

# The Magical Voice and Special Characteristics of Gryllidae

Yuldasheva Shokhista<sup>1,\*</sup>, Khamidov Kodirjon<sup>2</sup>

<sup>1</sup>Candidate of Biological Sciences, Associate Professor, Fergana State University, Fergana, Uzbekistan

<sup>2</sup>Doctoral Student, Fergana State University, Fergana, Uzbekistan

**Abstract** In this article, a scientific analysis of the literature on reproduction and development, ecological role and acoustic characteristics of crickets is carried out. In-depth study of this topic will help to better understand the biological importance of the family of crickets, as well as to determine their place in the ecological environment. Insects of the cicada family make sounds by special mechanical means. This process is mainly carried out by rubbing the wings or special parts of the body of the male insect. These sounds perform biological functions such as mate attraction, territory defense and warning of danger. The sound of each species has its own frequency and patterns, which ensure their communication and ecological flexibility.

**Keywords** Gryllidae, Nymph, Vitamin, Pest, Omnivore, Cricket, Predator, Stridulation, Light, Moisture, Temperature, Acheta deserta pall, Vitamin

## 1. Introduction

Gryllidae More than 2 thousand species are known in tropical and temperate regions. Gnats are small to medium-sized insects, around 3-50 mm.

The family of crickets is one of the most interesting representatives of the insect world, and their behavior, reproduction process and developmental stages are important in the study of biodiversity. The way of living, ecological role and acoustic characteristics of these insects in different environments attract the attention of researchers. Chirps are important not only for their unique vocalization, but also for their role in maintaining the food chain and biological balance in their ecosystems.

In natural conditions, crickets are adaptable to their habitat and climate, and their behavior depends on many environmental factors. The sounds made by male crickets to attract females, their evolutionary processes and adaptation to the ecological environment are widely studied in modern scientific research.

## 2. Materials and Methods

The role, scientific significance, advantages and limitations of the following literature in the study of the Gryllidae family are analyzed.

M. Johns (2015) in "The Ecology and Behavior of Crickets" in i character is studied. The habitat, feeding habits and population role of crickets are covered in detail. Written on the basis of observations made in natural conditions. The place of the crickets in the ecosystem provides rich information about and ecological relationships. More attention has been given to cycads in the tropics, and less information has been provided for other climate zones [1].

R. D. Alexander (1962) "Evolutionary Change in Cricket Acoustics" analyzes the acoustic properties of crickets and their evolutionary processes. The mechanism of attracting females through the sound of male crickets has been studied in detail. Provides an in-depth scientific analysis of the evolution of biological signals. Explains the biology of the acoustic behavior of crickets. Research chi studied representatives of several species being, it is difficult to generalize to all species [2].

D. B. Weissman and T. J. Walker (2002) in "The Orthoptera Species File Online" Source of warblers and other is the largest online resource for the classification of insects. The differences between the types and and their classification features are described in detail. Proposes a classification system based on genetic data. Ecological and Behavioral data are sparse. Mainly focused on classification [3].

"The Cricket as a Model Organism" by C. Zimmer (2000) presents research results aimed at studying crickets in laboratory conditions. The work contains a wealth of information on the developmental biology and physiology of crickets. It provides an opportunity to study crickets as a model organism for genetic and physiological research. The researcher is limited from observations in natural conditions,

\* Corresponding author:

sh.k.yuldasheva@fdu.uz (Yuldasheva Shokhista)

Received: Nov. 26, 2024; Accepted: Dec. 22, 2024; Published: Dec. 25, 2024

Published online at <http://journal.sapub.org/ijge>

and more attention is paid to laboratory experiments [4].

B. Hedwig (2014) provides an excellent analysis of the acoustics of crickets in *Insect Hearing and Acoustic Communication*. Provides an in-depth scientific analysis of the physiology of the vocalization mechanisms of male crickets. Study of acoustic signals with the help of new technologies and illuminates the biological and ecological significance of sounds [5].

The above literature covers the ecological significance, developmental process reproduction and vocalization characteristics of rattlesnakes from different perspectives. While Johns and Alexander's research focuses on environmental reproduction and biological processes, Zimmer and Hedwig's work provides a scientific basis for physiological and acoustic research. At the same time, classification reproduction and Weissman's study, which illuminates genetic information, approaches the topic from a classification point of view. The literature is complementary, but there is a need for more extensive research on reproduction and development under natural conditions.

### 3. Result and Discussion

The world of chirping is a wonderful world filled with complex soundscapes. Their unique chirps and songs, the harmony of nature's music have aroused the interest of mankind for centuries. This study explores the complex mechanisms behind the production of chirping sounds, the diverse purposes of their vocal output, and the factors influencing their vocal repertoire.

Crickets, like many other insects, use a mechanism known as stridulation to produce sound. It involves rubbing specialized body parts together to create vibrations that are amplified and transmitted as sound waves. In crickets, the primary stridulatory organs are located on their forewings.

Each forewing has a file, a series of small tooth-like ridges, and a scraping, hardened ridge. When the warbler is about to make a sound, it raises its wings and quickly rubs the file of one wing against the scraper of the other. This friction creates vibrations, which are amplified by the thin, membranous structure of the wing. The resulting sound spreads into the air, creating a familiar crackling sound [6].

Chirp songs serve many purposes, each adapted to specific behavioral contexts.

The most important function of chirping songs is to attract the pair. Male warblers make species-specific sounds that females can recognize. These calls vary in frequency, intensity, and pattern, allowing females to identify suitable mates. The complexity and variety of these songs can be surprising, with some species exhibiting elaborate courtship rituals involving complex vocal exchanges [8].

Male warblers often mark territories and defend them from rivals. They use their chirps to warn their enemies and assert their dominance. These territorial songs are typically characterized by aggressive and repetitive calls designed to intimidate other males.

Some warblers use their songs to warn others of danger,

such as the presence of predators. These warning calls are often loud and urgent, prompting other warblers to seek shelter or try to escape.

Chimps also use sound to communicate with other members of their species. They may share information about food sources, suitable habitats, or potential threats. These social calls are often subtler and less intense than mating or territorial calls [2].

Several environmental factors can affect the frequency and intensity of chirping:

Temperature plays a decisive role in chirping. With the increase in temperature, the rate of metabolic processes in the body of the cricket increases, which leads to rapid contraction of muscles and frequent chirping. This relationship between temperature and ringing speed has been used by scientists to develop temperature measuring instruments.

Humidity can also affect chirping. High humidity can dampen the sound produced by stridulation, while low humidity can cause increased desiccation and reduced activity.

Crickets are usually nocturnal and their chirping is affected by light levels. In most species, is low during the day and high at night.

Female warblers often use their restricted frequencies to signal mating acceptance or to attract males to certain locations.

The ability to make sounds has evolved in crickets over millions of years. Complex structures associated with stridulation are the result of natural selection, as individuals with more effective communication skills were more likely to survive and reproduce. The diversity of chirping sounds reflects a complex interplay between genetic factors, environmental influences, and sexual selection [5].

By studying the behavior and ecology of crickets, they can gain valuable information about the evolution of communication systems and the complex relationships between organisms and environments.

Larvae reproduction, growth, and development include egg, nymph, and adult stages, each characterized by unique physical changes and behavioral adaptations [8].

**Egg stage:** The life of a cricket begins as an egg. The female lays her eggs in soil or plant tissues. The number of eggs may vary depending on the species i.e. it is observed from several dozen to several hundred. Eggs are usually small and oval in shape and are covered with a hard outer shell that protects the developing embryo.

**Nymph stage:** After the incubation period, eggs develop into small nymphs. Nymphs are similar to adult crickets, but their wings and reproductive organs are not fully developed. As they grow, they shed their exoskeleton and go through a series of molting processes. With each molting, the nymph grows in size and develops adult-like characteristics. Nymphs become active as mature and begin to feed on various plant and animal matter.

**Adult stage:** After the final moult, the nymph emerges as an adult caterpillar. Adult crickets are distinguished by their well-developed wings, which they use to fly and to make sounds. They also have reproductive organs that allow

them to mate and offspring. Adult crickets are usually divided into two sexes: male and female. Male crickets are often larger and more colorful than females. Also, the file and used to produce sound in the front wings have special structures known as scrapers. Female crickets have no such structures and they usually make less sound.

**Mating and breeding.** Mating behavior in crickets is a complex process involving a series of courtship rituals. Male warblers use their songs to attract females and females may choose mates based on the quality of their songs. After a pair of crickets have mated, the female lays her eggs in a suitable location. Then the eggs hatch into crickets and the cycle begins anew [9].

In the irrigated farming regions of Central Asia, the steppe warbler (*Acheta deserta* Pall.) is often found. The body length of the male is 10–16 mm. that of the female is 12–20 mm, black; the body is covered with small gray hairs. Hind legs jumper. The blade reaches the tip of the belly. The male rubs his upper wings against each other - making a crunching sound. The organ of hearing is in the front calf. It has long protuberances at the tip of its abdomen. They live in soil cracks, under rocks, or in nests, and some live in houses (house rattlesnakes or black locusts). In the surface layer of Tupro q large (fifth) instar larvae overwinter. Larvae turn into adult insects in April-May. After the wings are formed, a month later, the crickets become smaller galas and lay eggs in soil cracks. In 15 - 20 days, larvae hatch from the eggs and give offspring once a year.

Several factors can affect the rate of development of crickets and: Temperature plays a decisive role in regulating the rate of development. Warmer temperatures can speed up development, while cooler temperatures can slow it down; humidity levels can also affect mold growth. High humidity can cause zambrug' infections and other problems, while low humidity can cause drying.

Sufficient food supply y and and y. Lack of food y can lead to slow growth and not developing.

Crickets play an important role in the ecosystem. They serve as a food source for a variety of predators, including birds, reptiles reptiles mammals and mammals. In addition,

they contribute to soil health by consuming decaying organic matter and aerating the soil.

Chickpeas are farmed kda, and are increasingly popular as a sustainable source of protein. C chickpeas are used to produce protein powder, chickpea flour and other food products.

## 4. Conclusions

By understanding the life and ecology of crickets, we can appreciate their importance in nature and take steps to preserve their habitats.

Crickets are an integral part of nature, but also interesting and useful insects for humans.

---

## REFERENCES

- [1] Johns, M. (2015). \*The Ecology and Behavior of Crickets\*.
- [2] Alexander, R. D. (1962). \*Evolutionary Change in Cricket Acoustics\*.
- [3] Weissman, D. B., Walker, T. J. (2002). \*The Orthoptera Species File Online\*.
- [4] Zimmer, C. (2000). \*The Cricket as a Model Organism\*.
- [5] Hedwig, B. (2014). \*Insect Hearing and Acoustic Communication\*.
- [6] Resh, W. H., & Cardé, R. T. (2009). Encyclopedia of Insects. Academic Press.
- [7] Encyclopedia Britannica: Provides detailed information on a wide range of topics, including crickets.
- [8] The Orthopterists' Society: A society dedicated to the study of Orthoptera, including crickets.
- [9] Kwassay, G. (2014). The Complete Guide to Growing Cucumbers: Revolutionary New Cucumber Growing Systems.
- [10] National Encyclopedia of Uzbekistan (2000-2005).