



Preliminary checklist of Tettigoniidae (Orthoptera) in the Nashik Region, Maharashtra, India

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Abstract

The family Tettigoniidae often called katydids or bush crickets, is part of the order Orthoptera. These insects are found in many places around the world, especially in tropical and subtropical areas like forests, grasslands, shrubs, and farmland. These creatures are important for how plants and insects interact, and they help support the food chain. Survey on Tettigoniids (Long-horned grasshoppers) conducted on 2022 to 2024 from Nashik region. Total six species of tettigoniids reported from these areas. These six species such as *Mecopoda elongata*, *Hexacentrus mundus*, *Hexacentrus unicolor*, *Conocephalus maculates*, *Duceti japonica*, *Phyllozelus siccus*. The current study aims to report tettigoniids from nashik region.

Keywords: Long-horned grasshoppers, diversity, Nashik

Introduction

Biodiversity shows how healthy an environment is and changes as time goes on. Biodiversity is usually considered as the number of different species in an area and how common each species is. Insects are animals that don't have backbones and are part of the arthropod group. They have a tough outer layer made of a substance called chitin (Mohale M.P. *et al.*, 2016) [6]. The order Orthoptera includes insects such as grasshoppers, add names of other members. They are divided into two suborders: Caelifera and Ensifera. Sometimes they are called short-horned grasshoppers, which helps tell them apart from katydids. Katydids have much longer antennae. Grasshoppers are hemimetabolous insects, meaning they go through incomplete metamorphosis. (More S.V. & Nikam K.N. 2016) [7]. Tettigoniidae is a family that belongs to the suborder Ensifera within the Superfamily Tettigonoidea. It has been noted by Srinivasan and Prabhakar (2012) that members of this family are known as katydids or bush crickets. Tettigoniidae have cylindrical and long antennae that are often longer than their body, four segments on their legs, and typically possess sword or sickle-shaped ovipositors, as noted by Rentz & Weismann (1981) [10].

There are about 6000 different species of Tettigoniidae in the world, grouped into 1070 genera, according to Otte (1997) [9]. Out of these 160 species from 68 genera have been found in India, as reported by Shishodia *et al.*, 2010 [11]. Katydids are found in many places around the globe, but most of them live in warm regions like the tropics and subtropics, especially in the tropical areas of the new world, as mentioned by Gwynne (2001) [4]. These insects are an important group within the Orthoptera order and are known to damage various cultivated and non-cultivated crops, according to Usmani *et al.*, (2010) [14]. This group of insects was not well understood before because Tettigoniidae typically occupy plants, as they are mostly active during nighttime. During times when they are not active, they hide in lives or in the soil, (Kevan 1989) [5] using burrows or holes in wood, which makes them hard to catch. These insects eat a variety of things, including plants, seeds, dead

animals, and sometimes other small creatures (Gwynne & Morris 2002) [3].

Present study is meant to create a first list of Tettigoniidae species from Nashik region, which will help in learning more about how many different species are, updating information about them, and supporting future research on their environment and protection.

Materials and Methodology

Study area: Maharashtra's Nashik district is located in the northwest part of the state between 18.33 degrees to 20.53 degrees North latitude and 73.16 degrees to 75.16 degrees East longitude. A height of 565m distinguishes it from sea level. Located in northern Maharashtra, the district covers 15,582 square kilometers. Temperature rise a little in October, but this is followed by a cool season from November to February. During the cool season, daytime temperature are around 28 degrees Celsius, but nights are cold, averaging about 10 degrees Celsius. The air is also very dry during this time. A typical year's rainfall in Nashik district is quite heavy. In the year 2022, Maharashtra which includes Nashik, faced extreme weather conditions. Some areas saw heavy rain, which is between 64.5mm and 115.5mm, very heavy rain, which is between 115.6 mm and 204.4mm and extremely heavy rain, which is more than 204.4 mm, according to the IMD Pune.

Collection, Preservation and Identification

Most Tettigoniids are active at night. Long horned grasshoppers were collected using a light trap, a battery torch and by hand picking during the night. The specimens collected were preserved with ethyl acetate. These killed specimens were removed from jar and kept for relaxation. After relaxation these species properly stretched on spreading board and preserved by dry preservation method. Identification was done by using standard identification keys, Fauna of British India and Orthoptera.speciesfile.org.

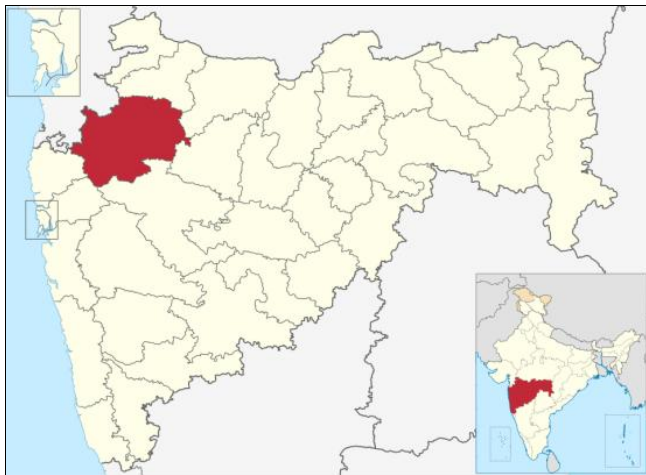


Fig 1: Map of Maharashtra highlighting Nashik Region

Result & Discussion

Tettigonids are important parts of biological communities. They act as both herbivores and predators. Many vertebrates eat them as a main source of animal protein,

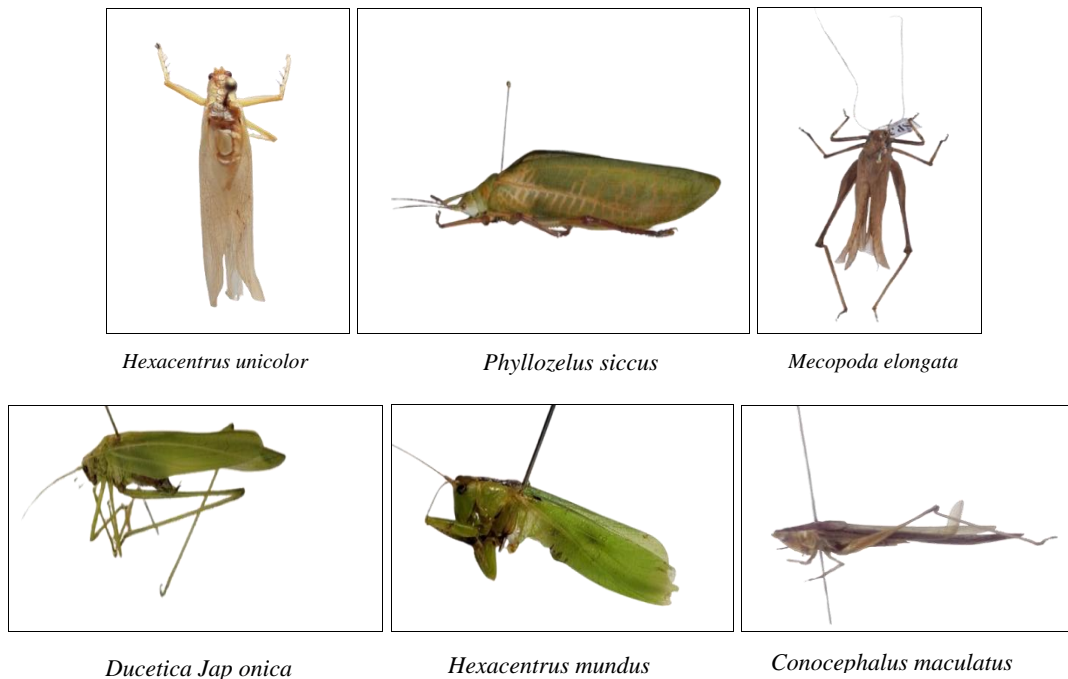
(Naskrecki2000) [8]. These insects can harm agricultural crops, pastures, and forest and they are known for causing a lot of damage all around the world. This family has about 250 different groups and more than 7,000 species that have been identified. Most of them are active at night and live in trees or plants. They use their body shape that looks like leaves to hide from predators. They mainly eat plants, like leaves, flowers, fruits, and seeds, but some also eat both plants and other insects, or even hunt smaller insects.

In the present study, we recorded six species of Tettigonids belonging to five genera, five tribes and five subfamilies i.e. Mecopodinae, Hexacentrinae, Conocephalinae, Phaneropterinae, Psudophyllinae from Nashik region. Earlier eleven species of tettigonids reported from Radhanagari wildlife sanctuary, Maharashtra by Sunil M. Gaikwad *et al.*, 2016) [13]. Similar study carried out on long horned grasshoppers, total seven species are reported by D. Suresh Chand *et al.*, 2022) [1]. There are three species of tettigonids reported from Maval and Haveli Tahsil of Pune (H.A. Dhamakeet *al.*, 2014). In future extensive surveys and collection will be made to several ecological exposure in correlation to tettigonids from Nashik region.

Table 1: List of collected Tettigonids from Nashik region, Maharashtra, India

Suborder	Family	Subfamily	Tribe	Genus	Species
Ensifera	Tettigoniidae	Mecopodinae	Mecopodini	Mecopoda	elongata (Linnaeus 1758)
		Hexacentriae	Hexacentrini	Hexacentrus	mundus (Walker 1869)
		Hexacentriae	Hexacentrini	Hexacentrus	Unicolor (Serville, 1831)
		Conocephalinae	Conocephalini	Conocephalus	maculates (Le Guillou, 1841)
		Phaneropterinae	Ducetiini	Ducetia	japonica (Thunberg, 1815)
		Pseudophyllinae	Phyllomimini	Phyllozelus	siccus

Table 2: Photoplates of Tettigonids



Conclusion

According to the current study on tettigonids population from Nashik, Maharashtra, India, is very distinct. This study reported 6 species of Tettigoniidae family belongs to 5

genera, 5 tribes and five sub-families. This study concludes that some areas of Nashik district shows the diversification of long-horned grasshoppers belonging to the order Orthoptera and family Tettigoniidae. Further exploration in

these areas will contribute to the discovery of more species. These studies represent the preliminary data and checklist on the current status of Tettigoniids from Nashik.

Acknowledgement

The author is very grateful to Prof. Shaikh Yasmeen, Research guide, Dr. Rafiq Zakaria college for Women, Chhatrapati Sambhajanagar for support & guidance and the Principal of Dr. Rafiq Zakaria College for Women, Chhatrapati Sambhajanagar for providing lab facilities.

Financial support: The author is very thankful to Chhatrapati Shahu Maharaj Research, Training and Human Development Institute (SARTHI) for financial support.

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