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Caption: Malabar Slender Loris *Loris lydekkerianus malabaricus* © Dileep Anthikkad.



A checklist of orthopteran fauna (Insecta: Orthoptera) with some new records in the cold arid region of Ladakh, India

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Abstract: The study is mainly focused on the Orthopteran fauna of Ladakh. In the current field survey and literature survey, 29 species, 24 genera, 11 subfamilies, and five families belonging to four super families of Tettigonioidea (Krauss, 1902), Acridoidea (MacLeay, 1821), Eumastacoidea (Burr, 1899), and Pyrgomorpoidea (Burnner von Wattenwyl, 1847) are reported. The subfamily Gomphocerinae, and the following species *Leva indica*, *Stenohippus mundus*, *Calliptamus italicus*, *Phaneroptera gracilis*, *Conocephalus longipennis*, and *C. maculatus* are recorded for the first time from the region.

Keywords: Checklist, Orthoptera, new record, Ladakh.

The order Orthoptera comprises katydids, grasshoppers, locusts, and crickets. It is one of the largest insect orders having more than 28,000 species around the globe and over 1,200 species reported from India (Cigliano et al. 2020). Orthopteran fauna is widely distributed in all the ecological zones of the world but their distribution is dependent upon the vegetation like grasslands, forests, and agricultural fields. Some environmental factors like temperature, rainfall, and soil conditions also determine the distribution of grasshoppers. Orthopteran fauna play a significant role in the grassland ecosystem, they being important as primary consumers (herbivores) and also as contributors of diet to many other animals (reptiles, birds, amphibians,

and mammals including man). Besides, Orthoptera plays a major role in the soil ecosystem by creating plant litter for soil, simultaneously plant growth and nutrients and cycling elements (Van Hook 1971).

Based on the size of the antennae, the order is divided into two suborders, Caelifera (short-horned) and Ensifera (long-horned). The suborder Ensifera is divided into seven superfamilies—Grylloidea, Gryllotalpoidea, Hagloidea, Stenopalmatoidea, Tettigonioidea, Rhaphidophoroidea, and Schazodactyloidea; whereas the suborder Caelifera into eight super families—Acridoidea, Eumastacoidea, Pneumoroidea, Proscopioidea, Pyrgomorpoidea, Tanoceroidea, Trigonopterygoidea, and Tetrigoidea. In Caelifera the superfamily Acridoidea shows the highest diversity with 11 families out of which the family Acrididae and Pyrgomorphidae are extensively distributed in India. Family Acrididae is divided into 27 subfamilies containing more than 800 genera which are also known as the most dominant and most diversified family in the order Orthoptera (Cigliano et al. 2020). A checklist of Indian Orthoptera including 1,033 species under 398 genera and 21 families was reported by Shishodia et al. (2010).

The remarkable taxonomic work on the Indian

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Acrididae was done by (Kirby 1914) in the book 'Fauna of British India' and divided the family into eight subfamilies. The checklist of Indian Acridoidea was firstly given by Tandon (1976). Bhomik (1984), Hazra et al. (1993), Tandon & Shishodia (1995), Reshi et al. (2008), Sharma & Mandal (2008), Sharma (2011), Rafi & Usmani (2013), Rafi et al. (2014), and Kumar & Usmani (2015) have contributed to the Indian Acrididae.

The present work was carried out to prepare a checklist of Orthoptera from the Ladakh region. The comprehensive study on Indian orthopteran fauna was published by Kirby (1914) and Chopard (1969). So, far there is no consolidated work on the orthopteran fauna of Ladakh is available; only some scattered information regarding orthopteran fauna of Ladakh have been published by a few researchers; Locust swarming at the two regions of Ladakh and major destruction caused by migratory locust *Locusta migratoria migratoria* in 2006 was studied by Ramamurthy & Kumar (2009). The checklist of Jammu & Kashmir (including Ladakh) has been prepared with 15 species from Ladakh by (Gupta & Chandra 2018). Kumar et al. (2018) also reported 10 species of Orthoptera from Ladakh with some new records.

MATERIALS AND METHODS

Sampling site

Ladakh: the region is located in the northern part of the country between 30.17N latitude and 77.58E longitude having a total area 59,146km². The area is bounded in the north and east by China and in north-west by central Asia and Afghanistan (Figure 1). Geographically, Ladakh is the cradle inside the lofty Himalayan mountain ranges, which stretch south-east to north-east. A major part of it is inaccessible due to its high altitude which ranges from 2438 to 5486 meters above sea level. Most of the areas are infertile due to low rainfall, but those areas that are good in vegetation are where human habitation and water sources are available. Human settlement areas are richly vegetated due to irrigation. The area is commonly called 'cold desert' because it experiences both arctic and desert climate.

Sample collection

Adult specimens of both the sexes were collected from different areas comprising agricultural land, forest land, grassland, and rocky mountain areas by using the insect sweeping net and by handpicking method. The collections were made during the year 2018–2019 in the months of July, August, and September from various

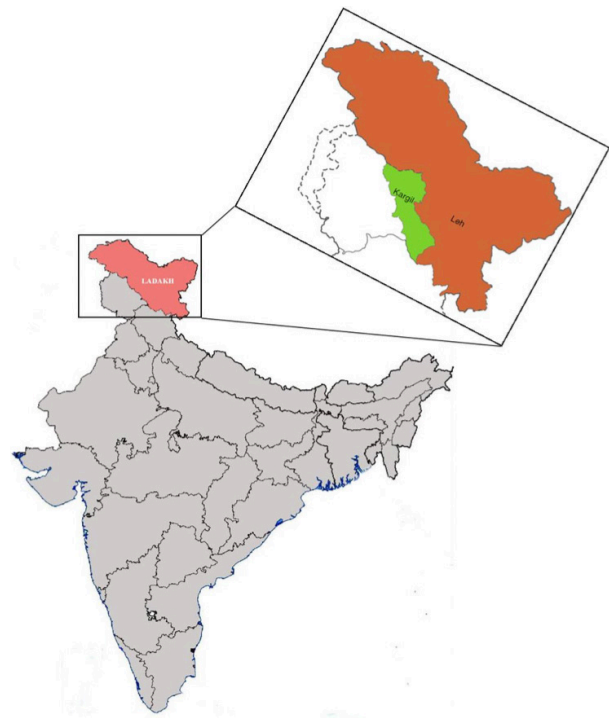


Figure 1. Map of Ladakh region.

places of Ladakh region.

An extensive literature survey was done to add the entire reported species from the region. All published information was undertaken by various sources which served as the basis for this critical analysis.

Specimen preparation

The specimens were killed by using ethyl acetate in an insect killing jar. After killing, the specimens were pinned and stretched with the help of the stretching board, the entomological pins used for specimen stretching and pinning were 0.3–0.4 mm; the pins were inserted on the dorsum of pronotum slightly right to the median carina. The wings were stretched along with the right angle axis of the body, the hind legs slightly stretched backward along the axis of the body. The other body parts antennae, legs, and wings had to be supported with extra pins so that it could dry in the desired position. The specimens were removed from the stretching board after they were fully dried and stored in the insect collection box. Naphthalene balls were put in the corners of the collection box in order to prevent specimen deterioration.

Species Identification

After the collection, the adult specimens were studied under the binocular stereo zoom microscope

and sorted out family-wise, sub-family-wise, genera-wise, and species-wise. The specimen identification was carried out with the help of key and description given by Bei-Bienko & Mischienko (1964) and other keys available in the literature and on the website of the 'Orthopteran Species File'.

RESULTS AND DISCUSSION

During the recent survey, a total number of 29 species and 24 genera belonging to 11 subfamilies, and five families of Orthoptera were found to be represented from the Ladakh region. In the previous report of Jammu & Kashmir, a total number of 15 species and 14 genera were recorded from the Ladakh region (Gupta & Chandra 2018). Kumar et al. (2018) reported 10 species and six genera with two new records from the region. In the current study six species—*Leva indica*, *Stenohippus mundus*, *Calliptamus italicus*, *Phaneroptera gracilis*, *Conocephalus longipennis*, and *Conocephalus* sp.—are for the first time recorded from the region and the species *Gyabus fusiformis* rediscovered from the region (Image 1). A maximum number of species reported from the region belong to the subfamily Oedipodinae (8 genera, 12 species) followed by the subfamily Catantopinae and Gomphomastacinae (3 genera, 3 species), Calliptaminae and Gomphocerinae (2 genera, 2 species), Conocephalinae (1 genus, 2 species) and Conophyminae, Melanopolinae, Phaneropterinae, Pyrgomorphinae, and Tettigoniinae (1 genus, 1 species each) shown in Figure 2.

Order Orthoptera Latreille 1793

Suborder Caelifera Ander 1939

Superfamily Acridoidea Macleay, 1821

Family Acrididae Macleay, 1821

Subfamily Calliptaminae Jacobson, 1905

Genus *Acorypha* Krauss, 1877

1. *Acorypha glaucopsis* (Walker, 1870)

Caloptenus glaucopsis walker, F, 1870. *Cata. Of the Specimen of Der. Salt. In Coll. Of British Museum* 4:702.

Caloptenopsis glaucopsis Bolivar, I. 1917. *Rev.real. Acad.Cienc.Exat. Fisic.Natur.*16:409–410.

Acorypha glaucopsis Soomro, S. & M.S. Wagan. 2005. *Pakistan J. Zool.* 37(3):230.

Acorypha glaucopsis Hemp, C. 2009. *Journal of Orthopteran research* 18(2):197.

Acorypha glaucopsis. Nayeem & Usmani. 2012. *Mun. Ento. & Zoo.* 7(1):409.

Acorypha glaucopsis Nazir, Mahmood, Ashfaq & Rahim, 2014. *JoTT* 6(3):5544–5552.

Distribution: Somalia, Nigeria, Sudan, Iran, Yemen,

Tanzania, Pakistan, and

India (Madhya Pradesh, Karnataka, western Himalaya, Jammu & Kashmir, Ladakh (Kargil), Tamil Nadu, Rajasthan, & Himachal Pradesh).

Genus *Calliptamus* Serville, 183 I.

2. *Calliptamus italicus* (Linnaeus, 1758)

Gryllus (Locusta) italicus Linnaeus, 1758. *Syst. Natur. Per Renga tria nature* 1:432.

Gryllus italicus Thunberg, 1815. *Mem. Acad. Imp. Sci.Sc. Peterburg* 5:227 *Calliptamus italicus*. Lucas, P.H. 1851. *Ann. Soc. ent. Fr.* 9 2:363.

Caloptenus italicus Fischer, 1853. *Ortho. Euro.*377.

Caloptenus italicus Eversmann, 1859. *Bull. Soc. Imp. Natur. Moscou* 32(1): 138.

Calliptamus italicus Uvarov, 1922. *Trans. R. Entomol. Soc. London.* 48:136.

Calliptamus italicus Nagy, 2000. *Duna. Dolg. Term. Tud. Sorozatt* 10:155.

Calliptamus italicus italicus. Galvagni. 2010. *Atti Acc. Rov. Agiati.* 8 10(B):177.

Distribution: South-western Europe, Switzerland, Spain, France, Germany, Italy, Greece, Middle Europe, Africa, Turkey, Iran, Kazakhstan, Afghanistan, India (Jammu & Kashmir and Ladakh), and China.

Subfamily Catantopinae Brunner and Wattenwyl, 1893

Genus *Diabolocatantops* Jago, 198

3. *Diabolocatantops innotabilis* (Walker, 1870)

Acridium innotabile Walker, F. 1870. *Catalogue of the spec. of Dermap. In Collection of the British Museum* 4:629.

Acridium innotabile Finot, 1907. *Annal Society Ent. Fr.* 76:336

Catantops innotabile Uvarov, 1929. *Revue Suisse de Zool.* 36:561.

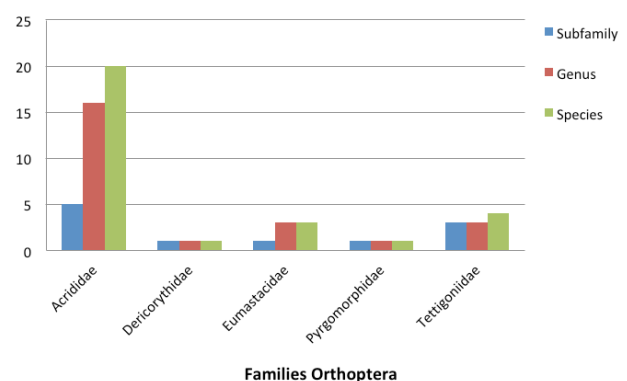


Figure 2. Showing the number of subfamilies, genera, and species of Orthoptera from Ladakh.



Image 1. Some collected specimens: A—*Stenohippus mundus* | B—*Acorypha glaucopsis* | C—*Leva indica* | D—*Locusta migratoria migratoria* | E—*Conocephalus longipennis* | F—*Oedipoda miniata miniata* | G—*Oedipoda himalayana* | H—*Gyabus fusiformis* | I—*Sphingonotus savignyi*. © Mohd Ali.

Diaboloecatantops innotabilis. Jago. 1984. Trans. Amer. Entomol. Soc. 110(3):371.

Diaboloecatantops innotabilis Shishodia, Chandra and Gupta, 2010. *Rec. Zool. Sur. India Misc. Pub.* 314:39

Diaboloecatantops innotabilis Kumar and Usmani, 2014. *J. of Entomol. And Zool. Stud.* 2(3):138

Distribution: Pakistan, India (Assam, Bihar, Jammu & Kashmir, Ladakh: Leh (Nyoma), Maldives, Himachal Pradesh, Goa, Tamil Nadu, Nepal, Maharashtra, Uttarakhand, Uttar Pradesh and West Bengal.), Sri Lanka, Nepal and Thailand.

Genus *Paraconophyma* Uvarov, 1921

4. *Paraconophyma scabra* (Walker, 1870)

Caloptenus scaber Walker, F. 1870. *Catalogue of the Specimens of Dermap. Salta. in the Collection of Brt. Mus.* 4:707.

Mesambria scabra Kirby, W.F., 1910. *A Synonymic Cat. of Orthop.* 3(2):440. *Paraconophyma scabra* Uvarov, 1921. *Ann. Mag. Nat. Hist.* 97:501.

Paraconophyma scabra Bhomik, 1986. *Zool. Surv. of India, Tech. Monogr.* 14:145.

Paraconophyma scabra Shishodia & Tandon. 2004. *Fauna of Manipur - Part 2.* 131.

Distribution: India (Bihar, Delhi, Himachal Pradesh, Jammu & Kashmir, Ladakh: Leh (Nyoma Taklung) and West Bengal).

Genus *Xenocatantops* Dirsh, 1953

5. *Xenocatantops humilis humilis* (Serville, 1838)

Acridium humile Serville, 1838. *Histoire naturelle des insectes. Orthopteres.* 662.

Catantops humilis Karny, 1915. *Supplementa Entomologica.* 4:88

Catantops humilis. Uvarov. 1929. *Revue Suisse de Zool.* 36:561.

Xenocatantops humilis humilis Dirsh and Uvarov, 1953. *Tijdschr. v. Entomologie* 96:237

Xenocatantops humilis. Ingrisch. 1990. *Spixiana (Munich).* 13:175.

Xenocatantops humilis Cao & Yin, 2007. *Acta Zootaxonomica Sin* 32(3):523

Xenocatantops humilis humilis Shishodia, Chandra and Gupta, 2010. *Rec. Zool. Surv. India, Misc. Pub., Occas. Paper* 314:37

Xenocatantops humilis. Tan, M.K. & Kamaruddin. 2016. *Zootaxa.* 4111(1):26.

Distribution: India (Assam, Bihar, Himachal Pradesh, Uttarakhand, Jammu & Kashmir, Ladakh: Leh (Nyoma), Mizoram, Sikkim, Tamil Nadu and West Bengal) Nepal, Bangladesh, Myanmar, Thailand., Malaysia and

Singapore.

Subfamily Gomphocerinae Fieber, 1853

Genus *Leva* Bolivar, 1909

6. *Leva indica* (Bolivar, 1902)

Gymnbothrus indicus Bolivar, 1902. *Ann. So. ent. Fr.* 70:596.

Leva indica Bolivar, 1902. *Bol. R. soc. Esp. Hist. Nat.* 9:292.

Leva indica Uvarov, 1929. *Revue Suisse de Zool.* 36:540.

Leva indica. Shishodia & Tandon. 2000. *Fauna of Tripura - Part 2.* 217.

Leva indica Nayeem and Usmani, 2012. *Munis Ento. Zoo.* 7(1):410.

Distribution: India (Bihar, Manipur, Ladakh: Kargil, Tamil Nadu and Rajasthan) and Sri Lanka.

Genus *Stenohippus* Uvarov, 1926

7. *Stenohippus mundus* (Walker, 1871)

Stenobothrus mundus Walker, F., 1871. *Catalogue of the Spec. of Derm. Salta.* 79.

Dociostaurus mundus Kirby, 1914. *Fauna of Brit. India, Include. Ceylon and Burma. Orthoptera (Acrididae)* 117, 119.

Stenohippus mundus Johnston, 1956. *Annot. Cata. of African Grasshoppers* 689.

Leva (Stenohippus) mundus Jago, 1971. *Proc. Acad. Nat. Sci. Philad.* 123:223.

Leva mundus Bhowmik, 1990. *Rec. Zool. Survey of India.* 87(1-4):89-94.

Stenohippus mundus. Hodjat. 2015. *J. Entomol. Res. Soc.* 17(1):98.

Distribution: West tropical Africa, Burkina, Nigeria, Palestine, Iran, and India (Jammu and Kashmir, Ladakh: Kargil, Maharashtra, Mumbai and Rajasthan).

Subfamily Melanopolinae Scudder, 1897

Genus *Dicranophyma* Uvarov, 1921

8. *Dicranophyma babaulti* Uvarov, 1925

Dicranophyma babaulti. Uvarov. 1925. *Mission Guy Babault dans.* 1914. 1925:31, 33.

Dicranophyma babaulti Mani, M.S. 1968. *Eco. And Bio. Of High Altitude Insects* 212

Dicranophyma babaulti Shishodia, Chandra and Gupta, 2010. *Rec. Zool. Sur. India, Misc. Publication, Occas. paper* 314:79

Distribution: India (Jammu & Kashmir, Ladakh: Kargil (Saliskote)).



Subfamily: Oedipodinae MacLeay, 1871

Genus *Ailopus* Fieber, 1853

9. *Ailopus simulatrix simulatrix* (Walker, 1870)

Epacromia simulatrix Walker, F., 1870. *Cata. of the Spec. of Dermap. Salta. In the collection of the British Museum* 4:773.

Acrotylus simulatrix Kirby, 1910. *A Synonymic Catalogue of Orthoptera* 3(2):267.

Aiolopus simulatrix. Ingrisch. 1983. *Nachrichtenbl. Bayer. Entom.* 32(3):93.

Aiolopus simulatrix. Ingrisch. 1999. *Esperiana*. 7:361.

Aiolopus simulatrix simulatrix. Usmani. 2008. *Zootaxa*. 1946:27.

Aiolopus simulatrix. Usmani. 2008. *Insecta Mundi*. 0041:10.

Aiolopus simulatrix simulatrix. Prabakar, Prabakaran & Chezhian. 2015. *Biolife*. 3(1):348.

Distribution: Nigeria, Libya, Egypt, Turkey, Saudi Arabia, Yemen, Iran, Pakistan and India (Ladakh: Kargil (Saliskote), Maharashtra and Tamil Nadu).

Genus *Bryodema* Fieber, 1853

10. *Bryodema luctuosum inda* Saussure, 1884

Bryodema inda Saussure, 1884. *Mem. Soc. Phys. Hist. Nat. Geneve*. 28(9):181

Bryodema india Kirby, W.F. 1914. *Fauna of British India, including Ceylon and Burma. Orthoptera (Acrididae)* 151

Bryodema luctuosum inda Bey-Bienko, 1930. *Ann. Mus. Zool. Acad. Imp. Sciences St. Petersburg* 31(1):116.

Bryodema luctuosum indum. Zhang, D.-C., Wenqiang Wang & X. C. Yin. 2006. *Entomol. News*. 117(1):17.

Bryodema luctuosum indum Shishodia & Gupta. 2009. *JoTT*. 1(11):569-572.

Distribution: India (Himachal Pradesh, Jammu & Kashmir, Ladakh: Leh (Khardong La)) and China.

Genus *Gastrimargus* Saussur, 1884

11. *Gastrimargus marmoratus* (Thunberg, 1815)

Gryllus marmoratus Thunberg, 1815. *Mem. Acad. Imp. Science St. Peterburg* 5:232.

Oedaleus (Gastrimargus)marmoratus Krauss, 1890. *Zool. Jahr. Abt. Syst. Gergr. Und Biol. Der Tiere*. 5(4):659.

Oedaleus marmoratus Schulthess, 1898. *Ann. Mus. Civ. Stor. Nat. Genova* 39:187.

Gastrimargus marmoratus. Kirby, W.F. 1902. *Trans. Entomol. Soc. Londo*. 1902:71.

Gastrimargus marmoratus Willemse, C. 1930. *Tijdschr. v. Entomo*. 73:63.

Gastrimargus marmoratus Mahmood, K. Samira, Salmah & Idris, 2008. *Pakistan J. Zool.* 40(5):375.

Distribution: South Africa, India (Andhra Pradesh, Assam, Bihar, Sikkim, Jammu & Kashmir, Ladakh (Nyoma), Uttarakhand, Uttar Pradesh and West Bengal) China, Myanmar, Malaysia, and Korea.

Genus *Locusta* Linnaeus, 1758

12. *Locusta migratoria migratoria* (Linnaeus, 1758)

Gryllus (Locusta) migratorius Linnaeus, 1758. *Syst. Nat. pr Regna tria nature* 1:432.

Gryllus migratorius Linnaeus, 1761. *Fauna Sueciae sistens Animalia Sueciae* 238.

Acrudium migratorium Lamarck, 1835. *Hist. nat. Anim. Sans Vert.* 4:444.

Oedipoda migratoria Selys Longchamps, 1850. *Bull. Acad. Sci. Bruxelles* 16(2):626-628.

Pachytylus migratoria Eversmann, 1859. *Bull. Soc. imp. nat. Moscou* 32(1):139.

Pachytylus migratoria Dtein, J.P.E.F., 1878. *Dtsch. Entomol.Z.* 22:233-236.

Pachytylus migratoria Schulthess, 1898. *Ann. Mus. Civ. Stor. Nat. Genova* 39:188.

Locusta migratoria Chopard, 1922. *Faune de France* 3:134, 161.

Locusta migratoria migratoria. Cejchan. 1963. *Beitrage zur Entomologie*. 13(7-8):781.

Locusta migratoria migratoria. Lemonnier-Darcemont, Puskás & Darcemont. 2015. *Articulata* 30:63-80.

Distribution: India (Jammu and Kashmir, Himachal Pradesh, Ladakh: Kargil, Leh, Rajasthan and Uttar Pradesh) and All over the World.

Genus *Oedaleus* Fieber, 1853

13. *Oedaleus abruptus* (Thunberg, 1815)

Gryllus abruptus Thunberg, 1815. *Mem. Acad. Imp. Sci. St. Peterburg* 5:233.

Oedaleus abruptus Saussure, 1884. *Mem. Soc. Phys. Hist. Nat. Geneve* 28(9):110, 117.

Oedaleus abruptus Bolivar, I., 1917. *Rev. Real Acad. Cienc. Exact., Fisic. Natur*, 16:385.

Oedaleus abruptus Chang, K.S.F., 1939. *Bull. Zool. Surv. India* 6(1):20, 21.

Oedaleus abruptus Bhowmik & Halder, 1984. *Bull. Zool. Surv. India* 6(1-3):48.

Oedaleus abruptus Lian, Y Hu & Y Qiao. 2000. *Entomotaxonomia*. 22(3):171-174.

Oedaleus abruptus. Ingrisch. 2001. *Senckenbergiana Biologica*. 81:156.

Oedaleus abruptus Nayeem & Usmani. 2012. *Munis Entomology & Zoology* 7(1):408.

Distribution: Pakistan, India (Bihar, Delhi, Goa,

Haryana, Jammu and Kashmir, and Ladakh: Indus River bank, Rajasthan, Manipur, Uttarakhand, Sikkim, Tripura, Tamil Nadu and West Bengal) Nepal, Thailand and Vietnam.

Genus *Oedipoda* Latreille, 1829

14. *Oedipoda himalayana* Uvarov, 1925

Oedipoda himalayana Uvarov, 1925. *Mission Guy babaul dans, Acrididae* 1925:22.

Oedipoda himalayana Bhomik, 1985. *Rec. Zool. Surv. India, Mis. Pub., Occas. Paper* 78:37.

Oedipoda himalayana Shishodia & Gupta. 2009. *JoTT* 1(11):569–572.

Oedipoda himalayana. Azim, Reshi & Rather. 2010. *Halteres* 1(2):8.

Distribution: India (Jammu & Kashmir, Ladakh: Kargil, Himachal Pradesh and Uttarakhand) and Tibet.

15. *Oedipoda miniata miniata* (Pallas, 1771)

Gryllus miniatus Pallas, 1771. *Reise durch Verschiedene Provinzen des Russ. Reiches* 1:467.

Oedipoda miniata. Targioni-Tozzetti. 1891. *Animali ed insetti del tabacco in erba e del tabacco secco*. 152.

Oedipoda miniata Ebner, 1908. *Verh. Der Zoologisch Botanischen Gesellsch. Wein* 58:337.

Oedipoda miniata miniata Ebner, 1910. *Zool. Jahr. Abt. Syst. Geogr. Und Biol. Der Tiere* 1910: 401–414.

Oedipoda miniata Werner, 1938. *S. B. Akad. Wiss. Wien, Math. Kl.* 147:130.

Oedipoda miniata Johnston, H.B., 1956. *Annotated catalogue of African grasshoppers* 518.

Oedipoda miniata miniata Muraj, Dino & Alimehilli, 1970. *Bull. Univ. Shtet. Tiranes, Ser. Shken. Nat.* 24(3):139, 145.

Oedipoda miniata miniata Massa, Fontana, Buzzetti, Kleukers & Ode 2012. *Faunal d italia. orthoptera* 48:434.

Oedipoda miniata miniata Defaut & Morichon, 2015. *Faune de france* 97(1a,b):491.

Distribution: Europe, Libya, Turkey, Palestine, Russia, Iran, Kazakhstan, Pakistan and India (Jammu & Kashmir, Ladakh: Kargil).

Genus *Sphingonotus* Fieber, 1852

16. *Sphingonotus (Sphingonotus) eurasius eurasius* Mischenko, 1937

Sphingonotus eurasius eurasius Mistshenko, 1937. *Eos* 12(3):193.

Sphingonotus eurasius Johnston, H.B., 1956. *Ann. Cata. of African Grasshoppers* 447.

Sphingonotus azureus Harz, 1975. *Ser. Entomol.* 11:525,528.

Sphingonotus eurasius Badih & F. Pascaul, 1998. *Nouvelle Revue Ent.* 15(2):134.

Sphingonotus eurasius Massa, 2009. *Jour. Orth. Res.* 18(1):84.

Sphingonotus (Sphingonotus) eurasius eurasius Benediktov, 2009. *Trudy Russk. Entomol. Obshch* 80(1):24.

Sphingonotus eurasius eurasius. Garai. 2010. *Esperiana.* 15:408.

Sphingonotus (Sphingonotus) eurasius eurasius. Benediktov. 2011. *Matériaux Orthopteriques et Entomocénétiques.* 16:7.

Sphingonotus (Sphingonotus) eurasius eurasius Dey, L.S. Saboori, Hodjat, Tork, Pahlow & Husemann, 2018. *Zootaxa* 4379(2):157.

Distribution: Morocco, Libya, Turkey, Palestine, Syria, Caucasus, Iran, Kazakhstan, India (Himachal Pradesh and Ladakh: Kargil (Hugnis)).

17. *Sphingonotus (Sphingonotus) rubescens fallax* Mishchenko, 1937

Sphingonotus fallax. Mistshenko. 1937(1936). *Eos* 12(3–4):153.

Sphingonotus rubescens fallax. Bey-Bienko & Mistshenko. 1951. *Locusts and Grasshoppers of the U.S.S.R. and Adjacent Countries.* 2:620(269).

Sphingonotus rubescens fallax. Bhowmik. 1985. *Rec. Zool. Surv. India, Misc. Pub., Occas. Paper.* 78:41.

Sphingonotus (Sphingonotus) rubescens fallax. Shishodia, K. Chandra & S.K. Gupta. 2010. *Rec. Zool. Surv. India, Misc. Pub., Occas. Paper.* 314:101.

Distribution: Europe, Africa, Afghanistan and India (Jammu & Kashmir and Ladakh: Kargil, Leh).

18. *Sphingonotus (Sphingonotus) rubescens rubescens* (Walker, 1870)

Oedipoda rubeus Walker, F., 1870. *Zoologist* 25(28):2301.

Sphingonotus rubescens Kirby, W.F., 1910. *A Synonymic Catalogue of Orthoptera* 3(2):274.

Sphingonotus rubescens Kirby, W.F., 1914. *Fauna of British India, including Ceylon and Burma. Orthoptera (Acrididae)* 155.

Sphingonotus rubescens rubescens Mistshenko, 1937. *Eos* 12(3-4):169.

Sphingonotus (Sphingonotus) rubescens rubescens Dey, L.S., Saboori, Hodjat, Tork, Pahlow & Husemann, 2018. *Zootaxa* 4379(2):167.

Distribution: Spain, Europe, Africa, Libya, Egypt, Turkey, Yemen, Palestine, Iran, Kazakhstan, Afghanistan and India (Jammu & Kashmir and Ladakh: Kargil, Leh).

**19. *Sphingonotus savignyi* (Saussure, 1884)**

Sphingonotus savignyi Saussure, 1884. *Mem. Soc. Phys. Hist. Nat. Geneve* 28(9):198.

Sphingonotus Savignyi Krauss, 1890. *Verh. der Zool. Bota. Gesellsch. Wien.* 28(9):198.

Sphingonotus savignyi Dirsh, 1965. *The Afr. Gener. Of Acridoidea* 470.

Sphingonotus savignyi savignyi Massa, 2009. *Jour. Orth. Res.* 18(1):470.

Sphingonotus(Sphingonotus) savignyi savignyi dey, L.S., Saboori, Hodjat, Tork, Pahlow & Husemann. 2018. *Zootaxa* 4379(2):170.

Distribution: North Africa, Russia, Central Asia, Afghanistan, Pakistan and India (Jammu & Kashmir, Ladakh: Kargil, Leh, and Himachal Pradesh).

Genus *Trilophidia* Stal, 1873**20. *Trilophidia annulata* (Thunberg, 1815).**

Gryllus annulatus Thunberg, 1815, *Mem. Acad. Imp. Sci. St. Peterburg* 5:234.

Trilophidia annulata Bolivar, I., 1902. *Ann. Soc. Ent. Fr.* 70:604.

Trilophidia annulata Hollis, 1965. *Trans. R. Entomol. Soc. London* 117:251.

Trilophidia annulata Kumar and Usmani, 2016. *Munis Entomology & zoology* 11(1): 83.

Distribution: Iran, Pakistan, India (Bihar, Jammu and Kashmir, Ladakh: Leh, Tamil Nadu, Maharashtra, Goa, Gujarat, Rajasthan, Orissa, Uttar Pradesh and West Bengal) Sri Lanka, Nepal, China, Thailand, Malaysia, Singapore, Korea and Japan.

Family Dericorythidae Jacobson & Bianchi, 1905**Subfamily Conophyminae Mistshenko, 1952.****Genus *Conophyma* Zubovski, 1898.****21. *Conophyma kashmiricum* Mistshenko, 1950**

Conophyma kashmiricum Mistshenko, 1950. *C.R. Academic Science, URSS* 72:213.

Conophyma kashmiricum Bey Bienko and Mistschenko, 1951. *Locusta and Grasshoppers of the USSR and Adjacent countries* 1:190(199).

Conophyma kashmiricum Balderson and Yin, 1991. *Ento. Gaz.* 42(3):195.

Distribution: India (Jammu & Kashmir and Ladakh (Kargil – Matayen)).

Superfamily Eumastacoidea Burr, 1899**Family Eumastacidae Burr, 1899****Subfamily Gomphomastacinae Burr, 1899****Genus *Gomphomastax* Brunner Wattenwyl, 1898****22. *Gomphomastax kashmirica* Balderson & Yin, 1991**

Gomphomastax kashmirica Balderson & Yin, 1991. *Ento. Gazette.* 42(3):191.

Gomphomastax kashmirica Usmani, Reshi & Azim, 2008. *Insecta Mundi* 33:2

Distribution: India (Jammu & Kashmir, Ladakh (Tso-Morari)).

Genus *Phytomastax* Bey Bienko, 1949**23. *Phytomastax bolivari* (Uvarov, 1936)**

Gomphomastax bolivari Uvarov, 1936. *Opuscula Entomologica* 1:18.

Phytomastax bolivari Bey Bienko & Mistshenko, 1951. *Locusta and Grasshoppers of the USSR and Adjacent Countries* 1:122(128).

Gomphomastax bolivari Mani. 1968. *Ecology and Biogeography of High Altitude Insects* 212.

Phytomastax bolivari Balderson & Yin, 1991. *Entomologist Gazette* 42(3):192.

Distribution: India (Jammu & Kashmir and Ladakh (Tragbal Pass)).

Genus *Gyabus* Ozdikmen, 2008**24. *Gyabus fusiformis* (Bei Bienko, 1949)**

Pachymastax fusiformis Bey Bienko, 1949. *C.R. Acad. Sci. URSS.* 64(5):733.

Pachymastax fusiformis Bey Bienko, 1951. *Locusta and Grasshoppers of the USSR and Adjacent Countries* 1:118(126).

Gyabus fusiformis Ozdikmen, 2008. *Zootaxa* 1763:68.

Distribution: India (Ladakh (Kargil – Choskor)).

Superfamily Pyrgomorpoidea Brunner Von Wattenwyl, 1874**Family Pyrgomorphidae Brunner Von Wattenwyl, 1874****Subfamily Pyrgomorphinae Brunner Von Wattenwyl, 1874****Genus *Atractomorpha* Saussure, 1872****25. *Atractomorpha sinensis montana* Kevan & Chen, 1969**

Atractomorpha sinensis montana Kevan, D.K.M, & Y. K. Chen, *Zoological Journal of Linnean Society* 48:141.

Atractomorpha sinensis montana Kevan, D.K.M., 1977. *In Beier. Orthopterorum Catalogus* 16:396.

Atractomorpha sinensis montana Vickery, 1996. *Notes Lyman ent. Mus. Res. Lab* 19:2-11.

Distribution: India (Jammu & Kashmir and Ladakh).

Suborder Ensifera**Superfamily Tettigonioidae Krauss, 1902****Family Tettigoniidae Krauss, 1902**

Subfamily Conocephalinae Burmeister, 1838**Genus Conocephalus Thunberg, 1815**

26. *Conocephalus (Anisoptera) longipennis* (Haan, 1843)

Locusta (Xiphidium) longipennis Haan, 1843. *Temminck Verhandelingen over de Nederlansche Overzeesche Bezittingen* 19/20:188,189.

Xiphidium longipenne Burnner von Wattenwyl, 1893. *Ann. Mus. Civ. Stor. Nat. Genova* 213(33):181.

Conocephalus (Xiphidion) longipennis. Karny. 1912. *Genera Insectorum*. 135:11.

Conocephalus longipennis Pitkin, 1980. *Bull. Br. Mus. (Nat. Hist) ent.* 41(5):349.

Conocephalus (Anisoptera) longipennis Zhou, M., Bi & Xian Wei Liu, 2010. *Zootaxa* 2527:57.

Conocephalus (Anisoptera) longipennis. Kim, T.-W. & Hong Thai Pham. 2014. *Zootaxa* 3811(1):69.

Conocephalus (Anisoptera) longipennis. Xiao, W., S.-L. Mao, Jianfeng Wang & J.H. Huang. 2016. *Far Eastern Entomologist*. 305:14.

Conocephalus (Anisoptera) longipennis. Nagar & Ranjni Swaminathan. 2016. *Zootaxa*. 4126(1):24.

Conocephalus (Anisoptera) longipennis. Farooqi & Usmani. 2018. *Zootaxa*. 4461(3):390.

Distribution: Dakar, India (Andaman & Nicobar, Assam, Karnataka, Kerala, Ladakh: Kargil and Uttar Pradesh), Eurasia, China, Malaysia, Vietnam, and Philippines.

27. *Conocephalus (Anisoptera) maculatus* (Le Guillou, 1841)

Xiphidion maculatus. Le Guillou. 1841. *Revue et Magasin de Zoologie*. 294.

Xiphidium (Xiphidium) maculatum Redtenbacher, 1891. *Ver. der Zool. Bota. Gesellesch, Wein* 41:515.

Anisoptera maculatum Kirby, W.F., 1906. *A Synonymic Catalogue of Orthoptera (Orthoptera Saltatoria, Locustidae vel Acrididae)* 2:278.

Conocephalus (Anisoptera) maculatus Hebard, 1992. *Proc. Acad. Nat. Sci. Philad* 74:243.

Conocephalus maculatus. Chopard. 1954. *Mem. Inst. franc. Afr. Noire*. 40(2):61.

Conocephalus (Anisoptera) maculatus Storozhenko, Kim & Jeon, 2015. *Monograph of Korean Orthoptera* 45.

Conocephalus (Anisoptera) maculatus. Gaikwad, Koli, Raut, Waghmare & Bhawane. 2016. *JoTT*. 8(2):8535.

Distribution: Africa, Libya, Saudi Arabia, Yemen, Pakistan, India (Orissa, Jammu and Kashmir, Ladakh: Kargil, Uttar Pradesh, Maharashtra and Uttarakhand) Nepal, China, Bhutan, Singapore, Malaysia, and Indonesia, Korea and Japan.

Subfamily Phaneropterinae Burmeister, 1838.**Genus Phaneroptera Serville, 1831**

28. *Phaneroptera gracilis* Burmeister, 1838

Phaneroptera gracilis Burmeister, 1838. *Handbuch der Entomologie* 22(IVIII):690.

Phaneroptera subnotata. Burner von Wattenwyl. 1878. *Monographie der Phaneropteriden*. 2016.

Phaneroptera gracili. Karny, 1927. *Zeitschr. Gesam. Naturwiss.* 88:12.

Phaneroptera gracilis Ingrisch, 2002. *Entomologica basiliensia*. 24:124.

Phaneroptera gracilis Hugel, 2009. *Zoosystema*. 31(3):552.

Phaneroptera gracilis Shi, F.M., L.H. Zaho & J.Jiao, 2013. *Acta zootaxonomica Sin.* 38(3):510.

Phaneroptera (Phaneroptera) gracilis gracilis Kim, T.W. & Hong Thai Pham, 2014. *Zootaxa*. 38(3):510.

Distribution: South Africa, Pakistan, India (Ladakh, Uttar Pradesh, Eastern Himalaya and Tamil Nadu) Nepal, China, Bhutan and Malaysia.

Subfamily Tettigoniinae Krauss, 1902**Genus Hyphinomos Uvarov, 1921**

29. *Hyphinomos fasciata* Uvarov, 1921.

Hyphinomos fasciata. Uvarov, 1921. *Jour. Bombay Nat. Hist. Soc.* 28:74.

Hypsinomos fasciata Mani, M.S., 1968. *Ecology and Biogeography of High Altitude Insects* 212.

Hyphinomos fasciata. Gurney & Liebermann. 1975. *Jour. Wash. Acad. Sci.* 65(3):102–107.

Distribution: Dakar, India (Jammu & Kashmir and Ladakh: Kargil) and China.

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