

FAUNA OF INDIA CHECKLIST

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ARTHROPODA: INSECTA: ARCHAEOGNATHA

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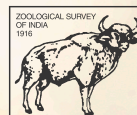
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ZOOLOGICAL SURVEY OF INDIA
Ministry of Environment, Forest & Climate Change

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Introduction: The Archaeognatha is an order of Apterygota that belongs to class Insecta, commonly known as jumping bristletails. Among extant insect taxa, they are some of the most evolutionarily primitive. The orders Zygentoma and Archaeognatha possess three-pronged tails comprising two lateral cerci and a medial epiproct or appendix dorsalis. Of these three organs, the appendix 'dorsalis' is considerably longer than the two cerci; in this Archaeognatha differs from Zygentoma, in which the three organs are subequal in length. In the late 20th century, it was recognized that the order Thysanura was paraphyletic, thus the two suborders were each raised to the status of an independent monophyletic order, with Archaeognatha sister taxon to the Dicondylia, including the Zygentoma. Archaeognatha are small insects with elongated bodies having arched dorsal region, especially over the thorax. Their abdomen ends in three long tail-like structures, of which the lateral two are cerci, while the medial filament, which is longest, is an epiproct. The tenth abdominal segment is reduced. The antennae are flexible. The two large compound eyes meet at the top of the head, and there are three ocelli. The mouthparts are partly retractable, with simple chewing mandibles and seven-segmented maxillary palps which are commonly longer than the legs. The members of the family Machilidae occur mostly in the decomposing litter of the forest floor, and are capable of jumping by means of the apical ventral stylets. Species, such as, *Lepisma saccharina* cause damage to books, photographs, bakery and other household articles.

Global Diversity: The order Archaeognatha is cosmopolitan; it includes roughly 500 species in two families. No species is currently evaluated as being at conservation risk. A fairly large work has been done from the various parts of the world on Archaeognatha viz. Escherich (1905,06), Janetschek (1957 & 1964), Hazra and Mandal: Pictorial Handbook on Indian Thysanura (2007), Oudemans (1890), Paclt (1961, 1967, 1969, 1972), Silvestri (1908, 1911a, 1913, 1936, 1938, 1948) and Wygodzinsky (1941, 1944, 1952). Thereafter, Bach De Roca (1981), Mendes (1977, 1980), Wygodzinsky (1963, 1972, 1974) contributed to our knowledge of Archaeognatha from the world.

Diversity in India: Escherich (1903) was the pioneer worker in Archaeognatha fauna in India. Silvestri (1911 – 1936) worked extensively on this fauna and described 06 species from India. Hazra (1993, 1996, 2000, 2004); Hazra & Mandal (2004, 2007) worked on this fauna and reported a few species from West Bengal and NE India and also published a pictorial handbook on Thysanura (2007).

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

Sl. No.	States/UTs	No. of Species	No. of Endemic Species
	INDIA TOTAL	10	6
1.	Andhra Pradesh	1	0
2.	Arunachal Pradesh	0	0
3.	Assam	0	0
4.	Bihar	0	0

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

Endemism: A total of 10 species under 06 genera have so far been recorded from India, out of which 06 species are endemic to India.

Habitat: Archaeognatha dwells in a wide range of habitats. While most species live in moist soil, others have adapted to chaparral, and even sandy deserts. They feed primarily on algae, but also lichens, mosses, or decaying organic detritus. Archaeognatha still remains one of the least studied groups of Indian fauna. They are known from all zoogeographic regions.

Ecological Significance: Archaeognathans play in maintaining the ecological balance in soil ecosystems. The destruction of soil-habitats should be checked, especially the use of poisonous

chemicals either in the form of pesticides or fertilizers, and discharge of industrial effluents must be controlled. Bush land species feed on lichens and fungi in commensal situations. Archaeognathans have been noted as attacking almost anything that contains food value: paper surfaces, starchy food materials, silk, their own cast skins, other dead insects, cellulose materials etc.

Human Significance: The natural land habitats are being polluted by pollutants and gradually degraded by massive felling of trees. The degraded lands or wastelands with their little or sublevel moisture content invariably lead to the depletion or wipe-out of the fauna inhabiting such areas. Further, excessive and indiscriminate use of chemical pesticides and fertilizers also has the negative impacts, resulting in the loss of habitats and populations and thereby leading to imbalance in soil ecosystem.

Threatened species as per IUCN: There are no threatened species as per IUCN.

Protected species as per WPA (2022): No species of Archaeognatha has been designated as Protected species as per WPA (2022).

Species under CITES: No species of Archaeognathans have been recorded as species under CITES.

Invasive alien species: No species of Archaeognathans have been identified as Invasive Alien Species (IAS).

Gap areas: Wygodzinsky (1952, 1954) described 06 species under 04 genera from India. Silvestri and Carmen Bach de Roca described 02 species each. Hazra & Mandal worked on this fauna and reported few species from Delhi, West Bengal & North East India. Therefore, there is ample scope for explorative inventorying work on this group from other parts of the Indian subcontinent.

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

Class Insecta Linnaeus, 1758

Order Archaeognatha Börner, 1904

Family Machilidae Grassi, 1888

1. *Machilanus insensilis* Wygodzinsky, 1974*
2. *Machilanus lapidicola* Wygodzinsky, 1974
3. *Machilanus schmidi* Wygodzinsky, 1974
4. *Machilanus hutchinsoni* Silvestri, 1936
5. *Graphitarsus surindicus* Carmen Bach de Roca, 1981*
6. *Haslundichilis qadrii* Wygodzinsky, 1952*
7. *Himalayachilis murrensis* Wygodzinsky, 1952*
8. *Allopsontus annandalei* Silvestri, 1911*

Family Meinertellidae Verhoeff, 1910

9. *Machilontus lawrencei* Carmen Bach de Roca, 1981
10. *Machilontus lefroyi* Wygodzinsky, 1974*

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