean values  $\pm$  standard deviation (range in parenthesis) followed by number of specimens examined.

tive material of *C. s. vicaria* at hand, the subspecific status of this population remains unclear. In contrast to the PW/PL ratio, the character “shape of the apical part of middle band” (triangular/longitudinal vs. rounded; see FRANZEN 1998: Fig. 2) is not consistent among the new material from northwestern Iran: all of the Miyane specimens have a triangular or longitudinal shape of the apical middle band (typical for *sublacerata* s.str.), whereas it is triangular in only 23% of the Hoy specimens and in 29% of our material from eastern Turkey (typical for *levithoracica*; FRANZEN 1998).

Moreover, there are some differences in coloration between the two Iranian samples: whilst the Miyane specimens all possess a greenish-brown dorsal coloration, there is much more variation in the Hoy series: specimens may have blue elytrae with a blue or turquoise pronotum, green elytrae with a green pronotum or brown elytrae with brown pronotum. However, differences in coloration are not presumed to be distinguishing characters for *C. s. sublacerata* and *C. s. levithoracica* (FRANZEN 1998).

Summarizing the analysis of the morphological characters in the new specimens, we conclude that the more western Iranian population from Hoy belongs to *C. s. levithoracica*, whereas the Ebrahimabad (Miyane) population seems to be transitional between *C. s. sublacerata* and *C. s. levithoracica*, showing a relative short pronotum but triangular to longitudinal apical middle band tips.



**Fig. 2:** Habitat of *Cylindera (Eugrapha) sublacerata levithoracica* in the Aras inundation floodplain west of Kağızman (Kars prov., eastern Turkey).

### Distribution and Habitats in Turkey

The new locality record from the Aras valley near Köprüköy (Erzurum prov., 50 km east of Erzurum) extends the known western distribution limit of *C. sublacerata* some 150 km to the west. Previously known Turkish localities are from Aras valley at Tuzluca (at the Armenian border) and the Doğubayazıt depression (at the Iranian border) (FRANZEN 1998, CASSOLA 1999).

At Köprüköy and west of Kağızman (Fig. 2) *C. sublacerata* was taken in fluvial habitats. Specimens were collected at each locality from small, dried up flood channels with moist, comparably compact muddy to clayish substrate. Vegetation cover was sparse and consisted of localized stands of grass and tiny weeds. Immediately adjoining dry sand bars yielded no specimens. However, at Kağızman, a few additional individuals were found on a muddy to sandy narrow river beach. Densities were approximately 1 specimen per 10 m<sup>2</sup> at Kağızman (11.7.1997, 11.00–11.30 hrs, substrate temperature 31.7 °C) and 0.01/10 m<sup>2</sup> at Köprüköy (13.7.1997, 13.00–14.00 hrs, substrate temperature 35.2 °C). At Kağızman most individuals were observed resting in the shade of grass and weeds.

Other cicindelids collected at the two sites were *Cicindela monticola* cf. *monticola* (Köprüköy and Kağızman; on dry to slightly moist sand bars with no or sparse vegetation) and *Calomera fischeri fischeri* (Köprüköy and Kağızman; on muddy, wet to moist patches with no or sparse vegetation). Additionally, *Cylindera germanica germanica* was found in the very same microhabitat as *C. sublacerata* at Köprüköy, and *Calomera caucasica* occurred together with the few individuals of *C. sublacerata* on the sandy to muddy river beach at Kağızman.

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