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# A synoptic retrospect on the dung beetle fauna (Scarabaeidae: Coleoptera) of West Bengal

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## Abstract

Species composition, district-wise distribution patterns and endemism are outlined for the dung beetles in the different physiographic zones of West Bengal. 239 species belonging to 78 genera and 5 subfamilies, i.e. Scarabaeinae, Rutelinae, Dynastinae, Cetoniinae, and Euchirinae are reported from the state of West Bengal. Subfamily Rutelinae is the subfamily with most number (112 species), followed by Cetoniinae (63), Scarabaeinae (49), Dynastinae (13), and Euchirinae (2) (Fig.1). In the districts of West Bengal, Darjeeling has the maximum number of species (134) , followed by Jalpaiguri (65), Hooghly (37), Kolkata (30), North 24 Parganas (17), Malda (10), Murshidabad (7), South 24 Parganas (6), East Medinipur and West Medinipur (2 each), Birbhum, East Bardhaman, West Bardhaman, Cooch Behar (1 each).

**Keywords**: Beetles, diversity, scarabs, species, phytophagous, coprophagous, West Bengal.

## 1. Introduction

The members of the family Scarabaeidae are commonly known as “dung beetles”. This is one of the major families of the order Coleoptera or sheathed wing (beetle) insect. Dung beetles are abundantly found in the tropics and sub-tropics of the globe covering the adequate amount of precipitation with substantial vegetative cover (Kritika and Jaimala, 2017). The forest ecosystem act as a transition area for dispersal and re-colonization of beetles from adjacent habitats (Yu, 2007). Despite their activity as floral pest they also help in the breakdown of organic matter of both flora and fauna such as dead wood, fruits, leaf litter, faecal matters and carcasses. Coleopterans contribute greatly to nutrient cycling and bioturbation, thereby maintaining an important trophic links in detritus food webs (Nadeau *et al*., 2015).Also both the adult and the larval stages (grub) of scarabs act as a regular prey source for great number of terrestrial predators.

Worldwide around 389,487 distinct species of coleopterans are reported under 176 families (Zhang, 2013), of which 22,334 species of beetles are known from India (Chandra *et al.*, 2018). Among them, the family Scarabaeidae consists of 33,504 species, of which about 2,211 species are known from India (Chandra *et al*., 2018; Schoolmeesters, 2020). The state of West Bengal currently includes of 239 species under 5 subfamilies of Family Scarabaeidae.

The phytophagous scarabs or chafers majorly forage on floral stems, roots, sap, fruit, flowers and foliage (Jackson and Klein, 2006), thus becoming a significant phytophagous pest for agro-forestry and horticultures. Larvae of the phytophagous one feed on decaying soil humus, resides in rotting woods and debris and often in hollow of trees (Sawada, 1991). On the other hand because of their different feeding habits, beetles under the subfamily Aphodiinae and Scarabaeinae are commonly called as 'dung beetles' or 'coprophagous beetles'. They majorly contributes in various ecological functions, like nutrient cycling, soil aeration, secondary seed dispersal (Mittal, 1993; Estrada and Estrada, 1991) and eradication of enteric parasites and dung breeding dipteran pests (Bornemissza, 1970; Fincher, 1981).

The only state in Modern India that extends from the snowy Himalayas to the mangrove adorned Bay of Bengal is none other than the West Bengal. A greater part of the large state rests in between zones of eastern Himalayas in north and the ancient plateau of Chhotanagpur, in the west to the fertile alluvial plains of Ganga-Brahmaputra delta (GBD) in the eastern and southern sectors. The state has roughly 9 major physiographic zones based on several sets of geological traits and hydrology namely, (I) the Himalayas, (II) the sub-Himalayan alluvial fans, (III) the Barind uplands, (IV) the degenerated eastern fringes of the Chhotanagpur plateau, (V) the plateau fringe palaeodeltas resembling subdued fans at present, (VI) the primarily non-tidal upper Ganga delta, (VII) the tidal and reclaimed lower Ganga delta, (VIII) the tidally inundated lower Ganga delta occupied by the Sundarbans mangroves and (IX) the Medinipur coastal plains primarily contributed by the river, Subarnarekha (Bandyopadhyay *et al*., 2014).

Faunal works on family Scarabaeidae from the state of West Bengal were mostly done by: Arrow, 1910, 1917, 1931; Oppenhamer, 1977; Chatterjee and Biswas, 1995; Sarkar *et al.,* 2010, 2014, 2015, 2016, 2017; Roy *et al*. 2014; Mitra *et al.*, 2015, 2016; Maity *et al.*, 2016; Ghosh and Bhunia, 2016.

**2. General Morphology**

The scarabs are in general oval shaped, or elongated, heavily built, usually convex elytra with 8 to 11-segmented antennae. The last three antennomeres are expanded into a plate-like structure that may be spread apart or united to form a compact terminal club. The size of the scarabs ranges between 2 mm to 10 cm in length (Hielkema and Hielkema, 2019). Some male scarabs, have extravagant horns or mandibles as a sign of sexual dimorphism (Arrow, 1951).

The family Scarabaeidae currently includes 10 subfamilies, i.e. Chironinae, Aphodiinae, Scarabaeinae, Orphninae, Melolonthinae, Rutelinae, Dynastinae, Trichiinae, Valginae and Cetoniinae known from India. The subfamilies, Chironinae, Aphodiinae and Scarabaeinae are largely coprophagous, whereas Orphninae, Melolonthinae, Dynastinae, Rutelinae, Cetoniinae, Trichiinae, and Valginae are majorly phytophagous (Ratcliffe and Jameson, 2001).

The phylogenetic analysis stated that two clades of dung beetles (rollers and tunnellers) were separated according to their distinct nesting strategies, where the rollers has evolved several times from its ancestral tunneller group. The tribes of Dichotomiini, Canthonini, and Coprini are poly- or paraphyletic, while rest of the tribes belong to the monophyletic clades. The genera belonging to the tribe Dichotomiini are the oldest, from where most basal lineages and all other clades and genera Canthonini, evolved from ancestral dichotomiini lineages either directly or indirectly (Philips *et al*., 2004).

**3. Diagnostic features of the subfamilies**

**Scarabaeinae**: True dung beetles. Scutellum absent in most species.

**Rutelinae**: Size variable, meso, metatarsal claws unequal, with smaller one always separately movable.

**Dynastinae**: Pro tibia tridentate, simple claws. Males having horns in front of the head.

**Cetoniinae**: Weak mandibles, lateral margins of elytra sinuate behind shoulders.

**Euchirinae**: Elongated first pair of legs with stiff median and apical spines in males while females have flexible terminal spines.

**4. Results**

This paper deals of 239 species under 78 genera and 5 subfamilies, i.e. Scarabaeinae, Rutelinae, Dynastinae, Cetoniinae, and Euchirinae which are till date found in the soils of West Bengal. Rutelinae is the subfamily with maximum number of species (112 species), followed by Cetoniinae (63), Scarabaeinae (49), Dynastinae (13), and Euchirinae (2) (Fig.1). Among the 23 districts of West Bengal, Darjeeling has the maximum number of species (134), followed by Jalpaiguri (65), Hooghly (37), Kolkata (30), North 24 Parganas (17), Malda (10), Murshidabad (7), South 24 Parganas (6), Purba Medinipur and Paschim Medinipur (2 each), Birbhum, Purba Bardhaman,Paschim Bardhaman, Cooch Behar (1 each).

While no species were reported from Howrah, Bankura, Purulia, Jhargram, Nadia, Uttar Dinajpur, Dakshin Dinajpur, Alipurduar, and Kalimpong. (Fig.2; Table 2). Out of 239 species, 49 species are coprophagous or dung feeders, while the rest species (190) are chafers or phytophagous (Fig.3). *Adoretus lacustris*is endemic to the state of West Bengal (* asterix provided to the endmic species in the list).

**Table 1**: Species diversity reported from West Bengal along with feeding habits.

| No. | Scientific name | District | Reference | Food habit |
|---|---|---|---|---|
| | **Family Scarabaeidae**<br>**Subfamily Scarabaeinae** | | | |
| 1. | *Gymnopleurus* (*Metagymnopleurus*) *miliaris* (Fabricius, 1775) | Hooghly | Oppenhamer, 1977 | Coprophagous |
| 2. | *Paragymnopleurus sinuatus* ssp. *assamensis* Waterhouse, 1890 | Jalpaiguri | Sarkar *et al*., 2015 | Coprophagous |
| 3. | *Paragymnopleurus melanarius* (Harold, 1867) | Hooghly | Oppenhamer, 1977 | Coprophagous |
| 4. | *Caccobius* (*Caccophilus*) *aterrimus* (Fabricius, 1798) | Hooghly | Oppenhamer, 1977 | Coprophagous |
| 5. | *Caccobius* (*Caccophilus*) *diminutivus* (Walker, 1858) | Hooghly | Oppenhamer, 1977 | Coprophagous |
| 6. | *Caccobius* (*Caccophilus* ) *tortus* Sharp, 1875 | Hooghly | Oppenhamer, 1977 | Coprophagous |
| 7. | *Caccobius* (*Caccophilus* ) *unicornis* (Fabricius, 1798) | Hooghly | Oppenhamer, 1977 | Coprophagous |
| 8. | *Caccobius* (*Caccophilus*) *vulcanus* (Fabricius, 1801) | Hooghly | Oppenhamer, 1977 | Coprophagous |
| 9. | *Drepanocerus setosus* (Wiedemann, 1823) | Hooghly | Oppenhamer, 1977 | Coprophagous |
| 10. | *Tiniocellus spinipes* (Roth, 1851) | Hooghly | Oppenhamer, 1977 | Coprophagous |
| 11. | *Catharsius birmanensis* Lansberge, 1874 | Jalpaiguri | Sarkar *et al*., 2015 | Coprophagous |
| 12. | *Catharsius capucinus* (Fabricius, 1781) | Jalpaiguri | Sarkar *et al*., 2010; Sarkar *et al*., 2015 | Coprophagous |
| 13. | *Catharsius javanus* Lansberge, 1886 | Jalpaiguri | Sarkar *et al*., 2010; Sarkar *et al*., 2015 | Coprophagous |
| 14. | *Catharsius molossus* (Linnaeus, 1758) | Hooghly, Jalpaiguri, North 24 Parganas | Oppenhamer, 1977; Sarkar *et al*., 2015; Mitra *et al*., 2016; Maity *et al*., 2016; Ghosh and Bhunia, 2016. | Coprophagous |
| 15. | *Catharsius pithecius* (Fabricius, 1775) | Hooghly | Oppenhamer, 1977 | Coprophagous |
| 16. | *Catharsius sagax* (Quenstedt, 1806) | Hooghly, Jalpaiguri | Oppenhamer, 1977; Mitra *et al*., 2016 | Coprophagous |
| 17. | *Copris* (*Copris*) *sarpendon* Harold, 1868 | Jalpaiguri | Sarkar *et al*., 2010; Sarkar *et al*., 2015 | Coprophagous |
| 18. | *Copris* (*Copris*) *sinicus* Hope, 1842 | Hooghly | Oppenhamer, 1977 | Coprophagous |
| 19. | *Copris* (*Copris*) *corpulentus* Gillet, 1910 | Jalpaiguri | Sarkar *et al*., 2010; Sarkar *et al*., 2015 | Coprophagous |

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| 20. | *Copris* (*Copris*) *magicus* Harold, 1881 | Jalpaiguri. | Sarkar *et al*., 2015 | Coprophagous |
| 21. | *Microcopris doriae* (Harold, 1877) | Jalpaiguri. | Sarkar *et al*., 2010; Sarkar *et al*., 2015 | Coprophagous |
| 22. | *Heliocopris tyrannus* (Thomas, 1859) | Jalpaiguri. | Sarkar *et al*., 2010; Sarkar *et al*., 2015 | Coprophagous |
| 23. | *Onitis subopacus* Arrow. 1931 | Jalpaiguri | Sarkar *et al*., 2010; Sarkar *et al*., 2015; Mitra *et al*., 2016 | Coprophagous |
| 24. | *Onitis philemon* Fabricius, 1801 | Hooghly, North 24 Parganas | Oppenhamer, 1977; Ghosh and Bhunia, 2016; Maity *et al*., 2016 | Coprophagous |
| 25. | *Onitisvirens* Lanberge , 1875 | Jalpaiguri. | Sarkar *et al*., 2015 | Coprophagous |
| 26. | *Digitonthophagus bonasus* (Fabricius 1775) | Hooghly | Oppenhamer, 1977; Sarkar *et al*., 2015 | Coprophagous |
| 27. | *Digitonthophagus gazella* (Fabricius, 1787) | Hooghly | Oppenhamer, 1977 | Coprophagous |
| 28. | *Onthophagus* (*Colobonthophagus*) *armatus* Blanchard, 1853 | Jalpaiguri. | Sarkar *et al*., 2015 | Coprophagous |
| 29. | *Onthophagus* (*Colobonthophagus*) *dama*(Fabricius, 1798) | Hooghly, North 24 Parganas, Jalpaiguri. | Oppenhamer, 1977; Roy *et. al.* 2014; Sarkar *et al*., 2015; Ghosh and Bhunia, 2016; Maity *et al*., 2016 | Coprophagous |
| 30. | *Onthophagus* (*Colobonthophagus*) *tragus* (Fabricius, 1792) | Hooghly, Jalpaiguri. | Oppenhamer, 1977; Sarkar *et al*., 2015. | Coprophagous |
| 31. | *Onthophagus* (*Colobonthophagus*) *turbatus* Walker, 1858 | Hooghly | Oppenhamer, 1977 | Coprophagous |
| 32. | *Onthophagus* (*Furconthophagus*) *centricornis* (Fabricius, 1798) | Hooghly. | Oppenhamer, 1977 | Coprophagous |
| 33. | *Onthophagus* (*Gibbonthophagus*) *duporti* Boucomont, 1914 | Hooghly. | Oppenhamer, 1977 | Coprophagous |
| 34. | *Onthophagus* (*Gibbonthophagus*) *luridipennis* Boheman, 1858 | Hooghly. | Oppenhamer, 1977 | Coprophagous |
| 35. | *Onthophagus* (*Gibbonthophagus*) *rectecornutus* Lansberge, 1883 | Hooghly. | Oppenhamer, 1977 | Coprophagous |
| 36. | *Onthophagus* (*Indonthophagus*) *mopsus* (Fabricius, 1792) | Hooghly. | Oppenhamer, 1977 | Coprophagous |
| 37. | *Onthophagus* (*Micronthophagus*) *vigilans* Boucomont, 1921 | Hooghly. | Oppenhamer, 1977 | Coprophagous |
| 38. | *Onthophagus (Onthophagiellus) crassicollis* Boucomont, 1913 | Hooghly. | Oppenhamer, 1977 | Coprophagous |
| 39. | *Onthophagus* (*Paraphanaeomorphus*) *bifasciatus* (Fabricius, 1781) | Hooghly. | Oppenhamer, 1977 | Coprophagous |
| 40. | *Onthophagus bengali* Gordon & | Hooghly. | Oppenhamer, 1977 | Coprophagous |

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| | Oppenheimer, 1977 | | | |
| 41. | *Onthophagus bison* Boucomont, 1919 | Jalpaiguri. | Sarkar *et al*., 2015 | Coprophagous |
| 42. | *Onthophagus cervus* (Fabricius, 1798) | Hooghly. | Oppenhamer, 1977 | Coprophagous |
| 43. | *Onthophagus falcifer* Harold, 1880 | Jalpaiguri. | Sarkar *et al*., 2015 | Coprophagous |
| 44. | *Onthophagus orientalis* Harold, 1868 | Hooghly. | Oppenhamer, 1977 | Coprophagous |
| 45. | *Onthophagus malabarensis* Boucomont, 1914 | Hooghly. | Oppenhamer, 1977 | Coprophagous |
| 46. | *Onthophagus ramosellus* Bates, 1891 | Hooghly. | Oppenhamer, 1977 | Coprophagous |
| 47. | *Onthophagus spinifex* (Fabricius, 1781) | Hooghly. | Oppenhamer, 1977 | Coprophagous |
| 48. | *Onthophagus triceratops* Arrow, 1913 | Hooghly; Jalpaiguri. | Oppenhamer, 1977; Sarkar *et al*., 2010. | Coprophagous |
| 49. | *Onthophagus unifasciatus* (Schaller, 1783) | Hooghly. | Oppenhamer, 1977 | Coprophagous |
| | **Subfamily Rutelinae** | | | |
| 50. | *Adoretus* (*Adoretus*) *lasiopygus* Burmesiter, 1855 | North 24 Parganas, Jalpaiguri. | Sarkar *et al*., 2010; Ghosh and Bhunia, 2016; Maity *et al*., 2016 | Phytophagous |
| 51. | *Adoretus* (*Adoretus*) *renardi* Brenske, 1893 | Jalpaiguri. | Sarkar *et al*., 2010 | Phytophagous |
| 52. | *Adoretus* (*Adoretus*) *excisus* Ohaus, 1914 | Kolkata | Chatterjee and Biswas, 1995 | Phytophagous |
| 53. | *Adoretus* (*Chaetadoretus*) *costopilosus* Ohaus, 1914 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 54. | *Adoretus* (*Chaetadoretus*) *testaceus* (Hope, 1831) | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 55. | *Adoretus bengalensis,* Brenske, 1893b | Jalpaiguri | Chatterjee and Biswas, 1995 | Phytophagous |
| 56. | *Adoretus bicolor* Brenske, 1893 | Kolkata, Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 57. | *Adoretus duvauceli* Blanchard, 1850 | Kolkata, Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 58. | *Adoretus lasius* Ohaus, 1914 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 59. | *Adoretus nephriticus* (Ohaus,1914) | Jalpaiguri | Chatterjee and Biswas, 1995 | Phytophagous |
| 60. | *Adoretus posticalis* Arrow, 1917 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 61. | *Adoretus rugosus* Arrow, 1914 | Jalpaiguri. | Sarkar *et al*., 2010 | Phytophagous |
| 62. | *Anomala aegrota* Arrow, 1917 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 63. | *Adoretus bicaudatus* Arrow, 1914 | Kolkata, South 24 Parganas | Chatterjee and Biswas, 1995 | Phytophagous |
| 64. | *Adoretus bimarginatus* Ohaus, 1914 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |

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| 65. | *Adoretus bombinator* Burmeister, 1855 | Jalpaiguri | Chatterjee and Biswas, 1995 | Phytophagous |
| 66. | *Adoretus caliginosus* Burmeister, 1844 | Kolkata, Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 67. | *Adoretus lacustris* Arrow 1917* | North 24 Parganas, Kolkata, Barddhaman | Chatterjee and Biswas, 1995; Ghosh and Bhunia , 2016; Maity *et al*., 2016 | Phytophagous |
| 68. | *Adoretus limbatus* Blanchard, 1850 | Kolkata, Malda | Chatterjee and Biswas, 1995 | Phytophagous |
| 69. | *Adoretus serratipes* Arrow, 1914 | Kolkata, Jalpaiguri | Chatterjee and Biswas, 1995 | Phytophagous |
| 70. | *Adoretus versutus* Harold, 1869 | North 24 Parganas, Kolkata, South 24 Parganas, Murshidabad. | Ghosh and Bhunia, 2016; Maity *et al*., 2016; Chatterjee and Biswas, 1995 | Phytophagous |
| 71. | *Adoretus flavus* Arrow 1917 | North 24 Parganas, Kolkata, South 24 Parganas. | Chatterjee and Biswas, 1995; Ghosh and Bhunia, 2016; Maity *et al*., 2016. | Phytophagous |
| 72. | *Adoretus fraterculus* Arrow, 1917 | Jalpaiguri | Chatterjee and Biswas, 1995 | Phytophagous |
| 73. | *Adoretus gemmifer* Arrow, 1917 | South 24 Parganas | Chatterjee and Biswas, 1995 | Phytophagous |
| 74. | *Adorrhinyptia dorsalis* (Burmeister, 1855) | Darjeeling, Jalpaiguri | Chatterjee and Biswas, 1995 | Phytophagous |
| 75. | *Adorrhinyptia ruficollis* (Kraatz, 1895) | Kolkata, Darjeeling, Jalpaiguri | Chatterjee and Biswas, 1995 | Phytophagous |
| 76. | *Anomala agilis* Arrow, 1917 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 77. | *Anomala angusta* Arrow, 1912 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 78. | *Anomala anthracina*Arrow, 1912 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 79. | *Anomala bella* Arrow, 1917 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 80. | *Anomala flaviventris* Arrow, 1912 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 81. | *Anomala flavofasciata* Arrow, 1912 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 82. | *Anomala flavopicta* Arrow, 1912 | Darjeeling | Chatterjee and Biswas, | Phytophagous |

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| | | | 1995 | |
| 83. | *Anomala flavonotata* Arrow, 1912 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 84. | *Anomala grandis* (Hope. 1840) | Jalpaiguri | Mitra *et al*., 2016 | Phytophagous |
| 85. | *Anomala dimidiata* (Hope, 1831) | Jalpaiguri, Malda, Darjeeling. | Chatterjee and Biswas, 1995; Mitra *et al*., 2016 | Phytophagous |
| 86. | *Anomala bengalensis* (Blanchard, 1851) | North 24 Parganas, Jalpaiguri, Kolkata, Malda, Murshidabad. | Chatterjee and Biswas, 1995; Roy *et. al.* 2014b; Ghosh and Bhunia, 2016; Maity *et al*., 2016; Sarkar *et al*., 2017. | Phytophagous |
| 87. | *Anomala biharensis* Arrow, 1917 | North 24 Parganas | Ghosh and Bhunia, 2016; Maity *et al*., 2016 | Phytophagous |
| 88. | *Anomala bilobata* Arrow, 1912 | North 24 Parganas, Kolkata, Murshidabad. | Chatterjee and Biswas, 1995; Ghosh and Bhunia, 2016; Maity *et al*., 2016 | Phytophagous |
| 89. | *Anomala blanchardi* (Blanchard, 1851) | Jalpaiguri | Sarkar *et al*., 2017. | Phytophagous |
| 90. | *Anomala bilunata* Fairmaire, 1888 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 91. | *Anomala cantori* (Hope, 1839) | Jalpaiguri, Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 92. | *Anomala cinderella* Arrow, 1917 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 93. | *Anomala clerica* Arrow, 1917 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 94. | *Anomala comma* Arrow, 1917 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 95. | *Anomala discalis* Walker, 1859 | Jalpaiguri | Sarkar *et al*., 2010; Sarkar *et al*., 2017. | Phytophagous |
| 96. | *Anomala dorsalis* (Fabricius, 1775) | Kolkata, Medinipur. | Chatterjee and Biswas, 1995 | Phytophagous |
| 97. | *Anomala varians* (Olivier, 1789) | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 98. | *Anomala fallaciosa* Arrow, 1917 | Jalpaiguri | Sarkar *et al*., 2010; Sarkar *et al*., 2017 | Phytophagous |
| 99. | *Anomala fissilabris* Arrow,1912 | Jalpaiguri | Sarkar *et al*., 2010. | Phytophagous |
| 100. | *Anomala lineatopennis* Blanchard, 1851 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 101. | *Anomala tristis* Arrow, 1917 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 102. | *Anomala macrophylla* (Wiedemann, 1823) | Malda | Chatterjee and Biswas, 1995 | Phytophagous |

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| 103. | *Anomala marginipennis* Arrow, 1912 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 104. | *Anomala nigrovaria* Arrow, 1917 | Jalpaiguri | Sarkar *et al*., 2010; Sarkar *et al*., 2017 | Phytophagous |
| 105. | *Anomala perplexa perplexa* (Hope, 1839) | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 106. | *Anomala platypyga* Fairmaire, 1893 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 107. | *Anomala propinqua* Arrow, 1912 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 108. | *Anomala polita* (Blanchard, 1851) | North 24 Parganas | Ghosh and Bhunia, 2016; Maity *et al*., 2016 | Phytophagous |
| 109. | *Anomala rufiventris* Redtenbacher, 1844 | Jalpaiguri, Darjeeling. | Chatterjee and Biswas, 1995; Sarkar *et al*., 2017 | Phytophagous |
| 110. | *Anomala rugosa* Arrow, 1899 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 111. | *Anomala trochanterica* Arrow, 1917 | Jalpaiguri | Sarkar *et al*., 2017 | Phytophagous |
| 112. | *Anomala varicolor* (Gyllenthal, 1817) | Jalpaiguri, Darjeeling and Jalpaiguri. | Chatterjee and Biswas, 1995; Sarkar *et al*., 2017. | Phytophagous |
| 113. | *Anomala variivestis* Arrow, 1917 | Jalpaiguri | Sarkar *et al*., 2017 | Phytophagous |
| 114. | *Anomala viridilatera* Arrow, 1917 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 115. | *Anomala variegata* Hope, 1831 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 116. | *Anomala xanthoptera* Blanchard, 1851 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 117. | *Callistethus auronitens* (Hope, 1835) | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 118. | *Callistethus pterygophorus* (Ohaus, 1903) | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 119. | *Callistethus stoliczkae* (Sharp, 1873) | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 120. | *Callistethus tumidicauda* (Arrow, 1912) | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 121. | *Mimela horsfieldi* Hope, 1836 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 122. | *Mimela passerinii* Hope, 1842 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 123. | *Mimela fulgidivittata* Blanchard, 1851 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 124. | *Mimela vittaticollis* Burmeister, 1855 | Darjeeling | Chatterjee and Biswas, | Phytophagous |

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| | | | 1995 | |
| 125. | *Mimela vernicata* (Fairmaire, 1896) | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 126. | *Mimela leei* (Swederus, 1787) | Jalpaiguri | Sarkar *et al*., 2016 | Phytophagous |
| 127. | *Mimela sericea* Ohaus, 1905 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 128. | *Mimela siliguria* (Arrow, 1917) | Jalpaiguri, Darjeeling | Chatterjee and Biswas, 1995; Sarkar *et al*., 2010 | Phytophagous |
| 129. | *Mimela soror* Arrow,1908 | Jalpaiguri | Sarkar *et al*., 2010; Sarkar *et al*., 2017 | Phytophagous |
| 130. | *Mimela princeps* Hope, 1842 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 131. | *Mimela laevigata* Arrow, 1908 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 132. | *Mimela heterochropus* Blanchard 1851 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 133. | *Mimela glabra* Hope, 1841 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 134. | *Mimela rugicauda* Arrow 1917 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 135. | *Mimela dehaani* (Hope, 1840) | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 136. | *Mimela marginalis* Arrow, 1908 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 137. | *Mimela bicolor* Hope, 1836 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 138. | *Singhala tenella* (Blanchard, 1851) | Kolkata | Chatterjee and Biswas, 1995 | Phytophagous |
| 139. | *Ischnopopillia erythropteraerythroptera* Kraatz, 1892 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 140. | *Ischnopopillia lateralis* (Hope, 1831) | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 141. | *Ischnopopillia pusilla* Arrow, 1912 | Jalpaiguri, Darjeeling | Chatterjee and Biswas, 1995; Sarkar *et al*., 2010 | Phytophagous |
| 142. | *Ischnopopillia festiva* (Arrow, 1917). | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 143. | *Pseudosinghala transversa* (Burmeister, 1855) | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 144. | *Singhala polymorpha* (Arrow, 1911) | Jalpaiguri. | Sarkar *et al*., 2010 | Phytophagous |
| 145. | *Adoretosoma fulviventre* Blanchard, 1851 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 146. | *Adoretosoma galerucina* (Arrow, 1917) | Darjeeling | Chatterjee and Biswas, | Phytophagous |

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| | | | 1995 | |
| 147. | *Adoretosoma signaticolle* (Nonfried, 1893) | Jalpaiguri, Darjeeling | Chatterjee and Biswas, 1995; Sarkar *et al*., 2010; Sarkar *et al*., 2017. | Phytophagous |
| 148. | *Popillia macclellandi* Hope, 1845 | Jalpaiguri. | Sarkar *et al*., 2010 | Phytophagous |
| 149. | *Popillia cyanea* Hope, 1831 | Darjeeling, Jalpaiguri | Chatterjee and Biswas, 1995 | Phytophagous |
| 150. | *Popillia nitida* Hope, 1831 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 151. | *Popillia laevicollis* Kraatz, 1892 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 152. | *Popillia cupricollis* Hope, 1831 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 153. | *Popillia feae* Kraatz, 1892 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 154. | *Popillia nottrotti* Kraatz, 1892 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 155. | *Popillia pilicollis* Kraatz, 1892 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 156. | *Callistopopillia iris* (Candeze, 1869) | Murshidabad, Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 157. | *Dactylopopillia virescens* (Hope, 1831) | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 158. | *Spilopopillia sexguttata* (Fairmaire, 1887) | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 159. | *Peperonota harringtoni* Westwood, 1847 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 160. | *Parastasia rufopicta* Westwood, 1842 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 161. | *Cyphelytra ochracea* Waterhouse, 1875 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| | **Subfamily Dynastinae** | | | |
| 162. | *Alissonotum crassum* Arrow, 1908 | Jalpaiguri, Cooch Behar | Chatterjee and Biswas, 1995; Sarkar *etal*., 2010; Sarkar *et al*., 2014 | Phytophagous |
| 163. | *Alissonotumpiceum* (Fabricius, 1775) | Kolkata, Darjeeling, South 24 Parganas. | Chatterjee and Biswas, 1995 | Phytophagous |
| 164. | *Alissonotum simile* Arrow, 1910 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 165. | *Phyllognathus dionysius* (Fabricius, 1792) | Jalpaiguri, North 24 Parganas, Kolkata, Darjeeling | Chatterjee and Biswas, 1995; Sarkar *etal*., 2010; Sarkar *et al*., 2014; Mitra *et* | Phytophagous |

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| | | | *al*., 2015. | |
| 166. | *Eophileurus* (*Eophileurus*) *platypterus* (Wiedemann, 1823) | Jalpaiguri | Sarkar *et al*., 2010; Sarkar *et al*., 2014 | Phytophagous |
| 167. | *Eophileurus* (*Eophileurus*) *planatus* (Wiedemann, 1823) | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 168. | *Microryctes monodon* (Fairmare, 1893) | Jalpaiguri | Sarkar *et al*., 2010; Sarkar *et al*., 2014 | Phytophagous |
| 169. | *Xylotrupes gideon* (Linnaeus, 1767) | Jalpaiguri, North 24 Parganas, Darjeeling. | Chatterjee and Biswas, 1995; Sarkar *etal*., 2014; Mitra *et al*., 2016; Ghosh and Bhunia, 2016; Maity *et al*., 2016 | Phytophagous |
| 170. | *Oryctes rhinoceros* (Linnaeus, 1758) | Jalpaiguri, North 24 Parganas, Kolkata, Hooghly, Medinipur, Murshidabad. | Chatterjee and Biswas, 1995; Sarkar *et al*., 2010; Sarkar *et al*., 2014; Roy *et. al.* 2014; Ghosh and Bhunia, 2016; Maity *et al*., 2016 | Phytophagous |
| 171. | *Heteronychus liioderes* Redtenbacher, 1867 | Jalpaiguri, North 24 Parganas, Kolkata, South 24 Parganas, Darjeeling | Chatterjee and Biswas, 1995; Sarkar *et al*., 2010; Sarkar *et al*., 2014; Roy *et. al.* 2014; Ghosh and Bhunia, 2016; Maity *et al*., 2016 | Phytophagous |
| 172. | *Heteronychus annulatus* Bates, 1891 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 173. | *Clyster retusus* Arrow, 1908 | Jalpaiguri | Sarkar *etal*., 2014 | Phytophagous |
| 174. | *Eupatorus hardwickei* (Hope, 1831) | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| | **Subfamily Cetoniinae** | | | |
| 175. | *Glycosia tricolor* (Olivier, 1789) | North 24 Parganas | Mitra *et al*., 2015 | Phytophagous |
| 176. | *Campsiura* (*Eucampsiura*) *javanica* Gory & Percheron, 1833 | Jalpaiguri | Sarkar *et al*., 2010 | Phytophagous |
| 177. | *Coenochilus curtipes* Westwood, 1874 | Jalpaiguri | Sarkar *et al*., 2010 | Phytophagous |
| 178. | *Dicheros* (*Hemicoryphocera*) *childreni* Westwood, 1842 | Jalpaiguri | Sarkar *et al*., 2010 | Phytophagous |
| 179. | *Oreoderus bhutanus* Arrow, 1910 | Jalpaiguri | Sarkar *et al*., 2010 | Phytophagous |
| 180. | *Thaumastopeus nigritus* (Fröhlich, 1792) | Jalpaiguri | Sarkar *et al*., 2010 | Phytophagous |

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| 181. | *Dicronocephalus wallichi* Hope, 1831 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 182. | *Philistina* (*Cephalocosmus*) *microphylla* (Wood-Mason, 1881) | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 183. | *Coilodera penicillata* Hope, 1831 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 184. | *Bombodes westwoodi* Thomson, 1857 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 185. | *Bombodes ursus* Westwood, 1848 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 186. | *Taeniodera nigricollis* (Janson, 1881) | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 187. | *Euselates* (*Euselates*) *quadrilineata* (Hope, 1831) | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 188. | *Euselates* (*Euselates*) *virgata* (Janson, 1892) | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 189. | *Euselates* (*Euselates*) *antennatus* (Wallace, 1868) | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 190. | *Dicheros* (*Hemicoryphocera*) *childreni* Westwood, 1842 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 191. | *Jumnos ruckeri* Saunders, 1839 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 192. | *Torynorrhina apicalis* (Westwood, 1842) | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 193. | *Torynorrhina opalina* (Hope, 1831) | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 194. | *Rhomborrhina microcephala* Westwood, 1842 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 195. | *Torynorrhina distincta* (Hope, 1841) | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 196. | *Diphyllomorpha glaberrima* (Westwood, 1842) | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 197. | *Rhomborrhina resplendens heros* (Gory & Percheron, 1833) | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 198. | *Coelodera mearesi* Westwood, 1842 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 199. | *Euchloropus laetus* (Fabricius, 1801) | Kolkata | Chatterjee and Biswas, 1995 | Phytophagous |
| 200. | *Hemiheterorrhina mutabilis* (Hope, 1831) | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 201. | *Heterorrhina dispar* Arrow, 1907 | Darjeeling | Chatterjee and Biswas, | Phytophagous |

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| | | | 1995 | |
| 202. | *Heterorrhina elegans* (Fabricius, 1781) | Kolkata, Malda and Murshidabad | Chatterjee and Biswas, 1995 | Phytophagous |
| 203. | *Heterorrhina punctatissima* Westwood, 1842 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 204. | *Heterorrhina nigritarsis nigritarsis* (Hope, 1831) | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 205. | *Trigonophorus nepalensis* Hope, 1831 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 206. | *Trigonophorus saundersi* Westwood, 1842 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 207. | *Trigonophorus gracilipes* Westwood, 1845a | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 208. | *Trigonophorus scintillans* Arrow, 1910 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 209. | *Anthracophora* (*Anthracophora*) *crucifera* (Olivier, 1789) | Kolkata, Darjeeling, Malda | Chatterjee and Biswas, 1995 | Phytophagous |
| 210. | *Anthracophora* (*Poecilophilides*) *dalmanni* (Hope, 1831) | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 211. | *Glycyphana horsfieldi* (Hope, 1831) | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 212. | *Glycyphana catena* Arrow, 1910 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 213. | *Glycyphana* (*Glycyphaniola*) *nepalensis* Kraatz, 1894 | Kolkata | Chatterjee and Biswas, 1995 | Phytophagous |
| 214. | *Glycosia tricolor* (Olivier, 1789) | North 24 Parganas | Chatterjee and Biswas, 1995 | Phytophagous |
| 215. | *Cetonia rutilans* (Janson, 1881) | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 216. | *Cetonia rhododendri* Gestro, 1891 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 217. | *Protaetia auripes*Hope, 1831 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 218. | *Protaetia montana* (Nonfried, 1892) | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 219. | *Protaetia aurichalcea* Fabricius, 1775 | Kolkata | Chatterjee and Biswas, 1995 | Phytophagous |
| 220. | *Protaetia* (*Protaetia*) *peregrine* (Herbst, 1790) | Murshidabad | Chatterjee and Biswas, 1995 | Phytophagous |
| 221. | *Protaetia fusca* (Herbst, 1790) | Kolkata, Darjeeling, Malda | Chatterjee and Biswas, 1995 | Phytophagous |
| 222. | *Protaetia caudata* Arrow, 1910 | Darjeeling | Chatterjee and Biswas, | Phytophagous |

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| | | | 1995 | |
| 223. | *Protaetia cariana cariana* (Gestro, 1891) | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 224. | *Protaetia neglecta* (Hope, 1831) | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 225. | *Gametis versicolor* (Fabricius, 1775) | Kolkata, Malda | Chatterjee and Biswas, 1995 | Phytophagous |
| 226. | *Gametis jucunda* (Faldermann, 1835) | Darjeeling, Kolkata | Chatterjee and Biswas, 1995 | Phytophagous |
| 227. | *Chiloloba acuta* (Wiedemann, 1823) | Kolkata, Malda | Chatterjee and Biswas, 1995 | Phytophagous |
| 228. | *Clinteria ducalis* White,1856 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 229. | *Clinteria hoffmeisteri* White,1847 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 230. | *Clinteria pumila* (Swartz, 1817) | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 231. | *Thaumastopeus nigritus* (Fröhlich, 1792) | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 232. | *Spilophorus cretosus* (Hope,1833) | Kolkata, Birbhum | Chatterjee and Biswas, 1995 | Phytophagous |
| 233. | *Cymophorus pulchellus* Arrow, 1910 | Hooghly | Chatterjee and Biswas, 1995 | Phytophagous |
| 234. | *Coenochilus campbelli* Saunders, 1842 | Malda | Chatterjee and Biswas, 1995 | Phytophagous |
| 235. | *Campsiura javanica* Gory & Percheron, 1833 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 236. | *Campsiura xanthorrhina* Hope, 1831 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 237. | *Dasyvalguscarbonarius* Arrow, 1910 | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| | **Subfamily Euchirinae** | | | |
| 238. | *Propomacrus parryi* (Gray, 1848) | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |
| 239. | *Propomacrus macleayi* (Hope, 1841) | Darjeeling | Chatterjee and Biswas, 1995 | Phytophagous |

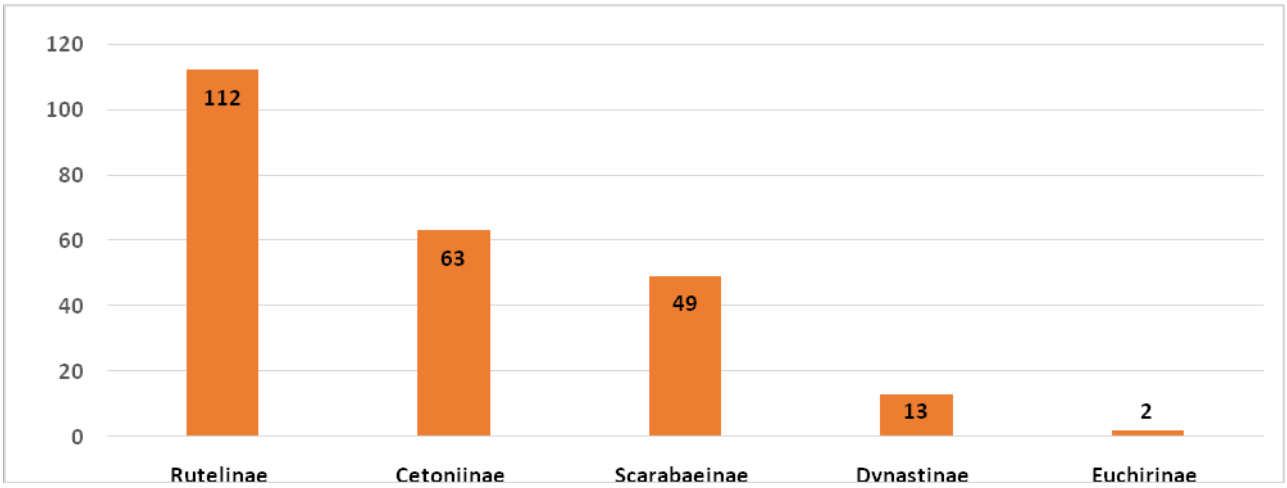


**Fig. 1: Sub family -wise species diversity of the family Scarabaeidae from West Bengal.**

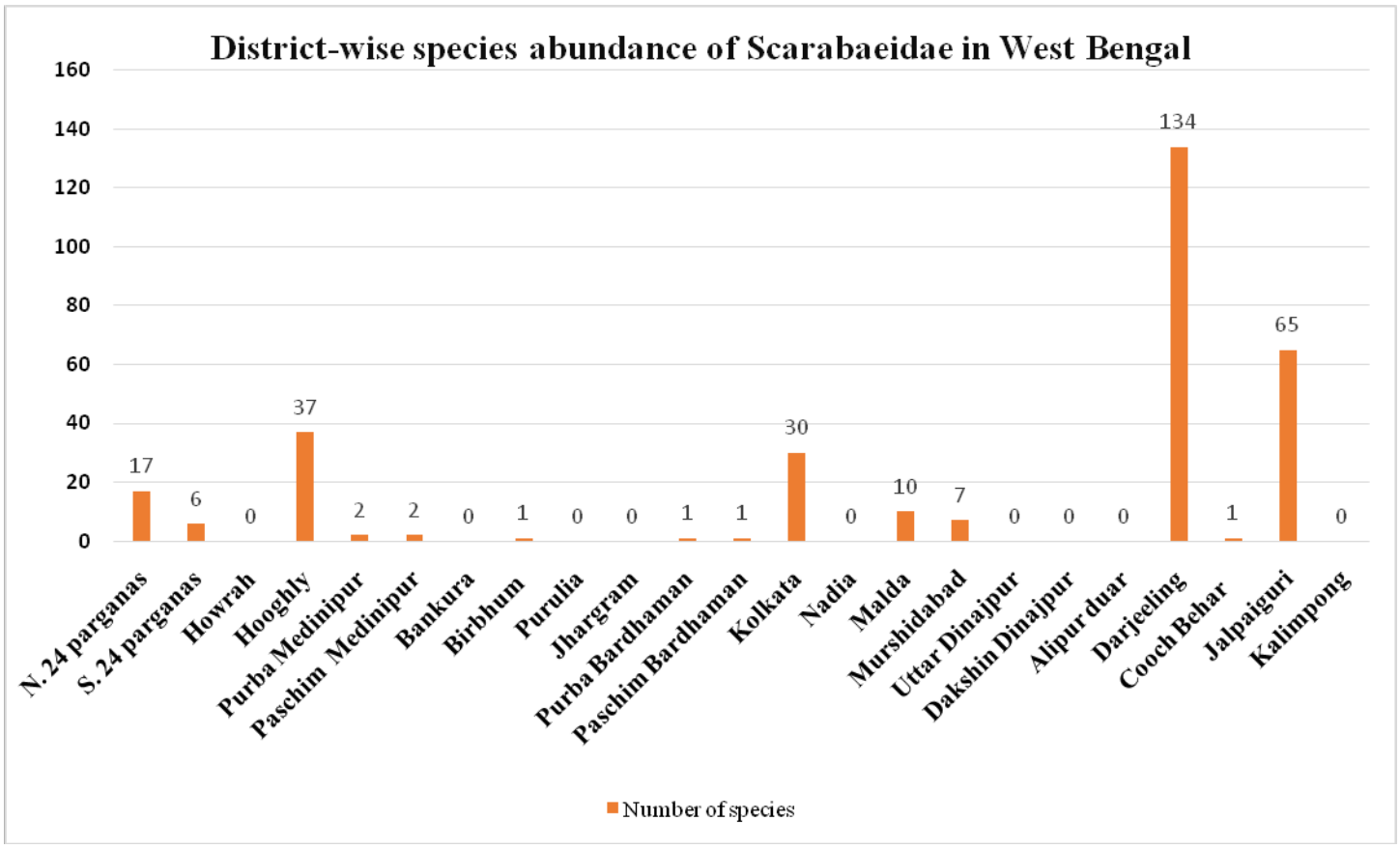


**Fig. 2 : District-wise species diversity in West Bengal.**

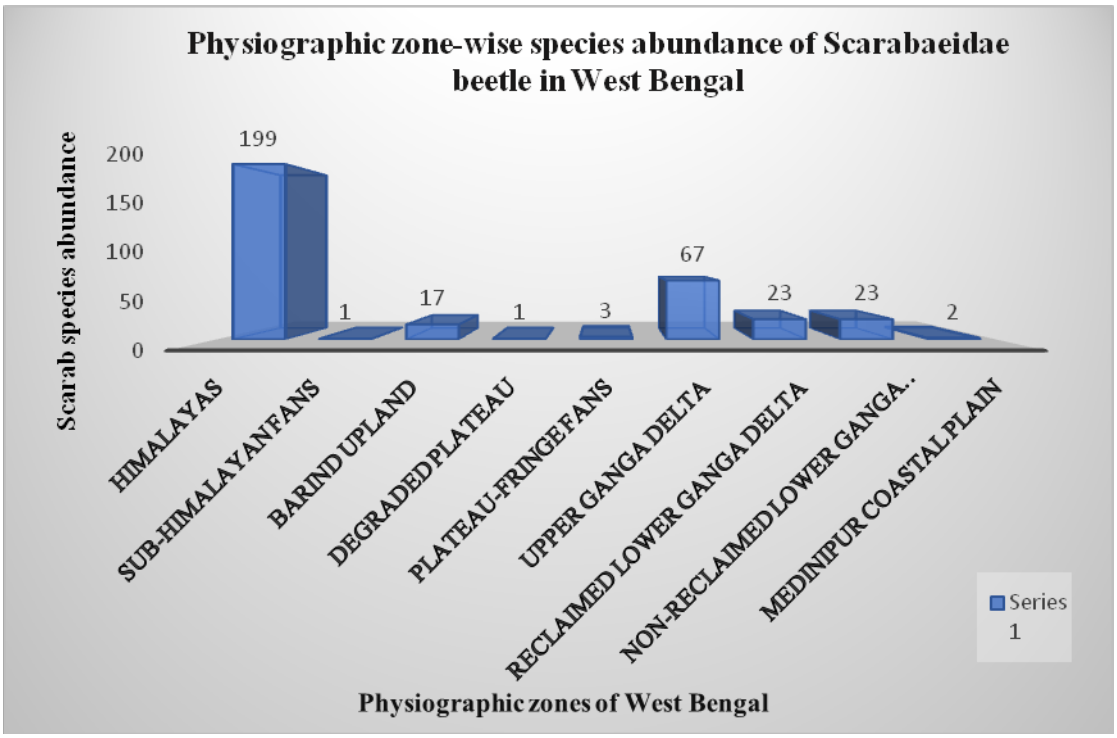


**Fig. 3: Scarabaeidae species diversity in West Bengal regarding physiographic zones.**

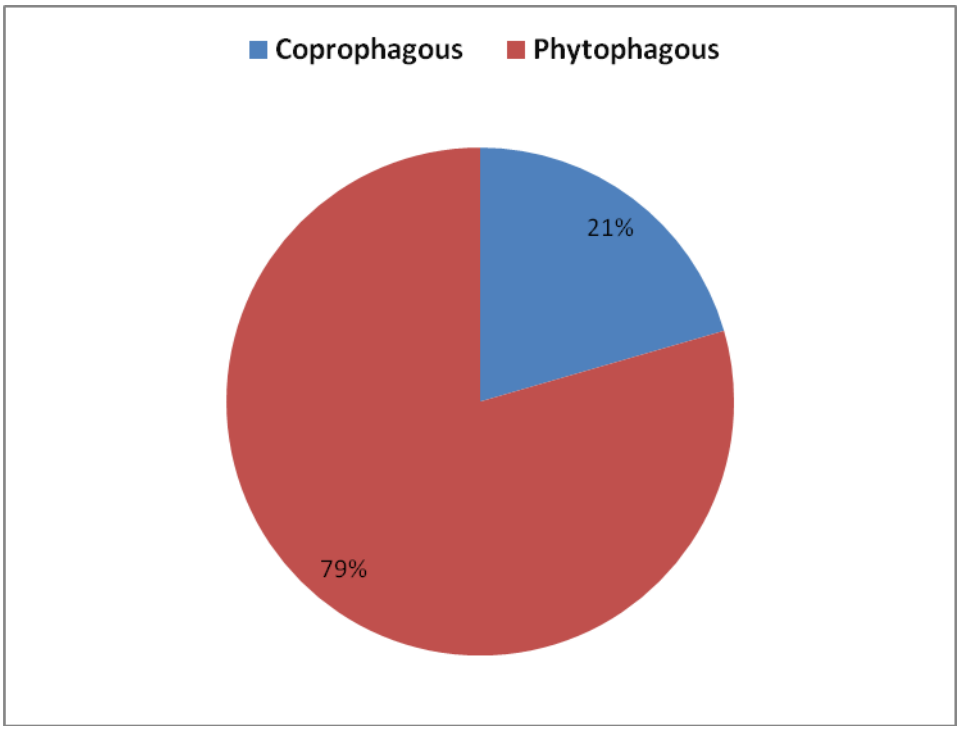


**Fig.4: Feeding habit of the scarab beetles of West Bengal.**

**Table 2**: Species abundance of Scarabaeidae regarding different major physiographic zones of West Bengal.

| Serial No. | Physiographic Provinces | Altitude range | Average slope | Total Area | Districts included predominantly | Total species abundance |
|---|---|---|---|---|---|---|
| 1. | Himalayas | 340–3631 m (Sandakphu, Darjiling), | 23.85° | 2,193 km2 | DJ, JP, KA, AD | 199 |
| 2. | Sub-Himalayan Fans | *Upper Fan*: 105–340 m ; *Lower Fan*: 25–105 m | 1.25°-0.35° | 14,518 km2 | KB, UD | 1 |
| 3. | Barind Upland | 15–55 m | 0.6° | 3,522 km2 | DD, MB, MD | 17 |
| 4. | Degraded Plateau | 115–669 m (□□Ajodhya hills, Puruliya) | 2.35° | 10,245 km2 | PU, JH, WB, BN | 1 |
| 5. | Plateau-fringe Fans | 5–115 m | 0.8° | 30,647 km2 | WME, EB, BI | 3 |
| 6. | Upper Ganga Delta | 5–35 m | 0.4° | 15,905 km2 | NA, HG, HW, KO | 67 |
| 7. | Reclaimed lower ganga delta | 0–10 m | 0.32° | 4,896 km2 | PN, PS | 23 |
| 8. | Non-reclaimed lower ganga delta | 0–5 m | 0.25° | 4,545 km2 | PN, PS | 23 |
| 9. | Medinipur coastal plain | 0–15 m | 0.45° | 2,219 km2 | EME | 2 |

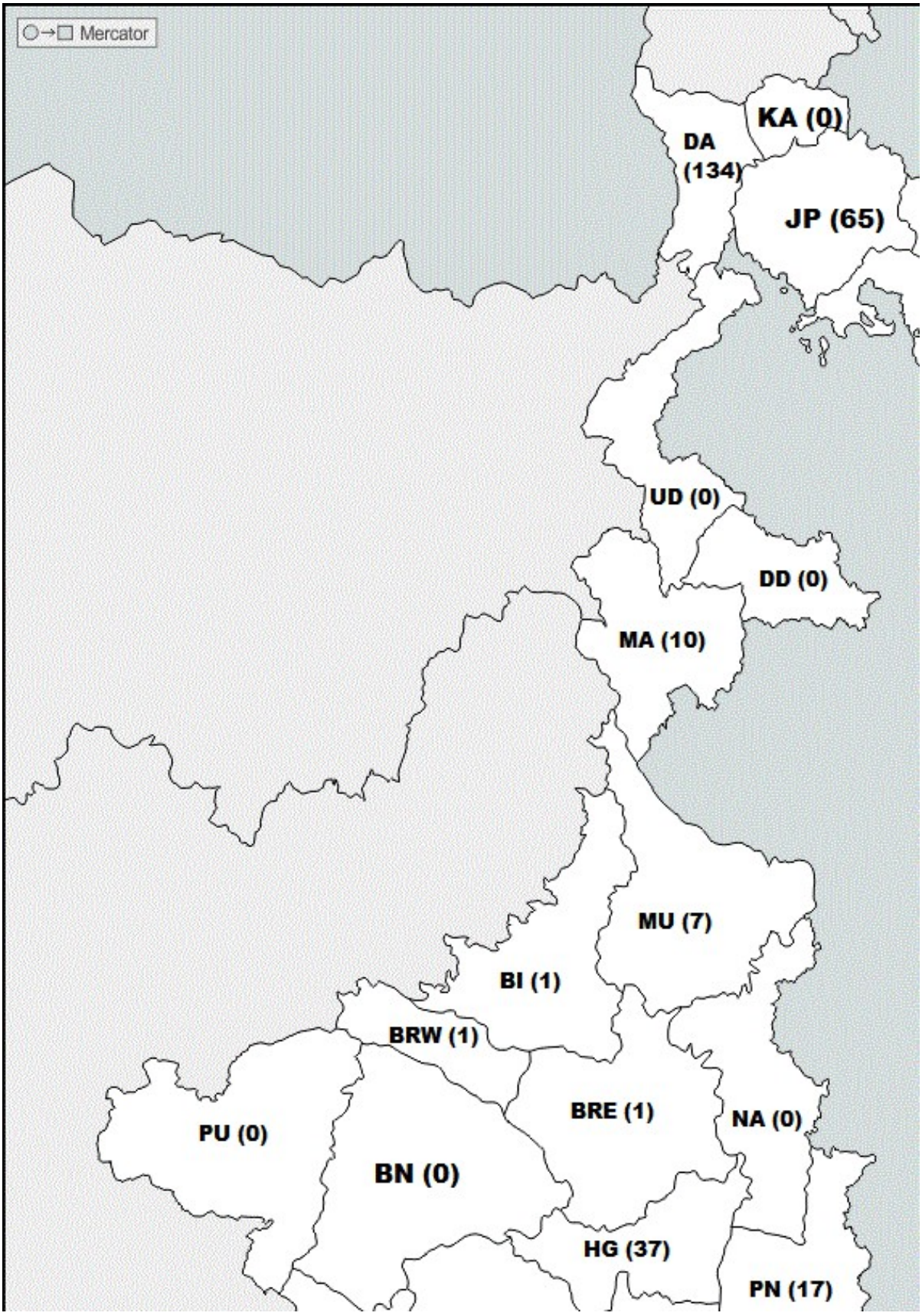


**Fig. 5: Map of West Bengal with showing abundance of Scarabaeidae species in each district.**

## 5. Discussion

*Adoretus lacustris*is is endemic to the state of West Bengal till date. This speciesof chafer was collected by F.H. Gravely at the water edges of Salt Lakes, near Calcutta with the larvae at the roots of an semiaquatic mangrove plant, sea holly (*Acanthus ilicifolius* L.), while the adults forms forage on the leaves of *Avicennasp*. (Arrow, 1917).The chafers act as a very important economically and serious pest of agriculture, forestry and fruit trees. *Oryctes rhinoceros* act as a serious pest of coconut plantation. *Phyllognathus dionysius* damage the roots of paddy, rose, forest, and fruit trees by foraging (Chatterjee and Biswas, 1995).

Among the dung beetles, species of the genus *Gymnopleurus* feed on the dung pats itself or carry it to the tunnel, thereby storing food.Many species such as *Onitis subopacus* prefer comparatively older dried dung as food. Some species under genera *Heliocopris*, *Cathursius*, and *Copris* make long tunnel chambers directly below the dung pats and roll the dung balls inside the tunnel, which is used to feed the larvae.The dung beetle species are usually collected from the dung of the domesticated cattle, but many species were collected also from the dungs of the herbivorous animals, like wild elephants, wild ungulates, wild boar, and equids (Biswas and Ghosh, 2000).

Out of 7 subfamilies of this family known from India, 5 subfamilies are reported from West bengal. Subfamilies Aphodinae and Melolonthinae are still not reported from any published literatues.

Despite of a large diversity of Scarabaeidae fauna in West Bengal, some districts and geographical zones are seemed to be statistically under surveyed, as they lack the record of significant numbers of dung beetle species. Regarding different Physiograhic zones of West bengal, it has been also observed that,Sub-Himalayan Fans, Degraded Plateau, Plateau-fringe Fans and Medinipur coastal plains are still lagging in diversity of scarabaeidae entemofauna, which again reflects the problem of undersurveyed condition. The authors hope that this lacuna will fill up surely in near future with the help of more frequent methodical survey and publications.

## 6. Conflict of interests

The authors have no conflict of interest to declare.


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