

New records and updated checklist of the genus *Philonthus* (Col: Staphylinidae) for Iran

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Six species of rove beetles (Coleoptera: Staphylinidae), belonging to the genus *Philonthus* Stephens 1829, are reported for the first time from Iran. They include *Philonthus juvenilis* Peyron, 1858, *Philonthus micans* (Gravenhorst, 1802), *Philonthus spinipes* Sharp, 1874, *Philonthus longicornis* Stephens 1832, *Philonthus viridipennis* Fauvel 1875, and *Philonthus wuesthoffi* Bernhauer 1939. All specimens were collected from Mazandaran province, north of Iran during 2012-2014. An updated checklist of this genus, including 43 species, has been provided.

Key words: Rove beetles, Staphylinidae, Staphylininae, Iran, Mazandaran, *Philonthus*

INTRODUCTION

Rove beetles (Coleoptera: Staphylinidae) are the largest or the second large family of beetles, with more than 58300 described species worldwide, classified in 33 subfamilies (Anlas and Deveci, 2011; Janak and Bordoni, 2012). Despite tremendous variations in habitus and size, the vast majority of rove beetles can be simply distinguished from other beetles by short truncate elytra, which expose more than half of their long abdomen (Newton et al., 2000). Various developmental stages of rove beetles are found in a wide variety of terrestrial and semi-aquatic habitats, including leaf litters, forests, dungs, carrions, under stones or barks, on flowers, under seaweed, in fungi, and in the nests of birds, mammals, and social insects (Anlas, 2009). The majority of rove beetles are free-living predators of other small arthropods and some species play important roles in biological control of insect pests with agricultural and medicinal importance (Maus et al., 1998; Polaszek, 1998).

According to the Palearctic catalogue (Lobl and Smetana, 2004) and recent contributions to this family, rove beetles are represented in Iran by 677 valid (sub-) species (Anlas and Newton, 2010; Assing, 2011). This species number is much less than those recorded from many smaller countries in the Palearctic region, such as Turkey (with 1600 species) (Anlas, 2009), Czech Republic (with 1403 species) (Bohac et al., 2007), and Romania (with 1200 species) (Stan, 2004).

The subfamily Staphylininae Latreille 1802, with more than 140 identified species (Anlas and Newton, 2010), is considered as the largest subfamily of rove beetles in Iran. The genus *Philonthus* is a very large worldwide genus of this subfamily with more than 1000 described species found in a wide variety of habitats (Newton et al., 2000). In this paper, six additional records of the genus are

reported from Iran. These species are based on materials collected from Mazandaran province (north of Iran) during 2012–2014.

MATERIAL AND METHODS

The materials referred to in this study are deposited in the Zoological Museum located at the College of Agriculture and Natural Resources, University of Tehran, Karaj, Iran. The samples were collected through direct monitoring of forest leaf litter, dungs, decaying materials, carrions, riparian edges, etc. Adult beetles were preserved in jars containing 75% ethanol in the field and pinned before drying. The faunistic list contained localities, altitude, GPS coordinates, collecting date, number, and sex of each specimen examined. Morphological studies were carried out using a Stereomicroscope (Olympus SZ40, Japan) and photographs were taken using a digital camera (Canon, IXUS 132).

RESULTS

Tribe Staphylinini Latreille, 1802

Subtribe Philonthina Kirby, 1837

Genus *Philonthus* Stephens, 1829

Philonthus juvenilis Peyron, 1858 (Fig. 1, a-b)

Examined materials: **Valasht Lake** (36°32'15.36" N, 51°17'15.23" E, elev: 307.40 meters ASL), 2 ♂, 3 ♀, riparian edge of the lake, leg: SM Tabadkani, 12.06.2012.

Distribution: East Europe, Cyperus, and Turkey, new record for Iran.

Philonthus micans (Gravenhorst, 1802) (Fig. 1, c-d)

Examined materials: **Marzanabad** (36°46'49.11" N, 51°16'23.02" E, elev: 101.03 meters ASL), 3 ♂, 2 ♀, leaf litter in riparian edge, leg: SM Tabadkani, 26.06.2012. **Najjardeh Village**, Noshahr (36°36'27.31" N 51°33'57.95" E, elev: 35.03 meters ASL), 2 ♂, 4 ♀, forest leaf litters, leg: SM Tabadkani, 13.05.2013.

Distribution: Algeria, Morocco, Kazakhstan, North America, Turkey, and whole Europe, new record for Iran.

Philonthus longicornis Stephens 1832 (Fig. 1, e-f)

Examined materials: **Valiabad Village**, Tehran-Chalous Road (36°14'23.22" N, 51°17'51.72" E, elev: 588.21 meters ASL), 2 ♂, 4 ♀, riparian edges, leg: SM Tabadkani, 18.04.2013.

Distribution: This is a cosmopolitan species distributed across all geographic regions. It is reported for the first time from Iran.

Philonthus viridipennis Fauvel 1875 (Fig. 1, g-h)

Examined materials: **Noshahr** (36°32'07.67" N, 51°38'21.85" E, elev: 986 meters ASL), 2 ♂, 3 ♀, **Chalous** (36°38'20.31" N, 51°25'03.19" E, elev: 122 meters ASL), 4 ♂, 1 ♀, riparian edges, leg: SM Tabadkani, 12.08.2013.

Distribution: Although, the distribution of this species is not clear, it may be native to West Palearctic region including Romania, and Czech Republic, new record for Iran.

Philonthus wuesthoffi Bernhauer 1939 (Fig. 1, i-j)

Examined materials: **Noshahr** (36°32'07.43" N, 51°37'52.34" E, elev: 835.5 meters ASL), 3 ♂, 1 ♀, riparian edges, leg: SM Tabadkani, 13.04.2013, **Chalous** (36°37'46.48" N, 51°26'56.28" E, elev: 132 meters ASL), 1 ♂, 1 ♀, riparian edges, leg: SM Tabadkani, 01.05.2013, **Ramsar** (36°52'39.01" N, 50°33'38.21" E, elev: 694 meters ASL), 1 ♂, 4 ♀, riparian edges, leg: SM Tabadkani, 01.05.2013,

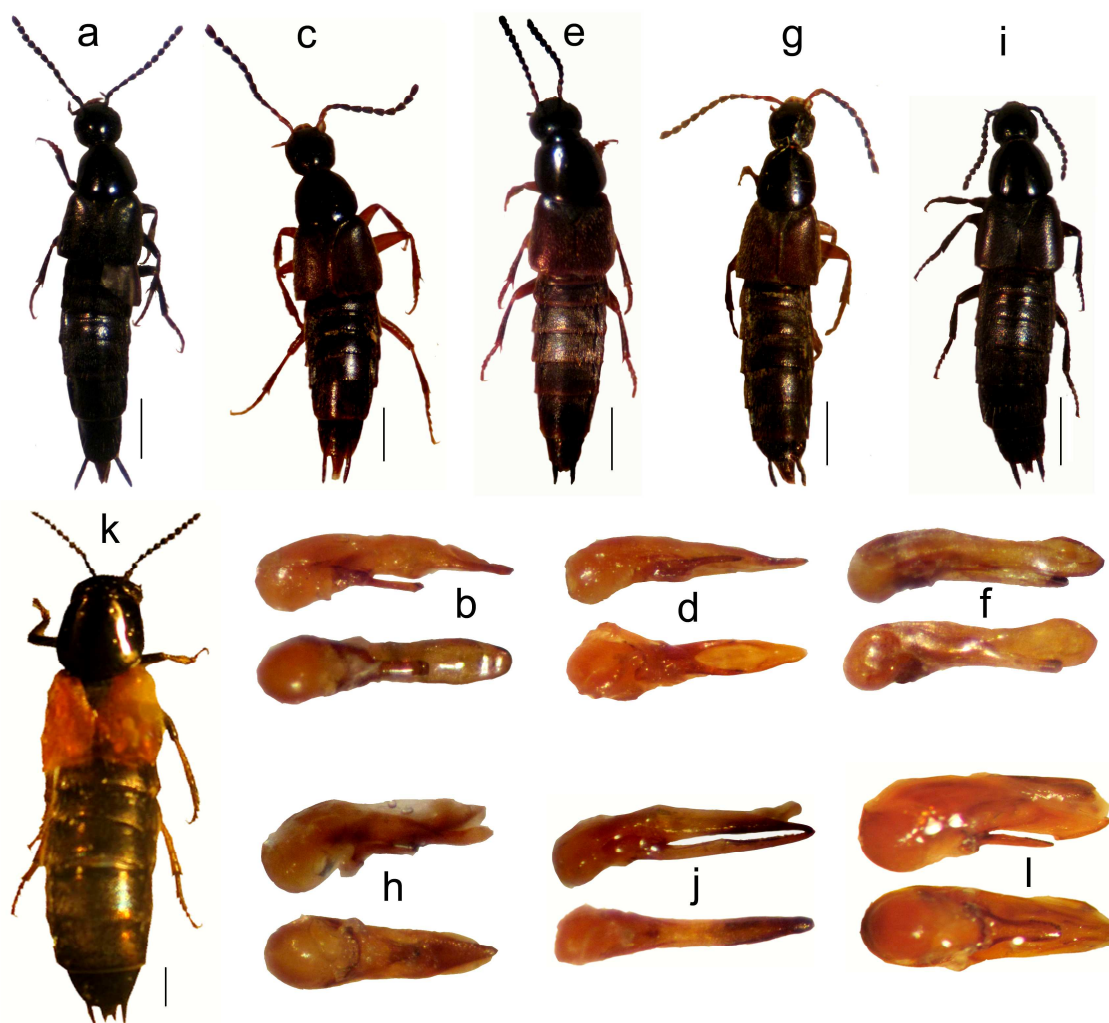


FIGURE 1. a-b) *Philonthus juvenilis*, c-d) *Philonthus micans*, e-f) *Philonthus longicornis*, g-h) *Philonthus viridipennis*, i-j) *Philonthus vvesthoffi*, k-l) *Philonthus spinipes*; a, c, e, g, i and k) dorsal habitus, b, d, f, h, j, and l) aedeagus in lateral and ventral views, Scale bars: 1 mm.

Babolsar (36°41'50.55" N, 52°40'51.01" E, elev: 35.5 meters ASL), 2 ♂, 5 ♀, riparian edges, leg: SM Tabadkani, 13.04.2013.

Distribution: China, Japan, North Korea, South Korea, Russia, Far East, Ukraine and Romania, new record for Iran.

***Philonthus spinipes* Sharp, 1874 (Fig. k-l)**

Examined materials: **Valiabad Village**, Tehran-Chalous Road (36°14'22.17" N, 51°17'52.68" E, elev: 587 meters ASL), 7 ♂, 5 ♀, decaying plant matter and dung, leg: SM Tabadkani, 18.04.2013.

Distribution: This species probably originally occurred in Far East of Asia, although, it has extended its distribution range westward and now, is now known from the entire Palearctic region including Armenia, Europe, China (Fujian), Japan, Kazakhstan, Korea, Taiwan, and Turkey (Schillhammer, 1999). It is reported for the first time from Iran.

TABLE 1. Checklist of *Philonthus* recorded from Iran.

Species	Collection area(s), province(s)	Reference(s)
<i>Philonthus aeneipennis</i> Boheman 1858	unspecified	See Anlas & Newton, 2010
<i>Philonthus atratus</i> (Gravenhorst 1802)	North Iran	See Anlas & Newton, 2010
<i>Philonthus biskrensis</i> Fagel 1957	Khuzestan, unspecified	See Anlas & Newton, 2010
<i>Philonthus broumandi</i> Bohac 1981	Khuzestan (Endemic)	See Anlas & Newton, 2010
<i>Philonthus carbonarius</i> (Gravenhorst 1802)	unspecified	See Anlas & Newton, 2010
<i>Philonthus caucasicus</i> Nordmann 1837	Kordestan	See Anlas & Newton, 2010
<i>Philonthus cognatus</i> Stephens 1832	Fars, Mazandaran	See Anlas & Newton, 2010
<i>Philonthus concinnus</i> (Gravenhorst 1802)	Mazandaran, unspecified	See Anlas & Newton, 2010
<i>Philonthus cruentatus</i> (Gmelin 1790)	unspecified	Smetana, 2004
<i>Philonthus debilis</i> (Gravenhorst 1802)	North Iran	See Anlas & Newton, 2010
<i>Philonthus dimidiatipennis</i> Erichson 1840	Khuzestan, Unspecified	See Anlas & Newton, 2010
<i>Philonthus discoides</i> (Gravenhorst 1802)	Sistan Baluchestan	See Anlas & Newton, 2010
<i>Philonthus ebeninus ebeninus</i> (Gravenhorst 1802)	Golestan, Unspecified	See Anlas & Newton, 2010
<i>Philonthus filator</i> (Tottenham 1953)	Guilan	Khormali, 2013
<i>Philonthus infirmus</i> Erichson 1840	Unspecified	Smetana, 2004
<i>Philonthus intermedius</i> Lacordaire 1835	Mazandaran, Unspecified	See Anlas & Newton, 2010
<i>Philonthus irakoiranicus</i> Scheerpeltz 1961	Khuzestan	See Anlas & Newton, 2010
<i>Philonthus kbouzestanicus</i> Bohac 1981	Hormozgan, Khuzestan, Sistan Baluchestan	See Anlas & Newton, 2010
<i>Philonthus juvenilis</i> Peyron, 1858	Mazandaran	Present paper
<i>Philonthus laminatus</i> (Creutzer 1799)	Mazandaran	See Anlas & Newton, 2010
<i>Philonthus longicornis</i> Stephens 1832	Mazandaran	Present paper
<i>Philonthus micans</i> (Gravenhorst, 1802)	Mazandaran	Present paper
<i>Philonthus nitidicollis</i> (Lacordaire 1835)	Mazandaran, Tehran	See Anlas & Newton, 2010
<i>Philonthus parvicornis</i> (Gravenhorst 1802)	Mazandaran	See Anlas & Newton, 2010
<i>Philonthus picimanus</i> (Menetries 1832)	Mazandaran	See Anlas & Newton, 2010
<i>Philonthus politus</i> (Linnaeus 1758)	Northwest Iran	See Anlas & Newton, 2010
<i>Philonthus punctus punctus</i> (Gravenhorst 1802)	Northwest Iran, Unspecified	See Anlas & Newton, 2010
<i>Philonthus punctus rapillyi</i> Jarrige 1971	Fars	See Anlas & Newton, 2010
<i>Philonthus quisquiliarius</i> (Gyllenhal 1810)	Unspecified	See Anlas & Newton, 2010
<i>Philonthus rotundicollis</i> (Menetries 1832)	East Azerbaijan, Mazandaran	See Anlas & Newton, 2010
<i>Philonthus rubripennis</i> Stephens 1832	Unspecified	See Anlas & Newton, 2010
<i>Philonthus salinus</i> Kiesenwetter 1834	Guilan	See Anlas & Newton, 2010
<i>Philonthus schaeuffelei</i> Scheerpeltz 1961	Khuzestan	See Anlas & Newton, 2010
<i>Philonthus spinipes</i> Sharp 1874	Mazandaran	Present paper
<i>Philonthus splendens</i> (Fabricius 1793)	Unspecified	Smetana, 2004
<i>Philonthus succicola</i> Thomson 1860	Golestan	See Anlas & Newton, 2010
<i>Philonthus tenuicornis</i> Mulsant & Rey 1853	Guilan	See Anlas & Newton, 2010
<i>Philonthus turbidus</i> Erichson 1840	Unspecified	Smetana, 2004
<i>Philonthus varians</i> (Paykull 1789)	Mazandaran, Tehran	See Anlas & Newton, 2010
<i>Philonthus velatipennis</i> Solsky 1870	Golestan, Hormozgan, Sistan Baluchestan	See Anlas & Newton, 2010
<i>Philonthus ventralis</i> (Gravenhorst 1802)	Unspecified	See Anlas & Newton, 2010
<i>Philonthus viridipennis</i> Fauvel 1875	Mazandaran	Present paper
<i>Philonthus wuesthoffi</i> Bernhauer 1939	Mazandaran	Present paper

DISCUSSION

In this study, six species of the genus *Philonthus* were identified as new records for the fauna of Iran. By inclusion of these species, the *Philonthus* fauna of Iran raises to 43 valid species. The distributional checklist of this genus has been summarized in Table 1. A simple comparison of this species number with those recorded for adjacent countries such as Turkey (with 62 species, Anlas, 2010), and Czech Republic (with 58 species, Bohac et al., 2007) reveals that the fauna of this genus in Iran is relatively poorly understood. Therefore, continued faunistic studies in different geographical areas would result in significant increase in our knowledge on real situation of this genus in Iran.

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