

FAUNA OF INDIA CHECKLIST

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ARTHROPODA: INSECTA: ZYGENTOMA

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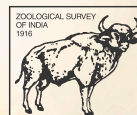
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ZOOLOGICAL SURVEY OF INDIA
Ministry of Environment, Forest & Climate Change

ARTHROPODA: INSECTA: ZYGENTOMA

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Introduction : Zygentoma are small, soft bodied, mostly scaled, wingless. Due to the silvery scales of their bodies, they are also called Silverfish. Some species are considered as serious house hold and library pest. Their body lengths are up to 1 centimetre, and they are easily distinguishable from other closely related orders by long, many segmented antennae, 2 anal cerci, a single median telson projecting posterior from the terminal part of abdomen. These free-living forms are found in the forest floor, in the nests of ants and termites, under bark of trees, under rocks and crevices. The Zygentoma have thread like long antennae that are many segmented, compound eyes present or absent, abdomen 11 segmented ending in 3 long “bristles”, body covered with silvery scales.

Global Diversity : Zygentoma with 3 families- Lepismatidae, Nicoletiidae & Lepidotrichidae. Altogether 561 species of Zygentoma were recorded from the world, Footitt & Adler (2009).

Diversity in India : Escherich (1905) was the first to do significant work on Zygentoma in the book which he published as 'Das system der Lepismatiden', in which he described 08 new species from India. Thereafter, Silvestri (1913) also described eight new species from different parts of India. Recently Hazra and his co-workers (1980-2024) have been doing extensive studies on Zygentoma and contributed significantly to the knowledge of Indian fauna. Mendes (1988) worked on genus Lepisma Linnaeus, 1758 and he published his research paper on Zoogeographic affinities of Indian Thysanura in the year 1990 and pointed out the poorly known diversity of the group due to improper exploration.

Hazra (1980) contributed significantly on the family Lepismatidae with a new species from West Bengal and Tripura. Hazra and Mandal (2004, 2007, 2010 and 2012) made note-worthy records of the family Lepismatidae, Ateluridae and Nicoletiidae from India which includes Sikkim, Manipur, West Bengal, Andhra Pradesh, Himachal Pradesh, Uttarakhand and Andaman and Nicobar Islands. Mandal (2010) published checklist of Indian Thysanura (Microcoryphia & Zygentoma). Mandal (2015) contributed to the knowledge of Thysanura (Zygentoma) from Uttar Pradesh. Mandal (2018) reported list of Zygentoma fauna of Indian Himalaya. Hazra, Jana & Mandal (2020) studied morphological variations and new records of Zygentoma (Apterygota: Insecta) from India. Hazra *et al.*, (2022) made some significant contributions to the taxa with three new species. Hazra *et al.* (2023) described another new species of Zygentoma from Kawal Tiger Reserve, Telangana, India. Recently, Hazra *et al.* (2024) published an updated checklist on Zygentoma from India.

Table-1: Diversity of Zygentoma in the various States of India

| Sl. No. | State/UT | No. of Species | No. of Endemic Species |
|---------|-------------------|----------------|------------------------|
| | | 38 | 16 |
| 1 | Andhra Pradesh | 3 | 1 |
| 2 | Arunachal Pradesh | 0 | 0 |
| 3 | Assam | 0 | 0 |
| 4 | Bihar | 0 | 0 |
| 5 | Chhattisgarh | 1 | 0 |
| 6 | Gujarat | 1 | 0 |

| Sl. No. | State/UT | No. of Species | No. of Endemic Species |
|---------|---------------------------------|----------------|------------------------|
| 7 | Goa | 1 | 0 |
| 8 | Haryana | 1 | 0 |
| 9 | Himachal Pradesh | 1 | 0 |
| 10 | Jharkhand | 1 | 0 |
| 11 | Karnataka | 3 | 2 |
| 12 | Kerala | 1 | 1 |
| 13 | Madhya Pradesh | 1 | 0 |
| 14 | Maharashtra | 6 | 1 |
| 15 | Manipur | 2 | 0 |
| 16 | Meghalaya | 0 | 0 |
| 17 | Mizoram | 0 | 0 |
| 18 | Nagaland | 0 | 0 |
| 19 | Odisha | 3 | 1 |
| 20 | Punjab | 0 | 0 |
| 21 | Rajasthan | 0 | 0 |
| 22 | Sikkim | 3 | 1 |
| 23 | Tamil Nadu | 1 | 1 |
| 24 | Telangana | 4 | 2 |
| 25 | Tripura | 2 | 1 |
| 26 | Uttar Pradesh | 2 | 2 |
| 27 | Uttarakhand | 6 | 1 |
| 28 | West Bengal | 8 | 1 |
| 29 | Andaman & Nicobar | 1 | 0 |
| 30 | Chandigarh | 0 | 0 |
| 31 | Dadra Nagar Haveli, Daman & Diu | 0 | 0 |
| 32 | Delhi | 1 | 0 |
| 33 | Jammu & Kashmir | 0 | 0 |
| 34 | Ladakh | 1 | 0 |
| 35 | Lakshadweep | 0 | 0 |
| 36 | Puducherry | 0 | 0 |
| 37 | State Unknown | 0 | 0 |

Endemism : Among the known taxa, fourteen species of this group of insects are endemic to India.

Habitat : They are mostly found in damp places, books and shelves in houses. Silverfish feed on cereals, paste, paper, starch in clothes, rayon fabrics and dried meats. Silverfish can sometimes be found in bathtubs or sinks at night, as they have difficulty moving on smooth surfaces and so become trapped. Wild species often are found in habitats such as caves, and some are commensals living in association with ant colonies and Termite mounds.

Ecological Significance : It is high time to formulate strategies for conservation of taxon for the role play in maintaining the ecological balance especially in soil ecosystem. In bush land, silverfish undoubtedly play a role in litter re-cycling and food chains.

Human Significance : There are a large number of endemic species in the group with very restricted distributions, and habitat destruction could easily threaten these more locally distributed species. Their significance seems to be limited to the nuisance effects or damage done to household or paper materials stored undisturbed for extended periods of time (e.g. archival books in libraries and museums).

Threatened species as per IUCN : No species has been designated as threatened as per IUCN.

Protected species as per WPA (2022) : There is no such protected species as per WPA (2022).

Species under CITES : No species under CITES.

Invasive alien species : No such species has been reported.

Gap areas : In India out of 28 states and 08 Union Territories, the Zygentoma fauna has not been reported from Puducherry, Lakshadweep, Ladakh, Daman and Diu, Dadra & Nagar Haveli, Chandigarh, Punjab, Nagaland, Mizoram, Haryana, Goa, Assam, Arunachal Pradesh. Only 31 species belonging to 17 genera and 2 families were recorded from India and most of them from Southern & Eastern parts of the country. So, therefore, there is an ample scope to explore from rest of Indian states and union territories and study this very minute group of insects.

Systematic list of Zygentoma of India (Endemic species marked with*)

Class Insecta Linnaeus, 1758

Order Zygentoma Börner, 1904

Family Lepismatidae (Latreille, 1802)

1. *Acrotelsa collaris* (Fabricius, 1793)
2. *Acrotelsella impudica* (Escherich, 1905)
3. *Acrotelsella jhargramensis* Hazra, Jana & Smith, 2023*
4. *Acrotelsella wygodzinsky* (Hazra, 1980) *
5. *Ctenolepisma* (*Ctenolepisma*) *alticola* Silvestri, 1935
6. *Ctenolepisma* (*Ctenolepisma*) *amrabadense* Hazra, Jana & Mandal, 2022
7. *Ctenolepisma* (*Ctenolepisma*) *boettgerianum* Paclt, 1961*
8. *Ctenolepisma* (*Ctenolepisma*) *dubitalis* Wygodzinsky, 1959' and
9. *Ctenolepisma* (*Ctenolepisma*) *kawalense* Hazra, Jana, Mandal & Molero-Baltanás, 2023*
10. *Ctenolepisma* (*Ctenolepisma*) *longicaudatum* Escherich, 1905
11. *Ctenolepisma* (*Ctenolepisma*) *nigrum* (Oudemans, 1890)
12. *Ctenolepisma* (*Ctenolepisma*) *rothschildi* Silvestri, 1907
13. *Ctenolepisma* (*Ctenolepisma*) *tripurense* Hazra, Biswas & Mitra, 2000*
14. *Ctenolepisma* (*Ctenolepisma*) *venkataramani* Hazra, Jana, Mandal & Baltanas, 2022*
15. *Thermobia domestica* (Packard, 1873)
16. *Afrolepisma nigrinum* (Silvestri, 1913)
17. *Lepisma devadasi* Sukumar & Livingstone, 1993#
18. *Lepisma saccharinum* Linnaeus, 1758
19. *Tricholepisma gravelyi* (Silvestri, 1913) *
20. *Xenolepisma subnigrinum* (Silvestri, 1938) *
21. Family Nicoletiidae (Lubbock, 1873)
22. *Assmuthia inermis* Escherich, 1906
23. *Assmuthia spinosissima* Escherich, 1906
24. *Atelurodes typhloponis* (Silvestri, 1913)

25. Bharatatelura malabarica Mendes, 1992
26. Neatelura yellapurensis Joseph & Mathad, 1963
27. Platestylea barbifer Escherich, 1906
28. Pseudogastrotheus indicus (Silvestri, 1913)
29. Pseudogastrotheus palpiseta (Silvestri, 1916)
30. Lepidospora (Lepidospora) ceylonica Silvestri, 1911
31. Lepidospora (Lepidospora) notabilis Silvestri, 1913

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