



A checklist of the dung beetles (Coleoptera, Scarabaeidae, Scarabaeinae) deposited at Pakistan Museum of Natural History

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ABSTRACT. The Pakistan Museum of Natural History (PMNH) holds a large number and historically valuable specimens of insects that were collected from various parts of the country before and after the independence of the Indo-Pak subcontinent (1917–2024). In this study, we examined 605 specimens of dung beetles of subfamily Scarabaeinae Latreille, 1802, and identified 26 species belonging to 12 genera and seven tribes. The tribes consist of Coprini Kolbe, 1805 (nine species), Onthophagini Lacordaire, 1856 (six species), Onitini Laporte, 1840 (six species), Gymnopleurini Lacordaire, 1856 (two species), Oniticellini d’Orbigny, 1916 (one species), Scarabaeini Latreille, 1802 (one species), and Sisyphini Mulsant, 1842 (one species). This study adds one species to the scarabid fauna of Pakistan, *Onthophagus (Palaeonthophagus) conspersus* Reitter, 1893.

Key words: Coprini, Onthophagini, Ontini, Gymnopleurini, South Asia

Received:

23 May, 2023

Accepted:

04 March, 2024

Published:

10 March, 2024

Subject Editor:

Hiva Naserzadeh

Citation: Abbas, M., Khaliq, S., Masroor, R. & Hassan, M.A., (2024) A checklist of the dung beetles (Coleoptera, Scarabaeidae, Scarabaeinae) deposited at Pakistan Museum of Natural History. *Journal of Insect Biodiversity and Systematics*, 10 (2), 415–430.

INTRODUCTION

The family Scarabaeidae is the largest and most diverse group with approximately 86% of all described species in the superfamily Scarabaeoidea. It consists of more than 30,000 species and is distributed worldwide (Cave & Ratcliffe, 2008; Chandra et al., 2012). Members in the subfamily Scarabaeinae are commonly known as dung beetles and contain more than 6,500 species in 279 genera (Schoolmeesters, 2018). Dung beetles play an important role in dung decomposition, nutrient cycling, seed dispersal and as ecosystem cleaners in the form of rollers, tunnelers and dwellers (Noriega et al., 2018; Milotic et al., 2019). Dung beetles are highly sensitive to environmental changes and serve as indicators of disturbances within their habitat, implying broader implications for climate change on a global scale. Their community structures are dependent on their habitat management and environmental changes, making them sensitive to the extinction or removal of particular species. This highlights the potential of

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dung beetle populations as bioindicators for evaluating environmental health and predicting the impacts of climate change (Nichols et al., 2008; Buse et al., 2018).

The composition of the scarabid beetle fauna of Pakistan has not yet received a thorough investigation based on large sampling data from the country. The existing knowledge of Pakistani scarabid fauna is largely based on limited collection data, which are mainly published by both regional and foreign experts. The first study on scarabid beetles of this region was conducted by Gilbert Arrow who published primitive lists of Lamellicornia in 1917, 1925 and 1931. So far, several faunal studies were conducted on the dung beetles of Pakistan including, Abdullah & Roohi (1968, 1969), Hashmi & Tashfeen (1992), Keith (2001, 2002), Bai et al. (2006), Löbl & Smetana (2006), Kabakov (2006), Ahrens (2007), Keith (2007), Kabakov (2008), Zídek & Pokorný (2008), Drumont et al. (2009), Keith (2010), Keith & Sabatinelli (2010), Ratcliff & Ahmed (2010), Montreuil (2011), Siddiqui & Kamaluddin (2011), Keith & Saltin (2012), Ahmed et al. (2014a, 2014b), Siddiqui et al. (2014), Abbas et al. (2015), Ali et al. (2015), Noureen et al. (2015a, 2015b), Sabatinelli & Ahrens (2015), Ziani et al. (2015), Zubair & Ratcliffe (2015), Ahrens & Fabrizi (2016), Génier & Moretto (2017), Ghazanfar et al. (2017), Fazal et al. (2018), Sreedevi et al. (2018), Montreuil et al. (2019), Ziani et al. (2019), Hussain et al. (2020), Zídek (2020), Noureen et al. (2021), Hussain et al. (2022), Moretto & Minetti (2022), and Abbas et al., (2023). Based on available published records and new findings in the present study, the diversity of Scarabaeidae in Pakistan includes more than 150 species.

This study is an attempt to update the available information regarding the specimens of dung beetles collected from various parts of Pakistan housed at the Insect Repository of Pakistan Museum of Natural History (PMNH).

MATERIAL AND METHODS

The specimens were examined with a Kyowa Optical Microscope (Model SDZ-P) and species were identified based on the following available published literature: Arrow (1931), Balthasar (1963a, 1963b), Löbl & Smetana (2006), Montreuil (2011), Abbas et al. (2015, 2023), Génier & Moretto (2017), Bui et al. (2018), Edmonds (2018), and Moretto & Minetti (2022). After examining 605 specimens of dung beetles, the digital photographs along with the following data are given for all available species housed at PMNH: country name, locality, number of examined specimens, and complete label data for 26 species in 12 genera and seven tribes: Coprini (nine species ≈35%), Onthophagini (six species ≈23%), Onitini (six species ≈23%), Gymnopleurini (two species ≈8%), Oniticellini, Scarabaeini, and Sisyphini each represented by a single species. In some cases, Species identification was conducted in cooperation with Dr. Denis Keith (Muséum des Sciences Naturelles et de Préhistoire, France). For most of the species, we followed his comments and suggestions to ensure further confirmation, referring to the mentioned taxonomic literature. Additionally, some species were compared with materials deposited at PMNH in a recently published paper on the tribe Onitini by Abbas et al. (2023). Various collectors collected the specimens over different time spans from different habitats and ecological regions using light traps and hand-picking methods. The material examined section for each species contains distribution data and accession no (C#xxxx) along with the digital photographs.

RESULTS

The dung beetles are housed at the Pakistan Museum of Natural History, containing 26 species and belong to seven tribes: Coprini (nine species), Onthophagini (six species), Onitini (six species), Gymnopleurini (two species), Scarabaeini (one species), Oniticellini (one species), and Sisyphini (one species).

Taxonomic hierarchy

Class Insecta Linnaeus, 1758

Order Coleoptera Linnaeus, 1758

Family Scarabaeidae Latreille, 1802**Subfamily Scarabaeinae Latreille, 1802****Tribe Coprini Leach, 1815****Genus *Heliocopriss* Hope, 1837*****Heliocopriss ares* Moretto & Minetti, 2022 (Fig. 1A) (C#54262)**

Heliocopriss ares Moretto & Minetti, 2022:8. Type locality: Sri Lanka.

Material examined. PAKISTAN, Khyber Pakhtunkhwa: 3 specimens, Abbottabad, 11.VII.2007, leg. & det. M. Abbas, 7 specimens, Kohat, 11.VIII.2010, leg. & det. M. Abbas, 4 specimens, Kurram Agency, 11.VII.2012, leg. & det. M. Abbas, 5 specimens, Besham, 11.VIII.2012, leg. & det. M. Abbas, 3 specimens, Peshawar, 11.VIII.2013, leg. & det. M. Abbas, 1 specimen, Buner, 11.VIII.2013, leg. & det. M. Abbas, 1 specimen, Malakand, 1.VII-VIII.2000, leg. M. Bashir, det. S. Khaliq; Sindh: 1 specimen, Karachi, 1.V.1980, leg. Anonymous, det. S. Khaliq.

Distribution. Khyber Pakhtunkhwa: Abbottabad, Besham, Kohat, Kurram Agency (Abbas et al., 2015; Moretto & Minetti, 2022).

***Heliocopriss midas* (Fabricius, 1775) (Fig. 1B) (C#1277)**

Scarabaeus midas Fabricius, 1775:21. Type locality: India.

Material examined. PAKISTAN, Islamabad Capital: 1 specimen, 14.VII.1991, leg. Ahmad, det. Khaliq, 1 specimen, 14.XII.1980, leg. Anonymous, det. S. Khaliq; Punjab: 1 specimen, Khabikki Lake, Khushab, 3-7.VIII.2007, leg. M. Abbas, det. S. Khaliq; Khyber Pakhtunkhwa: 9 specimens, Buner, 11.VIII.2007, leg. & det. M. Abbas, 1 specimen, Hamidan, Karak, 24.VI.2020, leg. S.A. Khan, det. S. Khaliq; 3 specimens, Mansehra, 3.VIII.2006, leg. & det. M. Abbas; Sindh: 1 specimen, Sadiqabad, Hyderabad, 2.XII.1954, leg. Qutbuddin, det. S. Khaliq.

Distribution. Balochistan: Quetta; Khyber Pakhtunkhwa: Buner, Dir, Mansehra, Peshawar; Punjab: Chakwal (Kallar Kahar); Sindh: Tharparkar (Chilhar) (Hashmi & Tashfeen, 1992; Siddiqui et al., 2014; Abbas et al., 2015).

***Heliocopriss dominus* Bates, 1868 (Fig. 1C) (C#72433)**

Heliocopriss dominus Bates, 1868:88. Type locality: India; *Heliocopriss mouhotus* Sharp, 1878:155.

Material examined. INDIA, Assam: 1 specimens, Garo Hill, Tura, 6.VII.1917, leg. Anonymous, det. S. Khaliq.

Distribution. India (not recorded from Pakistan).

Genus *Catharsius* Hope, 1837***Catharsius molossus* (Linnaeus, 1758) (Fig. 1D) (C#68752)**

Scarabaeus molossus Linnaeus, 1758:347. Type locality: India; *Scarabaeus abbreviatus* Herbst, 1789; *Scarabaeus herbiceus* Herbst, 1789; *Catharsius janus* Olivier, 1789; *Copris ursus* Fabricius, 1801; *Catharsius davidis* Deyrolle et Fairmaire, 1878; *Catharsius timorensis* Lansberge, 1879; *Catharsius dayacus* Lansberge, 1886; *Catharsius dubius* Paulian, 1936; *Catharsius borneensis* Paulian, 1936; *Catharsius kangeanus* Paulian, 1936.

Material examined. PAKISTAN, Islamabad Capital: 1 specimen, 18.VII.2007, leg. M. Fida, det. S. Khaliq, 1 specimen, Islamabad, 29.VI.17, leg. M. Shan, det. S. Khaliq, 1 specimen, 30.IX.1981, leg. M. Fida, det. S. Khaliq, 1 specimen, 29.III.2005, leg. K. Hussain, det. M. Abbas; Khyber Pakhtunkhwa: 5 specimens, Swat, 29.VII.2005, leg. & det. M. Abbas, 1 specimen, Dir, 4.VIII.2006, leg. & det. M. Abbas, 7 specimens, Swabi, 9.IX.2007, leg. & det. M. Abbas, 7 specimens, Mardan, 12.VI.2010, leg. & det. M. Abbas, 9 specimens, Chitral, 12.VIII.2012, leg. & det. M. Abbas, 9 specimens, Abbottabad, 13.VII.2013, leg. & det. M. Abbas, 20 specimens, Buner, 1.VII-VIII.2000, leg. M. Bashir, det. S. Khaliq, 1 specimen, Kopar, Malakand, 16.VII.2020, leg. S. Khan, det. S. Khaliq, 1 specimen, Kopar, Malakand, 18.VII.2020, leg. S. Khan, det. S. Khaliq, 1 specimen, Saifi Hilly, Mohmand, 29.VI.2020, leg. M. Nawaz, det. S. Khaliq,

1 specimen, Batal, 2.VII-VIII.2000, leg. M. Bashir, det. S. Khaliq; Sindh: 1 specimen, Lawrence Road, Karachi, 19.III.64, leg. M. Ayyub, det. S. Khaliq, 1 specimen, Shah Dadu, 19.II.1953, leg. M. Khan, det. S. Khaliq; Punjab: 1 specimen, Birgran, Murree, 26.IX.1938, leg. I. S. Parathi, det. S. Khaliq 1 specimen, Rawat, Rawalpindi, 26.VII.2005, leg. & det. M. Abbas; INDIA, Assam. 1 specimen, Dalat, South Assam, 1.III-V.1918, leg. C. Boden Kloss, det. Anonymous.

Distribution. Azad Kashmir: Chikar (Muzaffarabad), Palandri, Rawalakot; Khyber Pakhtunkhwa: Dir, Mardan, Swabi, Swat (Kanju), Waziristan; Punjab: Attock (Fateh Jang), Chakwal (Kallar Kahar), Layyah (Fateh Pur); Sindh: Hyderabad (Tandojam), Tharparkar (Chelhar) (Hashmi & Tashfeen, 1992; Siddiqui et al., 2014).

***Catharsius granulatus* Sharp, 1875 (Fig. 1E) (C#54266)**

Catharsius granulatus Sharp, 1875:41. Type locality: India.

Material examined. PAKISTAN, Islamabad Capital: 2 specimens, 22.V.2018, leg. M. Khurram, det. S. Khaliq, 1 specimen, 12.VII.2005, leg. & det. M. Abbas; Khyber Pakhtunkhwa: 3 specimens, Buner, 1.VII-VIII.2000, leg. M. Bashir, det. S. Khaliq, 17 specimens, Buner, 2.VII-VIII.2000, leg. M. Bashir, det. S. Khaliq, 2 specimens, Badraga, Malakand, 23.VI.2020, leg. & det. S. Khan, 1 specimen, Mansehra, 1.VII-VIII.2000, leg. M. Bashir, det. S. Khaliq, 1 specimen, Kopar, Malakand, 18.VII.2020, leg. S. Khan, det. M. Abbas; Punjab: 1 specimen, Bari, Chakwal, 14.IV.2003, leg. K. Mahmood, det. S. Khaliq, 1 specimen, Bari, Chakwal, 19.IX.2003, leg. K. Mahmood, det. S. Khaliq, 1 specimen, Khabeki Lake, Khushab, 3-7.VIII.2007, leg. & det. M. Abbas, 1 specimen, Rawalpindi, 29.VIII.82, leg. Anonymous, det. S. Khaliq, 1 specimen, Ratta road, Rawalpindi, 19.X.51, leg. M. Ali, det. S. Khaliq; BANGLADESH, 2 specimens, Chittagong, 11.I.1959, leg. M. Ayyub, det. S. Khaliq.

Distribution. Locality unknown (Ghosh et al., 2021).

***Catharsius pithecius* (Fabricius, 1775) (Fig. 1F) (C#68734)**

Scarabaeus pithecius Fabricius, 1775:21. Type locality: India; *Scarabaeus nanus* Fabricius, 1792; *Scarabaeus sabaeus* Fabricius, 1781; *Copris sinensis* Hope, 1842; *Catharsius pithecius* Gillet, 1911

Material examined. PAKISTAN, Islamabad Capital: 5 specimens, 2.VII.2005, leg. & det. M. Abbas, 1 specimen, 20.X.1980, leg. Anonymous, det. S. Khaliq; Khyber Pakhtunkhwa: 7 specimens, Peshawar, 13.VII.2007, leg. & det. M. Abbas, 5 specimens, Abbottabad, 18.VII.2008, leg. & det. M. Abbas, 7 specimens, Kohat, 28.VII.2012, leg. & det. M. Abbas, 1 specimen, Kopar, Malakand, 18.VII.2020, leg. S. Khan, det. S. Khaliq; Punjab: 1 specimen, Khabeki lake, Khushab, 3-7.VIII.2007, leg. & det. M. Abbas; INDIA, 1 specimen, Madhya Pradesh: Harrah land, Rewa, 9.III.1927, leg. H.S. Pruthi, det. Anonymous, 1 specimen, South India, Floor of Paini Hills, 20-23.IX.1922, leg. S. Ketap, det. Anonymous.

Distribution. Azad Kashmir: Palandri; Khyber Pakhtunkhwa: Dera Ismail Khan; Punjab: Chakwal (Kallar Kahar), Sialkot; Sindh: Karachi, Hyderabad (Tandojam), Tharparkar (Chelhar) (Hashmi & Tashfeen, 1992; Hussain et al., 2020; Siddiqui et al., 2014).

Genus *Metacatharsius* Paulian, 1839

***Metacatharsius inermis* (Laporte, 1840) (Fig. 1G) (C#72438)**

Copris inermis Laporte, 1840:78. Type locality: Sénégal.

Material examined. PAKISTAN, Islamabad Capital. 3 specimens, Quaid-e-Azam University, 29.VII.2005, leg. & det. M. Abbas; Khyber Pakhtunkhwa: Abbottabad, 23.VII.2010, 4 specimens, Chitral, 12.VII.2007, 5 specimens, Nowshera, 14.VIII.2013, 4 specimens, Mansehra, 13.VIII.2006, 6 specimens, leg. & det. M. Abbas.

Distribution. Azad Kashmir: Pallandri; Khyber Pakhtunkhwa: Swat (Kanju); Punjab: Bhakkar, Chakwal (Kallar Kahar), Dera Ghazi Khan, Faisalabad, Rahim Yar Khan, Toba Tek Singh (Kamalia); Sindh: Malir, Mirpur Khas, Naukot, Hyderabad (Tandojam), Tharparkar (Chelhar) (Arrow, 1931; Siddiqui et al., 2014).

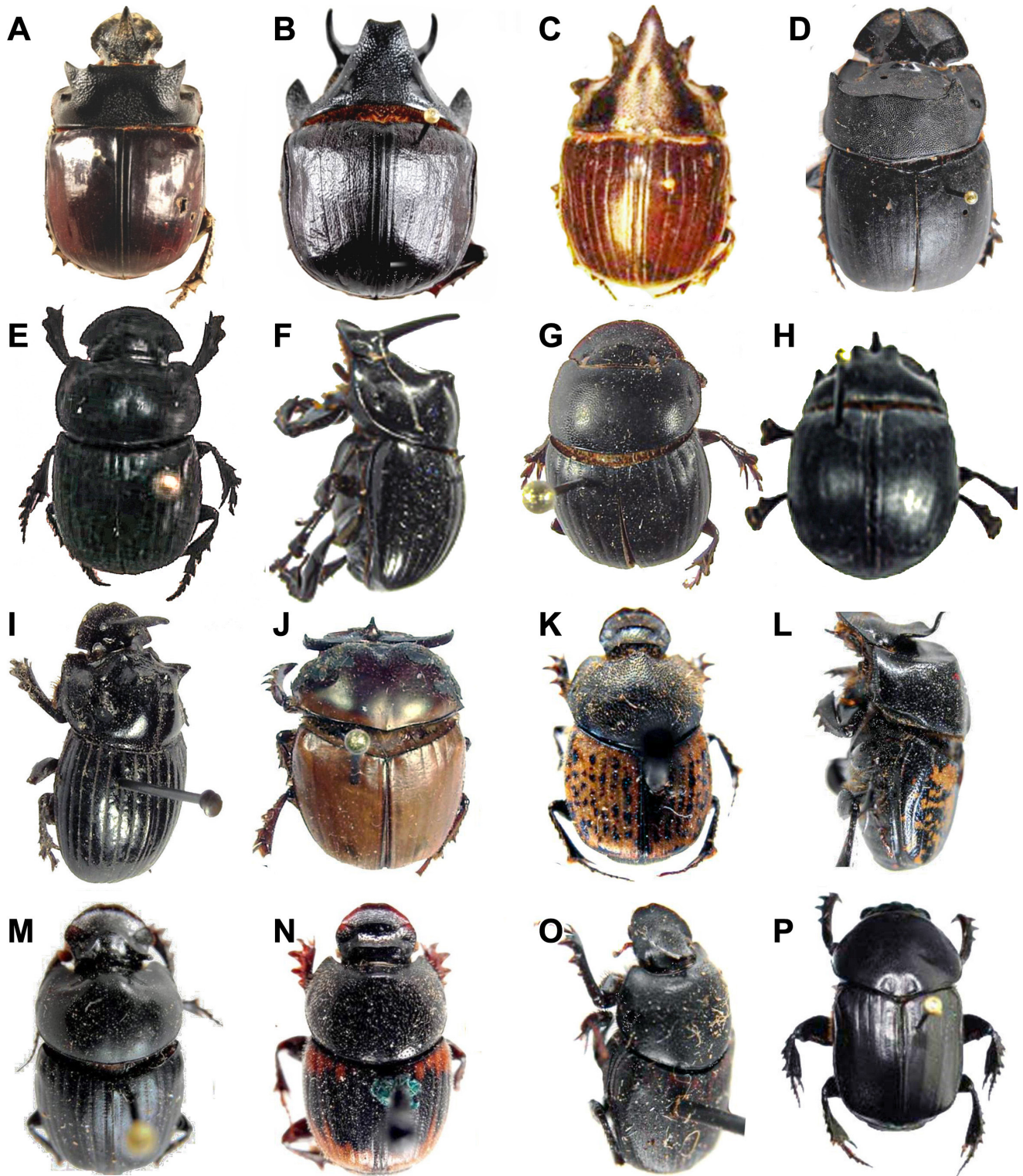


Figure 1. The Scarabaeinae from Pakistan. **A.** *Heliocopris ares* Moretto & Minetti, 2022 [♂, 29–30 mm]; **B.** *Heliocopris midas* (Fabricius, 1775) [♂, body length, 24–30 mm]; **C.** *Heliocopris dominus* Bates, 1868 [♂, 52 mm]; **D.** *Catharsius molossus* (Linnaeus, 1758) [♂, 22–30 mm]; **E.** *Catharsius granulatus* Sharp, 1875 [♀, 25–37 mm]; **F.** *Catharsius pithecius* (Fabricius, 1775) [♂, 14–22 mm]; **G.** *Metacatharsius inermis* (Laporte, 1840) [♂, 20–28.5 mm]; **H.** *Copris sacontala* Redtenbacher, 1848 [♂, 20–24 mm]; **I.** *Copris sarpedon* Harold, 1868 [♂, 14–17 mm]; **J.** *Digitonthophagus bonasus* (Fabricius, 1775) [♂, 9.0–14 mm]; **K.** *Onthophagus conspersus* Reitter, 1893 [♂, 6.5–7.8 mm]; **L.** *Onthophagus marginalis nigrimargo* Goidanich, 1926 [♂, 6.0–12 mm]; **M.** *Onthophagus ramosus* (Wiedemann, 1823) [♀, 8.0–11 mm]; **N.** *Onthophagus falsus* Gillet, 1925 [♀, 5.5–7.5 mm]; **O.** *Onthophagus concolor* Sharp, 1878 [♂, 6.0–10 mm]; **P.** *Onitis falcatus* (Wulfen, 1786) [♀, 15–22 mm].

Genus *Copris* Geoffroy, 1762

Copris sacontala Redtenbacher, 1848 (Fig. 1H) (C#54303)

Copris sacontala Redtenbacher, 1848:519. Type locality: India.

Material examined. PAKISTAN, Khyber Pakhtunkhwa: 1 specimen, Chitral, 10.VII.2011, 1 specimen, Kurram Agency, 09.VIII.2013, leg. & det. M. Abbas, 4 specimen, Buner, 1.VII-VIII.2000, leg. M. Bashir, det. S. Khaliq; Punjab: 7 specimens, Murree, 10.V.2009, leg. & det. M. Abbas.

Remarks. This species is found in the Himalayan dry temperate forests, inner valleys in the mountainous environments in sandy to heavy loamy soils and mostly in grasslands and pastures in cooler regime and is particularly good tolerant to frost.

Distribution. Locality unknown (Schoolmeesters, 2024), Khyber Pakhtunkhwa: Buner, Chitral, Kurram Agency; Punjab: Murree (current study).

Copris sarpedon Harold, 1868 (Fig. 1I) (C#72441)

Copris sarpedon Harold, 1868:75. Type locality: India; *Copris pompilius* Waterhouse, 1875; *Copris sexdentatus* Redtenbacher, 1844.

Material examined. PAKISTAN, Khyber Pakhtunkhwa: 4 specimens, Chitral, 13.VIII.2013, 7 specimens, Swat, 12.VII.2007, leg. & det. M. Abbas.

Remarks. This species represents the new country record for Pakistan and extends the distribution across India to Pakistan. It is distributed in the Himalayan moist temperate forests in the mountainous environments and is mostly found in the vicinities of human habitations in the rocky habitats.

Distribution. Azad Kashmir: Rawalakot (Siddiqui et al., 2014).

Tribe Onthophagini Lacordaire, 1856

Genus *Digitonthophagus* Balthasar, 1959

Digitonthophagus bonasus (Fabricius, 1775) (Fig. 1J) (C#86918)

Scarabaeus bonasus Fabricius, 1775:23. Type locality: Tranquebariae [=Tharangambadi, Tamil Nadu State, India].

Material examined. PAKISTAN, Islamabad Capital: 2 specimens, Fatima Jinnah Park, 24.V.1981, leg. A. Ghaffor, det. M. Abbas, 2 specimens, Margalla Hills, 29.VII.2005, leg. & det. M. Abbas; Khyber Pakhtunkhwa: 1 specimen, Bunair, 1.VII-VIII.2000, leg. M. Bashir, det. M. Abbas, 3 specimens, Swat, 10.VII.2008, leg. & det. M. Abbas, 4 specimens, Swabi, 26.VII.2013, leg. & det. M. Abbas, 2 specimens, Saifi hilly Mohmand, 29.VI.2020, leg. M. Nawaz, det. S. Khaliq, 29 specimens, Mansehra, 1.VII-VIII.2000, leg. M. Bashir, det. M. Abbas, 7 specimens, Haripur, 1.VII-VIII.2000, leg. M. Bashir, det. M. Abbas, 1 specimen, Malakand Kot, 27.IX.2020, leg. S. Khan, det. S. Khaliq; Punjab: 5 specimens, Attock Akhori, 28.V.2014, leg. Mishkat, det. S. Khaliq, 1 specimen, Ghazi Brotha, Attock, 29.V.2014, leg. Mishkat, det. M. Abbas, 1 specimen, Bahawalpur, 29.VIII.2009, leg. & det. Mishkat, 13 specimens, Lal Suhanra National Park, Bahawalpur, 10.IV.2015, leg. F. Muhammad & K. Hussain, det. M. Abbas, 4 specimens, Lal Suhanra National Park, Bahawalpur, 11.IV.2015, leg. F. Muhammad & K. Hussain, det. M. Abbas, 4 specimens, Lal Suhanra National Park, Bahawalpur, 12.IV.2015, leg. F. Muhammad & K. Hussain, det. M. Abbas, 2 specimens, Khabikki Lake, Khushab, 3-7.VIII.2007, leg. & det. M. Abbas, 8 specimens; Sindh: Taj Muhammad Rukh, Ghotki, 16.V.2009, leg. Mishkat, det. M. Abbas.

Distribution. Azad Kashmir: Pallandri, Muzaffarabad (Pir Chanasi); Khyber Pakhtunkhwa: Abbottabad, Buner, Mansehra, Peshawar, Swabi, Swat (Kanju); Punjab: Chakwal (Kallar Kahar), Islamabad Capital, Jhelum (Pind Dadan Khan), Lahore (Changa Manga Forest), Toba Tek Singh (Kamalia); Sindh: Karachi (Gulzar-e-Hijri), Malir, Mithi (Naukot), Thar, Tharparkar (Chelhar, Islamkot) (Siddiqui & Kamaluddin, 2011; Siddiqui et al., 2014; Abbas et al., 2015; Ali et al., 2015; Génier & Moretto, 2017).

Genus *Onthophagus* Latreille 1802

Onthophagus (Palaeonthophagus) conspersus Reitter, 1893 (Fig. 1K) (C#72432)

Onthophagus conspersus Reitter, 1893:210. Type locality: Azerbaijan.

Material examined. PAKISTAN, Khyber Pakhtunkhwa: 3 specimens, Kurram Agency, 8.IX.2007, 3 specimens, Malakand, 20.VIII.2012, 1 specimen, Buner, 2.IX.2013, leg. & det. M. Abbas; Punjab:

1 specimen, Rawat, 26.VII.2005, leg. & det. M. Abbas.

Distribution. Khyber Pakhtunkhwa: Buner, Kurram Agency, Malakand; Punjab: Rawat (**New country record**).

***Onthophagus (Palaeonthophagus) marginalis nigrimargo* Goidanich, 1926 (Fig. 1K) (C#72440)**

Copris marginalis Gebler, 1817:315. Type locality: Russia; *Onthophagus marmoratus* Ménériés, 1832; *Onthophagus circumscriptus* Faldermann, 1835.

Material examined. PAKISTAN, Khyber Pakhtunkhwa: 2 specimens, Kurram Agency, 12.VIII.2006, 3 specimens, Chitral, 8.IX.2008, 5 specimens, Shandur, 20.VIII.2012, leg. & det. M. Abbas.

Distribution. Locality unknown (Gorodinski, 2023).

***Onthophagus (Colobonthophagus) ramosus* (Wiedemann, 1823) (Fig. 1M) (C#72436)**

Copris ramosus Wiedemann, 1823:13. Type locality: India.

Material examined. PAKISTAN, Islamabad Capital: 7 specimens, 3.IX.2012; Khyber Pakhtunkhwa: 5 specimens, Swat, 14.IX.2007; Punjab: 8 specimens, Rawat, Rawalpindi, 26.VII.2005, leg. & det. M. Abbas.

Remarks. This species is common in the foothill habitats.

Distribution. Azad Kashmir: Pallandri, Muzaffarabad (Pir Chanasi); Khyber Pakhtunkhwa: Dera Ismail Khan; Punjab: Bhakkar, Chakwal; Sindh: Tharparkar (Siddiqui et al., 2014).

***Onthophagus (Onthophagus) falsus* Gillet, 1925 (Fig. 1N) (C#72437)**

Onthophagus falsus Gillet, 1925:223. Type locality: India.

Material examined. PAKISTAN, Khyber Pakhtunkhwa: 5 specimens, Besham, 14.IX.2007, 7 specimens, Upper Swat, 13.IX.2012; Punjab: 1 specimen, Rawat, 26.VII.2005, leg. & det. M. Abbas.

Distribution. Sindh: Karachi (Gulzar-e-Hijri), Malir, Tharparkar (Chilhar), Mithi (Naukot) (Siddiqui et al., 2014).

***Onthophagus (Altonthophagus) concolor* Sharp, 1878 (Fig. 1O) (C#72439)**

Onthophagus concolor Sharp, 1878:170. Type locality: India.

Material examined. PAKISTAN, Khyber Pakhtunkhwa: 3 specimens, Chitral, 14.IX.2007, 5 specimens, Kurram Agency, 2.VIII.2010, 9 specimens, Mansehra, 13.IX.2012, leg. & det. M. Abbas.

Remarks. This species is usually found at higher altitudes in alpine forests as well as in the alpine pastures.

Distribution. Locality unknown (Schoolmeesters, 2024), Khyber Pakhtunkhwa: Chitral, Kurram Agency, Mansehra (current study).

Tribe *Ontini* Laporte, 1840

Genus *Onitis* Fabricius, 1798

***Onitis falcatus* (Wulfen, 1786) (Fig. 1P) (C#72442)**

Scarabaeus falcatus Wulfen, 1786:14. Type locality: India; *Onitis sphinx* Herbst, 1789; *Onitis hymalayicus* Redtenbacher, 1844; *Onitis kiuchii* Masumoto, 1996.

Material examined. PAKISTAN, Khyber Pakhtunkhwa: 5 specimens, Buner, 9.IX.2007, 5 specimens, Mansehra, 12.VII.2008, 5 specimens, Besham, 25.VIII.2012, 6 specimens, Malakand, 6.VIII.2013, leg. & det. M. Abbas.

Distribution. Azad Kashmir: Rawalakot; Khyber Pakhtunkhwa: Dera Ismail Khan; Sindh: Tharparkar (Arrow, 1931; Hashmi & Tashfeen, 1992; Siddiqui et al., 2014; Abbas et al., 2023).

Onitis lama van Lansberge, 1875

Onitis lama van Lansberge, 1875:123. Type locality: India.

Material examined. PAKISTAN, Islamabad Capital: 1 specimen 18.V.2005, 7 specimens, 12.VI.2009; Khyber Pakhtunkhwa: 5 specimens, Buner, 18.VII.2006, 4 specimens, Abbottabad, 2.VII.2013, leg. & det. M. Abbas.

Distribution. Khyber Pakhtunkhwa: Abbottabad, Buner, Peshawar, Swat (Kanju); Punjab: Islamabad Capital (Siddiqui et al., 2014; Abbas et al., 2023).

***Onitis philemon* Fabricius, 1801 (Fig. 2A) (C#51014)**

Onitis philemon Fabricius, 1801:30. Type locality: India; *Onitis philemon* var. *sphinx* Illiger, 1804; *Onitis distinctus* Lansberge, 1875.

Material examined. PAKISTAN, Khyber Pakhtunkhwa: 7 specimens, Mansehra, 1.VII.2006, 5 specimens, Peshawar, 11.VI.2010, 9 specimens, Chitral, 20.VII.2012, 9 specimens, Nowshera, 18.VIII.2013; Punjab: 1 specimen, Rawa, 26.VII.2005, leg. & det. M. Abbas.

Distribution. Azad Kashmir: Poonch (Rawalakot); Khyber Pakhtunkhwa: Abbottabad, Chitral, Kohat, Nowshera, Mansehra, Peshawar; Punjab: Toba Tek Singh (Kamalia) (Siddiqui et al., 2014; Abbas et al., 2023).

***Onitis subopacus* Arrow, 1931 (Fig. 2B) (C#50407)**

Onitis subopacus Arrow, 1931:395. Type locality: Sri Lanka; New name for *Onitis philemon* Lansberge, 1875 preoccupied; *Onitis philemon* Lansberge, 1875, Junior homonym of *Onitis philemon* Fabricius, 1801.

Material examined. PAKISTAN, Islamabad Capital: 3 specimens, 12.VII.2005; Khyber Pakhtunkhwa: 7 specimens, Abbottabad, 11.V.2005, 5 specimens, Chitral, 21.VII.2007, 9 specimens, Peshawar, 23.VIII.2012, 4 specimens, Kohat, 3.VII.2013, 5 specimens, Dir, 13.IV.2014, leg. & det. M. Abbas.

Distribution. Azad Kashmir: Poonch (Rawalakot), Sudhanoti (Palandri); Gilgit-Baltistan: Gilgit (Naltar); Khyber Pakhtunkhwa: Abbottabad, Besham, Chitral, Dir, Kohat, Nowshera, Peshawar, Swat (Marghazar); Punjab: Islamabad Capital, Rawalpindi (Murree), Toba Tek Singh (Kamalia); Sindh: Malir (Siddiqui et al., 2014; Abbas et al., 2023).

***Onitis virens* Lansberge, 1875 (Fig. 2C) (C#51602)**

Onitis virens Lansberge, 1875:135. Type localities: India & Sri Lanka; *Onitis amplexans* Lansberge, 1875.

Material examined. PAKISTAN, Islamabad Capital: 1 specimen, Quaid-e-Azam University, 29.VII.2005, 6 specimens, 2.VII.2012, leg. & det. M. Abbas; Khyber Pakhtunkhwa: 12 specimens, Mansehra, 1.VII-VIII.2000, leg. M. Bashir, det. S. Khaliq, 1 specimen, Batal, 1.VII-VIII.2000, leg. M. Bashir, det. M. Abbas, 5 specimens, Nowshera, 12.V.2010, 9 specimens, Peshawar, 13.VIII.2013, leg. & det. M. Abbas; Punjab: 1 specimen, Rawat, Rawalpindi, 26.VII.2005, leg. & det. M. Abbas.

Distribution. Khyber Pakhtunkhwa: Abbottabad, Kohat, Mansehra, Mardan, Nowshera, Peshawar, Swat (Kanju); Punjab: Islamabad Capital; Sindh: Tharparkar (Siddiqui et al., 2014; Abbas et al., 2023).

Genus *Cheironitis* Lansberge, 1875***Cheironitis arrowi* Janssens, 1937 (Fig. 2D) (C#72434)**

Cheironitis arrowi Janssens, 1937:159. Type locality: India.

Materials examined. PAKISTAN, Islamabad Capital: 1 specimen, 20.V.2005; Khyber Pakhtunkhwa: 2 specimens, Malakand, 26.II.2005, 5 specimens, Swat, 20.VII.2010, 7 specimens, Mardan, 27.I.2012; Punjab: 9 specimens, Murree, 13.VIII.2013, leg. & det. M. Abbas.

Distribution. Khyber Pakhtunkhwa: Mansehra, Mardan, Malakand, Swat; Punjab: Islamabad Capital, Rawalpindi (Murree); Sindh: Karachi (Siddiqui et al., 2014; Abbas et al., 2023).

Tribe Oniticellini Kolbe, 1905**Genus *Euoniticellus* Janssens, 1953*****Euoniticellus fulvus* (Goeze, 1777) (Fig. 2E) (C#68815)**

Copris fulvus Geoffroy, 1785; *Euoniticellus flavipes* Fabricius, 1781; *Oniticellus flavipes* subsp. *fulvicollis* Mulsant, 1842; *Oniticellus flavipes* subsp. *fulvipterus* Mulsant, 1842; *Oniticellus flavipes* subsp. *maculatus* Mulsant, 1842; *Oniticellus flavipes* subsp. *minuta* Seabra, 1907; *Oniticellus flavipes* subsp. *subcornutus* Mulsant, 1842; *Oniticellus fulvicollis* Mulsant, 1842; *Oniticellus fulvipterus* Mulsant, 1842; *Oniticellus maculatus* Mulsant, 1842; *Oniticellus minuta* Seabra, 1907; *Oniticellus subcornutus* Mulsant, 1842; *Scarabaeus flavipes* Fabricius, 1787; *Scarabaeus fulvipes* Fabricius, 1781; *Scarabaeus thoracocircularis* Laicharting, 1781.

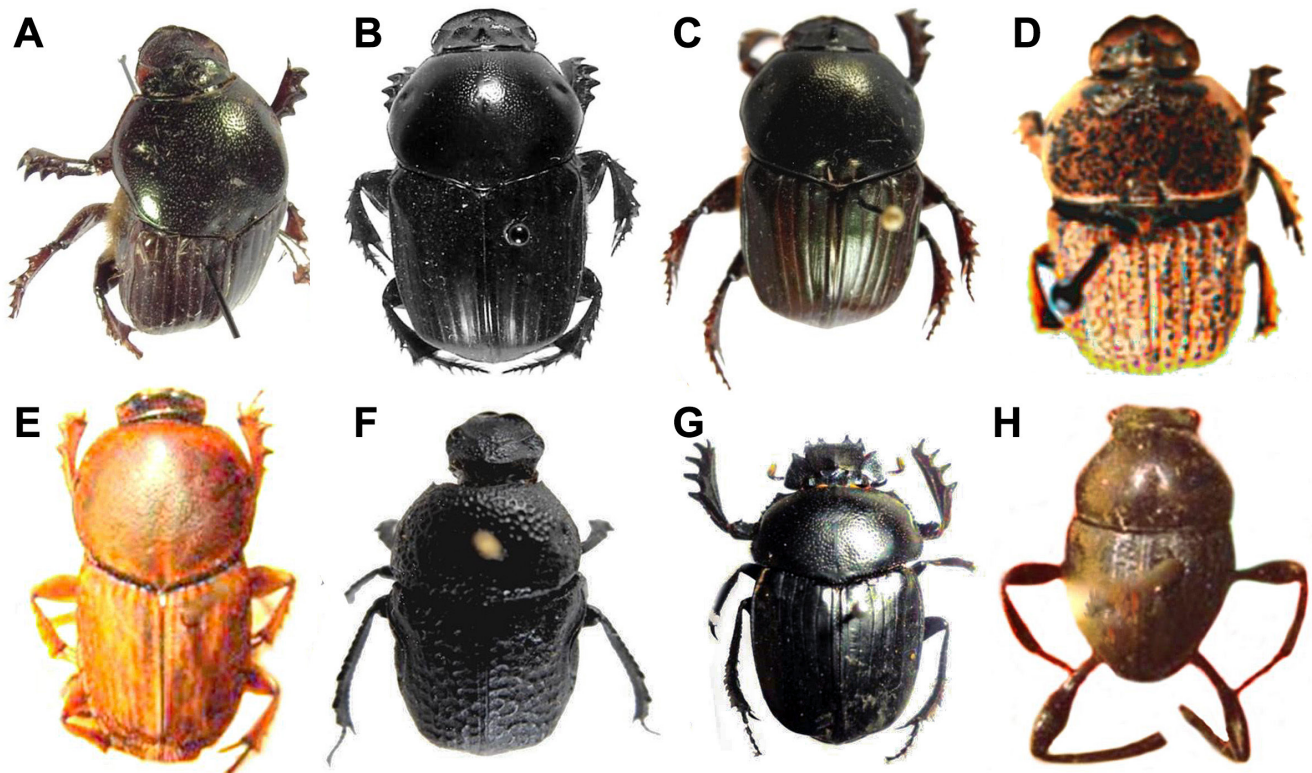


Figure 2. The Scarabaeinae from Pakistan. **A.** *Onitis philemon* Fabricius, 1801 [♀, 13.5–19 mm]; **B.** *Onitis subopacus* Arrow, 1931 [♂, 15–20 mm]; **C.** *Onitis virens* Lansberge, 1875 [♀, 18–22 mm]; **D.** *Cheironitis arrowi* Janssens, 1937 [♂, 9.2–10.1 mm]; **E.** *Euoniticellus fulvus* (Goeze, 1777) [♀, 8.0–12.2 mm]; **F.** *Gymnopleurus flagellates hornei* Waterhouse, 1890 [♀, 19–22.5 mm]; **G.** *Scarabaeus bannuensis* Janssens, 1940 [♂, 22–30 mm]; **H.** *Sisyphus* (s. str.) *longipes* (Olivier, 1789) [♂, 5.0–7.0 mm].

Material examined. PAKISTAN, Islamabad Capital: 1 specimen, Quaid-e-Azam University, 29.VII.2005, leg. M. Abbas, det. S. Khaliq; Khyber Pakhtunkhwa: 5 specimens, Heroshah, Malakand, 13.VII.2020, leg. S. Khan, det. S. Khaliq, 4 specimens, Heroshah, Malakand, 28.VII.2020, leg. S. Khan, det. S. Khaliq, 1 specimen, Dargai, Malakand, 19.VII.2020, leg. S. Khan, det. M. Abbas.

Distribution. Locality unknown (Löbl & Smetana, 2006).

Tribe Gymnopleurini Lacordaire, 1856

Genus *Gymnopleurus* Illiger, 1803

Gymnopleurus flagellatus hornei Waterhouse, 1890 (Fig. 2F) (C#72443)

Scarabaeus flagellatus Fabricius, 1787:17. Type locality: India; *Gymnopleurus hornei* Waterhouse, 1890.

Material examined. PAKISTAN, Khyber Pakhtunkhwa: 3 specimens, Kurram Agency, 14.VI.2007, 3 specimens, Dir, Khyber, 19.VI.2008, 3 specimens, Khyber Agency, 12.VII.2012, 6 specimens, Mohmand Agency, 23.IV.2013, leg. & det. M. Abbas.

Distribution. Azad Kashmir: Pallandri; Khyber Pakhtunkhwa: Bajor Agency (Arrow, 1931; Lobel & Smetana, 2006; Siddiqui et al., 2014).

Gymnopleurus miliaris (Fabricius, 1875)

Scarabaeus miliaris Fabricius, 1775:817. Type locality: India.

Material examined. PAKISTAN, Khyber Pakhtunkhwa: 4 specimens, Malakand, 23.VI.2020, leg. S. Khan, det. S. Khaliq.

Distribution. Azad Kashmir: Muzaffarabad; Khyber Pakhtunkhwa: Dera Ismail Khan, Mansehra; Sindh: Tharparkar (Arrow, 1931; Hashmi & Tashfeen, 1992; Siddiqui et al., 2014).

Tribe Scarabaeini Latreille, 1802

Genus *Scarabaeus* Linnaeus, 1758

Scarabaeus bannuensis Janssens, 1940 (Fig. 2G) (C#72444)

Scarabaeus bannuensis Janssens, 1940:49. Type locality: Pakistan.

Material examined. PAKISTAN, Khyber Pakhtunkhwa: 1 specimen, Kohat, 12.VII.2007, 3 specimens, Kurram Agency, 16.V.2010, leg. & det. M. Abbas.

Distribution. Khyber Pakhtunkhwa: Bannu (Zídek & Pokorný, 2008).

Tribe Sisyphini Mulsant, 1842

Genus *Sisyphus* Latreille, 1807

Sisyphus (Sisyphus) longipes (Olivier, 1789) (Fig. 2H) (C#68959)

Scarabaeus longipes Olivier, 1789: 164. Type locality: India; *Scarabaeus minutus* Fabricius, 1792; *Copris helwigii* Fabricius, 1798.

Material examined. PAKISTAN, Khyber Pakhtunkhwa: 2 specimens, Malakand, 28.VII.2020, leg. S. Khan, det. S. Khaliq.

Distribution. Azad Kashmir: Muzaffarabad (Punjkot); Khyber Pakhtunkhwa: Dera Ismail Khan (Siddiqui et al., 2014).

DISCUSSION

The present checklist attempts to update the information pertaining to dung beetles deposited at the Insect Repository of the Pakistan Museum of Natural History (PMNH). PMNH holds a large number of historically valuable specimens of insects that were collected from various parts of the country before and after the independence of the Indo-Pak subcontinent. After examining 605 specimens of the subfamily Scarabaeinae Latreille, 26 species under 12 genera and seven tribes were identified. Among the 605 specimens, only four samples have distribution data from India and Bangladesh: two specimens of *Catharsius pithecius*, one specimen of *Heliocopris dominus* from India, and one specimen of *Catharsius granulatus* from Bangladesh. In Pakistan, the distribution of these known species varies significantly among different provinces, with all species recorded from Khyber Pakhtunkhwa to no records from the Balochistan province. Khyber Pakhtunkhwa province reports the highest number of genera and species (12 genera, 25 species), followed by Punjab (nine genera, 15 species), Sindh (eighth genera, 12 species), Azad Kashmir (seven genera, 11 species), Gilgit-Baltistan (one genus, one species), and Balochistan (0) (Table 1).

Currently, our understanding of the dung beetle fauna of Pakistan is still incomplete, and the species diversity across different regions remains inadequately studied. Unfortunately, the northern areas (Gilgit-Baltistan) and southwestern parts (Balochistan) of Pakistan have received less attention in the past (Abbas et al., 2015, 2023), resulting in a low diversity of dung beetle species recorded from these regions. However, we anticipate that these areas hold the potential to host a significant number of species because these areas are highly influenced by the Oriental and Palaeartic fauna in the north and Afrotropical fauna in the southwestern parts of Pakistan (Hassan et al., 2019). At present, a detailed discussion regarding biogeographical regions and regional endemism is not possible due to limited data availability. However, it is imperative for future studies to address an updated checklist of the family Scarabaeidae from Pakistan. These studies should also encompass comprehensive analyses of the regional distribution and biogeographical patterns of these genera and species within the family in Pakistan.

Table 1. The regional diversity of the dung beetle subfamily Scarabaeinae Latreille, 1802, as deposited at the Pakistan Museum of Natural History (PMNH), Islamabad, Pakistan.

Family	Subfamily	Tribe	Genus	Species	Distribution in Pakistan						Elsewhere
					AK	BA	GB	KPK	PB	SD	OC
Scarabaeidae Latreille, 1802	Scarabaeinae Latreille, 1802	Coprini	<i>Heliocopris</i>	<i>H. ares</i>				•		•	
				<i>H. midas</i>				•	•	•	
				<i>H. dominus</i>							•
			<i>Catharsius</i>	<i>C. molossus</i>	•			•	•	•	•
				<i>C. granulatus</i>				•	•		
				<i>C. pithecius</i>	•			•	•	•	•
			<i>Metacatharsius</i>	<i>M. inermis</i>	•			•	•	•	
			<i>Copris</i>	<i>C. sacontala</i>				•	•		
				<i>C. sarpedon</i>	•			•			
		Onthophagini	<i>Digitonthophagus</i>	<i>D. bonasus</i>	•			•	•	•	
				<i>Onthophagus</i>	<i>O. conspersus</i>				•		
			<i>O. nigrimargo</i>					•			
			<i>O. ramosus</i>					•	•		
			<i>O. falsus</i>					•	•	•	
			<i>O. concolor</i>				•				
		Ontini	<i>Onitis</i>	<i>O. falcatus</i>	•			•		•	
				<i>O. lama</i>				•	•		
				<i>O. philemon</i>	•			•	•		
				<i>O. subopacus</i>	•		•	•	•	•	
				<i>O. virens</i>				•	•	•	
		<i>Cheironitis</i>	<i>C. arrowi</i>				•	•	•		
		Oniticellini	<i>Euoniticellus</i>	<i>E. fulvus</i>				•	•		
		Gymnopleurini	<i>Gymnopleurus</i>	<i>G. flagellatus hornei</i>	•			•			
				<i>G. miliaris</i>	•			•		•	
		Scarabaeini	Scarabaeus	<i>S. bannuensis</i>				•			
		Sisyphini	<i>Sisyphus</i>	<i>S. longipes</i>	•			•			

Abbreviations: • = presence; AK = Azad Kashmir; BA = Balochistan; GB = Gilgit-Baltistan; KPK = Khyber Pakhtunkhwa; PB = Punjab; SD = Sindh; OC = other countries.

AUTHOR'S CONTRIBUTION

The authors confirm their contribution to the paper as follows: M. Abbas and S. Khaliq: Designed methodology and photography; M. Abbas and S. Khaliq: Wrote the initial draft of the manuscript; R. Masroor and M.A. Hassan: Reviewed and edited the manuscript; M. Abbas and M.A. Hassan: Proofreading. All authors read and approved the final version of the manuscript.

FUNDING

This research received no specific grant from any funding agencies.

AVAILABILITY OF DATA AND MATERIAL

The specimens listed in this study are deposited at the Pakistan Museum of Natural History (PMNH) and are available from the curator, upon request.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

Not applicable.

CONSENT FOR PUBLICATION

Not applicable.

CONFLICT OF INTERESTS

The authors declare that there is no conflict of interest regarding the publication of this paper.

ACKNOWLEDGMENTS

We express our sincere gratitude to Dr Denis Keith (Muséum des Sciences Naturelles et de Préhistoire, France) for his invaluable contribution in taxonomic identifications and also providing helpful literature. We also express our sincere gratitude to the number of local people who provided us valuable information or help during the field collection. This research was supported by the PSF-NSFC III/ Bio/C-PMNH (13) project.

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فهرست سوسک‌های سرگین‌غلطان (Coleoptera, Scarabaeidae, Scarabaeinae) نگهداری شده در موزه تاریخ طبیعی پاکستان

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تاریخ دریافت: ۰۴ خرداد ۱۴۰۲ | تاریخ پذیرش: ۱۴ اسفند ۱۴۰۲ | تاریخ انتشار: ۲۰ اسفند ۱۴۰۲

چکیده: موزه تاریخ طبیعی پاکستان (PMNH) دارنده دارای تعداد زیاد و ارزشمندی از نمونه‌های حشرات است که قبل و بعد از استقلال هند و پاکستان (۱۹۱۷-۲۰۲۴) از نواحی مختلف این کشور جمع‌آوری شده است. در این مطالعه، ۶۰۵ نمونه از سوسک‌های سرگین‌غلطان متعلق به زیرخانواده *Scarabaeinae* Latreille, 1802 بررسی و ۲۶ گونه متعلق به ۱۲ جنس و هفت قبیله شناسایی شد. این قبیله‌ها شامل *Coprini* Kolbe, 1805 (نه گونه)، *Gymnopleurini* (شش گونه)، *Onitini* Laporte, 1840 (شش گونه)، *Onthophagini* Lacordaire, 1856 (دو گونه)، *Lacordaire*, 1856 (یک گونه)، *Oniticellini* d'Orbigny, 1916 (یک گونه)، *Scarabaeini* Latreille, 1802 (یک گونه) و *Sisyphini* Mulsant, 1842 (یک گونه) بودند. در این بررسی، یک گونه سرگین‌غلطان به نام *Onthophagus* *conspersus* Reitter, 1893 (*Palaeonthophagus*) به فون پاکستان افزوده شد.

واژگان کلیدی: *Coprini*، *Onthophagini*، *Ontini*، *Gymnopleurini*، جنوب آسیا