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Diversity, Species Richness and abundance of Long horned beetles (Coleoptera: Cerambycidae) in Amba forest of Shahuwadi Tehsil, Kolhapur District (Maharashtra) India

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Abstract

Cerambycidae is important Coleoptera families, with over 36,000 species identified under 5,000 distinct genera and 8 subfamilies. Cerambycidae comes from the Greek word "Cerambis", which means "horned beetle".The Cerambycidae family, commonly known as longhorn beetles or longhorns, is a large and diverse group of beetles. Longhorn beetles play good ecological roles as both decomposers and potential pests of trees. Cerambycids are found in diverse habitats worldwide, including forests, grasslands, woodlands and even urban environments. These beetles are associated with woody plants, as their larvae develop within the wood of various tree species. The present research aims to study cerambycid diversity, abundance in Amba reserve forest of Shahuwadi Tehsil, Kolhapur District (Maharashtra) India.They are characterized by their elongated bodies and long antennae. A study was conducted from June 2024 to May 2025 across six selected sites in Amba reserve forest of Shahuwadi Tehsil, Kolhapur District (Maharashtra)India

Keywords: *Cerambycidae, Coleoptera, Longhorn beetles, Amba forest*

Introduction:

The Amba forest is the one of the well known protected areas in the Kolhapur district and famous for wild animals such as Indian bison and is the corridor of Chandoli wildlife sanctuary for tiger. The geography and environmental conditions of the study area is suitable for flora and fauna especially for the insects. It receives high rainfall as compared to other forest areas of Kolhapur district. Western Ghats lies in Maharashtra state and along with a coastline on the Arabian Sea, they are running parallel to Sahyadri Hills, also known as the Western Ghats. The study area is a part of Western Ghats, which has rich number of flora and fauna, especially for the insects. The study area is the suitable for naturally growing plants such as, medicine plants, flowering plants and large trees. Amba forest lies in Kolhapur district and near the boundries of Ratnagiri district. Forest area has suitable environmental conditions such as rainfall, temperature and humidity for the plants and animals especially for insects such as butterfly, grasshoppers, bugs, and beetles. This area is covered with dense lush forest, evergreen forest and mixed forest and also some area covered with grasses. The longhorn beetles belongs to the family Cerambycidae of superfamily Chrysomeloidea.Both the larval and adult stage of insects is serious pests of forest trees and also pests in agricultural field. These beetles are phytophagus or xylophagus in habit. Ghate and coauthors and other workers were published many research papers and short notes on the family Cerambycidae for Maharashtra state as well as India [4-16]. The most diverse and successful insect order, Coleoptera (387,100 species), represents about 38 per cent of all insect species (Zhang, 2011). The Cerambycidae is one of the biggest families of Coleoptera represented by more than 35,000 species described under 4,000 genera (Lawrence, 1982; Švácha and Lawrence, 2014). Sengupta and Sengupta (1981) [25] reported 16 species of cerambycid beetle from Arunachal Pradesh which was reported for the first time from this area. Dwari and Mondal (2018) documented diversity of 13 species of longhorn beetles associated with 12 genera under two subfamilies viz., Cerambycinae and Lamiinae from West Bengal. Basak and Biswas (1985) also recorded 12 species of Cerambycidae from Namdapha wildlife sanctuary of Arunachal Pradesh and in 1993

subsequently contributed to the cerambycid fauna of the state of Orissa. Biswas and Basak (1992) reviewed six species of the genus Apomecyna along with a morpho taxonomic key. Raychaudhury and Saha (2001) [23] revealed 12 species of cerambycid beetles from Buxa tiger reserve of West Bengal.

Study area : Study area (Amba Forest) is a part of Western Ghats, which has rich number of flora and fauna, especially for the insects. The study area is the suitable for naturally growing plants such as, medicine plants, flowering plants and large trees. Amba forest lies in Kolhapur district and near the boundries of Ratnagiri district (**Latitude:** 16.9753549,
Longitude: 73.7963222)

Materials and Methods:

Collection methods: In the study region, majority species of longhorn beetles were collected with the help of Hand Picking method and a few with insect net during the June 2024 to May 2025. Extensive surveys were carried to find out the long horn beetle diversity and their abundance.

Identification of Species: The collected beetles were processed for identification. The specimens were studied using a Stereo Zoom Binocular Microscope (Magnus MSZ-Bi). Collected specimens were identified to species level following key characters provided by Gahan (1906), Maulik (1919, 1926), Cherepanov (1990), Mukhopadhyay & Biswas (2000), Basu (2002) and Mukhopadhyay & Halder (2004) and also by various taxonomic keys and published articles. Based on the checklist information, sub-family, tribe, genera and species distribution across the India were analysed. This analysis was primarily made to understand the general situation of the taxonomic status of the group in the country and to appreciate the need for additional work to make it more comprehensive.

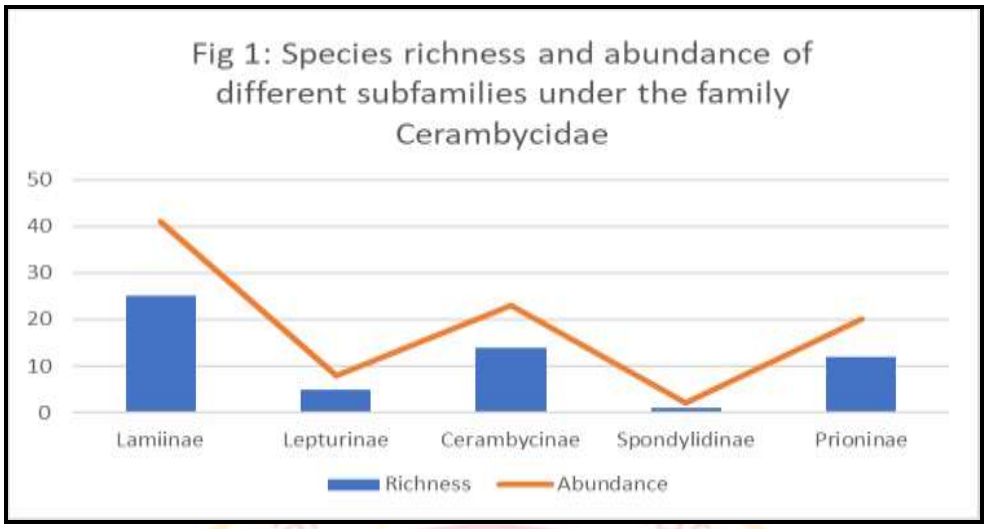
Table No.1: Subfamily wise, Long horn beetles diversity in Amba forest area during May 2024-June 2025

Family	Sub-Families	Tribes	Name of the Species
Cerambycidae	Lamiinae	Apodasyini	*Ropica pedongensis*
			Ropica rosti
			Ropica subaffinis
		Apomecynini	*Apomecyna cretacea*
			Apomecyna histrio
			Apomecyna leucosticta
			Cornallis gracilipes
			Diaxenes dendrobii
		Acanthocinini	*Cristosydonia alterna* holzschuh,
			Eoporis pedongensis Breuning,
			Rondibilis (Striatorondibilis) pedongensis
			Trichohoplorana dureli
		Agapanthiini	*Cleptometopus fuscosignatus*
			Cleptometopus indistinctus
			Eucomatocera vittata
			Palimnodes ducalis
		Mesosini	Mesocacia multimaculata
			Mesosa (Aplocnemia) affinis
		Monochamini	*Acalolepta basicornis*
			Aristobia reticulator
			Blepephaeus arrowi
			Blepephaeus indicus
			Falsagnia obenbergeri

			Hechinoschema spinosa
			Mimoleprodera granulosa
	CERAMBYCINAE	Cerambycini	*Aeolesthes holosericea*
			Aeolesthes indicola
		Callichromatini	*Anubis bipustulatus bipustulatus*
			Anubis bipustulatus fimbriatus
			Aphrodisium (Aphrodisium) cantori
		Callidiopini	*Ceresium declaratum*
			Ceresium lepidulum
		Cerambycin	Aeolesthes (Aeolesthes) holosericea
			Neoplocaederus obesus
		Callidiopini	*Ceresium declaratum*
			Ceresium lepidulum
			Ceresium leucosticticum
		Clytini	*Chlorophorus annularoides*
			Chlorophorus furcillatus
	Lepturinae	Lepturini	*Paranaspia frainii*
			Pyrocalymma pyrochroides
		Xylosteini	*Formosotoxotus masatakai*
			Peithona prionoides Gahan
			Palaeoxylosteus kurosawai
	Prioninae	**Aegosomatini**	***Aegosoma katsurai***
			Aegosoma ornaticolle
			Baralipton maculosum
			Spinimegopis buckleyi
			Spinimegopis delahayei
		Prionini	Prionomma atratum
			Priotyrannus mordax
			Dorysthenes (Lophosternus) indicus
			Dorysthenes buquetii
		Callichromatini	*Anubis bipustulatus bipustulatus*
			Anubis bipustulatus fimbriatus
		Remphanini	Rhaphipodus subopacus
	Spondylidinae	Asemini	Cephalallus oberthuri
	5	19	35

Table 2: Species richness and abundance of different subfamilies under the family Cerambycidae recorded from the study area from January June 2024 to May 2025

Family	Sub-family	2024		2025		2024-25	
		Richness	Abundance	Richness	Abundance	Richness	Abundance
Cerambycidae	Lamiinae	25	41	30	91	45	**132**
	Lepturinae	5	8	7	11	12	**19**
	Cerambycinae	14	23	18	30	19	**53**
	Spondylidinae	1	2	1	2	7	**4**
	Prioninae	12	20	15	25	27	**45**
	Total	**57**	**93**	**26**	**159**	**107**	**253**



Results:

The present study recorded 57 species of longhorn beetles in study area. They belong to 4 subfamilies, 19 tribes and 35 genera of the family Cerambycidae were recorded from June 2024 to May 2025 across six selected sites in Amba reserve forest of Shahuwadi Tehsil, Kolhapur District (Maharashtra)India (Table 1).

As evident from species richness and abundance of different Subfamilies (Table 2) Lamiinae was comprised of the highest number of species (25 species), followed by Cerambycinae (14species), Prioninae (12species),Lepturinae (5 species), Spondylidinae a (1 species) (Fig N0.1).As compared to the number of individuals, again Lamiinae was the most abundant subfamily (43.85% of the total individuals), followed by Cerambycinae (24.57%), Prioninae (21.05%), Lepturinae(8.77%) and Spondylidinae (1.75%). On the other hand, again maximum number of individuals belonged to the tribes Monochamini which contributed (12.28%) of the total individuals, followed by Apomecynini and Aegosomatini (8.77%), Acanthocinini, Agapanthiin and Prionini (7.07%), Apodasyini, Callichromatini, Callidiopini, Xylosteini (5.26%), and other tribes contributes (3.50%),

Discussions:

In this study, 57 species of longhorn beetles belonging to 5 subfamilies and 35 genera were obtained. The subfamily Lamiinae was most dominant, which represents 25 species belonging to 6 genera and 5 followed by subfamily Cerambycinae with 14 species belonging to 8 genera and 6 tribes. subfamily Prioninae having 12 species belonging to 6 genera and 4 tribes. subfamily Lepturinae having 5 species belonging to 5 genera and 2 tribes. Subfamily Spondylidinae with 1 species belonging to 1 genera and 1tribes. The most of the species were collected in rainy season, and they are also collected from different light sources from the forest areas. The diversity of species of Cerambycids family may be increased in in accordance with the availability of rich vegetation and suitable environmental conditions in the forest area.

The present work reveals new information about Cerambycidae family especially for Amba forest of Shahuwadi Tehsil, Kolhapur District (Maharashtra)India. Similarly, Dwari and Mondal (2018) documented diversity of 13 species of longhorn beetles associated with 12 genera under two subfamilies. Sengupta and Sengupta (1981) [25] reported 16 species of cerambycid beetle from Arunachal Pradesh which was reported for the first time from the area. Basak and Biswas (1985) also recorded 12 species of Cerambycidae from Namdapha wildlife sanctuary of Arunachal Pradesh. Later Biswas and Basak (1992) reviewed six species of the genus *Apomecyna* along with a morpho-taxonomic key.

Conclusion:

The present study concluded that the diversity,species richness and abundance of long-horned beetles (Coleoptera: Cerambycidae) in Amba reserve forest of Shahuwadi Tehsil, Kolhapur District (Maharashtra)India is influenced by their ability to adapt to environmental conditions and their seasonal life cycles as the study area has high rain fall during monsoon season. Many long-horned beetle species

were decomposers and woodborer. Their larvae fed on the wood, breaking it down and recycle nutrients back into the soil and ensuring the health of the forest ecosystem. Long-horned beetles are decomposers and are associated with decomposing wood their presence is an indicator of forest health.

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