

Colour Pattern Of Painted Grasshopper, *Poekilocerus pictus* (Pyrgomorphidae: Orthoptera) In SRM College Of Agricultural Sciences, Chengalpattu District, Tamil Nadu

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Abstract

As Far As We Can Tell, Insects Are Very Colourful And Beautiful Animals. In Addition To Its Many Other Functions, Colour Aids In Signalling, Physiological Adaptability, And Predator Defence On An Insect's Body. Moreover, Colour Helps Identify Species And Provides Information In A Variety Of Directions. This Study Provides Unique Information On The Colour Pattern Of Painted Grasshoppers In Baburayanpettai Village, Srm College Of Agricultural Sciences. Located In The Chengalpattu District Of Chennai, Tamil Nadu (India), Baburayanpettai Is A Village. Insect Variety In This Region Is Truly Astounding. The Patterns Of Colour That Cover The Bodies Of Insects Differ. The Class Insecta And The Order Orthoptera Are Where Painted Grasshoppers Are Found In The Animal Kingdom. Painted Grasshoppers Have A Distinctive Colour On Their Body That Makes Them Look Attractive And Seductive. We Collect Data For This Study Using Insect Collection Nets, Field Research, Handpicking Methods, And Direct Observation In Order To Identify Colour Patterns.

Keywords: Color Pattern, Painted Grasshoppers, *Poekilocerus pictus*, Orthoptera, Pyrgomorphidae Caloptropis

INTRODUCTION

The colours of the different body parts of the different species that inhabit our planet vary greatly. Insects belong to the phylum Arthropoda and class Insecta in the animal kingdom. Since grasshoppers are members of the order Orthoptera and have distinctly straight forewings, their name is derived from the Greek words orthos (straight) and ptera (winged). which accurately depict their distinctively straight forewings. Grasshoppers can be identified by these forewings on the mesothorax. Because of its ecological connection to the Aak plant, the painted grasshopper, scientifically known as *Poekilocerus pictus*, is frequently referred to as the "Aak" grasshopper. This species is frequently used as a model organism by researchers to examine the morphology and physiology of insects. The head, thorax, and abdomen make up the segmented body of painted grasshoppers, just like those of other insects. Despite being segmented, the head appears fused, with two compound eyes, three simple eyes (ocelli), a pair of antennae, and mouthparts designed for biting and chewing. Each of the three segments that comprise the thorax is responsible for supporting a pair of legs. The "pterothorax", which includes the last two segments of the thorax, also has two pairs of wings. In contrast to the fragile and membranous hind wings, the forewings, also known as "tegmina," have a slight leathery or leathery-like texture. One of the most important roles of the abdomen is stridulation, which is a one-of-a-kind sound creation that is accomplished by rubbing the veins of the tegmina with the femurs of the hind legs. The abdomen is cylindrical and consists of eleven segments. The majority of the time, painted grasshoppers consume green grass, and because of their colouration, they are able to blend in with their surroundings. Known for their powerful jumping ability, they are able to quickly leap away from any potential dangers that may be present. Because they are solitary, the number of these insects tends to increase during the monsoon season in the location chosen for this study. The three phases of their hemimetabolous life cycle are eggs, nymphs, and adults.

MATERIALS AND METHODOLOGY

Study Space

India is one of the mega-diversity nations having the greatest diversity of insect species. Located south of the Indian subcontinent, where the Western Ghats are found, Tamil Nadu is the state with the most biodiversity in

India. In Tamil Nadu, India's southernmost state, the village of Acharapakkam block, also known as Baburayanpettai, is situated in the Chengalpattu district. Baburayanpettai may be found in 79.73 degrees east and 12.38 degrees north. Tropical humid is the climatic classification for Chengalpattu. Precipitation is substantially less throughout the winter than it is during the summer. This climate, Koppen-Geiger says, is awful. Chengalpattu experiences an average yearly temperature of 27.8 degrees Celsius, or 82.0 degrees Fahrenheit. The overall amount of precipitation per year is 39.2 inches, or 995 millimetres, based on weather data obtained. In this region, there is a great variation in temperatures. Temperatures in this region can range anywhere from 25 degrees Fahrenheit to 96 degrees Fahrenheit. The most distinguishing features of this region are the seasonal variations in temperature and the limited availability of water. Bhendi, brinjal, bitter gourd, ash gourd, snake gourd, moringa, paddy, ragi, and groundnuts are some of the vegetables that are grown in this region. Other crops that are planted here include other vegetables. A large number of canals and ponds have been constructed in order to facilitate irrigation. The average range for humidity is between 60 and 77 percent, however during the monsoon season, it can reach as high as 77 percent. During the study of painted grasshoppers, various equipment was used, including entomological forceps, insect collection nets, killing bottles, spreading boards, entomological pins, cotton, insect preservation boxes, hand lenses, cameras, mobile phones, and microscopes. Nymphs and adults were different in size, so for the study of the painted grasshoppers, specialized technique and apparatus are required. We collected painted grasshoppers using various methods such as an insect net and the hand-picking method. At all times, the hand-picking method was a very common and easiest way to collect the painted grasshoppers. This study will also employ the direct observation method and photography.

RESULTS AND DISCUSSION

The painted grasshoppers produced many colors on their bodies. The nymphs and adults color patterns are varies. We were observing the following colour pattern on the painted grasshopper's body:

Nymph colour pattern. The colors white and blue together antennae have patterns, and the blue-colored complex eyes on the ventral line have a light-yellow tint. The upper surface of each segment of the nymph is covered in three rows of red spots. Three red dot rows are visible, two of which are on the lateral side and one in the middle between them. The painted grasshopper nymph's entire body is covered with dots, both black and yellow. Legs: The three pairs of legs of the painted grasshopper nymph are dotted with black and yellow. Thorax: A red dot is present in each thoracic segment. There are only tiny, immature, pale-colored wings.

The Adult Colour Pattern

The antennae display blue and white colour bars. The antenna's basal segments have a blue tint. After that, one or two segments alternate between the colors white and blue, moving from proximal to distal. The pronotum is located on the dorsal surface of the thorax. Here there are alternating forms of yellowish, blue, and greenish lines. Looking at the head and thorax from above, you can see two yellow lines laterally, with a greenish-blue line existing in between them. Eyes: The ventral side of the compound eyes has a yellow border, and both have a bluish tint. Legs All segments of the legs are yellow, and there are light blue bands on the femur. The femur segments of the six legs each have alternating lines of blue and yellow. The tibia is spined and black. Yellow, green, red, and pink are the colours of the tegmina, often called the forewings. At the basal surface, where they join the mesothorax, these are green in colour. The distal tegmina is pink. Veins on the wings are evident. Despite their pinkish ventral surface, forewing veins are yellow from proximal to distal on the dorsal surface. From the proximal to the distal end, the colour of the membrane-covered hind wings varies from bright green to reddish-orange. The current investigation concurred with Vidhu Priya and colleagues (2024). Abdomen: Yellow and blue-green dorsolateral stripes can be seen on each segment of the abdomen. These bands exist in different configurations. The ventral side is yellow with a pale blue border. The current investigation supported the findings of Hans Raj Parihar and Rajani (2022).

CONCLUSION

According to the aforementioned study, painted grasshoppers have unique colour patterns on the surfaces of their bodies that are unique to nymphs and adults. One of the research's distinctive features is the colour pattern of the painted grasshoppers in the study area.

Nymphs and adults of painted grasshoppers exhibit different colour patterns on the outside of their bodies, according to the previously cited study. One of the distinctive features of the study is the colour pattern of the

painted grasshoppers in the study area. In addition to black and yellow patterns across its body, the nymph bears red spots on each body segment and blue and white bands on its antennae. However, adults have a yellowish-greenish pronotum, blue compound eyes with a yellow lateral line, and a band of blue and white on the antennae. While the forewings of adults are pink in the distal region and green in the proximal region, their membranous hind wings are light pink and green respectively. The adult has yellow and greenish-blue streaks on its abdomen. But the addition of these colourful grasshoppers creates a striking spectacle. These hues allow them to distinguish species, communicate, adapt physiologically, and fend off predators, among other things.

Acknowledgement

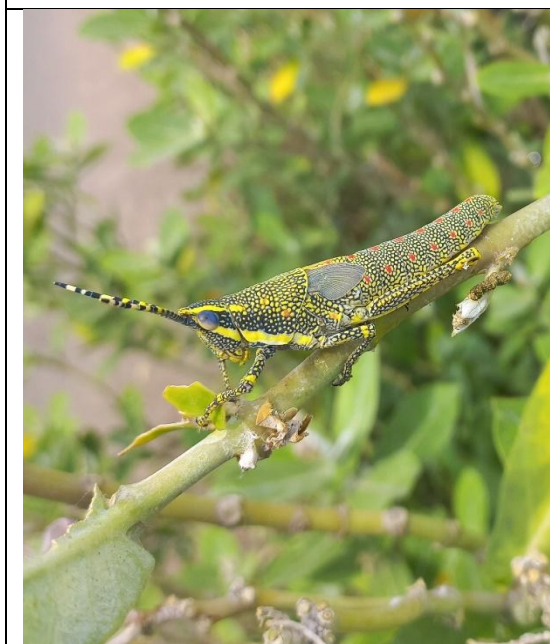
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Calotropis plant with Painted Grasshopper



Adult Painted Grasshopper on Calotropis



Nymphal stage of Painted Grasshopper



Adults of painted Grasshopper

Figure 1 nymphs and adults of Painted Grasshopper, *Poekilocerus pictus* on calotrops plant

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