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Biological Science

DIVERSITY OF FROGS AND TOADS IN AND AROUND SHIVAMOGGA

Shantha A R Assistant Professor, Department of Zoology, Sahyadri Science College, Shivamogga, Karnataka, India, 577203.

ABSTRACT Shivamogga is a district in Karnataka, India, A major part of Shivamogga lies in the Malnad region of Western Ghats. The city lies on the banks of the river Tunga. Being the gateway for the hilly region of the Western Ghats, the city is popularly nicknamed as "Gateway of Malnad.The place is known for its rich diversity of flora and fauna. It receives an annual precipitation of around 1042 mm and an average temperature of 75.5 F to 76.5 F Frog, being a common species in the Western Ghats, is one of the species found in Shivamogga with a lot of diversity. Frog is a major organism in a food chain which is both a prey and a predator and plays an important role in maintaining the balance of an ecosystem. They feed on insects including the ones which transmit human and other animal diseases. Conservation of this sepcies is very important in order to ensure a balance in the ecosystem. This paper attempts to explore the variety of frogs found in and around Shivamogga.

KEYWORDS : Ecosystem, Food Chain, Diversity, Amphibia, Frog, Toad

INTRODUCTION

Frogs and toads belong to the subphylum of the animal kingdom, the vertebrata, a group characterized by the possession of backbone or vertebral column.

Ecology:

Very little is known about the ecology of frogs. However, they play an important role in consuming insects and are an important food source for birds, snakes and other animals throughout the food web. It mainly acts as secondary consumers in many food chains. The tadpoles are found on wet rock surfaces where it feeds in the rocks surfaces for algae or other organic material.

Habit And Habitat:

Frogs and toads are usually both aquatic and terrestrial in habitat. The aquatic forms live in the ponds. The terrestrial forms live on land areas, forests and on leaves of trees. In aquatic forms coetaneous respiration took place so that the skin must be kept moist.

Food Sources:

Frogs are carnivores. They eat insects, spiders, snails, worms, small fish and small land animals such as mice. A frog hunts by sitting motionless, rarely even blinking. When prey walks in or flies by, it opens its mouth and its tongue flicks out and back.

Locomotion:

Locomotion is by leaping, swimming and running. Hind limbs play a major role in all. In leaping and running the hind limbs act like springs, and the frog is thrown high up in the air. In swimming, the hind limbs are also extended back, the toes are spread apart and as the webs between them afford considerable resistance to passing through water.

Behaviour:

Frogs can breathe through their skin if their skin is moist. Most frogs are active at night when the air is more humid. During the daytime, these frogs sit still in moist places, and wait for its prey. Most frogs have sticky tongues that attach in front of their mouth and flip outward. Some frogs, including the position frogs, take a more energetic approach to hunting.

Frogs mate based on the weather. During rainstorms, frogs make their homes in colder climates commonly wait until the temperature is warm and the spring rains have come. For species in dry climatic conditions, the rainy season is the time for making the species call.

Body:

Frogs have 2 arms and 2 legs. The arms have a humerus radius and ulna. The legs have femur and fused fibula bones. The arms have four fingers and legs have five toes. The shoulder blades and collar bones are shaped similar to humans.

Some frogs lack a tongue and use their fingers to catch prey and place it in its mouth. The webbing on the feet of tree frogs covers only a half or less of the length of their toes.Some species of frogs walk but most are powerful jumpers. The hind limbs are strong and long.

Skin And Color:

Frogs usually have smooth skin. Some frogs have spines or tubercles that camouflage them so well they look like moss or lichen. Most frogs have dull colors like brown, green, and gray to camouflage them in their environment.

Some frogs become pale or darker in response to certain stimuli and change their color altogether. The changes occur due to star shaped pigment cells in the skin called chromatophores. Different chromatophores contain different granules of color; some cells have red, some have yellow, some have black and so on.

The outside of the frog is moist. The moistures come from mucus that's secreted by glands in the lower layer of the skin.

Physical Description

Frogs are cold blooded meaning their body temperatures match the temperatures of their surroundings. They are less active in cold weather, when their metabolism slows down. Some frogs produce high glucose concentrations in their vital organs which protects them from freezing weather.

Buckle Pumping

Frogs breathe in an unusual way through a method called buckle pumping. It's a two stroke process, when they lower the floor of their mouth. It draws air in through their nostrils and pulls air from their lungs into their buccal cavity. Frogs have a good sense of smell. Their nose sits on top of the head with eyes and nose both above. When a frog catches prey, the eyes close and drop down into the root of its mouth and help push the food down the throat.

Methodology

Field observations were made thrice in a month for a 2 months period from July 2020 to September 2020. Frogs and toads require careful observations and certain equipment to collect members of abundant species for identification. For identification, we need watching fields, guides, frogs, nets etc. the net must be prepared. A light metal rod is made into a ring of about 8.5 inch in diameter. A long handle is attached to the metal ring. Nylon net is made into a long pouch and stitched to the metal ring. The outer net is closed.

RESULTS AND DISCUSSION

There are around 10 frogs identified in and around Shivamogga. The city is 569m above the sea level and lies on the banks of river Tunga. It is a gateway to hilly regions of Western Ghats and called “Gateway of Malnad”. The following are the frog species identified in shivamogga:

Euphlyctis Aloysii

E. aloysii belongs to Genus Euphlyctis, family Dicroglossidae and Order Anura. These frogs feed on small worms and are commonly called skittering frogs. These have tympanum larger than eyes with little pointed snout. They have full webbing in their toes at their hind limbs and are active at night.

Rhacophorus Malabaricus

R. malabaricus belong to the genus Rhachoporous and the family

Rhacaphoridae. They are about 10 cm in length and males are smaller than females. They are commonly called Malabar gliding frogs. Their body is covered with vivid green without markings and flanks with green reticulation on white background. The webbings in hands and feet are reddish in color. These are found in trees, shrubs, and overhanging vegetation.

Hylarana Aurantiaca

They belong to the genus Hylarana and the family Ranidae. They are commonly called Golden frogs. Their body is dorsum bronze color dotted with black. These have tympanum as large as eyes and thick glandular fold from eye to vent. Flanks are light brown in color. They are found in stream sides, rocks, waterlogged fields, and evergreen forests.

Micrixalus

They belong to the genus Micrixalus and the family Micrixalidae. They are commonly called dancing frogs. They have pointed snouts projecting beyond their mouths. They have dilated toes and fingertips and full webbing can be observed in the feet. They predominantly are found near waterfalls, on rocks and stone streams.

Nyctibatrachus Jog

It belongs to the genus Nyctibatrachus and the family Nyctibatrachaidae. They are commonly called Jog night frogs. Their pupils are horizontal and rhombus, subocular glands prominent. They have digitised toes, skin folds along fingers and full webbing can be seen. They are normally found in streams, on rocks and boulders.

Indirana Semipalmata

These belong to the genus Indirana and the family Ranixalidae. They are commonly known as small handed frogs. Their body is dorsum with short longitudinal glandular folds. They have large tympanum and snouts are rounded without warts. They are about 42mm in size and are seen on land, forest, near moise floor, and rocks in the western ghats.

Nyctibatrachus Dattatreyaensis.

These belong to the genus Nyctibatrachus and the family Nyctibatrachidae. They are commonly called night frogs. They have rounded snouts with prominent Y marks. Males are about 43mm and females 46mm. They are active during night and are found in Dattatreya peeta, baba budan hills, kemmanagundi in karnataka.

Hoplobatrachus Tigrina

H. tigrina belongs to the genus Hoplobatrachus. They are commonly called the Indian bullfrog. Body is green with black patches along with yellow midrib on the dorsal surface and pale yellow on the ventral and divided into head and trunk. They undergo aestivation in summer and hibernation in winter. They are carnivores and poikilotherms. They develop protective coloration to camouflage. Vertebrae are procoelous.

Nyctibatrachus Kempholeyensis.

They belong to the genus Nyctibatrachus and the family Nyctibatrachidae. They are commonly called kempholey night frogs. It is a light brown in color and its belly is off white. It has slightly wrinkled skin and is endemic to the western ghats, in karnataka and kerala. Their fingers and toe discs are round distally.

Euphlyctis Cyanophlyctis

They belong to the genus Euphylctic and the family Dicroglossidae. They are commonly called Indian skipper frogs. They have scarlet pointed snouts and distinct tympanum. Their skin has small tubercles with distinct rows of prores. Brown or olive above dark spotted or marbled. This frog is a very aquatic frog found in marshes, pools and various other wetlands.

Duttaphrynus Scaber

They belong to the genus Duttaphrynus and family Bufonidae. They are commonly called as Fergusons toad. They are terrestrial species and commonly found in India and Srilanka. They usually appear in wet evergreen tropical forest, tropical dry forest, grasslands and rural from land areas.

- Morphology: the skin is rough in nature with spiny skin.
- Food Habit: it feeds by hunting on invertebrates.

Pedostibes Tuberculosus

Belonging to the genus Pedostibes and family Bufonidae, it is commonly called as Malabr tree toad. It has golden iris interspersed with black lines and poisonous glands.

- Habitat - tree hollows and leaf bases containing water.
- Found in - Kudremukh, Agumbe, Anamalais in Kerala and Koyna in Maharashtra.

CONCLUSION

Conservation of frogs and toads in contrast with that of vertebrates takes less importance due to their population size and wide range habitats. The population of frogs and toads are neglected by man. Frogs maintain ecological balance. They are found in the regions of mud, forests and behind rocks. Frogs are diurnal whereas toads are nocturnal.

The wide variety of frogs and toads identified in shivamogga is due to the climatic conditions of the regions. However, due to urbanization, the habit and habitat of the frogs are destroyed which leads to decrease in the number of frogs and toads which can have a profound impact on the food chain.

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