

## Research Article

## New Record of Genus *Melolontha* Fabricius 1775 (Melolonthinae: Scarabaeidae) from Sindh, Pakistan

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**Abstract** | Scarabaeid beetles are major defoliator of cultivated plants and plants of barren areas. Survey was conducted to collect beetle fauna from different localities of Sindh Province. 46 specimens were captured and sorted out into Genus *Melolontha* Fabricius, 1775 of subfamily Melolonthinae with two species i-e: *Melolontha indica* Hope, 1831 and *Melolontha furcicauda* Ancy, 1881. In addition to this, *M. indica* constructed as a new regional record for Pakistan while *M. furcicauda* is reported first time from Sindh Province of Pakistan. Beside this, description of the species and distribution of species along with digital images are provided for the first time. Hopefully, present study will provide a firm basis for future researchers concerned with this group.

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**Keywords** | Sindh Province, New record, Beetles fauna, Species, *Melolontha*



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### Introduction

The genus *Melolontha* is regarded as phytophagous group of beetles. The genus comprises of 24 species worldwide. These beetles are found throughout the Palaearctic and Oriental regions. The beetles are pest of crops and their larvae are feeding on roots and adults feeding upon the laeves (Li *et al.*, 2010). These beetles cause severe damage to forestry and agriculture (Harrison and Wingfield, 2016). In addition to this, they are significant from an ecological standpoint since they provide food for a wide variety of animals and serve as hosts for a wide variety of microbes (East and Pottinger, 1975).

Melolonthinae is the largest subfamily of Scarabaeidae, containing 28 tribes, 750 genera and 11,000 species distributed throughout the worldwide (Bouchard *et al.*, 2011). These beetles are commonly known as June beetles or cockchafer (Cave and Ratcliffe, 2008). The species of these beetles can be recognized by antennal lamellae which folded tightly in 3-7 segmented club in male (Jameson and Ratcliffe, 2002; Ratcliffe *et al.*, 2002). The *Melolontha* beetles are found in palaearctic and oriental regions (Chandra and Gupta, 2013). Four to five species are present in the plains or open lowland plantations, and they are frequently listed as crop pests because their larvae and adults feed on the foliage of nearby crops and cause root

damage (Andresen, 2002). *Melolontha* is made up of about 35 species that are found in East and South-East Asia, the Himalayas, Japan, mainland China, Indochina, and Taiwan. The greatest species diversity of *Melolontha* is associated with higher altitudes and mountainous forest area (Li *et al.*, 2010) and Hazara division bearing similar topographic features could be the potential spot. Pakistan's Scarabaeidae fauna is not well known. Numerous researchers (Arrow, 1931; Abdullah and Roohi, 1968, 1969; Zahoor *et al.*, 2003; Ratcliffe and Ahmed, 2010; Keith and Saltin, 2012; Siddiqui *et al.*, 2014; Ali *et al.*, 2015; Noureen *et al.*, 2015) have conducted preliminary studies on the diversity of scarab beetles in Pakistan, but less attention has been paid to Scarab beetles of this region. This study was conducted to investigate the *Melolontha* fauna in Sindh province, Pakistan, in an effort to close the diversity gap in scarab beetles in Pakistan. The results of present study will provide a firm basis for future researchers concerned with diversity analysis of scarabaeid species.

**Materials and Methods**

The samples were collected from different habitats of Sindh Province during the October 2020 to November 2021 (Figure 1). A total of 46 samples of *Melolontha* species were captured by the help of aerial nets and hand picking. The samples were killed by using potassium cyanide in cyanide jar. The samples were than properly pinned and stretched on stretching board. The beetles were than identified, morphological features were noted down (Keith and Saltin, 2012; Arrow, 1931, 1944). Stereomicroscope was used to examine and sketch the specimens (Olympus, SZX7). For the largest and smallest individuals, measurements were taken. The body width was measured at the base of the pronotum, and the body length was measured from the apex of the clypeus to the apex of the elytra.

**Results and Discussion**

*Melolontha furcicauda* Ancy 1881  
 Genus *Melolontha* Fabricius 1775  
 Subfamily Melolonthinae  
 Family Scarabaeidae  
 (Figure 2A-C)

*Measurements (mm)*

Length of body 19 mm and width of body 12 mm.



Figure 1: Showing various districts of Sindh from where the samples were captured.

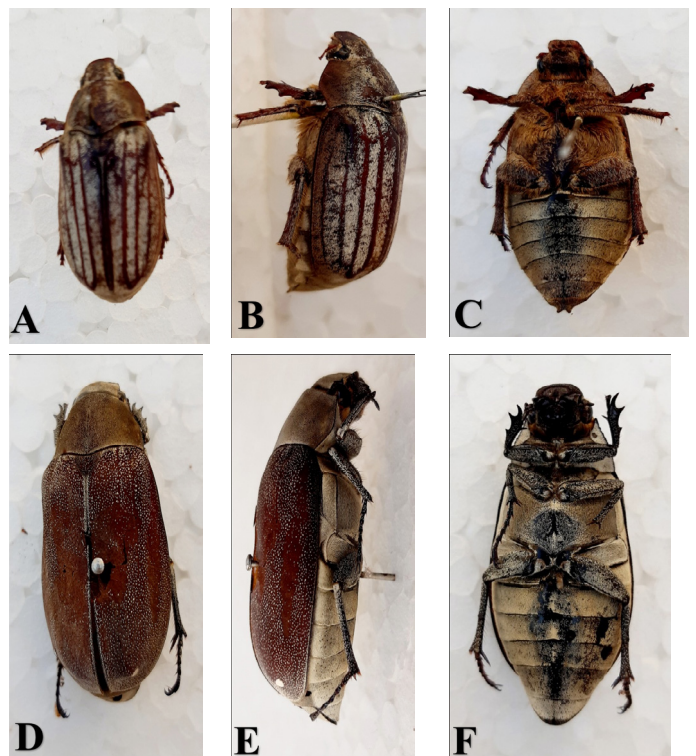


Figure 2: A-C, *Melolontha furcicauda* (Ancy, 1881); D-E, *Melolontha indica* Hope, 1831.

*Description*

Light creamy colour with light to dark brown stripes on dorsal side. Males have more even and dense puncta on their heads than females, who have coarse and uneven puncta. In comparison to males, females have a rectangular clypeus with heavily reflexed frontal borders. In contrast to female beetles, which

only have a little bit of their maxillary palp exposed, male beetles have their maxillary palps clearly visible from above the clypeus. The middle section of the pronotum has a slight depression. In contrast to male who have punctuation that is uniform throughout the pronotum, females have a small granular-like structure that is present in the center and dense along the sides. The front edge is nearly flat and slightly elevated on the sides in males. In contrast to female beetles, which have uniform punctuation across the whole pronotum, male beetles have punctations that are sparse in the center and crowded at the sides. In men, the scutellum is smaller and more rounded in shape; in females, it is broad and oval in shape. In males, the pygidium is triangular, although the edges are somewhat wavy close to the base. The bifurcated, tubular, and hairy caudal process. The caudal processes are tiny and pointed in females.

**Distribution in Sindh**

This species is distributed in Ghotki, Hyderabad, Jacobabad, Jamshoro, Karachi East, Karachi West, Kashmore, Khairpur, Larkana Naushahero Feroze, Qambar Shahdadkot, Sukkur and Shikarpur (Table 1).

**Table 1:** District wise distribution of *Melolontha furcicauda* Ancey 1881.

S. No.	District	No. of specimen
01	Ghotki	1
02	Hyderabad	2
03	Jacobabad	4
04	Jamshoro	3
05	Karachi Central	0
06	Karachi East	1
07	Karachi South	0
08	Karachi West	1
09	Kashmore	3
10	Khairpur	3
11	Larkana	2
12	N.Feroze	2
13	Qambar Shahdadkot	3
14	Shikarpur	2
15	Sukkur	2
Total		29

**Remarks**

Keith and Saltin (2012) reported this species from Khyber Pakhtunkhwa Province of Pakistan. While

this species first record from Sindh Province of Pakistan.

***Melolontha indica* Hope, 1831**  
(Figure 2D-F)

**Measurements (mm)**

Length of body 26-33mm; width of body 12.5-14 mm.

**Description**

Pronotom is light brown and elytra are Dark brown with white granular spots. Body is long and dark brown in hue, covered extremely evenly and densely in pale scales. The clypeus is rectangular, with a sharply reflexed edge and a very faint middle sinuation. The head is tightly setose and firmly and closely punctate. Antennas are quite long, flat, and 10 segments long and 7 segments wide. Pronotum strongly rounded at the sides; very finely and densely punctate; anterior angles dull but extremely obtuse; posterior angles acute and right angles; base lobed in the middle. Short and tightly setose scutellum. Scales uniformly distributed throughout the elytra, and the costae are weakly elevated. densely covered in long, silky hair on the metasternum. Horizontally formed mesosternum with a lengthy tapering process. Sharply tridentate fore tibiae; base-toothed claws. Long and extending behind, the pygidium formed a somewhat bifid process.

**Table 2:** District wise distribution of *Melolontha indica* Hope, 1831.

S. No.	District	No. of specimen
01	Ghotki	1
02	Hyderabad	1
03	Jacobabad	2
04	Jamshoro	2
05	Karachi Central	0
06	Karachi East	0
07	Karachi South	0
08	Karachi West	1
09	Kashmore	1
10	Khairpur	2
11	Larkana	1
12	N.Feroze	1
13	Qambar Shahdadkot	2
14	Shikarpur	2
15	Sukkur	1
Total		17

### Distribution in Sindh

This species is distributed in Ghotki, Hyderabad, Jacobabad, Jamshoro, Karachi West, Kashmore, Khairpur, Larkana Naushahero Feroze, Qambar Shahdadkot, Sukkur and Shikarpur (Table 2).

### Remarks

Siddiqui and Kamaluddin (2011) stated that Scarabaeid fauna of Pakistan is very rich. We agreed on this statement. At the present *M. indica* is reported for the first time from Pakistan.

### Discussion

Scarabs are a family of beetles that contain an amazing variety of members and may be found all over the planet, with the exception of the oceans and Antarctica. There are over 30,000 different species of scarabs, which account for about 10 % of all known beetle species (Guo *et al.*, 2022). Family Scarabaeidae comprises of different subfamilies Scarabeinae, Phaenomeriinae, Cetoniinae, Dynastinae, Aphodiinae Melolonthinae, Rutelinae, Glaphyrinae and Euchirinae (Endrödi, 1966). During the present study total of 46 specimens of genus *Melolontha* were collected and identified into two species i-e: *Melolontha furcicauda* Ancy 1881 and *Melolontha indica* Hope, 1831. Besides this, morphological characters are presented in detail. In addition to this, *M. indica* constructed as a new regional record for Pakistan while *M. furcicauda* is reported first time from Sindh Province of Pakistan. Keith and Saltin (2012) reported *M. furcicauda* from Khyber Pakhtunkhwa Province of Pakistan. While this species first record from Sindh Province of Pakistan. The species possess light creamy colour with light to dark brown stripes on dorsal side. Males have more even and dense puncta on their heads than females, who have coarse and uneven puncta. In comparison to males, females have a rectangular clypeus with heavily reflexed frontal borders. In contrast to female beetles, which only have a little bit of their maxillary palp exposed, male beetles have their maxillary palps clearly visible from above the clypeus. The middle section of the pronotum has a slight depression. While for *M. indica* present study agrees with description given by Rana *et al.* (2022). Hopefully, this study will form a base line for future researchers dealing with this fauna.

### Conclusions and Recommendations

Present study concludes the finding of two species of

genus *Melolontha* Fabricius 1775 and it also concludes that more surveys of Sindh should be carried out in future to explore the Scarab beetles fauna.

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### Novelty Statement

Genus *Melolontha* has been described with two distinct species emerged: *Melolontha indica* Hope, 1831, and *Melolontha furcicauda* Ancy, 1881. Remarkably, *M. indica* marks a new regional discovery for Pakistan, while the sighting of *M. furcicauda* stands as the first recorded instance within Sindh Province. Notably, this study presents detailed descriptions of these species and their distributions, accompanied by digital imagery, offering a pioneering resource for researchers. This comprehensive exploration aims to establish a robust foundation for future investigations dedicated to this intriguing group of beetles.

### Author's Contribution

**Waheed Ali Panhwar:** Conceived the idea, Technical Input at every step, Correspondence, Wrote abstract, Introduction, Overall Management of the article.

**Mr. Mehtab Ali Mahar:** Collected the samples, Data analysis, Wrote Result and discussion.

**Dr. Abdul Manan Shaikh:** Methodology, Conclusion, References formatting.

### Conflict of interest

The authors have declared no conflict of interest.

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