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A study on the diversity of orthopteran entomofauna in the field of Srimanta sankardev kalakshetra, kamrup metro, Assam India

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Abstract
The order Orthoptera is one of the important order of class insecta having over 20,000 species known globally and more than 1750 species have been recorded from India. Grasshoppers are found in almost all types of habitat including the tropics, temperate grassland, rainforest, desrest and mountains. They play major role in the food chain in the ecosystem. They make a good fish bait and also used as food items in India, Mexico, Japan, Philipines and North America. The present study was carried out in Kalakshetra area, Panjabari, Guwahati, Assam extends to latitude of $26^{0}13^{/}05^{//}$N and longitude $91^{0}82^{/}24^{//}$E,from January-December 2022. The study reveals 18 species belonging to 3 families with 15 genera and acrididae is the most dominant family with 11 species followed by the others.

Keywords: Diversity, Orthoptera, Assam

Introduction

The phylum Arthropoda is the largest phyla of the kingdom animalia. About 1 million Arthropods have been described of which 90% are class insecta. Globally, scientists have identified about 925, 000 species of insect. In the class Insecta, There is an important order is Orthoptera which etymology is “Ortho” means Straight and “Ptera” means wings.The order Orthoptera is one of the important order of class insecta having over 20,000 species known to science globally With more than 1750 species have been recorded from India.They pridominantly tropical distribution with fewer species known from temperature zones. It has two infraorders acrididea and tridactylidea**.** The Acrididae family includes more than 8000 species of grasshoppers and locusts distributed world wide. Grasshoppers are found in allmost all types of habitat including the temperate grassland, rainforest, desert, and mountains. They are two types “short horned grasshopper” (Caelifera) and “long horned grasshopper” (Ensifera). They are hemimetabolous insects. They hatch in the spring and the young one may be seen leaping around in May-june. Nympes moults five times, becoming more similar as adult at each developmental stage. They have filiform types of antenna and hind legs are saltatorial in type. They have the capacity of banding without breaking, cerci are short and unsegmented. ovipositor are well developed in females. Most of the grasshoppers are polyphagous, they eat from multiple plant sources. The grasshopper are cold blooded animals and needs to warm up before they can start their daily activities. There are hundreds of unclassified species of grasshopper, distributed throughout the temperate and warmer regions of the world. They play a major role in the food chain in the ecosystem. They make a good fish bait, either living or dead and they are continue to be used as food in Mexico, Japan, Philippines India and N. America. The Present investigation were carried out in the field of Srimanta Sankardev kalakshetra, The area committes in Kamrup district in the Indian state of Assam. It is situated in the eastern part of the Guwahati city is in Panjabari area. In the North east India it is the largest cultural congregation and it is the major tourist spot in the Guwahati city. It is surrounded by hills on all sides except the Northern sides. It is present in the south bank of the Brahmaputra-river. The total area of the Srimanta Sankardev Kalakshetra is about 17.5 hectares (approx) spread over at Panjabari, Guwahati and geographically it extends to Latitude of 26. 1305° North and Longitude 91.8224° East. The climate is mildly sub-trophical with warm. The Area defined seasons like summer (April to july), Monsoon (june to September) Winter (November to February). The area is furnished with on avarage 1722mm of rainfall per year or 143.5 mm (5. 7 inc) per month. In the month january when avarage of 8 mm of rainfall occurs,and the most wettest month with highest rainfall is July with avarage rainfall 377mm.The annual average temperature is about 24.6 ° c(76 F). The warmest month is August with (32.1 °C) and lowest is January (23.6 °C). In these area-sand soil, Red soil, Black soil are the major soil type in the area. The vegetation commonly grassland, the area is coverd by short grasses and long grasses. The area full of *Origanum vulgare*, Monkey grass, Bermuda grass (short), Bahama grass, Centipede grass in the different side of the area. In the Park the big trees like *Michelia champaca, Aquilaria malaccensis, Mesua ferra, Phyllanthus acidus, Mimuscps elengi*, Mango tree, Cotton etc.

Fig 1: Map of Srimanta sankaradev kalakshetra showing its location

Meterials and method

The study was carried out in the Srimanta Sankardev kalakshetra park at Guwahati city. The methodology used to investigate the diversity were conducted on weekly on that area from January to December 2022, by using the hand picking and sweep net method for collecting the samples in the morning 6-10 A.M evening from 3-5 P.M The Samples were collected randomly by using these 2 scientific methods to capture the most species of grasshoppers. After Collecting the samples were transferred to a killing jar containing Ethanol acetate-soaked cotton after 3-4 minutes the grasshoppers were stretched out and photographed with the mobile phone then preserved in both the wet and dry preservation method. All identified specimens were labeled with their systematic position in the insect box with help of entomological pins (dry method) and 70% alcohol (wet method). The specimens were identified by using various publications of Kirby (1914) [8], various literatures, Internet sources and Books.

Result

During this study period, a total of 18 orthopteran species belong to 3 families and 15 genus were found in the study area. These are Acrididae (11 species), Tettigoniidae (5 Species) and Pyrgomorphidae (2 Species) From all the species 13 species were short horned and 5 species were long horned. Table 1. Showing the list of the speices found in this area with their family and type of antenna and Fig 1. Showing the map of the study area Fig 2. showing the family wise distribution of with a pie diagram. In this study found Acrididae family is the most dominant family with 58% and 11 species followed by Tettigoniidae 32% and Pyrgomorphidae with 10%.

Table 1: List of orthopteran diversity of the study area

SL no	Order	Family	Genus	Species name	Type of Antenna
1.	Orthoptera	Acrididae	Oxya	*O.japonica(Thunberg,1815)*	Short horned
2.				*O. chinensis(Thunberg,1815)*	Short horned
3.				*O. velox(Fabricius,1787)*	Short horned
4.				*O. hyla(Servilla,1831)*	Short horned
5.			Acrida	*A.exaltata(Walker,1859)*	Short horned
6.			Gesonula	*G. punctifrons (Uvarov,1940)*	Short horned

7.			Trilophidia	*T. annulata(Thunberg,1815)*	Short horned
8.			Xenocatantops	*X. humilies (Serville,1838)*	Short horned
9.			Phlaeoba	*P.infumata(Brunner,1893)*	Short horned
10.			Hieroglyphu	*H.nigrorepletus(Bolivar,1912)*	Short horned
11.			Homorocoryphu	*H.nitidulus (Scopoli,1786)*	Long horned
12.		Tettigoniidae	Euconocephalus	*E.pallidus(Redtenbacher,1891)*	Long horned
13.			Mecopoda	*M.elongata(Linnaeus,1758)*	Long hored
14.			Conocephalus	*C.maculatesLe guillou,1841)*	Long horned
15.			Hexacentrus	*H. japonicas(Serville,1831)*	Long horned
16.			Tetrix	*T.spp(Linnaeus,1761)*	Short horned
17.		Pyrgomorphidae	Atractomorpha	*A.crenulata(Fabricius,1793)*	Short horned
18.			Chrotogonus	*Chrotogonus spp(Servile,1838)*	Short horned

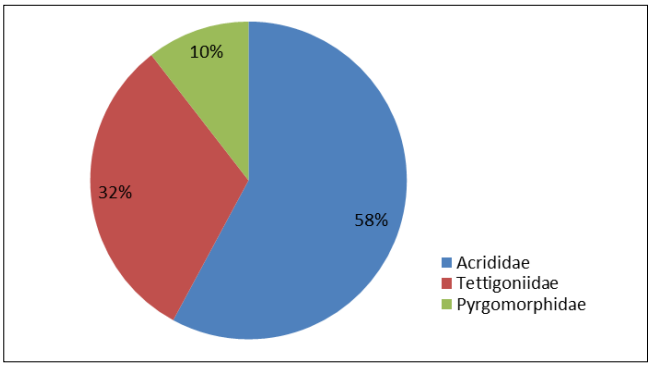

Fig 2: Showing the Family wise Distribution of Grasshopper.

Conclusion

Grasshoppers are the most conspicuous insects found and also among the most injurious to our crops and plants.In the present study we have found 18 species of grasshoppers of three families namely Acrididae, Tettigoniidae, Pyrgorphidae in the selected sites. During the study period the grasshopper species of Acrididae is found more in numbers in the area following the other families. The species of the family Acrididae have many taxonomic importances, they are ecologically important as both predator and pests. They are mostly found in green grass field, dried grass field and some trees in the adjoining areas.They are polyphagous in nature. The species are found more during hot summer seasons (March-August). There are many significance of grasshoppers, they are used in art media, in symbolism, as food in many countries, as a pest in literature, in mechanical engineering. They play a major role in the food chain. In the North east India it is consume by the tribal people as a food. Depending upon the weather conditions and the grasshoppers populations. From the above discussion it can be conducted that in this study area lost of orthoptera species are found some of them are pest of field crops, some of them are economically important species.

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