



The Tribe Opatrini Brulle, 1832 (Tenebrioninae: Tenebrionidae: Coleoptera) from Uttarakhand with some New Records

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(Received 16 August 2016, Accepted 01 October, 2016)

(Published by Research Trend, Website: www.researchtrend.net)

ABSTRACT: The beetles of the National Zoological collections, Zoological Survey of India, Kolkata and Northern Regional Centre, Dehradun were studied and identified with more focus on the tribe Opatrini of sub family Tenebrioninae of the family Tenebrionidae. The paper contains the report of 24 species belonging to 04 genera under the tribe Opatrini from Uttarakhand state. Out of 21 *Gonocephalum* species reported, 07 species are new records to the state and lonely species reported from the genus *Mesomorphus*, *Opatroides* and *Scleron* are also new records to Uttarakhand state.

INTRODUCTION

Uttarakhand is a state located in northern part of India and it was separated from the state of Uttar Pradesh in 2000 and earlier it was named as Uttaranchal and officially changed from Uttaranchal to Uttarakhand in 2007. The state shares the international boundary with China and Nepal on north and east respectively and state boundary with Himachal Pradesh and Uttar Pradesh in the west and south respectively. The state is well known for snow peaks, glaciers, rivers and mountains. The Uttarakhand state geologically represents Himalayas and shallow valleys. Due to its varied topography Uttarakhand has diversified climate. Ecologically, the Uttarakhand state represents a unique ecosystem in India. The hills with varied physiography and climatic conditions, possess a very rich faunal diversity.

Even though there are several studies on the fauna of Uttarakhand including some families of Coleoptera by different research workers, no comprehensive report has been done on the Darkling Beetles of the state. Hence, this study was undertaken to throw some light on the Tribe: *Opatrini* Brulle, 1832 of this state.

The Opatrines are small to large (about 3 mm to 30 mm). Head often dilated and prominent at sides in front of eyes. Eyes constricted at middle or completely divided by genae into upper and lower parts, without erect scales between facets. Antennae usually relatively short, sometimes clubbed, 11-segmented; bearing only simple, setiform sensoria on apical antennomeres. Gula simple, trochantin of mesocoxae usually prominent. Wings present or absent. Elytra with scutellary striae and 9 complete striae or striate. Abdomen with intersternal membrane of visible abdominal sternites 3-5 exposed. Abdominal defensive glands present. The Opatrini are worldwide in distribution with 118 genera, 10 of which occur in India (Personal communication).

MATERIALS AND METHODS

The collections in the National Zoological collections, Zoological Survey of India, Kolkata and Northern Regional Centre, Dehradun were studied and identified with more focus on the tribe Opatrini. To make the study comprehensive, all earlier scattered reports (Schawaller, 1997, 2006 and Iwan *et al.* 2010) were also taken into consideration. The registration numbers of the respective centres were also given with materials examined. Some of the *Gonocephalum* species were reported from undivided Uttar Pradesh by Iwan *et al.* (2010) with no specific localities were freshly considered with material examined from Uttarakhand.

RESULTS AND DISCUSSION

The paper contains the report of 24 species belonging to 04 genera under the tribe Opatrini of sub family Tenebrioninae of the family Tenebrionidae from Uttarakhand state and the genus *Gonocephalum* is the dominant and may be due to its remarkable capacity of adaptation like heavy sclerotization, long lived, dark in colour, mostly crepuscular or active at night and can live in the soil, under the stones, litters, logs or tree trunks and guano of birds and mammals. Out of 21 *Gonocephalum* species reported, 07 species are new records to the state and lonely species reported from the genus *Mesomorphus*, *Opatroides* and *Scleron* are also new records to Uttarakhand state. Out of 108 species of *Gonocephalum* reported from India (personal communication) 21 species are recorded from Uttarakhand state and further extensive survey may reveal few more species and even new species, since the state is having varieties of ecosystems and high altitude area also. The high altitude species like *Laena* Dejean, 1821 and *Strongylium* Kirby, 1819 has also to be worked out.

Species details:***Gonocephalum abnormale* Kaszab, 1952**

Gonocephalum abnormale Kaszab, 1952a: 634.

Distribution: India: Uttarakhand (Haridwar, Rurki) Tamil Nadu and Rajasthan.

***Gonocephalum aequatoriale* (Blanchard, 1853)**

Opatrum aequatoriale Blanchard, 1853: 152.

Hopatum aequatoriale Blanchard, 1853. – Gemminger 1870: 1930.

Gonocephalum aequatoriale (Blanchard, 1853). – Mulsant 1859: 129, 1859: 67; Gebien, 1910b: 322, 1939: 448; Kaszab, 1952a: 571; Hua Li, 2002: 138; Iwan and Löbl 2008: 262.

Gonocephalum aequatoriale a. *Acutangulum* Fairmaire, 1882:220.

Gonocephalum acutangulum (Fairmaire, 1882). – Champion 1895:115; Gebien 1910b: 322; 1914: 61, 1927: 23, 1939: 448; Blair, 1928:24; Kaszab, 1952a: 678.

Material Examined: 9 exs., Nun River Dehradun, 19.i.1974, R.K. Bhatnagar Coll., Reg. no. A1422-1430/NRC Dehradun.

Distribution: India: Uttarakhand (Nun River, Dehradun).

Remarks: This species has been recorded for the first time from Uttarakhand and reported earlier by Iwan *et al* (2010) with no specific location.

***Gonocephalum annamita* Chatanay, 1917**

Gonocephalum annamita Chatanay, 1917: 236. – Gebien 1939: 448; Kaszab 1952: 589, 1980b: 171; Hua Li 2002: 138; Iwan and Löbl 2008: 262.

Gonocephalum pubens Gravely, 1915: 520 (**hom. nov.** nom. preoccup., nec *Opatrum pubens* Marseul, 1876: 97 nec *Gonocephalum pubens* Gebien, 1913: 4).

Material Examined: 1 ex., Haridwar, Uttarakhand, T.D. Soota Coll., 10.i.1974, Reg. no. A 1479/NRC Dehradun.

Distribution: India: Uttarakhand (Haridwar) and Arunachal Pradesh

Remarks: This species has been recorded for the first time from Uttarakhand.

***Gonocephalum bilineatum* (Walker, 1858)**

Opatrum bilineatum Walker, 1858: 284.

Hopatum bilineatum Walker, 1858. – Gemminger 1870: 1931.

Gonocephalum bilineatum (Walker, 1858). – Gebien 1910b: 322, 1921: 269, 1939: 446; Chatanay 1917: 238; Blair 1921: 269; Schuster 1928: 989; Reichardt 1936: 109; Kaszab 1952a: 641, 1954: 75, 1965a: 114, 1965d: 287, 1970a: 424, 1977: 257, 1979a: 260, 1979b: 65, 1980b: 171; Boddy 1965: 171; Kwon and Choi 1986: 106; Schawaller 1997a: 3; Hua Li 2002: 138; Iwan and Löbl 2008: 263.

Gonocephalum kamtschaticum Motschulsky, 1860: 139.

Hopatum kamtschaticum Motschulsky, 1860. – Gemminger 1870: 1932.

Gonocephalum kamtschaticum Motschulsky, 1860. – Reitter 1904: 146; Gebien 1910b: 323; Schuster 1928: 989; Reichardt 1936: 109; Kaszab 1952a: 682, 1965d: 287.

Blapstinus latifrons LeConte, 1874: 70. – Casey 1890: 393.

Gonocephalum latifrons (LeConte, 1874). – Champion 1895: 115; Gebien 1910b: 323, 1939: 452; Kaszab 1952a: 682; Ferrer 2000: 129.

Opatrum orarium Lewis, 1894: 380. – Champion 1895: 117.

Gonocephalum orarium (Lewis, 1894). – Gebien 1910b:

Material Examined: 1 ex., Haridwar, Uttarakhand, R.K. Bhatnagar coll., 10.i.1974, A1476/NRC, Dehradun.

Distribution: India: Uttarakhand (Haridwar), Sikkim, West Bengal, Chhattisgarh (Hegde *et al* 2014, 2015) Uttar Pradesh (Hegde and Lal, 2013, Hegde *et al* 2015).

Remarks: This species has been recorded for the first time from Uttarakhand.

***Gonocephalum birmanicum* Kaszab, 1952**

Gonocephalum birmanicum Kaszab, 1952a: 484. – Kaszab 1977: 256, 1979b: 62, 1979a: 260; Schawaller 1997a: 4; Hua Li 2002: 138; Iwan and Löbl 2008: 263.

Distribution: India: Uttarakhand, Manipur, Tamil Nadu and Uttar Pradesh.

***Gonocephalum brachelytra* Kaszab, 1952**

Gonocephalum brachelytra Kaszab, 1952a: 632. – Kaszab 1968b: 20, 1970c: 152; Iwan and Löbl 2008: 263.

Distribution: India: Uttarakhand (Dehradun) West Bengal, and Uttar Pradesh.

***Gonocephalum civicum* Kaszab, 1952**

Gonocephalum civicum Kaszab, 1952a: 612. – Kaszab 1970a: 423, 1977: 257; Schawaller 1997a: 4; Iwan and Löbl 2008: 263.

Distribution: India: Uttarakhand, Sikkim and West Bengal.

***Gonocephalum consobrinum* Blair, 1923**

Gonocephalum consobrinum Blair, 1923: 122. – Schuster 1928: 989; Reichardt 1936: 97; Gebien 1939: 443; Kaszab 1952a: 629, 1960a: 149, 1968b: 20, 1970c: 152, 1974a: 193, 1982b: 164; Ferrer 1993a: 92, 1995a: 69; Iwan and Löbl 2008: 263.

Distribution: India: Uttarakhand, Rajasthan and West Bengal.

***Gonocephalum depressum* (Fabricius, 1801)**

Opatrum depressum Fabricius, 1801: 117. – Steven 1829: 95.

Hopatrum depressum Fabricius, 1801. – Gemminger 1870: 1931; Fairmaire 1893: 20, 1894: 17.

Gonocephalum depressum (Fabricius, 1801). – Gebien 1906: 213; 1910b: 323, 1913: 376, 1939: 447; Gravely 1913: 520; Blair 1922: 292; Kaszab 1952a: 635, 1974a: 193, 1979a: 260, 1979b: 65; Kwieton 1981: 17; Schawaller 1997a: 5; Hua Li 2002: 138; Iwan and Löbl 2008: 263.

Opatrum contrahens Walker, 1858: 284. – Blair 1921: 269.

Hopatrum contrahens Walker, 1858. – Gemminger 1870: 1931.

Gonocephalum contrahens (Walker, 1858). – Gebien 1910b: 322, 1939: 447; Kaszab 1952a: 681.

Material examined: 07 exs., Haridwar, Uttarakhand, T.D. Soota Coll., 10.i.1974, Reg. no. A 1462-1475/NRC Dehradun. 2 ex. Rohtar, Uttarakhand, R.K. Bhatnagar Coll. 14.ii.1962 Reg. no. 3398, 3399/H4A ZSI Head Quarters, Kolkata. 2 ex. Dehradun, Uttarakhand, S.Lal Coll. 09.vii.1961 Reg. no. 4388, 4389/H4A ZSI Head Quarters, Kolkata.

Distribution: India: Uttarakhand (Haridwar), Himachal Pradesh, Arunachal Pradesh, Kashmir, Sikkim, West Bengal and Uttar Pradesh (Hegde and Lal, 2013, Hegde *et al* 2015).

Remarks: This species has been recorded for the first time from Uttarakhand.

***Gonocephalum dorsogranosum* (Fairmaire, 1896)**

Hopatrum dorsogranosum Fairmaire, 1896: 14.

Gonocephalum dorsogranosum (Fairmaire, 1896). – Gebien 1910b: 323, 1939: 448; Kaszab 1940: 149, 1952a: 627, 1960a: 149, 1968b: 20, 1970c: 152, 1974a: 193; Kwieton 1981: 17; Iwan and Löbl 2008: 263.

Gonocephalum foveolatus Kaszab, 1963: 343.

Distribution: India: Uttarakhand, Sikkim and West Bengal.

***Gonocephalum gustafssoni* Ferrer, 1995**

Gonocephalum gustafssoni Ferrer 1995a: 73.

Distribution: India: Uttarakhand (Rishikesh) and Rajasthan.

***Gonocephalum. Hauschildi* Kaszab, 1952**

Gonocephalum Hauschildi Kaszab, 1952a: 498. – Kaszab 1965a: 113.

Gonocephalum hauschildi Kaszab, 1952a. – Schawaller 1997a: 6; Iwan and Löbl 2008: 264.

Distribution: India: Uttarakhand (Kaligad, Dehradun) Sikkim and West Bengal

***Gonocephalum helopioide* (Fairmaire, 1894)**

Hopatrum helopioide Fairmaire, 1894: 19.

Opatrum helopioides (Fairmaire, 1894): 19. – Champion 1895: 116.

Gonocephalum helopioide (Fairmaire, 1894). – Gebien 1910b: 323, 1939: 448; Kaszab 1952a: 574; Schawaller 1997a: 7; Iwan and Löbl 2008: 264.

Material examined: 01 exs., Rajaji National Park, Dehradun, Uttarakhand, T.D. Soota Coll., 10.i.1974, Reg. no. A1473/NRC Dehradun; 1 ex., Haridwar, Uttarakhand, T.D. Soota Coll., 10.i.1974, Reg. no. 1474/NRC Dehradun; 1 ex., Mohand Range, Uttarakhand, T.D. Soota Coll., 10.i.1974, Reg. no. A1475/NRC Dehradun.

Distribution: India: Uttarakhand (Rajaji National Park, Haridwar, Dehradun), Sikkim, West Bengal, Chhattisgarh (Hegde *et al* 2014, 2015) and Uttar Pradesh (Hegde and Lal, 2013, Hegde *et al* 2015).

Remarks: This species has been recorded for the first time from Uttarakhand.

***Gonocephalum minusculum* (Fairmaire, 1894)**

Opatrum minusculum Fairmaire, 1894: 20. – Champion 1895: 116.

Bradymerus minusculum Fairmaire, 1894: 20.

Gonocephalum minusculum (Fairmaire, 1894). – Gebien 1910b: 324, 1939: 448; Kaszab 1952a: 481.

Bradymerus bidentulus Fairmaire, 1896: 23 – Gebien 1939: 448; Kaszab 1952a: 673.

Distribution: India: Uttarakhand.

***Gonocephalum oculare* Kaszab, 1952**

Gonocephalum oculare Kaszab, 1952a: 622. – Ferrer 1993a: 107;

Kaszab 1977: 257; Schawaller 1997a: 10; Iwan and Löbl 2008: 266.

Gonocephalum (Opatropis) oculare Kaszab, 1952a. – Ferrer 2000b: 128.

Distribution: India: Uttarakhand Uttar Pradesh and West Bengal.

***Gonocephalum patricium* Kaszab, 1952**

Gonocephalum patricium Kaszab, 1952a: 604. – Iwan and Löbl 2008: 264.

Distribution: India: Uttarakhand, Sikkim and West Bengal.

***Gonocephalum roseni* Kaszab, 1952**

Gonocephalum roseni Kaszab, 1952a: 546. – Kaszab 1977: 257; Schawaller 1997a: 10.

Gonocephalum roseni Kaszab, 1952a. – Kaszab 1965a: 113, 1970a: 423; Iwan and Löbl 2008: 265.

Distribution: India: Uttarakhand, Sikkim, West Bengal and Arunachal Pradesh.

***Gonocephalum semipatruele* Kaszab, 1952**

Gonocephalum semipatruele Kaszab, 1952a: 608. – Gridelli 1953: 63; Kaszab 1982b: 167; Iwan and Löbl 2008: 265.

Distribution: India: Uttarakhand, Karnataka, Uttar Pradesh and Delhi.

***Gonocephalum simulatrix* (Fairmaire, 1891)**

Pseudoblapssimulatrix Fairmaire, 1891: c.

*Gonocephalum bilineatum**Gonocephalum tuberculatum**Mesomorpha rugulosa**Gonocephalum depressum**Gonocephalum helopioides**Opatroides vicinus**Scleron reitteri*

Gonocephalum simulatrix (Fairmaire, 1891). – Gebien 1935: 317, 1939: 446; Reichardt 1936: 107; Schuster 1936: 193; Gridelli 1954: 283; Kaszab 1952a: 653, 1960a: 151, 1961a: 4; 1961b: 351, 1965b: 669, 1968b: 20, 1970c: 153, 1974a: 193, 1977: 259; Schawaller 1997a: 12; Iwan and Löbl 2008: 266.

Scleropatrum infimum Fairmaire, 1896: 57.

Gonocephalum infimum (Fairmaire, 1896). – Gebien 1939: 446; Kaszab 1952a: 683.

Material examined: 12 exs., Nun River, Dehradun, 19.i.1974, Sikander Lal Coll., Reg. no. A1409/NRC, Dehradun.

Distribution: India: Uttarakhand (Nun River, Dehradun), Himachal Pradesh and Kashmir. Elsewhere: China, Pakistan and Nepal.

Remarks: This species has been recorded for the first time from Uttarakhand.

***Gonocephalum stoeckleini* Kaszab, 1952**

Gonocephalum stoeckleini Kaszab, 1952a: 662. – Kaszab 1961b: 351, 1979b: 66.

Gonocephalum stoeckleini Kaszab, 1952. – Kaszab 1965a: 114.

Gonocephalum stoeckleini Kaszab, 1952. – Iwan and Löbl 2008: 266.

Distribution: India: Uttarakhand and Kashmir.

***Gonocephalum tuberculatum* (Hope, 1831)**

Opatrum tuberculatum Hope, 1831: 31.

Gonocephalum tuberculatum (Hope, 1831). – Chatanay 1917: 243; Miwa 1931: 151; Gridelli 1934: 67; Reichardt 1936: 108; Gebien 1939: 446; Kaszab 1941a: 51, 1952a: 464, 1960a: 139, 1961d: 236, 1968b: 19, 1970a: 423, 1970c: 145, 1973b: 55, 1974a: 193, 1980b: 171; Gridelli 1954: 283; Nakane 1966: 243; Schawaller 1997a: 13; Hua Li 2002: 139; Iwan and Löbl 2008: 266.

Hopatum elongatum Guérin-Ménéville, 1834. – Fairmaire 1894: 17; Gemminger, 1870: 1931.

Opatrum elongatum Guérin-Ménéville, 1834: 32.

Gonocephalum elongatum (Guérin-Ménéville, 1834) – Gebien 1910b: 323, 1913: 4; Schuster 1928: 989; Reichardt 1936: 108; Kaszab 1952a: 672.

Gonocephalum quadrinodosum Reitter, 1904: 146. – Gebien 1910b: 325, 1939: 446; Schuster 1928: 989 (= *Opatrum elongatum* Guérin-Ménéville, 1834); Reichardt 1936: 108 (= *Opatrum elongatum* Guérin-Ménéville, 1834); Kaszab 1952a: 672.

Material examined: 13 exs., Raipur, Dehradun, G.U. Kurup coll., 10.i.1974, Reg. no. A1438-1449, 1464/NRC Dehradun; 11 exs., Sahastradhara Dehradun, 10.i.1974, G.U. Kurup, Reg. no. A1450-1458, 1462, 1463/ NRC Dehradun; 01 ex., Rajaji National Park Dehradun, T.D. Soota Coll., 10.i.1974, Reg. no. A1460/NRC Dehradun; 01 ex., Haridwar, T.D. Soota Coll., 10.i.1974, Reg. no. A1461/NRC Dehradun; 01 ex., Haridwar, R. K. Bhatnagar Coll., 10.i.1974, Reg. no. A1465/NRC Dehradun.

Distribution: India: Uttarakhand (Raipur, Dehradun, Sahastradhara, Rajaji National Park, Haridwar), Kashmir, Himachal Pradesh, Sikkim, West Bengal, Karnatak (Hegde, 2016) and Uttar Pradesh (Hegde and Lal, 2013, Hegde *et al* 2015).

Remarks: This species has been recorded for the first time from Uttarakhand.

***Mesomorphus rugulosus* Chatanay, 1917**

1921. *Mesomorphus maquilinguis* Gebien.

Material examined: 1 ex., Harrawala Dehradun, Uttarakhand, G.U. Kurup coll., 14.i.1974, Reg. no. A 1511/NRC Dehradun.

Distribution: India: Uttarakhand (Harrawala, Dehradun) and Uttar Pradesh (Hegde and Lal, 2013, Hegde *et al* 2013).

Elsewhere: Sri Lanka, Nepal, Myanmar, Indochina, Java and Philippines.

Remarks: This species has been recorded for the first time from Uttarakhand.

***Opatroides vicinus* (Fairmaire, 1896)**

1896. *Opatroides vicinus* Fairmaire. *Ann. Soc. Ent. Belg.* XL. Kaszab 1930. *Ent. Arb. Mus. Frey*, 11: 157-159.

Material Examined: 5 exs., Raipur, Dehradun, G.U. Kurup coll., 10.i.1974, Reg no. A1485-1489/NRC Dehradun. 6 ex. Dehradun, Uttarakhand, R.K. Bhatnagar Coll. 24.ii.1962 Reg. no. 4393-4398/H4A ZSI Head Quarters, Kolkata.

Distribution: India: Uttarakhand (Raipur, Dehradun) West Bengal, Chhattisgarh (Hegde *et al* 2014, 2015) and Uttar Pradesh (Hegde and Lal, 2013, Hegde *et al* 2015).

Elsewhere: Nepal and Arabian region (Schawaller, 2006).

Remarks: This species has been recorded for the first time from Uttarakhand.

***Scleron reitteri* Gebien 1906**

Scleron reitteri Gebien (1906) *Deutsche Ent. Zeitschr.* 234 (nom. Nov.)- KASZAB (1942): *Mitt. Munchn. Ent. Ges.*, 32 (1) 9. – *Scleron orientale* Reitter (1904): *Verh. Naturf. Ver. Brunn.* 42: 125 (nom. Preoccupy, nec. *Oriente* Fabricius, 1775)

Material examined: 3 exs., Raipur Dehradun, Uttarakhand, G.U. Kurup Coll., 11.i.1974, Reg. no. A1499-1501/NRC Dehradun; 1 ex., Chandrabani, Dehradun, Uttarakhand, T.D. Soota coll., 11.i.1974, Reg. no. A1502/NRC Dehradun.

Distribution: India: Uttarakhand (Raipur, Chandrabani, Dehradun) West Bengal, Chhattisgarh (Hegde *et al* 2014, 2015) and Uttar Pradesh (Hegde and Lal, 2013, Hegde *et al* 2015).

Remarks: This species has been recorded for the first time from Uttarakhand.

SUMMARY

Since, there are no studies on the Tenebrionidae family from the Uttarakhand state, an attempt has been made to explore the tribe Opatrini from the collections present in National zoological collections, Zoological Survey of India, Kolkata and Northern Regional Centre, Dehradun. The study revealed the report of 24 species belonging to 04 genera under the tribe Opatrini of sub family Tenebrioninae of the family Tenebrionidae from Uttarakhand state and the genus *Gonocephalum* is the dominant and out of 21 *Gonocephalum* species reported, 07 species are new records to the state and lonely species reported from the genus *Mesomorphus*, *Opatroides* and *Scleron* are also new records to Uttarakhand state.

ACKNOWLEDGEMENTS

I am thankful to Dr. Kailash Chandra, Director, Zoological Survey of India, Kolkata for the facilities and Officer-in Charge, Northern Regional Centre, Dehradun for the help during my visit to the centre for the study purpose.

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