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Checklist of Scarab Beetles (Coleoptera: Scarabaeidae) from Tripura, India

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Abstract

Altogether, 52 species belonging to 22 genera, 13 tribes and 5 subfamilies of family Scarabaeidae are reported from the state of Tripura, in the North-east biogeographic zone of India. *Digitonthophagus bonasus* (Fabricius, 1775), *Onthophagus* (*Colobonthophagus*) *tragus* (Fabricius, 1792), *O. orientalis* Harold, 1868, *Tibiodrepanus setosus* Wiedemann, 1823, [Scarabaeinae], *Adoretus lasiopygus* Burmeister, 1855, *Anomala grandis* (Hope, 1840), *A. rugosa* Arrow, 1899, *Mimela inscripta* (Nonfried, 1892) [Rutelinae], and *Dicheros* (*Coryphocera*) *bimacula* Wiedemann, 1823 [Cetoniinae] are new records to the state of Tripura.

Keywords: Checklist, Dung Beetles, New Records, North East Biogeographic Zone, Phytophagous

Introduction

Scarabaeidae, belonging to the superfamily Scarabaeoidea, is one of the most prominent Coleoptera families, commonly known as scarab beetles. The family includes 33,504 species, out of which about 2,211 species are reported from India (Gupta *et al*., 2018; Chandra *et al*., 2018; Schoolmeesters, 2020). The scarab beetles are divided into two groups based on the feeding habits: chafers or phytophagous and dung beetles or coprophagous (Sawada, 1991). The chafers, under subfamilies Melolonthinae, Rutelinae, Dynastinae, Cetoniinae, act as pests of many agricultural crops by damaging the stems or roots of plants feeding on nectar sap, and juice of ripe fruits and vegetables (Sawada, 1991; Valois *et al*., 2019). The dung beetles under subfamilies Aphodiinae and Scarabaeinae perform ecological functions like nutrient cycling, soil aeration (Mittal, 1993), secondary seed dispersal (Estrada & Coates-Estrada, 1991), and feeding the enteric parasites and dung breeding dipterans pests (Bornemissza, 1970; Fincher, 1981).

The major works on scarab beetles from North East biogeographic zone of India were made by Arrow (1910, 1917, 1931), Mikšić (1976, 1977, 1982, 1987), Balthasar (1963a,b, 1964), Endrödi (1985), Young (1989), Sabatinelli (1992), Biswas & Ghosh (2000), Chatterjee & Biswas (2000a,b), Chatterjee (2000, 2004), Mittal & Jain (2015), Ahrens & Fabrizi (2016), Bhattacharyya *et al*., (2017), Geetha & Agarwala (2018) and Sreedevi *et al*. (2018, 2019). Compared to the knowledge of scarabs from the rest of India, little information is available on the diversity of scarab beetles of Tripura state. Only Chatterjee & Biswas (2000b) reported 34 species belonging to 12 genera. The present study analyses the specimens collected during recent surveys and the specimens, housed in the Coleoptera section of Zoological Survey of India, Kolkata, thereby providing an updated list of the Scarabaeidae fauna of Tripura state.

Material and Methods

Study Area

Tripura, which extends from 22°56'N to 24°32'N, and 91°09'E to 92°20'E, is biogeographically located in the north-eastern part of India, covering an area of 10,491 sq km. Bangladesh bounds it to the north, south, and west, and the Indian states of Assam and Mizoram to the east.

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Collection and Preservation

The specimens for the study were collected from different localities of Tripura state in September 2018, during the survey to Tripura from Zoological Survey of India, Kolkata, using collection methodologies of light trapping and handpicking. While handpicking, specimens were collected using forceps from the soil, mud, waste matter, carrion, and dung pats. After collecting, the specimens were killed in jars containing benzene vapours. It was later preserved dry pinned. After coming back to the laboratory, the specimens were washed with detergent to remove the debris and soil matters from the body surface to expose the morphological characters for identification. For getting a complete faunal list of Scarabaeidae from Tripura, the specimens in the Coleoptera section of ZSI, Kolkata, were analyzed. The species-level identification was performed using keys and descriptions in Arrow (1910, 1917, 1931), Endrödi (1985), Mikšić (1977, 1987) and was compared with reference collection, present at Zoological Survey of India, Kolkata. The specimens are deposited in the Zoological Survey of India, Kolkata. The specimens were studied with a Nikon SMZ-25 stereo zoom-microscope, and the photographs were taken through the microscope by using the software (NIS-Elements BR 5.10.00). The species which are new records to the state are marked with an asterisk (*). The habitus photographs of the species newly reported to the state are provided, and the collected specimens are deposited in the Zoological Survey of India, Kolkata.

Abbreviations: AP: Andhra Pradesh, AR: Arunachal Pradesh, AS: Assam, BR: Bihar, CG: Chhattisgarh, GJ: Gujarat, HR: Haryana, HP: Himachal Pradesh, JK: Jammu and Kashmir, KA: Karnataka, KL: Kerala, MP: Madhya Pradesh, MH: Maharashtra, MN: Manipur, ML: Meghalaya, MZ: Mizoram, NL: Nagaland, OD: Odisha, PB: Punjab, RJ: Rajasthan, SK: Sikkim, TN: Tamil Nadu, TR: Tripura, UK: Uttarakhand, UP: Uttar Pradesh, WB: West Bengal, AN: Andaman and Nicobar Islands; AF: Afghanistan, AO: Angola, AU: Australia, BD: Bangladesh, BW: Botswana, KH: Cambodia, CA: Canada, CN: China, EG: Egypt, SV: El Salvador, ET: Ethiopia, FJ: Fiji:, GH: Ghana, HK: Hong Kong, ID: Indonesia, IR: Iran, JM: Jamaica, JP: Japan, KE: Kenya, KP: Korea (North), KR: Korea (South), LA: Laos, MB: Mozambique, MM: Myanmar, MR: Mauretania, MY: Malaysia, MX: Mexico, NA: Namibia, NC: New Caledonia, NP: Nepal, PG: Papua New Guinea, PH: Philippines, PK: Pakistan, PE: Peru, CO: Republic Democratic Congo, ZA: Republic of South Africa, RU: Russia, LK: Sri Lanka, SA: Saudi Arabia, SG: Senegal, SN: Singapore, SO: Somalia, SD: Sudan, TZ: Tanzania, TH: Thailand, TL: Timor-Leste, TU: Turkey, TW: Taiwan, UG: Uganda, US: United States of America, VN: Vietnam, YE: Yemen, ZM: Zambia, ZW: Zimbabwe.

Results and Discussion

The present study reports, 52 species belonging to 22 genera, 13 tribes and five subfamilies, i.e., Scarabaeinae, Melolonthinae, Rutelinae, Dynastinae, and Cetoniinae, under family Scarabaeidae from Tripura state. Out of these 52 species, *Adoretus lasiopygus* Burmeister, 1855, *Anomala grandis* (Hope, 1840), *A. rugosa* Arrow, 1899, *Dicheros* (*Coryphocera*) *bimacula* Wiedemann, 1823, *Digitonthophagus bonasus* (Fabricius, 1775), *Mimela inscripta* (Nonfried, 1892), *Onthophagus* (*Colobonthophagus*) *tragus* (Fabricius, 1792), *O. orientalis* Harold, 1868, and *Tibiodrepanus setosus* Wiedemann, 1823, are new records to the state of Tripura.

Out of 22 genera, *Onthophagus* is the genus with the most number of species (14), followed by *Catharsius* (6), *Anomala* (5), *Onitis* (4), *Copris*, *Digitonthophagus*, *Adoretus*, *Popillia*, and *Protaetia* (2 each), *Caccobius*, *Heliocopris*, *Paragymnopleurus*, *Oniticellus*, *Liatongus*, *Tibiodrepanus*, *Maladera*, *Mimela*, *Heteronychus*, *Oryctes*, *Coilodera*, *Ixorida* and *Dicheros* (1 each). Of the family Scarabaeidae, Scarabaeinae is the subfamily with the most number of species (34), followed by Rutelinae (10 species), Cetoniinae (5 species), Dynastinae (2 species), and Melolonthinae (1 species) (Table 1).

Thirty four species are dung feeders under subfamily Scarabaeinae. The dung beetles include three major functional guilds based on nesting, tunnelers, rollers and dwellers (Halffter and Matthews, 1966). Species under genus *Paragymnopleurus* are rollers and carry dung balls from fresh cattle dung from one place to another. The species belonging to genera, *Copris*, *Catharsius*, *Heliocopris*, *Onitis*, *Digitonthophagus*, and *Onthophagus* are tunnelers and make long tunnels underground for keeping the dung balls. The species belonging to genera, *Oniticellus*, *Liatongus* and *Tibiodrepanus* are dwellers and reside in the dung pats. The rest of the 18 species belonging to Melolonthinae, Rutelinae, Dynastinae and Cetoniinae are chafers or phytophagous and feed on different parts of the plant.

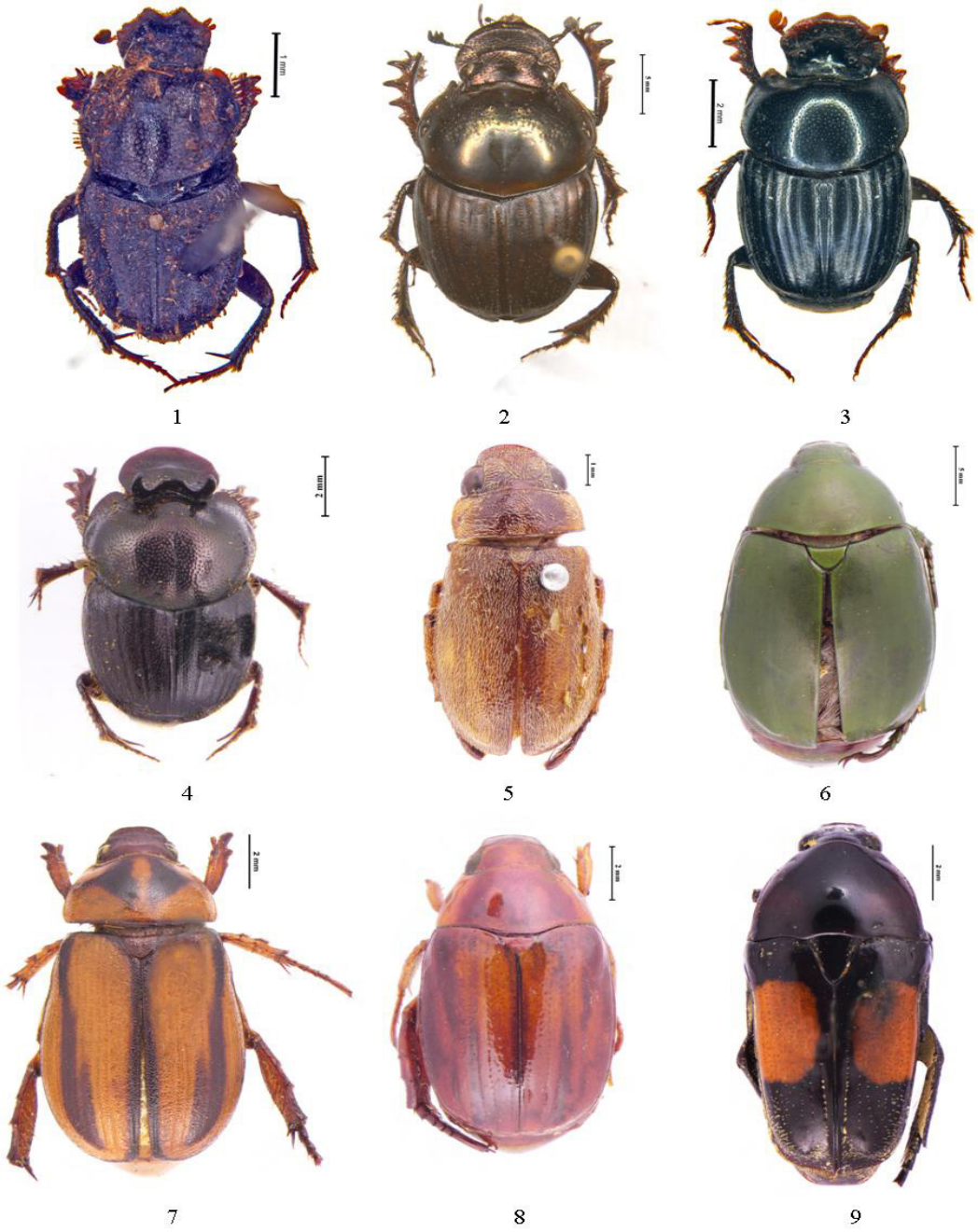
Table 1. Checklist of family Scarabaeidae reported from Tripura State, India

Sl. No.	Taxa	Distribution in Tripura / Specimens records	Distribution in other Indian states and abroad
Family SCARABAEIDAE Subfamily SCARABAEINAE Tribe **Coprini**			
1.	*Copris sarpedon* Harold, 1868	Ambasa, Ampi, Belonia, 05.i.1989 (1♂), leg. S. K. Chatterjee.	HR, HP, JK, KA, ML, PB, UP, UK, WB; BD, NP, TH.
2.	*Copris laevigatus* Gillet 1927	Ampi, Kumarghat Forest Range, 19. v. 1992 (1♂), leg. S. K. Chakraborty.	AS, MN; CN, TH.
3.	*Catharsius birmanensis* Lansberge, 1874	Kumarghat Fishery Rest House, 06.i.1989 (1♂), leg. B. Mitra & party.	HR, HP, PB, RJ, SK, TR, UP, WB; BT, LA, MM, NP.
4.	*Catharsius granulatus* Sharp, 1875	Chandmani Tila, 10. xi. 1969 (3 ♂, 1 ♀), leg. V. C. Agrawal, Bajra Bari, 05.i.1969 (1♂), leg. N. Muraleedharan.	AS, BR, KA, KL, ML, OD, SK, UP, WB; NP, PK, LK.
5.	*Catharsius javanus* Lansberge, 1886	Bajra, Bari, 06.i.1989 (1♂), leg. N. Muraleedharan.	AS, ML, WB; CN, ID, MY, MM, TH.
6.	*Catharsius molossus* (Linnaeus, 1758)	Ampi, 18.xii.1971 (1♀), leg. V. C. Agrawal, Chaudmani, Charilam, 10.xi.1969 (1♂), leg. V. C. Agrawal, Teliamura, 2. ii. 1971 (1♂), leg. V. C. Agrawal, Tripura University campus, 26.ix.2018 (2♀), leg. J. Ghosh, Gomti, Chhabimura, 27.ix.2018 (2♀), leg. J. Ghosh, Sipahijala National Park, 27.ix.2018, (1♀, 1♂), leg. J. Ghosh, Shanmura, Lankamura 26.ix.2018, (1♀), leg. J. Ghosh.	AD, AP, AR, AS, BR, CG, GJ, HR, HP, KA, KL, MP, MH, ML, MZ, OD, RJ, SK, UP, UK, WB; AF, BD, KH, CN, ID, LA, MY, NP, PK, LK, TH, VN.
7.	*Catharsius quadridentatus* Lansberge, 1885	Agartala, Indra Nagar, 27.ix.2018 (1♀), leg. J. Ghosh.	MM.
8.	*Catharsius sagax* (Quenstedt, 1806)	Amarpur, Suryamaninagar, 27.ix.2018 (1♀), leg. J. Ghosh.	AP, BR, CG, GJ, HR, HP, KA, KL, MP, MH, ML, OD, RJ, TN, UP, UK, WB; BD, BT, NP.
9.	*Heliocopris bucephalus* (Fabricius, 1775)	Sipahijola, 23. xi. 1991 (1♀), leg. K. K. Roy, Zirania, 4. xii. 1991 (1♀), leg. K. K. Roy, Tripura University campus, 26.ix.2018 (2♀), leg. J. Ghosh. Gomti, Chhabimura, 27.ix. 2018 (2♀), leg. J. Ghosh.	AP, AS, BR, CG, HR, HP, KA, KL, MP, MH, ML, OD, PB, RJ, UP, WB; AF, ID, MY, MM, NP, TH.
Tribe **Gymnopleurini**			
10.	*Paragymnopleurus sinuatus assamensis* (Waterhouse, 1890)	Bhubanban, 05.i.1989 (1♂), leg. V. C. Agrawal.	AR, AS, CG, HR, HP, KA, KL, MP, MH, ML, NL, PB, SK, TN, UK, WB; ID, LA, MM, NP, TW, TH.
Tribe **Oniticellini**			
11.	*Oniticellus cinctus* (Fabricius, 1775)	Ampi, 18.vi.1991 (8♀, 7♀), leg. V. C. Agrawal, Sipahijala National Park, 28.ix.2018 (3♀), leg. J. Ghosh. West Tripura, Tripura University campus, 27.ix.2018 (3♀), leg. J. Ghosh. Gomti, Chhabimura, 27.ix.2018 (2♀), leg. J. Ghosh.	AP, AR, AS, CG, GJ, HR, HP, KA, KL, MP, MH, ML, PB, RJ, TN, UK, TN; BD, CN, MY, MM, PK, TH, VN.
12.	*Liatongus affinis* (Arrow, 1908)	Ambasa, Baramura, Teliamura, 27.ix.2018 (2 ♀), leg. J. Ghosh.	KA, MN, WB; CN, MM, TH, VN.

Sl. No.	Taxa	Distribution in Tripura / Specimens records	Distribution in other Indian states and abroad
13.	*Tibiodrepanus setosus* Wiedemann, 1823* (Figure 1)	Khowai, Teliamura, 05.i.1989 (1♂), leg. V. C. Agrawal, West Tripura, Baramura, 06.i.1989 (1♀), leg. V. C. Agrawal.	AP, CG, HR, HP, KA, KL, MP, MH, ML, OD, PB, UK, UP, TN; LK, MM, VN.
Tribe **Onitini**			
14.	*Onitis falcatus* (Wulfen, 1786)	Dhalai, Ambasa, Ampi, Nalchar, Suryamaninagar, 27.ix.2018 (2 ♀), leg. J. Ghosh.	AP, AR, BR, GJ, HR, HP, KA, KL, MP, MH, ML, OD, PB, RJ, TN, UK, UP, WB; BD, MY, MM, PH, TW.
15.	*Onitis philemon* Fabricius , 1801	Ambasa, Ampi, 17. vi. 1971, (1♀), leg. V. C. Agrawal, Champaknagar, Nalchar, 11.i.1989, (2♀), leg. S. K. Chatterjee, Sepahijala, Teliamura, 27.ix.2018 (1♀,2♂), leg. J. Ghosh.	AP, AR, AS, BR, CH, CG, GJ, HR, HP, KA, KL, MP, MH, ML, OD, PB. RJ, TN, UP, UK, WB, LK.
16.	*Onitis subopacus* Arrow, 1931	Ampi, Teliamura, 27.ix.2018 (1♀), leg. J. Ghosh.	AR, AS, BR, CG, HR, HP, JK, KL, MH, MP, ML, PB, RJ, TN, TR, UP, UK, WB; BD, MY, MM, NP, LK, TH.
17.	*Onitis virens* Lanberge , 1875	Ampi, Teliamura, 25.ix.2018 (1♀), leg. J. Ghosh.	AS, BR, CH, CG, HR, HP, KA, KL, MH, ML, OD, PB, RJ, TN, UP, UK, WB; BD, CN, MM, PK, VN.
Tribe **Onthophagini**			
18.	*Digitonthophagus catta* (Fabricius, 1787)	Agartala, Indranagar, Tuisangma 25.ix.2018 (1♀), leg. J. Ghosh.	AP, AR, BR, CH, CG, DL, GJ, HR, HP, KA, KL, MP, MH, ML, OD, PB, RJ, TN, UP, UK; AO, AU, BW, CN, CO, EG, ET, FJ, GH, IR, JM, JP, KE, MG, MW, MR, MX, MB, NA, NC, NP, PE, PG, PK, SA, SN, SD, SO, SV, UG, US, YE, TZ, VN, ZA, ZM, ZW.
19.	*Digitonthophagus bonasus* (Fabricius, 1775)* (Figure 2)	Sipahijala National Park, 27.ix.2018, (1♀, 3♂), leg. J. Ghosh, Gomati, Chhabimura, 27. ix. 2018 (2♀), leg. J. Ghosh.	AP, AR, BR, CH, CG, DL, GJ, HR, HP, KA, JK, MP, MH, ML, OD, PB, RJ, TN, UP, UK, WB; AF, KH, MM, PK, TH, LK, VN.
20.	*Onthophagus* (*Colobonthophagus*) *aenescens* (Wiedemann, 1823)	Khowai, Teliamura, 26.ix.2018 (1♀), leg. J. Ghosh.	AS, BR, HR, HP, ML, PB, UK, UP, WB; NP, PK.
21.	*Onthophagus* (*Colobonthophagus*) *armatus* Blanchard, 1853	Khowai, Teliamurra, 25.ix.2018 (1♀), leg. J. Ghosh.	AR, AS, CG, GJ, ML, TR, WB; GU, HK, PH, MM, TW.
22.	*Onthophagus* (*Colobonthophagus*) *quadridentatus* (Fabricius, 1798)	Ambasa, 24.ix.2018 (1♀), leg. J. Ghosh.	AR, AS, CG, HR, HP, KA, KL, MP, MH, PY, PB, OD, RJ, TN, UP, UK, WB; LK, TW.
23.	*Onthophagus* (*Colobonthophagus*) *ramosellus* Bates, 1891	Khoai, Teliamura, 5.i.1989 (4♂, 3♀), leg. S. K. Chatterjee, Sipahijala National Park, 26.ix.2018, (3♀), leg. J. Ghosh, Tripura University campus, 26.ix.2018 (3♂, 1♀), leg. J. Ghosh, Gomti, Chhabimura, 27.ix.2018 (2♀), leg. J. Ghosh.	AR, AS, BR, CG, HR, HP, KA, MP, MH, ML, PB, RJ, TN, UK, UP, WB; AF, MM, PK.
24.	*Onthophagus* (*Colobonthophagus*) *triceratops* Arrow, 1913	West Tripura, Ambasa, 7.i.1989, (2♂,1♀), leg. S. K. Chatterjee, Khoai, 5.i.1989 (2♀), leg. S. K. Chatterjee, Sipahijala National Park, 27.ix.2018 (1♀, 1♂), leg. J. Ghosh.	AR, AS, GJ, KA, WB.

Sl. No.	Taxa	Distribution in Tripura / Specimens records	Distribution in other Indian states and abroad
25.	*Onthophagus* (*Colobontho-phagus*) *tragus* (Fabricius, 1792)* (Figure 3)	Dhalai, Tripura, 06.v.1983 (1♀), leg. S. K. Chatterjee.	AS, GJ, HR, HP, KA, KL, MP, OD, PB, RJ, TN, UK, WB; CN, ID, MM.
26.	*Onthophagus* (*Gibbonthoph-agus*) *luridipennis* Boheman, 1858	Agartala, Ambasa, Bairagibazar, 07.v.1983 (1♀), leg. S. K. Chatterjee, Baramura, Brahmachora, Champaknagar, Kalacherra, Khoai, Teliamura, 06.v.1983 (1♀), leg. S. K. Chatterjee.	AR, AS, KA, UK, UP, WB; BD, CN, MM, PH, TW, TH.
27.	*Onthophagus* (*Gibbonthopha-gus*) *taurinus* White, 1844	Ambasa, 06.v.1983 (1♀), leg. S. K. Chatterjee.	BD, CN, MM, TW, TH.
28.	*Onthophagus* (*Onthophagus*) *spinifex* (Fabricius, 1781)	Khoai, 07.v.1983 (1♀), leg. S. K. Chatterjee.	BR, CH, CG, DL, HR, HP, KA, KL, MP, MH, ML, PB, RJ, TN, UP, UK, WB; PK, LK.
29.	*Onthophagus* (*Phanaeomor-phus*) *gagates* Hope, 1831	Tripura University campus, 26.ix.2018 (3♂, 1♀), leg. J. Ghosh.	AR, AS, HR, HP, MP, ML, PB, UP, UK, WB; BD, CN, MM, NP, VN.
30.	*Onthophagus* (*Serrophous*) *rectecornutus* Lansberge, 1883	Ambasa, 17.i.1989 (1♀), Teliamura, 4.i.1989 (1♀), leg. S. K. Chatterjee, Sipahijala National Park, 27.ix.2018, (4♀, 1♂), leg. J. Ghosh, Gomti, Chhabimura, 27.ix.2018 (2 ♀), leg. J. Ghosh.	AR, AS, BR, GJ, HR, KA, KL, ML, NL, WB; BD, BT, CN, MM, LK, TH, VN.
31.	*Onthophagus* (*Serrophorus*) *sagittarius* (Fabricius, 1775)	Ambasa, Ampi. Agartala, Bairagibazar, Baramura, Champak Nagar, Teliamura, 06.v.1983 (1♀), leg. S. K. Chatterjee.	AR, AS, MP, ML, OD, RJ, UP, UK, WB; BD, CN, MM, TW, TL, TH.
32.	*Onthophagus fasciatus* Boucomont, 1914	Teliamura, Agartala, 07.v.1983 (1♀), leg. S. K. Chatterjee.	CG, HR, HP, KA, KL, MP, MH, TN, UK, WB.
33.	*Onthophagus orientalis* Harold, 1868*(Figure 4)	South Tripura, Bagma, 17.xi.1990 (1♀), leg. S. K. Chatterjee.	AR, AS, AN, CG, GJ, HR, MP, MH, MN, ML, RJ, SK, UK, UP, WB; ID, MM, PK.
34.	*Caccobius* (*Caccophilus*) *unicornis* (Fabricius, 1798)	Brahmachara, Teliamura, 07.v.1983 (1♀), leg. S. K. Chatterjee.	AS, CG, HR, KA, KL, MP, ML, OD, RJ, UP, WB; CN, ID, MY, PH, LK.
Subfamily MELOLONTHINAE Tribe **Sericini**			
35.	*Maladera (Cephaloserica) castanea* (Arrow, 1913)	Indranagar, 08.v.1983 (1♀), leg. S. K. Chatterjee.	BR, GJ, RJ, PB, KA; CA, KP, KR, JP, RU, TU, US.
Subfamily RUTELINAE Tribe **Adoretini**			
36.	*Adoretus lasiopygus* Burmesiter, 1855*(Figure 5)	West Tripura, Khasia Mangal, 09.v.1992 (1♂), leg. S. K. Chatterjee.	AS, BR, CG, HR, HP, KA, KL, MP, MH, OD, PB, SK, TN, UP, WB; BD, BT, NP, LK.
37.	*Adoretus compressus* (Weber, 1801)	Indranagar, 08.v.1983 (1♀), leg. S. K. Chatterjee.	WB; ID, LK, MY, MU, PG, TH.
Tribe **Anomalini**			
38.	*Anomala dimidiata dimidiata* (Hope, 1831)	Paratia, Belonia, Kumarghat, Sipahijala National Park, 27. ix. 2018, (1♀, 1♂), leg. J. Ghosh, Gomti, Chhabimura, 27.ix. 2018 (2♀), leg. J. Ghosh.	AR, AN, AS, BR, CG, HR, HP, JK, MP, MN, MH, ML, PB, SK, TN, UP, UK, WB; AF, BT, CN, NP, PK.
39.	*Anomala grandis* (Hope, 1840)* (Figure 6)	North Tripura, Amarpur, 12.iv. 1993 (1♀), leg. V. C. Agrawal.	AS, BR, MN, ML, OD, SK, TN; BD, KH, LA, MY, MM, TH.

Sl. No.	Taxa	Distribution in Tripura / Specimens records	Distribution in other Indian states and abroad
40.	*Anomala marginipennis* Arrow, 1912	Belonia, 05.v.1983 (1♀), leg. V. C. Agrawal.	AS, ML, SK, WB; BT, NP.
41.	*Anomala rugosa* Arrow, 1899* (Figure 7)	Sipahijala National Park, 27.ix.2018, (1♀,1♂), leg. J. Ghosh, Tripura University Campus, 26.ix.2018 (1♀), leg. J. Ghosh. Gomti, Chhabimura, 27.ix.2018 (2♀), leg. J. Ghosh.	AS, BR, CG, HR, HP, KA, MP, MH, SK, TN, UP, UK, WB; BT, NP, PK.
42.	*Anomala validipes* Arrow, 1917	Udaipur, 05.v.1983 (1♀), leg. V. C. Agrawal.	AS.
43.	*Mimela inscripta* (Nonfried, 1892)* (Figure 8)	Sipahijala National Park, 27.ix. 2018, (1♀,1♂), leg. J. Ghosh, Tripura University campus, 26.ix.2018 (1♀), leg. J. Ghosh, Gomti, Chhabimura, 27.ix.2018 (2♀), leg. J. Ghosh.	BR, CG, MP, ML; CN, MM, NP, TH.
44.	*Popillia birmanica* Arrow, 1913	Radbapur, Dharmanagar, 06.v.1983 (1♀), leg. V. C. Agrawal.	AS; BD, MM, NP.
45.	*Popillia laevistriata* Arrow, 1913	Nutanbazar, 07.v.1983 (1♀), leg. V. C. Agrawal.	AS; BT.
Subfamily DYNASTINAE Tribe **Pentodontini**			
46.	*Heteronychus lioderes* Redtenbacher,1867	Sipahijala National Park, 27.ix.2018, (1♀,1♂), leg. J. Ghosh, Tripura University Campus, 26.ix.2018 (1♀), leg. J. Ghosh.	AN, CG, HP, MP, MH, ML, OD, SK, UP, WB.
Tribe **Oryctini**			
47.	*Oryctes* (*Rykanes*) *rhinoceros* Linnaeus, 1758	Agartala, Tripura University campus, 26.ix.2018 (1♀), leg. J. Ghosh.	AN, AP, AR, MP, MH, OD, TN, WB; HK, ID, JP, LK, PH, SG, TH.
Subfamily CETONIINAE Tribe **Cetoniini**			
48.	*Protaetia* (*Pseudocetoniscehma*) *ceylanica* (Schoch, 1892)	South Tripura, Belonia, 08.v.1983 (1♀), leg. V. C. Agrawal.	TN; MM, LK.
49.	*Protaetia* (*Heteroprotaetia*) *fusca* (Herbst, 1790)	Indranagar, 07.v.1983 (1♀), leg. V. C. Agrawal.	AN, AS, HP, SK, WB; AU, CN, ID, MM, MY, SG, TH, VN.
Tribe **Goliathini**			
50.	*Dicheros* (*Coryphocera*) *bimacula* Wiedemann, 1823*(Figure 9)	Tripura University Campus, 27.ix.2018 (1 ♀), leg. J. Ghosh.	KL, MP, TN; LK.
Tribe **Taenioderini**			
51.	*Coilodera mearesii* (Westwood, 1842)	Trishna Wildlife Sanctuary, 04.v.1983 (1♀), leg. V. C. Agrawal.	AS, ML, SK, WB; NP, MY.
52.	*Ixorida mouhoti* (Wallace, 1868)	Trishna Wildlife Sanctuary, 04.v.1983 (1♀), leg. V. C. Agrawal.	CN, KH, LA, MM, TH, VN.



Figures (1-9). Dorsal view of the Habitus: **1**. *Tibiodrepanus setosus*, **2**. *Digitonthophagus bonasus*, **3**. *Onthophagus* (*Colobonthophagus*) *tragus*, **4**. *O. orientalis*, **5**. *Adoretus lasiopygus*, **6**. *Anomala grandis*, **7**. *A. rugosa*, **8**. *Mimela inscripta*, **9**. *Dicheros* (*Coryphocera*) *bimacula.*

Conclusion

The present study gives an idea of the diversity of scarab beetles in Tripura state, which revealed 52 species belonging to 22 genera, 13 tribes, and five subfamilies. Among the 52 recorded species, 34 belong to Scarabaeinae, 10 to Rutelinae, five to Cetoniinae, two to Dynastinae and one to Melolonthinae. Nine species are reported for the first time from the state. This study provides primary data and inventory on the present status, composition of scarab beetles in Tripura. There is also a need for the protection and conservation of the species for the future. The present work resulted in the database of scarabs, which will help the future workers for its conservation, preservation, and addition to the local biodiversity of scarab beetles.

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