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## Faunal diversity of *Paederus* Fabricius, 1775 (Coleoptera: Staphylinidae) in Iran

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# INSECTA MUNDI

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Faunal diversity of *Paederus* Fabricius, 1775  
(Coleoptera: Staphylinidae) in Iran

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Faunal diversity of *Paederus* Fabricius, 1775 (Coleoptera: Staphylinidae) in Iran

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**Abstract.** Beetles of the genus *Paederus sensu stricto* Fabricius, 1775 (Coleoptera: Staphylinidae) are often noticed because of their potency in inducing a dermal lesion, so-called linear dermatitis. This genus, which is placed in the tribe Paederini and subfamily Paederinae of Staphylinidae, currently comprises 490 species worldwide. Our study presents a short review of the former records of *Paederus* spp. in Iran plus some unpublished data. Field collections were done during March-October yearly (1997-2007) in northern and southern Iran and April-June from central, eastern, western and north-western Iran (2008-2009). The present study adds four species to the Iranian fauna of the genus *Paederus*, which are *P. brevipennis* Lacordaire, 1835, *P. basalis* Bernhauer, 1914, *P. pubescens* Cameron, 1914 and *P. schoenherri* Czwalina, 1899. *Paederus brevipennis* and *P. schoenherri* are the first members of the subgenus *Harpopaederus* Scheerpeltz, 1957, ever reported from Iran. Considering previous reports, museum-deposited materials and our findings, 14 species and subspecies of the genus *Paederus*, which are grouped in five subgenera, occur in Iran. These subgenera are *Eopaederus* Scheerpeltz, *Harpopaederus* Scheerpeltz, *Heteropaederus* Scheerpeltz, *Paederus* Fabricius and *Poederomorphus* des Cottes; however *P. duplex spectabilis* Bernhauer, 1913 is not yet attributed to any of the 13 so-far defined subgenera.

**Key words:** Rove beetle, Staphylinidae, *Paederus*, fauna, Iran.

## Introduction

The family Staphylinidae (Coleoptera), which is commonly named rove beetles, currently comprises 3,847 genera and 56,768 species worldwide (Newton 2007). Linnaeus (1758) described 19 species of Staphylinidae in *Systema Naturae* and placed all in the genus *Staphylinus* Linnaeus, which included *Staphylinus riparius* Linnaeus. Fabricius (1775) described the genus *Paederus*, including *Paederus riparius* (Linnaeus) and one more species, and Latreille (1810) designated *P. riparius* as the type species of the genus *Paederus*. This genus, which is found in all zoogeographic regions, is placed in the subtribe Paederina, tribe Paederini, subfamily Paederinae, of Staphylinidae (Frank and Kanamitsu 1987). Paederina include 678 valid species (Alfred Newton, personal communication) with 650 species in *Paederus sensu lato* Fabricius worldwide (Willers 2003), which include all genera of the subtribe Paederina. The form-rich genus *Paederus* Fabricius *s.l.* is represented in the Palaearctic region with approximately 85 species or subspecies (Willers 2011).

Taxonomic studies on the genus *Paederus* are inadequate at the subgeneric and species levels (Willers 2003; Smetana 2004). As a genus-group taxon, *Paederus sensu lato* has a very complicated history and its taxonomic sense has changed dramatically (Li and Zhou 2009). To accommodate a large

diversity of species, 14 genera were gradually derived from *Paederus s.l.* (Scheerpeltz 1957; Korge 1969) and based on the morphology of male primary and secondary sexual characters, 13 subgenera were developed to accommodate the species in *Paederus s.s.* (Coiffait 1982; Frank 1988; Li and Zhou 2007; Li and Zhou 2008), but most species are not yet classified into this thirteen-subgenera system (Li and Zhou 2007). *Paederus s.s.* currently includes 491 species worldwide, and about 37 species or subspecies in the Palaearctic region (Alfred Newton, personal communication).

Compared to most other regions of the Western Palaearctic region, the current knowledge of the staphylinid fauna of Iran must be considered rather incomplete (Assing 2007; Assing 2011), i.e., only 594 species and subspecies have been so far reported (Anlaş and Newton, 2010). Based on the zoogeographic, topographic, and ecological diversity of Iran, its fauna can be expected to comprise several thousand species of Staphylinidae (Assing 2011).

The faunal diversity of Iranian Staphylinidae was studied intensively during field excursions of European entomologists in the 1960s–1970s (Scheerpeltz 1961; Jarrige 1971). Since then there have been more contributions to the faunal study, distribution, ecology and medical importance of these beetles in Iran. These studies recognized 14 *Paederus* species or subspecies for the Iranian fauna. The *Paederus* species of these studies and their geographical localities (if available) are listed in Table 1. We have continued to collect *Paederus* beetles from the not yet covered regions of Iran in 2008–2009 to better understand the faunal diversity and geographical distribution of this genus. Although we tried to collect specimens throughout Iran, many regions remain to be sampled. In a country as large as Alaska, climatically very diverse, and located at the border line of the Palaearctic and Oriental zoogeographic regions, any uncovered spot might reveal an unknown species. This current paper includes all previously-reported species of the genus *Paederus* from Iran plus our not-yet published data of recent years.

## Materials and Methods

**Method of Collection.** Our *Paederus* studies of 1997–2007 started in March and continued until October yearly. During this 10 year time frame, over 9,000 specimens were collected in various areas of Iran, mostly from northern and southern Iran. We performed more intense field studies from April–June in 2008 and 2009, and collected over 700 specimens from central, eastern, western and north-western Iran (Fig. 1).

Two collection methods were used in this study. During daylight hours, beetles were detected visually among vegetation and collected using an aspirator. Daylight collections were randomly made from various crop plants, mainly alfalfa and rice, and from weeds (Nikbakhtzadeh and Tirgari 2008). The daylight collection method also included use of a spade to check for the presence of the beetles in soil cracks. At night, an ultraviolet (UV) fluorescent light was used to attract flying beetles. Although the beetles are also attracted to incandescent, fluorescent and neon lamps, longwave UV seems especially attractive to them. A UV lamp (XX-series BLB, UVP, LLC Upland, CA, USA) was operated once every two weeks at the selected locations from dusk until midnight. It was installed either on the wall of a building or on a metal pole, 2 m above ground level. Collecting the beetles in daylight hours led to the ability to select localities where lamps were likely to attract beetles at night, based on characteristics of the nearby vegetation and the presence of beetles themselves.

**Identification.** Collected beetles were sexed by observing their external genitalia (male aedeagus versus female valviferes), cleared for 5 minutes in 10% KOH, and then stored in 70% ethanol. Specimens were dissected with the aid of a binocular microscope (Zeiss Stemi-SR) to examine mouthparts, abdominal segments in both sexes, and aedeagus. Identification was in part by use of the key and illustrations of Coiffait (1982) and in part by sending specimens to specialists (see Acknowledgements). Voucher specimens are deposited in the laboratory of Medical Entomology at Tarbiat Modares University (METMU), Tehran, Iran.

**Examining deposited specimens.** The Hayk Mirzayans Museum (HMIM) of Insect Taxonomy at the Iranian Research Institute of Plant Protection was visited several times in 1997–1998. Despite the considerable number of deposited specimens of *Paederus* in that museum, names were often ambiguous

with plenty of synonyms, homonyms or misspellings. Our work includes only data which could be verified by further examination (Table 1). *Paederus* specimens, which had been collected during the 1970s–1990s and deposited at the Medical Entomology Museum (TUPH) of the Institute of Public Health Research, Tehran, were also visited and identified, and those results are presented here (Table 1).

**Geographical coverage.** Field collections were mainly done in northern Iran at the Caspian Sea coast (north of Mt. Elborz ranges, 49.21–52.40°E), southern Iran (Fars Province, 28.40–30.26°N, 51.24–54.39°E), valleys of Mt. Zagros in central and western Iran (31.22–35.57°N, 46.05–50.26°E) and the north-western provinces alongside the borders of Turkey, Armenia and the Republic of Azerbaijan (36.13–39.40°N, 44.24–48.51°E). Eastern and south-eastern Iran were also visited three times in 2006 and 2009 (Fig. 1).

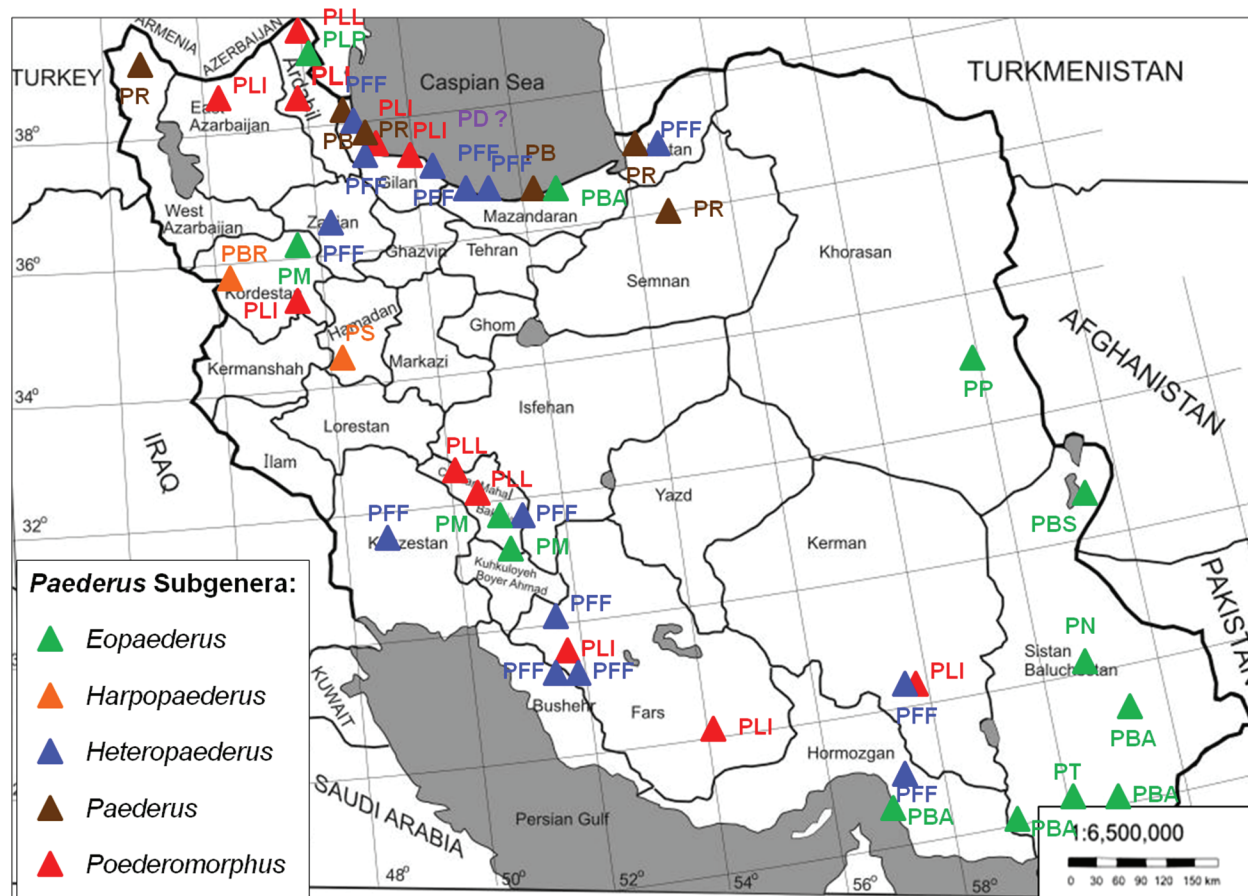
## Results and Discussion

The present study recognizes four species that are new to the Iranian fauna of the genus *Paederus*, which are *P. basalis* Bernhauer, 1914, *P. pubescens* Cameron, 1914, *P. brevipennis* Lacordaire, 1835 and *P. schoenherri* Czwalina, 1899. The first two species were collected from eastern Iran (Zabol and Birjand respectively), while the latter ones were collected in the western counties of Marivan and Nahavand (Table 1). These species were identified based on the key and figures of Coiffait (1982), but neither examined by a fauna expert or compared to any museum-deposited type specimens. *Paederus basalis*, with its synonym *P. ledouxi* Coiffait, 1979 (Willers 1999) and *P. pubescens* have been so far reported from Afghanistan, China and many regions of the Indian subcontinent, while *P. brevipennis* and *P. schoenherri* are known from European countries (Smetana 2004). *Paederus schoenherri* previously had two subspecies, *P. schoenherri schoenherri* Czwalina, 1889 and *P. schoenherri schulzei* Korge, 1969 (Smetana 2004), however Willers (2011) raised the subspecies *P. schoenherri schulzei* to species rank so no subspecies are now recognized in *P. schoenherri*.

In dry regions of eastern and southern Iran, *Paederus* were mainly found in restricted areas near sparse creeks and ponds, and among field crops under irrigation. *Paederus basalis* was collected in alfalfa fields, close to the shores of Hamoon lake, and *P. pubescens* was found among a dense canopy of weeds at the margins of some irrigated crop fields. Eastern Iran is close to the borderline of the Oriental zoogeographic region and therefore shows some faunal similarity to the Oriental region. The newly found western species *P. brevipennis* and *P. schoenherri* were correspondingly collected at the shores of Zerivar lake and the Gamasiab river (Table 1). In western and particularly northern Iran, suitable habitats for *Paederus* beetles are far more widespread, so they are more uniformly distributed. In the Palaearctic region, *P. schoenherri* and *P. brevipennis* are only reported from Europe (Coiffait 1982; Smetana 2004).

*Paederus balachowskyi* (Jarrige, 1971) (Jarrige 1971; Willers 2011), *P. fuscipes fuscipes* Curtis, 1826 (Scheerpeltz 1961; Jarrige 1971; Boháč 1981; Anlaş and Newton 2010), *P. littoralis ilsae* Bernhauer, 1932 (Scheerpeltz 1957, 1961, 1963; Jarrige 1971; Nikbakhtzadeh and Tirgari 2008), *P. nigricornis* Bernhauer, 1911 (Nikbakhtzadeh and Tirgari 2008) and *P. tamulus* Erichson, 1840 (Scheerpeltz 1961; Smetana 2004; Li and Zhou 2008) have been also reported from Eastern Iran. *Paederus mixtus* Sharp, 1874, reported from Iran by Sakenin et al. (2011), is treated as a synonym of *P. tamulus* (Smetana 2004).

*Paederus fuscipes fuscipes* Curtis, 1826 has a wide geographical distribution worldwide and is found in many African, Asian and European countries (Coiffait 1982; Smetana 2004). This frequent subspecies of northern, central and southern Iran is also a common species in Turkey (Anlaş and Çevik 2008) and Caucasus (Shulaev 2008). The first record of *P. fuscipes fuscipes* dates back to a survey which was done on stored products in Anzali, a coastal Iranian town along the western Caspian Sea (Freeman 1958). Scheerpeltz (1961) reported this species from Anbar-Abad in Kerman province. It seems to be a frequent species along the Caspian Sea shores (Jarrige 1971; Janbakhsh and Ardalan 1977; Boháč 1981; Nikdel and Tirgari 1998; Tirgari and Nikbakhtzadeh 2002; Nikbakhtzadeh and Tirgari 2008; Anlaş and Newton 2010). This subspecies has been repeatedly reported from central and southern Iran (Scheerpeltz 1961; Jarrige 1971; Boháč 1981; Nikbakhtzadeh and Sadeghiani 1999; Nikbakhtzadeh and Naderi



**Figure 1.** Map of *Paederus* spp. geographical distribution in Iran. Sub-generic allocation is marked by colored triangles. Abbreviations: **PB:** *Paederus balcanicus*, **PBA:** *Paederus balachowskyi*, **PBR:** *Paederus brevipennis*, **PBS:** *Paederus basalis*, **PD:** *Paederus duplex*, **PFF:** *Paederus fuscipes fuscipes*, **PLI:** *Paederus littoralis ilsae*, **PLL:** *Paederus littoralis littoralis*, **PLP:** *Paederus limnophilus*, **PM:** *Paederus mesopotamicus*, **PN:** *Paederus nigricornis*, **PP:** *Paederus pubescens*, **PR:** *Paederus riparius*, **PS:** *Paederus schoenherri*, **PT:** *Paederus tamulus*. Localities for some species have not been cited in literature.

2009; Anlaş and Newton 2010). In southern Iran, *P. fuscipes fuscipes* seems to be restricted to humid regions of western Fars (Table 1). *Paederus fuscipes fuscipes* was formerly known by the synonymous names of *P. iliensis* Coiffait, 1970 and *P. kalalovae* Roubal, 1932. These older species are downgraded to a single subspecies of *P. fuscipes* in the current systematics of Staphylinidae (Boháč 1985; Willers 1999).

*Paederus littoralis ilsae* Bernhauer, 1932 includes the synonym *P. lenkoranus* Scheerpeltz, 1957 (Smetana 2004; Anlaş and Newton 2010). It was formerly known as *P. ilsae* (Coiffait, 1982), but downgraded to a subspecies of *P. littoralis* (Smetana 2004).

Freeman (1958) identified *P. littoralis ilsae* as a pest of the stored products in Anzali. Several records of this subspecies exist from the Caspian Sea region, Kurdistan and Kerman provinces (Scheerpeltz 1957, 1961, 1963; Jarrige 1971). It has been twice collected from southern Iran (Nikbakhtzadeh and Sadeghiani 1999; Nikbakhtzadeh and Tirgari 2008). We collected *P. littoralis ilsae* from Oshtebin village along the Armenia-Azerbaijan borders in north-west Iran (Table 1). This subspecies has been already reported from Republic of Azerbaijan and Caucasus (Coiffait 1982), Europe, Middle East, and South Asia (Smetana 2004). *Paederus fuscipes fuscipes* (as *P. iliensis*) and *P. littoralis ilsae* (as *P. ilsae*) were identified as the causative agents of linear dermatitis in Iraq (Davidson et al. 2009).

Another subspecies of *P. littoralis*, *P. littoralis littoralis* Gravenhorst, 1802, has been also collected from Iran. It was first collected from Caspian Sea shores (Majidi-Shad et al. 1989) and then from Pars-Abad in northwest Iran (Nikbakhtzadeh and Tirgari 2008). We have recently collected this subspecies

Subgenus	Species	Location (Geographical grid)	Reference		
<i>Eopaederus</i> Scheerpeltz, 1957	<b><i>P. basalis</i> Bernhauer, 1914</b> * synonym: <i>P. ledouxii</i> Coiffait, 1979	Zabol (31.03N, 61.19E)	Present study- collected 2008		
	<b><i>P. limnophilus</i> Erichson, 1840</b> * Synonym: <i>P. carpathicus</i> Wendeler, 1926	Pars-Abad (39.39N, 47.55E)	Nikbakhtzadeh & Tirgari, 2008		
	<b><i>P. Mesopotamicus</i> Eppelsheim, 1889</b> * Synonyms: • <i>P. balachowskyi</i> (Jarrige, 1971) • <i>P. pietschmanni</i> Bernhauer, 1913	Ardal (32.02N, 50.37E) Chabahar (25.17N, 60.37E) <sup>1</sup> Caspian Sea southern shores <sup>2</sup> Iranshahr (27.12N, 60.41E) <sup>1</sup> Kurdistan <sup>2</sup> Lordegan (31.30N, 50.49E) Minab (27.08N, 57.05E) <sup>1</sup> Nikshahr (26.13N, 60.13E) <sup>1</sup> Not specified Sadat Mahalleh (36.40N, 52.36E) <sup>1</sup>	Nikbakhtzadeh & Naderi, 2009 Jarrige, 1971 Janbakhtsh & Ardalan, 1977 <sup>3</sup> ; Present study- TUPH <sup>4</sup> Jarrige, 1971 Smetana, 2004; Li & Zhou, 2008 Nikbakhtzadeh & Naderi, 2009 Willers, 2011 Willers, 2011 Coiffait, 1982 Present study- HMIM <sup>5</sup>		
	<b><i>P. nigricornis</i> Bernhauer, 1911</b>	Mt. Taftan (28.30N, 61.07E)	Nikbakhtzadeh & Tirgari, 2008		
	<b><i>P. pubescens</i> Cameron, 1914</b>	Birjand (32.52N, 59.11E)	Present study- collected 2008		
	<b><i>P. tamulus</i> Erichson, 1840</b> * Synonym: <i>P. mixtus</i> Sharp, 1874	Makran (Baluchistan) <sup>2</sup>	Scheerpeltz, 1961; Smetana, 2004; Li & Zhou, 2008		
	<i>Harpopaederus</i> Scheerpeltz, 1957	<b><i>P. brevipennis</i> Lacordaire, 1835</b>	Zerivar lake (35.32N, 46.06E)	Present study- collected 2009	
		<b><i>P. schoenherri</i> Czwalina, 1889<sup>6</sup></b>	Nahavand (34.03N, 48.23E)	Present study- collected 2009	
	<i>Heteropaederus</i> Scheerpeltz, 1957	<b><i>P. fuscipes fuscipes</i> Curtis, 1826</b> * Synonym: <i>P. iliensis</i> Coiffait 1970 <i>P. kalalovae</i> Roubal 1932	Anbar-Abad (28.28N, 57.50E) <sup>1</sup> Anzali (37.28N, 49.28E) <sup>1</sup> Asalem (37.42N, 48.57E) <sup>1</sup> Brooijen (31.50N, 51.05E) Caspian Sea southern shores <sup>2</sup> Fars <sup>2</sup> Khoozestan <sup>2</sup> Gorgan (36.50N, 54.25E) <sup>1</sup> Kazeroon (29.47N, 51.38E) Minab (27.08N, 57.05E) <sup>1</sup> Noor-Abad (30.05N, 51.30E) Nowshahr (36.39N, 51.29E) <sup>1</sup> Ramsar (36.54N, 50.39E) Rasht (37.16N, 49.35E) <sup>1</sup> Tonkabon (36.49N, 50.53E) Zanjan (36.40N, 48.29E) <sup>1</sup>	Scheerpeltz, 1961; Jarrige, 1971; Boháč, 1981; Anlaş & Newton, 2010 Freeman, 1958; The same ref. as Anbar-Abad The same ref. as Anbar-Abad Nikbakhtzadeh & Naderi, 2009 Janbakhtsh & Ardalan, 1977; Present study- HMIM The same ref. as Anbar-Abad The same ref. as Anbar-Abad The same ref. as Anbar-Abad Nikbakhtzadeh & Sadeghiani, 1999 The same ref. as Anbar-Abad Nikbakhtzadeh & Sadeghiani, 1999 Anlaş & Newton, 2010 Nikdel & Tirgari, 1998; Tirgari & Nikbakhtzadeh, 2002; Present study- TUPH The same ref. as Anbar-Abad Tirgari & Nikbakhtzadeh, 2002 The same ref. as Anbar-Abad	
		<i>Paederus</i> Fabricius, 1775	<b><i>P. balcanicus</i> Koch, 1938</b> * Synonym: <i>P. trapeziceps</i> Scheerpeltz, 1957	Astara (38.22N, 48.51E) Noor (36.37N, 52.12E)	Present study- collected 2009 Tirgari & Nikbakhtzadeh, 2002
<b><i>P. riparius</i> (Linnaeus, 1758)</b>			Anzali (37.28N, 49.28E) <sup>1</sup> Caspian Sea southern shores <sup>2</sup> Gorgan (36.50N, 54.25E) <sup>1</sup> Macu (39.20N, 44.26E) Shahrud (36.24N, 54.58E) <sup>1</sup>	Jarrige, 1971; Smetana, 2004 Majidi-Shad et al., 1989 Samin et al. 2011a Present study- collected 2009 Samin et al. 2011b	
<i>Poederomorphus</i> des Cottes, 1862  Synonym: <i>Dioncopaederus</i> Scheerpeltz, 1957		<b><i>P. littoralis ilsae</i> Bernhauer, 1932</b> * Synonym: <i>P. lenkoranus</i> Scheerpeltz, 1957 <i>P. ilsae</i> (Coiffait, 1982)	Anzali (37.28N, 49.28E) <sup>1</sup> Akinlou (Kurdistan) <sup>2</sup> Anbar-Abad (28.28N, 57.50E) <sup>1</sup> Ardebil (38.14N, 48.17E) <sup>1</sup> Asalem (37.42N, 48.57E) <sup>1</sup> Chamkhaleh (37.13N, 50.12E) Darab (28.45N, 54.32E) Kazeroon (29.50N, 51.35E) Not specified Oshtebin (38.51N, 46.29E)	Freeman, 1958 Scheerpeltz, 1957, 1961, 1963 & Jarrige, 1971 Same ref. as Akinlou Same ref. as Akinlou Same ref. as Akinlou Tirgari & Nikbakhtzadeh, 2002 Nikbakhtzadeh & Tirgari, 2008 Nikbakhtzadeh & Sadeghiani, 1999 Coiffait, 1982; Löbl & Smetana, 2004 Present study- collected 2009	
		<b><i>P. littoralis littoralis</i> Gravenhorst, 1802</b>	Caspian Sea southern shores <sup>2</sup> Farsan (32.12N, 50.33E) Pars-Abad (39.39N, 47.55E) Shahrekord (32.02N, 50.48E)	Majidi-Shad et al., 1989 Nikbakhtzadeh & Naderi, 2009 Nikbakhtzadeh & Tirgari, 2008 Nikbakhtzadeh & Naderi, 2009	
		Unassigned species	<b><i>P. duplex spectabilis</i> Bernhauer, 1913</b> * Synonym: <i>P. spectabilis</i> Bernhauer 1915	Caspian Sea southern shores <sup>2</sup>	Janbakhtsh & Ardalan, 1977 <sup>3</sup> ; Present study- TUPH

**Table 1.** *Paederus* species (Col.: Staphylinidae) and their distribution in Iran. <sup>1</sup>Geographical grid is approximate; just indicates the center of district, <sup>2</sup>The exact location is not clear, <sup>3</sup>Reported in their publication by the synonymous name of *P. pietschmanni* Bernhauer 1913, <sup>4</sup> Medical Entomology Museum at Tehran University of Medical Sciences, <sup>5</sup> Hayk Mirzayans Insect Museum, <sup>6</sup>Reported in their publication as *P. spectabilis* Bernhauer 1915, now a subspecies of *P. duplex* Eppelsheim 1895. The listed synonyms include only those that have been reported from Iran; full synonymies for all species can be found in Smetana (2004).

from Farsan and Shahrekord in central Iran (Nikbakhtzadeh and Naderi 2009). Despite *P. littoralis ilsae*, this is a more European subspecies, and, outside Europe, has been only reported from Algeria, Cyprus and Turkey (Smetana 2004). Piryugin (2010) considers *P. fuscipes fuscipes* and *P. littoralis littoralis* to be trans-Eurasian subspecies.

*Paederus nigricornis* Bernhauer, 1911 was once collected from the foothills of Mt. Taftan. This species was already reported from Pakistan, Afghanistan, India, Nepal and China (Smetana 2004).

*Paederus tamulus* Erichson, 1840, which is another member of subgenus *Eopaederus*, was several times collected from Makran in southeastern Iran. This is an Asian species, whose distribution stretched from Afghanistan and the Indian subcontinent to east and Southeast Asia (Smetana 2004).



*Paederus (Eopaederus) limnophilus* Erichson, 1840 includes the synonym *P. carpathicus* Wendeler, 1926, and was reported from the northernmost point of the Iranian territory (Nikbakhtzadeh and Tirgari 2008). It is in fact a European species (de Jong 2011) which has never been reported outside European borders. We identified this species based on the key and illustrations of Coiffait (1982), but the collected material still needs to be compared with type specimens.

Janbakhsh and Ardalan (1977) collected *P. spectabilis* Bernhauer, 1915 from the Caspian Sea region. This was treated as a subspecies of *P. duplex* Eppelsheim, 1895 by Fagel (1958) and has not yet been allocated to any of the defined sub-generic divisions (Table 1). *Paederus duplex* and its 3 subspecies have only been known from Ethiopia (Fagel 1958), except for this record from Iran. Therefore further work is needed to confirm this identification.

*Paederus balcanicus* Koch, 1938, which was previously reported by Tirgari and Nikbakhtzadeh (2002) from northern Iran (Fig. 1), was recently found in Astara in the westernmost part of the Caspian Sea (Table 1). This is a common species in central Europe and the Eastern Mediterranean region (Coiffait 1982; Smetana 2004), which includes the synonym *P. trapeziceps* Scheerpeltz, 1957 (Smetana 2004; Anlaç and Newton 2010).

*Paederus riparius* (Linnaeus, 1758) is found throughout Europe, in Egypt and Algeria and Turkey, Iran, and central Asia (Coiffait 1982; Smetana 2004). It was first collected from Anzali (Jarrige 1971) and an unknown locality along the Caspian Sea shores (Majidi-Shad et al. 1989). Smetana (2004) reported this species from Iran without mentioning the locality. It has been recently collected from Gorgan at the eastern side of the Caspian Sea (Samin et al. 2011a) and Shaurud in Semnan Province (Samin et al. 2011b). We collected *P. riparius* from Macu in north-western Iran alongside the Turkey-Azerbaijan borders (Table 1). This species was assumed to be a western Palaearctic species (Coiffait 1982), but Pirugin (2010) believes it is more a Holarctic species.

*Paederus balachowskyi* (Jarrige, 1971) and *P. mesopotamicus* Eppelsheim, 1889 have been recently considered synonymous (Willers 2011). In our study, *P. mesopotamicus* was collected from two counties in central Iran (Nikbakhtzadeh and Naderi 2009). Using the synonym name of *P. pietschmanni* Bernhauer, 1913, it was for the first time referred to as the agent of *Paederus* dermatitis in northern Iran (Janbakhsh and Ardalan 1977). We examined the deposited material by Janbakhsh in TUPH and could confirm those specimens as *P. mesopotamicus*. Examining the *Paederus* collection at HMIM, we found specimens of *P. mesopotamicus* from the southern coasts of the Caspian Sea (Sadat Mahalleh), which had been collected in 1978. The approximate geographical grid of this collection site is shown in Table 1. *Paederus mesopotamicus* was reported from Chabahar and Iranshahr (Jarrige 1971) and Minab and Nikshahr (Willers 2011) in south-east Iran; but the exact collecting locality has not been mentioned. There is also another record for *P. mesopotamicus* from Kurdistan, but the locality has not been mentioned (Smetana 2004; Li and Zhou 2008).

Considering species mentioned in the literature, *Paederus* materials deposited in the visited museums and our findings, 14 species and subspecies of the genus *Paederus*, which are grouped in five subgenera, occur in Iran. These subgenera are *Eopaederus*, *Harpopaederus*, *Heteropaederus*, *Paederus* and *Poederomorphus*; however *P. duplex* is not yet attributed to any of the 13 subgenera. It should be noticed that *Paederus (Dioncopaederus)* Scheerpeltz, 1957, was made a new synonym of *Paederus (Poederomorphus)* Gautier des Cottés, 1862 (Herman 2003).

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