



ISSN 0375-1511

Rec. zool. Surv. India : 112(Part-1) : 81-91, 2012

TAXONOMIC STUDIES ON LAMELLICORN SCARABAEIDS (COLEOPTERA) OF SIMBALBARA WILDLIFE SANCTUARY, SIRMOUR, HIMACHAL PRADESH, INDIA

KAILASH CHANDRA* DEVANSHU GUPTA**, V.P. UNIYAL***,
ABESH K. SANYAL*** AND V. BHARGAV***

**Zoological Survey of India, New Alipore, Kolkata-700053, West Bengal,*
(E-mail : kailash611@rediffmail.com)

***Zoological Survey of India, Jabalpur-482002, Madhya Pradesh*
(E-mail : devanshuguptagb4102@gamil.com)

****Wildlife Institute of India, Chandrabani, Dehradun, Uttarakhand*

INTRODUCTION

Scarabaeid beetles comprise a speciose group and are a conspicuous component of the beetle fauna of World. Adults of these beetles are noticeable due to their relatively large size, bright colors, often elaborate ornamentation, and interesting life histories. Life histories of scarab beetles are incredibly diverse and include adults that feed on dung, carrion, fungi, vegetation, pollen, fruits, compost, or roots. On the other hand some scarab beetles live in the nests of ants (myrmecophiles), in the nests of termites (termitophiles), or in the nests of rodents or birds. Dung beetle is a common name applied to beetles in the subfamilies Scarabaeinae and Aphodiinae, while most species in the subfamilies Melolonthinae, Dynastinae, Rutelinae, and Cetoniinae feed on plant products and are agricultural pests of various commercial crops. The dung beetles as a whole performs a series of ecological functions such as nutrient cycling, soil aeration (Mittal, 1993), seed dispersal (Estrada & Coates-Estrada, 1991 & Larsen, 2004) and regulation of enteric parasites and dung breeding dipterans pests (Borenmissza, 1970 & Fincher, 1981).

The family Scarabaeidae includes about 27,800 species worldwide. Within Scarabaeidae, two subfamilies; Aphodiinae and Scarabaeinae consists of approximately 6,850 species while other

subfamilies; Orphninae, Melolonthinae, Dynastinae, Rutelinae, Cetoniinae, Trichiinae and Valginae include approximately 20,950 species (Ratcliffe & Jameson 2001).

Major taxonomic studies on scarab beetles of India had been carried out by; Arrow, (1910, 1917 & 1931) and Balthasar (1963a, 1963b, 1964). Further information regarding the scarab diversity in north-west India have been published by Mittal (1981, 1989), Mittal and Pajini (1977) and Chandra (1988, 2005). Chandra (1988) studied diversity and distribution of Pleurostict Scarabaeidae of northwest India and reported 108 species belonging to 4 subfamilies; Rutelinae, Cetoniinae Dynastinae and Melolonthinae. Recently, Chandra (2005) published an account of the scarab beetles of Himachal Pradesh and reported 167 species belonging to 50 genera and 8 subfamilies with their distribution in different districts of the state wherein 67 species were included from district Sirmour.

While studying beetle specimens from Simbalbara Wildlife Sanctuary (SWLS), 27 species of scarabaeid beetles, belonging to 14 genera, 7 tribes and 5 subfamilies of family Scarabaeidae were identified and recorded for the first time from SWLS. This first attempt to inventorise the scarab beetle fauna of SWLS also provides some new information about the diversity and distribution of scarab beetles of Himachal Pradesh. Three species

of dung beetles; *Gymnopleurus* (*Gymnopleurus*) *cyaneus* (Fabricius), *Garreta dejeani* Castelnau and *Paragymnopleurus sinuatus* (Olivier) of Scarabaeinae and two species of chafer beetles; *Lepidiota albistigma* Burmeister and *Schizonycha ruficollis* (Fabricius) of Melolonthinae are additions to the beetle fauna of Himachal Pradesh.

MATERIAL AND METHODS

Study area

Simbalbara Wildlife Sanctuary (SWLS) is situated in Sirmour district of Himachal Pradesh, India and lies in between 30°24.21' and 30°27.338' N latitudes and 77°27.18' and 77°32.056' E longitudes with altitudinal range of 350m to 700m. This small sanctuary stretches over an area of 19 sq. km and lies in the confluence of the plains and the main Shivalik range. The area receives a mean annual rainfall of about 1260 mm. while the relative humidity varies from 100% during monsoon to 26% in summer (Pendharkar, 1993).

Specimens for the study were collected, during July-August, 2007 by applying light trap and hand picking methods. Thereafter they were pinned and identified using available literature (Arrow 1910, 1917, 1931; Balthasar 1963a, 1963b) and matched with the reference collection present in Zoological Survey of India (ZSI), Jabalpur. Thereafter they were deposited in National Zoological Collections of ZSI, Jabalpur. The details of material examined, registration number of identified species, systematic account, and distribution of the species are provided along with the species photographs (Plate 1, 2 & 3).

SYSTEMATIC ACCOUNT

Order COLEOPTERA Linnaeus, 1758

Suborder POLYPHAGA Emery, 1886

Family SCARABAEIDAE Latreille, 1802

Subfamily Scarabaeinae Latreille, 1802

Tribe *Gymnopleurini* Lacordaire, 1856

1. *Gymnopleurus* (*Gymnopleurus*) *cyaneus* (Fabricius, 1798)

1798. *Copris cyaneus* Fabricius, *Ent. Syst. Suppl.*: 34.

1931. *Gymnopleurus cyaneus*, Arrow, *Faun. Brit. India*, (Lamellicornia: Coprinae), 3: 49.

1963. *Gymnopleurus* (*Gymnopleurus*) *cyaneus*, Balthasar, *Mon. der Scarabaeidae und Aphodiidae der Palaeark. und Orientalis Region* (Coleoptera: Lamellicornia), Coprinae, I: 207.

Material examined: Sirmour, SWLS: ZSI/CZRC/A-15554, 02.viii.2007 (1♂1♀); ZSI/CZRC/A-15555, 10.viii.2007 (1♀), coll. Vinay Bhargav.

Geographical distribution: India: Haryana, Himachal Pradesh, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal. *Elsewhere*: Sri Lanka.

Remarks: New record from Himachal Pradesh.

2. *Garreta dejeani* Castelnau, 1840

1840. *Gymnopleurus dejeani* Castelnau, *Hist. Nat.*, II: 70.

1931. *Gymnopleurus dejeani*, Arrow, *Faun. Brit. India*, (Lamellicornia: Coprinae), 3: 59.

1963. *Gymnopleurus* (*Garreta*) *dejeani*, Balthasar, *Mon. der Scarabaeidae und Aphodiidae der Palaeark. und Orientalis Region* (Coleoptera: Lamellicornia), Coprinae, I: 227.

Material examined: Sirmour, SWLS: ZSI/CZRC/A-15553, 08.viii.2007 (1♀), ZSI/CZRC/A-15554, 18.vi.2007 (1♀), coll. V. Bhargav.

Geographical distribution: India: Himachal Pradesh, Kerala, Madhya Pradesh, Maharashtra and Uttarakhand.

Remarks: New record from Himachal Pradesh.

3. *Garreta opacus* Redtenbacher, 1848

1848. *Gymnopleurus opacus* Redtenbacher *Hugel's Kaschmir*, IV, 2: 516.

1931. *Gymnopleurus opacus*, Arrow, *Faun. Brit. India*, (Lamellicornia: Coprinae), 3: 58.

1963. *Gymnopleurus* (*Garreta*) *opacus*, Balthasar, *Mon. der Scarabaeidae und Aphodiidae der Palaeark. und Orientalis Region* (Coleoptera: Lamellicornia), Coprinae, I: 227.

2005. *Gymnopleurus opacus*, Chandra, *Zool. Surv. India, Fauna of Western Himalaya*, (part 2): 146.

Material examined: Sirmour, SWLS: ZSI/CZRC/A-15551, 16.vi.2007 (1♂1♀), coll. V. Bhargav.

Geographical distribution: India: Himachal Pradesh, Madhya Pradesh, Punjab and Uttarakhand.

4. *Paragymnopleurus sinuatus* (Olivier, 1789)

1789. *Scarabaeus sinuatus* Olivier, *Entom.*, I, 3: 160, tf.21, fig. 189.
1931. *Gymnopleurus sinuatus*, Arrow, *Faun. Brit. India*, (Lamellicornia: Coprinae), 3: 63.
1963. *Gymnopleurus (Paragymnopleurus) sinuatus*, Balthasar, *Mon. der Scarabaeidae und Aphodiidae der Palaeark. und Orientalis Region* (Coleoptera: Lamellicornia), Coprinae, I: 218.

Material examined : Sirmour, SWLS: ZSI/CZRC/A-15556, 05.viii.2007 (2ex.); ZSI/CZRC/A-15557, 07.viii.2007 (2ex.); ZSI/CZRC/A-15558, 08.viii.2007 (2ex.); ZSI/CZRC/A-15559, 03.viii.2007 (1ex.); ZSI/CZRC/A-15560, 09.viii.2007 (2ex.); ZSI/CZRC/A-15561, 12.vii.2007(1 ex.); coll. V. Bhargav.

Geographical distribution : India: Haryana, Himachal Pradesh, Karnataka, Madhya Pradesh, Maharashtra, Tamil Nadu, Uttar Pradesh, Uttarakhand and West Bengal.

Remarks : New record from Himachal Pradesh.

Tribe Coprini Leach, 1815**5. *Heliocopris bucephalus* (Fabricius, 1775)**

1775. *Scarabaeus bucephalus* Fabricius, *Syst. Ent.*, : 24.
1931. *Heliocopris bucephalus*, Arrow, *Faun. Brit. India*, (Lamellicornia: Coprinae), 3: 88.
1963. *Heliocopris bucephalus*, Balthasar, *Mon. der Scarabaeidae und Aphodiidae der Palaeark. und Orientalis Region* (Coleoptera : Lamellicornia), Coprinae, I: 303.
2005. *Heliocopris bucephalus*, Chandra, *Zool. Surv. India, Fauna of Western Himalaya*, (part 2): 146.

Material examined : Sirmour, SWLS: ZSI/CZRC/A-15545, 02.viii.2007 (1♂), coll. V. Bhargav.

Geographical distribution : India : Bihar, Haryana, Himachal Pradesh, Madhya Pradesh, Maharashtra, Rajasthan, Uttar Pradesh and West Bengal. *Elsewhere*: Myanmar, Malay, Peninsula and Java.

6. *Catharsius (Catharsius) molossus* (Linnaeus, 1758)

1758. *Scarabaeus molossus* Linnaeus, *Syst. Nat. ed.*: 347.
1931. *Catharsius molossus*, Arrow, *Faun. Brit. India*, (Lamellicornia: Coprinae), 3: 94.

1963. *Catharsius (Catharsius) molossus*, Balthasar, *Mon. der Scarabaeidae und Aphodiidae der Palaeark. und Orientalis Region* (Coleoptera : Lamellicornia), Coprinae, I: 307.

2005. *Catharsius molossus*, Chandra, *Zool. Surv. India, Fauna of Western Himalaya*, (part 2): 146.

Material examined : Sirmour, SWLS, ZSI/CZRC/A-15549, 02.viii.2007 (2♂); ZSI/CZRC/A-15550, 03.viii.2007 (4♂); Coll. V. Bhargav.

Geographical distribution : India : Andaman and Nicobar Island, Arunachal Pradesh, Assam, Bihar, Haryana, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Meghalaya, Orissa, Sikkim, Uttar Pradesh, Uttarakhand and West Bengal.

7. *Catharsius (Catharsius) sagax* (Quenstedt, 1806)

1806. *Copris sagax* Quenstedt, *Schönh. Syn. Ins.*, I: 43.
1931. *Catharsius sagax*, Arrow, *Faun. Brit. India*, (Lamellicornia: Coprinae), 3: 96.
1963. *Catharsius (Catharsius) sagax*, Balthasar, *Mon. der Scarabaeidae und Aphodiidae der Palaeark. und Orientalis Region* (Coleoptera : Lamellicornia), Coprinae, I: 309.
2005. *Catharsius sagax*, Chandra, *Zool. Surv. India, Fauna of Western Himalaya*, (part 2): 146.

Material examined: Sirmour, SWLS: ZSI/CZRC/A-15562, 02.viii.2007 (1♀), ZSI/CZRC/A-15563, 03.viii.2007 (1♀), ZSI/CZRC/A-15564, 08.viii.2007 (1♀), ZSI/CZRC/A-15565, 09.viii.2007 (1♀), ZSI/CZRC/A-15566, 03.viii.2007 (1♂), ZSI/CZRC/A-15567, (1♂), coll. V. Bhargav.

Geographical distribution: India : Andhra Pradesh, Bihar, Chhattisgarh, Haryana, Himachal Pradesh, Madhya Pradesh, Maharashtra, Punjab, Tamil Nadu, Uttar Pradesh and West Bengal. *Elsewhere*: Bhutan.

8. *Copris (Copris) repertus* Walker, 1858

1858. *Copris repertus* Walker, *Ann. Mag. Nat. Hist.*, (3) II: 208.
1931. *Copris repertus*, Arrow, *Faun. Brit. India*, (Lamellicornia: Coprinae), 3: 116.
1963. *Copris (Copris) repertus*, Balthasar, *Monographie der Scarabaeidae und Aphodiidae der Palaearktischen und Orientalischen Region* (Coleoptera : Lamellicornia), I: 351.

2005. *Copris repertus*, Chandra, Zool. Surv. India, Fauna of Western Himalaya, (part 2): 147.

Material examined : Sirmour, SWLS: ZSI/CZRC/A-15546, 03.viii.2007 (2♂2♀); ZSI/CZRC/A-15547, 08.viii.2007, (1♀), coll. V. Bhargav.

Geographical distribution : India: Bihar, Chhattisgarh, Haryana, Himachal Pradesh, Karnataka, Madhya Pradesh, Maharashtra, Uttar Pradesh and Tamil Nadu. *Elsewhere*: Sri Lanka and Myanmar.

Tribe **Onthophagini** Burmeister, 1846

9. ***Digitonthophagus (Onthophagus) bonasus***
(Fabricius, 1775)

1775. *Scarabaeus bonasus* Fabricius, *Syst. Ent.*, : 23.

1931. *Onthophagus bonasus*, Arrow, *Faun. Brit. India*, (Lamellicornia: Coprinae), 3: 116.

1963. *Digitonthophagus (Onthophagus) bonasus*, Balthasar, *Monographie der Scarabaeidae und Aphodiidae der Palaearktischen und Orientalischen Region* (Coleoptera : Lamellicornia), II: 231.

2005. *Onthophagus bonasus*, Chandra, Zool. Surv. India, Fauna of Western Himalaya, (part 2): 148.

Material examined : Sirmour, SWLS: ZSI/CZRC/A-15533, 12.vi.2007 (1♂); ZSI/CZRC/A-15534, 18.vi.2007 (2♂); ZSI/CZRC/A-15535, 20.vi.2007 (2♂); ZSI/CZRC/A-15536, 20.vi.2007 (1♂); coll. V. Bhargav.

Geographical distribution : India : Bihar, Himachal Pradesh, Karnataka, Madhya Pradesh, Maharashtra, Orissa, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh, Uttarakhand, and West Bengal. *Elsewhere*: Myanmar, Pakistan, Thailand and Vietnam.

10. ***Onthophagus (Onthophagus) dama***
(Fabricius, 1798)

1798. *Copris dama* Fabricius, *Ent. Syst. Suppl.*: 32.

1931. *Onthophagus dama*, Arrow, *Faun. Brit. India*, (Lamellicornia: Coprinae), 3: 279.

1963. *Onthophagus (Onthophagus) dama*, Balthasar, *Mon. der Scarabaeidae und Aphodiidae der Palaeark. und Orientalis Region* (Coleoptera: Lamellicornia), Coprinae, II: 325.

2005. *Onthophagus dama*, Chandra, Zool. Surv. India, Fauna of Western Himalaya, (part 2): 148.

Material examined : Sirmour, SWLS: ZSI/CZRC/A-15541, 10.viii.2007 (1♂), Coll. V. Bhargav.

Geographical distribution : India: Haryana, Himachal Pradesh, Karnataka, Madhya Pradesh, Maharashtra, Orissa, Tamil Nadu, Uttar Pradesh and Uttarakhand. *Elsewhere*: Bhutan and Sri Lanka.

11. ***Onthophagus (Onthophagus) griseosetosus***
Arrow, 1931

1931. *Onthophagus griseosetosus* Arrow, *Faun. Brit. India* (Lamellicornia: Coprinae), 3: 192.

1963. *Onthophagus (Onthophagus) griseosetosus*, Balthasar, *Mon. der Scarabaeidae und Aphodiidae der Palaeark. und Orientalis Region* (Coleoptera: Lamellicornia), Coprinae, II: 374.

2005. *Onthophagus griseosetosus*, Chandra, Zool. Surv. India, Fauna of Western Himalaya, (part 2): 149.

Material examined : Sirmour, SWLS: ZSI/CZRC/A-15541, 12.viii.2006 (1♂), coll. V. Bhargav.

Geographical distribution: India: Himachal Pradesh, Madhya Pradesh, Maharashtra, Tamil Nadu and Uttarakhand.

12. ***Onthophagus (Proagoderus) pactolus***
(Fabricius, 1787)

1787. *Scarabaeus pactolus* Fabricius, *Man. Ins.*, I: 12.

1931. *Onthophagus pactolus*, Arrow, *Faun. Brit. India*, (Lamellicornia: Coprinae), 3: 203.

1963. *Onthophagus (Proagoderus) pactolus*, Balthasar, *Mon. der Scarabaeidae und Aphodiidae der Palaeark. und Orientalis Region* (Coleoptera : Lamellicornia), Coprinae, II: 466.

2005. *Onthophagus pactolus*, Chandra, Zool. Surv. India, Fauna of Western Himalaya, (part 2): 148.

Material examined : Sirmour, SWLS: ZSI/CZRC/A-15529, 08.vi.2007 (2♂); ZSI/CZRC/A-15530, 14.vi.2007 (1♂); ZSI/CZRC/A-15531, 15.vi.2007 (1♂); ZSI/CZRC/A-15532, 22.vi.2007 (1♂); coll. V. Bhargav.

Geographical distribution: India: Haryana, Karnataka, Madhya Pradesh, Maharashtra, Uttar Pradesh and Uttarakhand.

13. *Onthophagus (Onthophagus) ramosus*
(Wiedmann, 1823)

1823. *Copris ramosa* Wiedmann, *Zool. Mag.* II, 1: 13.
1931. *Onthophagus ramosus* Arrow, *Faun. Brit. India* (Lamellicornia: Coprinae) 3: 236.
1963. *Onthophagus (Onthophagus) ramosus* Balthasar, *Mon. der Scarabaeidae und Aphodiidae der Palaeark. und Orientalis Region* (Coleoptera: Lamellicornia), Coprinae, II: 497.
2005. *Onthophagus ramosus* Chandra, *Zool. Surv. India, Fauna of Western Himalaya*, (part 2): 148.

Material examined : Sirmour, SWLS: ZSI/CZRC/A-15548, 06.viii.2007 (1♂), coll. V. Bhargav.

Geographical distribution : India: Bihar, Haryana, Himachal Pradesh, Karnataka, Kashmir, Madhya Pradesh, Maharashtra, Orissa, Punjab, Uttarakhand, Uttar Pradesh and Tamil Nadu. *Elsewhere*: Thailand.

14. *Onthophagus (Onthophagus) ramosellus*
Bates, 1891

1891. *Onthophagus ramosellus* Bates, *Entom. Suppl.*, XXIV: 11.
1931. *Onthophagus ramosus*, Arrow, *Faun. Brit. India* (Lamellicornia: Coprinae) 3: 236.
1963. *Onthophagus (Onthophagus) ramosellus*, Balthasar, *Mon. der Scarabaeidae und Aphodiidae der Palaeark. und Orientalis Region* (Coleoptera: Lamellicornia), Coprinae, II: 497.
2005. *Onthophagus ramosellus*, Chandra, *Zool. Surv. India, Fauna of Western Himalaya*, (part 2): 148.

Material examined: Sirmour, SWLS: ZSI/CZRC/A-15537, 02.viii.2007 (1♂), coll. V. Bhargav.

Geographical distribution: India: Bihar, Haryana, Himachal Pradesh, Madhya Pradesh, Maharashtra, Punjab, Rajasthan, Uttar Pradesh, Uttarakhand and West Bengal. *Elsewhere*: Pakistan.

Tribe **Onitini** Laporte, 1840

15. *Onitis philemon* Fabricius, 1801

1801. *Onitis philemon* Fabricius, *Syst. Eleut.*, I: 30.
1931. *Onitis philemon*, Arrow, *Faun. Brit. India*, (Lamellicornia: Coprinae), 3: 393.
1963. *Onitis philemon*, Balthasar, *Mon. der Scarabaeidae und Aphodiidae der Palaeark. und Orientalis Region* (Coleoptera: Lamellicornia), Coprinae, II: 41.
2005. *Onitis philemon*, Chandra, *Zool. Surv. India, Fauna of Western Himalaya*, (part 2): 150.

Material examined : Sirmour, SWLS: ZSI/CZRC/A-15542, 05.viii.2007 (1♂), ZSI/CZRC/A-15543, 07.viii.2007 (1♀), ZSI/CZRC/A-15544, 18.vi.2007 (1♂), coll. V. Bhargav.

Geographical distribution : India: Bihar, Chhattisgarh, Haryana, Himachal Pradesh, Karnataka, Madhya Pradesh, Maharashtra, Orissa, Punjab, Tamil Nadu, Uttar Pradesh, Uttaranchal and West Bengal. *Elsewhere*: Myanmar, Pakistan, Sri Lanka, Thailand and Vietnam.

II. **Subfamily : RUTELINAE** MacLeay, 1819
Tribe **Anomalini** Streubel, 1839

16. *Anomala cantori* (Hope, 1840)

1840. *Euchlora cantori* Hope, *Mag. Nat. Hist.*, IV: 284.
1855. *Anomala secera*, Burmeister, *Handb. Entom.*, IV, 2: 504.
1917. *Anomala cantori*, Arrow, *Faun. Brit. India* (Lamellicornia : Rutelinae), 2: 220.
2005. *Anomala cantori*, Chandra, *Zool. Surv. India, Fauna of Western Himalaya*, (part 2): 153.

Material examined : Sirmour, SWLS: ZSI/CZRC/A-15501, 03.viii.2007 (1♀), ZSI/CZRC/A-15501, 07.viii.2007 (1♀), coll. V. Bhargav.

Geographical distribution: India: Assam, Himachal Pradesh, Haryana, Madhya Pradesh and West Bengal. *Elsewhere* : Myanmar.

17. *Anomala dimidiata* (Hope, 1831)

1831. *Euchlora dimidiata* Hope, *Gray's Zool. Misc.*: 23.
1917. *Anomala dimidiata*, Arrow, *Faun. Brit. India* (Lamellicornia: Rutelinae), 2: 232.
2005. *Anomala dimidiata*, Chandra, *Zool. Surv. India, Fauna of Western Himalaya*, (part 2): 153.

Material examined : Sirmour, SWLS: ZSI/CZRC/A-15503, 06.vi.2007 (1ex.); ZSI/CZRC/A-15504, 08.vi.2007 (1ex.); ZSI/CZRC/A-15505, 09.vi.2007 (1ex.); ZSI/CZRC/A-15506, 10.vi.2007 (1ex.); ZSI/CZRC/A-15507, 12.vi.2007 (4ex.); coll. V. Bhargav.

Geographical distribution: India: Assam, Haryana, Himachal Pradesh, Manipur, Meghalaya, Punjab, Sikkim and Uttar Pradesh and West Bengal. *Elsewhere*: Nepal.

18. *Anomala polita* Blanchard, 1851

1851. *Anomala polita* Blanchard, *Cat. Coll. Ent. Mus. Paris*: 182.

1917. *Anomala polita*, Arrow, *Faun. Brit. India* (Lamellicornia: Rutelinae), 2: 138.

2005. *Anomala polita*, Chandra, *Zool. Surv. India, Fauna of Western Himalaya*, (part 2): 153.

Material examined : Sirmour, SWLS: ZSI/CZRC/A-15509, 04.viii.2007 (1♀), Coll. V. Bhargav.

Geographical distribution : India: Haryana, Himachal Pradesh, Madhya Pradesh and Uttar Pradesh.

19. *Anomala rufiventris* Redtenbacher, 1848

1848. *Anomala rufiventris* Redtenbacher, *Hügels's Kaschmir*, IV, 2: 526.

1917. *Anomala rufiventris*, Arrow, *Faun. Brit. India* (Lamellicornia: Rutelinae), 2: 138.

2005. *Anomala rufiventris*, Chandra, *Zool. Surv. India, Fauna of Western Himalaya*, (part 2): 153.

Material examined: Sirmour, SWLS: ZSI/CZRC/A-15508, 10.vi.2007 (1♀), Coll. V. Bhargav.

Geographical distribution: India: Assam, Himachal Pradesh, Manipur, Sikkim and Uttarakhand. *Elsewhere*: Bhutan.

20. *Popillia cupricollis* Hope, 1831

1831. *Popillia cupricollis* Hope, *Gray's Zool. Miscell.*: 23.

1917. *Popillia cupricollis*, Arrow *Faun. Brit. India*, (Lamellicornia: Rutelinae), 2: 73.

2005. *Popillia cupricollis*, Chandra, *Zool. Surv. India, Fauna of Western Himalaya*, (part 2): 152.

Material examined : Sirmour, SWLS: ZSI/CZRC/A-15511, 08.viii.2007 (1♀), coll. V. Bhargav.

Geographical distribution: India: Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Punjab, Sikkim and Uttarakhand.

Elsewhere : Nepal.

21. *Popillia cyanea* Hope, 1831

1831. *Popillia cyanea* Hope, *Gray's Zool. Miscell.* : 23.

1917. *Popillia cyanea*, Arrow, *Faun. Brit. India*, (Lamellicornia: Rutelinae), 2: 62.

2005. *Popillia cyanea*, Chandra, *Zool. Surv. India, Fauna of Western Himalaya*, (part 2): 152.

Material examined : Sirmour, SWLS: ZSI/CZRC/A-15510, 10.xii.2009 (1♀), coll. V. Bhargav.

Geographical distribution: India : Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Punjab, Sikkim, Uttaranchal and West Bengal. *Elsewhere*: Nepal.

III. Subfamily CETONIINAE Leach, 1815**Tribe Cetoniini Leach, 1815****22. *Clinteria spilota* (Hope, 1831)**

1831. *Cetonia spilota* Hope, *Gray's Zool. Misc.*, : 25.

1910. *Clinteria spilota*, Arrow, *Faun. Brit. India*, (Lamellicornia: Cetoniinae), 1: 184.

2005. *Clinteria spilota*, Chandra, *Zool. Surv. India, Fauna of Western Himalaya*, (part 2): 155.

Material examined : Sirmour, SWLS: ZSI/CZRC/A-15522, 10.vi.2007 (2♀), coll. V. Bhargav.

Geographical distribution: India: Haryana, Himachal Pradesh and Uttar Pradesh.

23. *Oxycetonia albopunctata* (Fabricius, 1775)

1798. *Cetonia versicolor* Fabricius, *Syst. Suppl.*, : 51.

1910. *Oxycetonia albopunctata*, Arrow, *Faun. Brit. India*, (Lamellicornia : Cetoniinae), 1: 166.

Material examined : Sirmour, SWLS: ZSI/CZRC/A-15520, 22.vi.2007 (1♀) 20.vi.2007; ZSI/CZRC/A-15521, (1♀), Coll. V. Bhargav.

Geographical distribution : India: Assam, Himachal Pradesh, Karnataka, Madhya Pradesh, Tamil Nadu, and West Bengal. *Elsewhere*: Bhutan, Mauritius, Madagascar, Pakistan and Sri Lanka.

IV. Subfamily MELOLONTHINAE MacLeay, 1819**24. *Holotrichia longipennis* Blanchard, 1850**

1850. *Holotrichia longipennis* Blanchard, *Cat. Coll. Ent.*, I: 140.

2005. *Holotrichia longipennis* Chandra, *Zool. Surv. India, Fauna of Western Himalaya*, (part 2): 151.

Material examined: Sirmour, SWLS: ZSI/CZRC/A-15513, 04.viii.2007 (1♂); ZSI/CZRC/A-15514, 02.viii.2007 (1♀), coll. V. Bhargav.

Geographical distribution: Himachal Pradesh and Uttar Pradesh.

25. *Schizonycha ruficollis* (Fabricius, 1781)

1781. *Melolontha ruficollis* Fabricius, *Spec. Ins.*, 7: 39.
1850. *Schizonycha ruficollis*, Blanchard, *Cat. Coll. Ent.*, 1: 151.

Material examined : Sirmour, SWLS: 04.viii.2007 (1ex.), coll. V. Bhargav.

Geographical distribution : India: Bihar, Himachal Pradesh, Madhya Pradesh, Orissa, Uttar Pradesh, Uttaranchal and West Bengal.

Remarks : New record from Himachal Pradesh.

26. *Lepidiota albistigma* Burmeister, 1855

1855. *Lepidiota albistigma* Burmeister, *Handb. Ent.*, IV, 2: 295.

Material examined: Sirmour, SWLS: ZSI/CZRC/A-15513, 03.viii.2007 (1♀), coll. V. Bhargav.

Geographical distribution: India: Haryana, Himachal Pradesh and Uttar Pradesh.

Remarks : New record from Himachal Pradesh.

V. Subfamily DYNASTINAE MacLeay, 1819

27. *Xylotrupes gideon* (Linnaeus, 1767)

1767. *Scarabaeus gideon* Linnaeus *Syst. Nat.* 12th ed., 10 (2): 541.
1910. *Xylotrupes gideon*, Arrow, Arrow, *Faun. Brit. India*, (Lamellicornia: Dynastinae), I: 262.
2005. *Xylotrupes gideon*, Chandra, *Insecta: Coleoptera: Scarabaeidae, Zool. Surv. India, Fauna of Western Himalaya*, (part 2): 154.

Material examined: Sirmour, SWLS: ZSI/CZRC/A-15515, 02.viii.2007 (1♂1♀); ZSI/CZRC/A-15516, 03.viii.2007 (2♂2♀); ZSI/CZRC/A-15517, 03.viii.2007 (1♂); ZSI/CZRC/A-15518, 04.viii.2007 (1♂1♀); ZSI/CZRC/A-15519, 08.viii.2007 (1♀); coll. V. Bhargav.

Geographical distribution : India: Assam, Andaman, Himachal Pradesh, Maharashtra, Sikkim, Kerala and West Bengal.

Elsewhere : Sri Lanka and Indo-Malayan sub region.

SUMMARY

Altogether, 27 species of the scarab beetles belonging to 14 genera, 7 tribes and 5 subfamilies of family Scarabaeidae were studied from Simbalbara Wildlife Sanctuary. *Gymnopleurus* (*Gymnopleurus*) *cyaneus* (Fabricius), *Garreta dejeani* Castelnau and *Paragymnopleurus sinuatus* (Olivier) of Scarabaeinae and *Lepidiota albistigma* Burmeister and *Schizonycha ruficollis* (Fabricius) of Melolonthinae are additions to the beetle fauna of Himachal Pradesh. While *G. cyaneus* Fabricius, *G. dejeani* Castelnau and *P. sinuatus* (Olivier) of Scarabaeinae, *L. albistigma* Burmeister and *S. ruficollis* (Fabricius) of Melolonthinae and *Anomala dimidiata* Hope and *Popillia cyanea* Hope of Rutelinae, are newly recorded from Sirmour district.

ACKNOWLEDGEMENTS

The authors are thankful to Dr. K. Venkataraman, Director, Zoological Survey of India, Kolkata and Director, Wildlife Institute of India, Dehradun for providing necessary facilities and encouragement.

REFERENCES

- Arrow, G.J. 1910. *The Fauna of British India including Ceylon and Burma*. Col. Lamell. I, (Cetoniinae & Dynastinae). Taylor & Francis, London, V-XIV, 1-322.
Arrow, G.J. 1917. *The Fauna of British India including Ceylon and Burma*. Col. Lamell. II, (Rutelinae). Taylor & Francis, London, V-XIII, 1-387, 7 fig., 5 pls.
Arrow, G.J. 1931. *The Fauna of British India including Ceylon and Burma*. Col. Lamell. III, (Coprinae). Taylor & Francis, London, XII: 1-428, 61 fig., 19 pls., map.
Balthasar, V. 1963a. *Monographie der Scarabaeidae und Aphodiidae der Palaearktischen und Orientalischen Region*. (Coleoptera: Lamellicornia), Verlag der Tschechoslowakischen Akademie der Wissenschaften Prag, I, 1-391, 137 figs., 24pls.

- Balthasar, V. 1963b. *Monographie der Scarabaeidae und Aphodiidae der Palaearktischen und Orientalischen Region.* (Coleoptera: Lamellicornia), Verlag der Tschechoslowakischen Akademie der Wissenschaften Prag, II, 1-627, 226 figs., 16 pls.
- Balthasar, V. 1964. *Monographie der Scarabaeidae und Aphodiidae der Palaearktischen und Orientalischen Region.* (Coleoptera: Lamellicornia), Verlag der Tschechoslowakischen Akademie der Wissenschaften Prag, III, 1-652, 224 figs.
- Borenmissza, G. F. 1970. Insectary studies on the control of dung breeding flies by the activity of dung beetle, *Onthophagus gazella* F. (Coleoptera: Scarabaeinae), **9**: 31-41.
- Chandra, K. 1988. Taxonomic studies on Pleurostict Scarabaeidae (Coleoptera) of north-west India. *Y. E.S. Quarterly, U.S.A.* **5** (1): 20-27.
- Chandra, K. 2005. Insecta: Coleoptera: Scarabaeidae, *Zoological Survey of India, Fauna of Western Himalayas, Himachal Pradesh, (Part 2)*: 141-155.
- Estrada, A. and Coates-Estrada, R. 1991. Howler monkeys, dung beetles (Scarabaeidae) and seed dispersal: Ecological interactions in the tropical rainforest of Los tuxlas, Mexico. *Jour. of Trop. Eco.*, **7**: 459-474.
- Fincher, G. T. 1981. The Potential value of dung beetles in pasture ecosystem. *J. Georg. Entomol. Soc.*, **16** (2): 316-333.
- Larsen, T. 2004. Dung beetle extinctions and ecological function.
(<http://www.princeton.edu/kremen/trond.htm>)
- Mittal, I. C. 1981. Scarabaeidae of Haryana and surrounding areas. *Bull. Ent.*, **22** : 35-40.
- Mittal, I. C. 1989. New species of Sericinae and Melolonthinae from India (Insecta, Coleoptera, Scarabaeidae). *Reichenbachia*, **25** (31): 157-160.
- Mittal I. C., 1993. Natural manuring and soil conditioning by dung beetles. *Trop. Eco.*, **34** (2): 150-159.
- Mittal, I. C. and Pajni, H. R. 1977. New species belonging to Melolonthinae (Coleoptera: Scarabaeidae : Melolonthinae) from India. *Entomol.*, **2**(1) : 85-86.
- Pendharkar, A. 1993. Habitat use, group and activity pattern of goral (*Nemorhaedus goral*) in Simbalbara sanctuary (Himachal Pradesh) and Darpur reserved forest (Haryana), India. M. Sc. Dissertation submitted to Saurashtra University.
- Ratcliffe, Brett, C. and Jameson, Mary, Liz. 2001. Scarabaeoidea: Scarabaeoid beetles (=Lamellicornia) (URL:<http://www-museum.unl.edu/research/entomology/Guide/Scarabaeoidea/Scarabaeoidea-pages/Scarabaeoidea-Overview/ScarabaeoideaO.html>). In, B.C. Ratcliffe and M.L. Jameson (eds.), Generic Guide to New World Scarab Beetles (URL: <http://www-museum.unl.edu/research/entomology/Guide/index4.htm>). Accessed on: 01.06.2012.

PLATE - 1



1. *Gymnopleurus (Gymnopleurus) cyaneus* (Fabricius)



2. *Garreta dejeani* Castelnau



3. *Garreta opacus* Redtenbacher



4. *Paragymnopleurus sinuatus* (Olivier)



5. *Heliocopris bucephalus* (Fabricius)



6. *Catharsius (Catharsius) molossus* (Linnaeus)



7. *Catharsius (Catharsius) sagax* (Quenstedt)



8. *Copris (Copris) repertus* Walker



9. *Digitonthophagus (Onthophagus) bonasus* (Fabricius)

PLATE - 2



10. *Onthophagus (Onthophagus) dama* (Fabricius)



11. *Onthophagus (Onthophagus) griseosetosus* Arrow



12. *Onthophagus (Proagoderus) pactolus* (Fabricius)



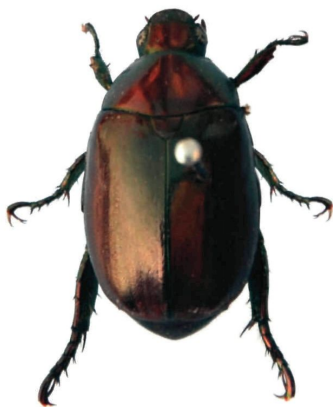
13. *Onthophagus (Onthophagus) ramosus* (Wiedmann)



14. *Onthophagus (Onthophagus) ramosettus* Bates



15. *Onitis philemon* Fabricius



16. *Anomala cantori* (Hope)



17. *Anomala dimidiata* (Hope)

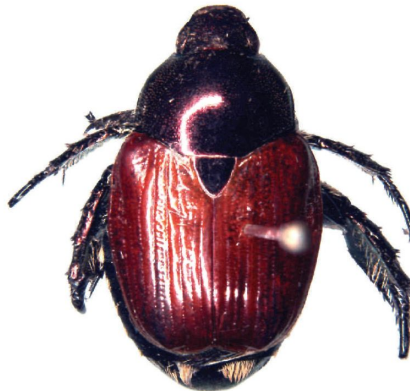


18. *Anomala polita* Blanchard

PLATE - 3



19. *Anomala rufiventris*
Redtenbacher



20. *Popillia cupricollis*
Hope



21. *Popillia cyanea*
Hope



22. *Clinteria spilota*
(Hope)



23. *Oxycetonia albopunctata*
(Fabricius)



24. *Holotrichia longipennis*
Blanchard



25. *Schizonycha ruficollis*
(Fabricius)



26. *Lepidiota albistigma*
Burmeister



27. *Xylotrupes gideon*
(Linnaeus)