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Where the Orient begins: first record of the genus *Patrus* Aubé, 1838 (Coleoptera: Gyrinidae) in Iran

Kde začíná Orient: první nález rodu *Patrus* Aubé, 1838 (Coleoptera: Gyrinidae) v Íránu

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New record, distribution, Coleoptera, Gyrinidae, *Patrus*, Iran, Oriental region, Palaearctic region

Abstract. *Patrus limbatus* (Régimbart, 1884), previously known only from India and Sri Lanka, is recorded for the first time from the Hormozgan Province, southern Iran. The diagnostic characters of the species are illustrated, and its distribution from a zoogeographic view is briefly discussed.

INTRODUCTION

Gyrinidae or whirligig beetles are a rather small, well defined group of adephagous water beetles specialized for life under and on the water's surface. Their most peculiar morphological adaptations are: compound eyes divided completely into two pairs, one of which is on the dorsal surface of the head (above the water line) and the other on the ventral surface of head (below the water line); antennae short and compact; prothoracic legs elongate, while meso- and metathoracic legs broadly expanded, flat and fringed with setae for swimming. The family comprises nearly 900 species worldwide which occur on all continents except Antarctica (cf. Beutel & Roughley 2005).

Gyrinidae are currently classified into three subfamilies: primitive Spanglerogyrinae with the single North American species *Spanglerogyrus albiventris* Folkerts, 1979, Heterogyrinae with the single Madagascan member *Heterogyrus milloti* Legros, 1953, and the globally distributed Gyrininae comprising three tribes – Dineutini, Gyrinini and Orectochilini, all three of which have representatives occurring in the Palaearctic zoogeographical region (Miller & Bergsten 2012).

The genus *Patrus* Aubé, 1838 was erected for the single Oriental species *P. javanus* Aubé, 1838. However, the genus was for a long time considered a junior synonym (e.g. Régimbart 1884) or a subgenus (Hatch 1926) of the predominantly Palaearctic *Orectochilus* Dejean, 1833, until it was revalidated by Miller & Bergsten (2012). *Patrus* is characterized by antennae with six flagellomeres (nine in *Orectochilus*) and by the dorsum usually not being entirely covered with setae (elytra and pronotum are entirely covered with fine setae in *Orectochilus*). The genus currently comprises ca. 150–200 species, distributed predominantly in the Oriental zoogeographical region, with only a few species reaching the Palaearctic in the Himalayas

and southern China (cf. Mazzoldi 2003). So far no *Patrus* species has been recorded west of India, with the exception of *Patrus haemorrhous* (Régimbart, 1891) which was very recently published from Pakistan (Darilmaz & Ahmed 2015).

We recently studied a series of specimens collected by the German entomologists Dirk Frenzel and Jörg Weipert in southern Iran (Hormozgan province) which were found to belong to the species *Patrus limbatus* (Régimbart, 1884), previously known only from India and Sri Lanka. The new record is given below.

MATERIAL AND METHODS

Specimens were examined with an Olympus SZX12 stereomicroscope, measurements were taken with an ocular graticule. Habitus photographs were taken using a Canon MP-E 65mm f/2.8 Macro lens with 5:1 optical magnification on bellows attached to a Canon EOS 550D camera. Partially focused images of the specimen were combined using Helicon Focus 5.1.19 software.

Exact label data are cited for the material examined, our comments are given in square brackets. Material is deposited in the collection of the National Museum, Prague, Czech Republic; Naturkundemuseum Erfurt, Germany; and in the private collection of Dirk Frenzel, Sonneberg, André Skale, Hof and Jörg Weipert, Plaue, all Germany.

RESULTS

Patrus limbatus (Régimbart, 1884)

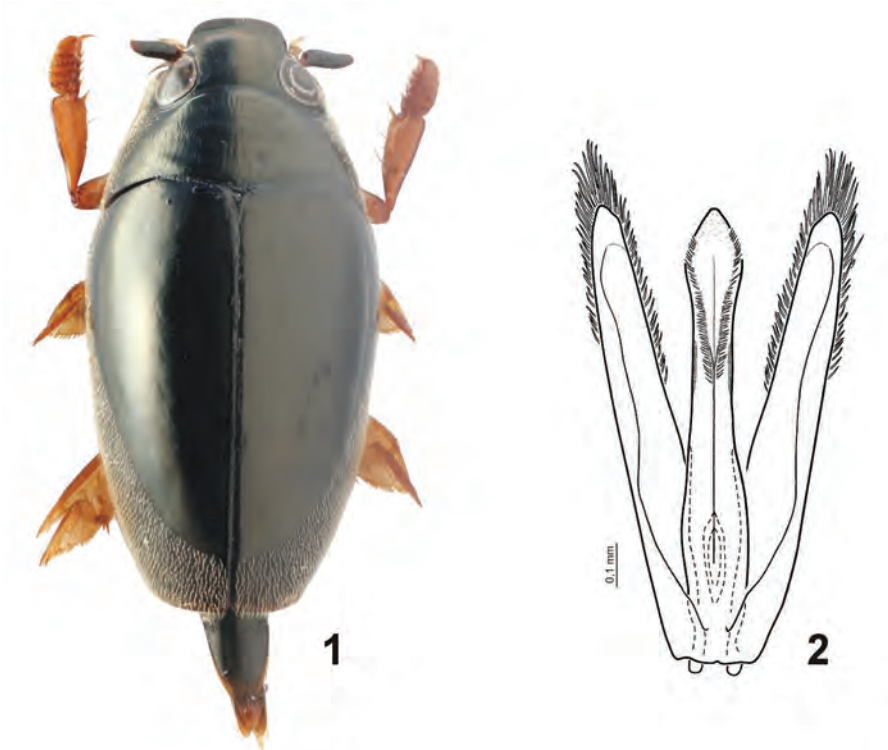
(Figs 1–2)

Orectochilus limbatus Régimbart, 1884: 424 (orig. descr., Indes orient.); Régimbart 1907: 211 (descr., new records); Ochs 1929: 243 (descr., new records); Vazirani 1958: 16 (new records).
Orectochilus gravelyi Ochs, 1925: 199 (orig. descr., Chota Nagpur: Chaibassa). Synonymised by Ochs 1929: 243.
Orectochilus (*Patrus*) *limbatus*: Ochs 1930: 27 (catalogue); Vazirani 1953: 426 (new records); 1977a: 252 (new records); 1977b: 279 (new records); 1984: 52 (descr., new records); Jäch et al. 2010: 16 (new records, biology).

Material examined. 5 ♂♂, 4 ♀♀, labelled: S-IRAN, Prov. Hormozgan, Gardaneh, Bachlauf in Palmenhain [watercourse in palm grove], 320 m, 27°38′01″N, 56°48′35″E, 6.III.[20]14, leg. D. Frenzel / 104; 6 ♂♂, 4 ♀♀, same data, but leg. J. Weipert.
Collecting circumstances: The specimens were collected during the day, with a hand net in quiet areas of a small river flowing through a palm grove (Fig. 3) (D. Frenzel & J. Weipert, pers. comm. 2014).
Distribution: India (Bihar, Jharkand, Madhya Pradesh, Maharashtra, Tamil Nadu, Uttar Pradesh), Sri Lanka (Ochs 1925, 1929; Vazirani 1984). Presence in Pakistan is likely. First record from Iran (Hormozgan Province).

DISCUSSION

Although traditionally included in the Palaearctic zoogeographical realm (cf. Löbl & Smetana 2003), the territory of southern Iran represents a typical transition area between Palaearctic and Oriental zoogeographical regions. Many predominantly Indian species are known to also occur in southern Pakistan and Iran, west to Hormozgan and Baluchistan provinces. For example, the currently known distribution of *Patrus limbatus* is almost identical with that of another gyrinid – *Dineutus indicus* Aubé, 1838. In other aquatic Adephaga, the



Figs 1–2. *Patrus limbatus* (Régimbart, 1884): 1 – habitus; 2 – male aedeagus in dorsal view.
Obr. 1–2. *Patrus limbatus* (Régimbart, 1884): 1 – habitus; 2 – aedeagus samce, dorsální pohled.

occurrence of a relatively high number of Oriental species of Dytiscidae in Baluchistan was documented by Hájek (2006). Therefore, the finding of *Patrus limbatus* in Hormozgan is not a big surprise and we may expect that more so far Indian aquatic beetle species occur in southern Pakistan and Iran as well.

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Figure 3. Habitat of *Patrus limbatus* (Régimbart, 1884) in southern Iran.
Obr. 3. Habitat *Patrus limbatus* (Régimbart, 1884) v jižním Íránu.

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SOUHRN

Rod *Patrus* Aubé, 1838 byl tradičně považován za podrod v rámci palearktického rodu *Orectochilus* Dejean, 1833. Recentně byly oba rody odděleny Millerem & Bergstenem (2012). *Patrus* je charakterizován tykadly s pouze šesti články bičíku (devět u rodu *Orectochilus*) a také dorsální stranou těla, která zpravidla není zcela pokryta setami (dorsální strana štítu a krovek zcela pokryta setami u rodu *Orectochilus*). Rod zahrnuje přibližně 150–200 druhů rozšířených především v orientální zoogeografické oblasti, pouze několik druhů zasahuje do palearktu v oblasti Himálají a jižní Číny (cf. Mazzoldi 2003). S výjimkou *Patrus haemorrhous* (Régimbart, 1891) nalezeného recentně v Pakistánu (Darilmaz & Ahmed 2015), nebyl doposud žádný zástupce rodu hlášen západně od Indie.

Recentně jsme měli možnost studovat exempláře rodu *Patrus* chytané v jižním Íránu (provincie Hormozgán). Jejich determinace ukázala, že patří k druhu *P. limbatus* (Régimbart, 1884), doposud známého pouze z území Indie a Sri Lanky. Nález tohoto druhu také v Íránu však není výjimečný. Přestože Írán je zpravidla řazen do palearktické zoogeografické oblasti (cf. Löbl & Smetana 2003), území jižního Íránu (provincie Hormozgán a Balúčistán) představuje přechodovou oblast mezi palearktickou a orientální oblastí a celá řada „typicky orientálních" druhů je známa též z oblasti jižního Pákistánu a Íránu. Např. identické rozšíření s druhem *Patrus limbatus* má i další zástupce vírníkovitých – *Dineutus indicus* Aubé, 1838. Hájek (2006) uvádí z Balúčistánu též výskyt dalších „orientálních" druhů dravých vodních brouků, přičemž lze očekávat ještě další nové nálezy.