

ON THE COLEOPTERA OF PANDHARPUR TAHSIL, DISTRICT SOLAPUR (M.S.) INDIA

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ABSTRACT

This study provides the detailed information on the coleopteran assemblage from the of Pandharpur tahsil, district Solapur (M. S.) India. The study reports beetles from the 20 different families of order Coleoptera viz. Carabidae, Haliplidae, Dytiscidae, Gyrinidae, Hydrophilidae, Histeridae, Staphylinidae, Leucanidae, Scarabaeidae, Buprestidae, Elateridae, Lampyridae, Bostrichidae, Nitidulidae, Coccinellidae, Meloidae, Tenebrionidae, Cerambycidae, Chrysomelidae and Curculionidae.

Key words: Coleoptera, Arid Zone, Diversity, Solapur

INTRODUCTION

The insects from the Order Coleoptera are known occur in almost all kinds of habitats except polar regions. The order Coleoptera exhibit great diversity and species richness with remarkable plasticity in the development and constituting about 25 % of the all known types of animals. It is very difficult to estimate accurate species number from any taxonomic group of animals. As far as concerned to the described number of coleopteran species counts to 3, 60,000 throughout the world (Bouchard et al., 2009). These species are distributed within 211 families, 541 subfamilies, 1663 tribes and 740 subtribes of order Coleoptera (Bouchard, 2011). The number of earlier described species of Coleoptera from the Indian subcontinent was 15088 (Kazmi & Ramamurthy, 2004).

The order Coleoptera represents both beneficial and harmful species. Several studies have been carried out on the diversity of coleoptera, their assemblage in different ecosystems, utilization of food resource, their role in maintenance of different ecosystem (Stebbing , 1914; Beeson, 1941, Lefroy, 1971; Erwin & Scott, 1980; Meshram et al., 1990; Nair, 2000, 2001, 2007; Pardo-Locarno et al., 2005; Anitha et al., 2006; Kulkarni et al., 2009).

Taking into consideration the huge diversity of order Coleoptera and its twofold importance, the present work has been undertaken to find out the coleopteran assemblage from the agro-ecological zone of Pandharpur tahsil, district Solapur (M.S.) India.

MATERIALS AND METHODS

Collection of Beetles

Faunistic surveys of the Pandharpur Tahsil especially in the agro-ecological zone were conducted between Jan. 2014 to December 2014 and beetles were collected from agro-ecological zone of 10 different villages, viz., Gadegaon, Takali, Mendhapur, Sarkoli, Gursale, Ozewadi Ranjani, Ambe, Chale and Mundhewadi. The beetles were collected during the morning hours during 7.00 am to 9.00 am. The collection of beetles was also made with the help of light trap from 7.00 pm to 8.00 pm. The collection method of beetles was followed according to (Alfred and Ramakrishna, 2004 and Leather et al., 2005).

Study Area

Pandharpur tahsil of Solapur district geographically lies between 17°30'00"N to 18°05'00"N latitude & 75°05'00"E to 75°35'00"E Longitude, which cover 1303.6 Sq Km area. There are 103 villages in Pandharpur tahsil. For the present study, the agro-ecological zone 10 different villages was selected for the present study. These villages are Gadegaon, Takali, Mendhapur, Gursale, Sarkoli, Ozewadi, Ranjani, Chale, Ambe and Mundhewadi.

The land use pattern of Pandharpur tahsil shows 52% of the land is used for agriculture, 18 % represents fallow land, 17% barren land, 11% grassland and 2% land is occupied by water body (Palkar & Gavade, 2013).

RESULTS

The present investigation reports the coleopteran species associated with the agro-ecological zone of Pandharpur Tahsil. The agricultural area of the selected villages includes vegetable crops, fruit crops and cash crops. The villages selected for the present study are mentioned in the study area. A total of 70 species were recorded during the study period under 53 genera distributed in 20 families of order Coleoptera viz. from the agro-ecological zone of Pandharpur Tahsil, district Solapur Maharashtra, India. Table 1 presents the checklist of the beetles collected during the study period.

Table. 1. Checklist of Coleoptera from the agro-ecological zone of Pandharpur Tahsil, district Solapur (M.S.) India

Sr. No.	Species	Family
1.	<i>Brachinus</i> sp.	Carabidae
2.	<i>Eudema</i> sp.	
3.	<i>Chlaenius</i> sp.	
4.	<i>Haliphus</i> sp.	Halipilidae
5.	<i>Sandracottus dejeani</i> Aube ?	Dytiscidae

6.	<i>Cybister</i> sp.	
7.	<i>Dinutes (Protodinutes) indicus</i> Aube	Gyrinidae
8.	<i>Orectochilus</i> sp.	
9.	<i>Sphaeridium</i> sp.	Hydrophilidae
10.	<i>Hister</i> sp.	Histeridae
11.	<i>Hister</i> sp.	
12.	<i>Platydorus</i> sp.	Staphylinidae
13.	Unidentified sp.	Leucanidae
14.	<i>Aphodius moestus</i> Fab.	Scarabaeidae
15.	<i>Aphodius</i> sp.	
16.	<i>Aphodius</i> sp.	
17.	<i>Scarabaeus sacer</i> ?	
18.	<i>Heliocopris bucephalus</i> Fab.	
19.	<i>Catharcus pithecius</i> Fab.	
20.	<i>Catharcus</i> sp.	
21.	<i>Onthophagus catta</i> Fab.	
22.	<i>Oniticellus cinctus</i> Fab.	
23.	<i>Onthophagus</i> sp.	
24.	<i>Onthophagus</i> sp.	
25.	<i>Onthophagus</i> sp.	
26.	<i>Onthophagus</i> sp.	
27.	<i>Holotrichia fissa</i> Brenske	
28.	<i>Maladera castanea</i>	
29.	<i>Maladera holosericea</i> 23	
30.	<i>Maladera</i> sp	
31.	<i>Apogonia</i> sp.	
32.	<i>Anomala bengalensis</i> Blanch.	
33.	<i>Anomala</i> sp.	
34.	<i>Anomala</i> sp.	
35.	<i>Anatona stillata</i> New.	
36.	<i>Adoretus versutus</i> Harold	
37.	<i>Adoretus</i> sp.	
38.	<i>Chiloloba acuta</i> Wied.	
39.	<i>Oryctes rhinoceros</i> Linn.	
40.	<i>Phyllognathus dionysius</i> Fab.	

41.	<i>Psiloptera orientalis</i> Laporte & Gory	Buprestidae
42.	<i>Sternocera laevigata</i> Olivier	
43.	<i>Sternocera orientalis</i> Castelnau & Gory	
44.	<i>Agrilus</i> sp.	
45.	<i>Argypnus</i> sp.	Elateridae
46.	<i>Melanotus</i> sp.	
47.	<i>Melanotus</i> sp.	
48.	<i>Lamprophorus</i> sp.	Lampyridae
49.	<i>Sinoxylon</i> sp.	Bostrichidae
50.	<i>Sinoxylon</i> sp.	
51.	<i>Carpophilus</i> sp.	Nitidulidae
52.	<i>Menochilus</i> sp.	Coccinellidae
53.	<i>Illies</i> sp.	
54.	<i>Mylabris pustulata</i> Thunberg	Meloidae
55.	<i>Mylabris</i> sp.	
56.	<i>Gonocephalum</i> sp.	Tenebrionidae
57.	<i>Gonocephalum</i> sp.	
58.	<i>Tribolium</i> sp.	
59.	<i>Batocera rufomaculata</i> De Geer	Cerambycidae
60.	<i>Xystocera globosa</i> Olivier	
61.	<i>Olenecamptus bilobus</i> Dillon & Dillon	
62.	<i>Stromatium barbatum</i> Fab.	
63.	<i>Pterolophia</i> sp.	
64.	<i>Stibara nigricornis</i> Fab.	
65.	<i>Coptops aedificator</i> Fab.	
66.	<i>Macrotoma</i> sp.	
67.	<i>Celosterna scabrator</i> 52 Fab.	
68.	<i>Aspidomorpha</i> sp.	Chrysomelidae
69.	<i>Myllocerus</i> sp.	Curculionidae
70.	<i>Euplatypus</i> sp.	

DISCUSSION

The present inventory in the coleopteran assemblage from the agro-ecological zone of Pandharpur Tahsil reports 70 species belonging to 53 genera distributed within 20 different families. These species

exhibits different feeding guilds viz. phytophagous, saprophagous, coprophagous and carnivorous. The beetles from the Carabidae, Histeridae, and Coccinellidae are predatory in nature. Among these family Histeridae and Coccinellidae represents the genera *Hister*, *Menochilus* and *Illies*, which are widely used in the biological control programme of pests. Summerlin et al., (1984) studied the life cycle and habits of *Hister abbreviatus* and its potential in reduction of fly population. Netam et al., (2013) reported the seasonal incidence of insect pests from the Soyabean field with variation in the bio-control agents like coccinellid beetles, spiders and pentatomid bugs. Among these three groups, family Coccinellidae represented two species that are *Menochilus sexmaculatus* and *Coccinella septempunctatus*.

The aquatic beetles recorded from the present study region belong to the families Haliplidae, Gyrinidae, Dytiscidae and Hydrophilidae. These families represent only five species from the present study area. This number is very low as the aquatic ecosystems i.e. seasonal streams and lakes present near agro-ecological zone represent great variety of aquatic beetles. More concentrated efforts are needed in future to explore this particular fauna from the Pandharpur Tahsil. Among the ground dwelling beetle families, Tenebrionidae represented only 3 species of which *Tribolium* is a serious pest of stored grains.

The phytophagous group represents the families Scarabaeidae, Elateridae, Cerambycidae, Buprestidae, Meloidae Bostrichidae, Nitidulidae, Chrysomelidae and Curculionidae. The beetles from these groups feed on the different plant parts that are foliage, stem, bark, root, seeds, fruits. These seven families many pestiferous species of agricultural fields, plantation crops and fruit crops. The major pestiferous general are *Holotrichia*, *Apogonia*, *Maladera*, *Adoretus*, *Anomala*, *Oryctes*, *Phyllognathus*, *Oryctes*, *PSiloptera*, *Sternocera*, *Agrilus*, *Argyppus*, *Sinoxylon*, *Myloceros* and *Euplatypus*. The species from these genera are reported as serious pests of agricultural crops, plantations crops, forest plants from the different parts of the country (Beeson, 1941; Meshram et al., 1990; Nair, 2000, 2001, 2007; Anitha et al., 2006; Kulkarni et al., 2009).

The coprophagous beetles play a significant role in the decomposition of organic matter and nutrient recycling. During the present study, 12 species of beetles were recorded which use animal excrements as food resource. These beetles represent genera *Aphodius*, *Scarabaeus*, *Heliocopris*, *Catharcus*, *Oniticellus* and *Onthophagus*. These genera were recorded from the excrements of buffalo, cow, dog and humans. Likewise several studies have been carried out on the insects associated with animal excrements and their ecological role (Bornemissza, 1960, 1968, 1969; 1970; Koskela and Hanski, 1977; Hanski, 1987; Pinero and Milo, 2004. Venugopal et al., 2012).

The present study will be helpful in the management of pestiferous species of agricultural field, in determination of potential and use of predatory beetles as bio control agents. The coprophagous beetles recorded during the present study can be used in the decomposition organic waste material after the determination of their potential.

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