A PRELIMINARY STUDY OF AMPHIBIAN DIVERSITY (FROGS & TOADS) IN A SELECTED REGION OF MUTHANGA WILDLIFE SANCTUARY, WAYANAD DISTRICT, KERALA.

* Vardha Nourin P
** P A Gafoor

Abstract

Amphibians, one of the sensitive ecological indicators, play a vital role in the ecosystem as secondary consumers in many food chains. Their tadpoles have significant impact in nutritional cycling. Adult amphibians are the best biological pest controlling agents. They are small vertebrates, need water or a moist environment to survive and reproduce. This group includes frogs and toads, caecilians, newts and salamanders. Around 40% of amphibian species are threatened with extinction. They play a significant role both as prey and predator. They eat pest insects which benefits agriculture around the world and helps to minimise the spread of many diseases including malaria. A study was conducted in the base camp area of Muthanga Wildlife Sanctuary of Wayanad district, Kerala to know about the amphibian species of that region. A total of 21 species of frogs and toads were noted which come under 8 families. Species diversity of frogs belonging to family Bufonidae (1sps), Dicroglossidae (4sps), Micrixalidae (2sps), Microhylidae (2sps), Nyctibatrachidae (1sps), Ranidae (3sps), Ranixalidae (1sps) and Rhacophoridae (7sps). The main objective is to study the amphibian diversity of the area, their habitat ecology and their IUCN status. Their conservation importance is also noted.

* B.Sc Zoology student, Farook College
** Assistant Professor PG& Research Department of Zoology Farook College

Introduction

Amphibians, animals with dual mode of life, are evolved during the Devonian period, around 370 million years ago (Kentwood D. Wells 2007), developed and dominated during carboniferous era. They are lung breathing animals but make use of their skin also as a respiratory structure. They have smooth and slimy skin which lacks scales. Fertilization is external and depend upon water to complete their life cycle. Majority of them show indirect development with larval stages except pseudophilautus species and bush frog species (direct development). They exhibit high degree of parental care. They are classified in to three.

1. Anura
2. Caudata
3. Gymnophiona

They are one of the most sensitive ecological indicators, inhabiting in terrestrial, fossorial, arboreal and fresh water habitats. They indicate the health of the ecosystem (Blastein, et.al,1994, Sparling, et.al.1995; Boyer and Grue, 1995; Cooke and Ferguson, 1976; Gupta, 1998 and Houlahan, et. Al.2000) but in the last few decades there has been a dramatic decline in their population even in protected areas (Corn, 1994; Blaustein and Wake,1995). Their permeable skin and complex reproductive patterns make them more difficult to survive. This study focuses to enlist them with their ecological habitats.

Materials and Methods

The study was carried out at a part of Muthanga wildlife sanctuary (11.670 N, 76.360E) of Wayand district, an integral part of Nilgiri biosphere reserve. This rain forest connects Bandipur Tiger Reserve and Rajiv Gandhi National Park of Karnataka and Muthumalai Tiger Reserve of Tamil Nadu. It is rich in its flora and fauna. The study was done towards the end of their breeding season. A through search was made in the study area along the streams and other water bodies. The data collection was done daily during morning and evening. Their habitat, time of collection and date of collection were noted. All species were photographed and documented. Data was collected without disturbing their life activities and used a digital camera to record specific events.

Call Analysis :

It is also used to analyse amphibians of the study area. Calls of each species is unique from each other. Frogs and toads produce a wide variety of calls during their breeding period to attract their mates. Calls are usually performed by males to mark their territory and to exhibit their willingness and mating readiness. This type of communication is essential for their survival.

Result and Discussion

During the study period 21 species of 8 families of frogs and toads were observed. The family Rhacophoridae comprises the largest number of species(33.3%) and the lowest number is recorded in the family Bufonidae, Nyctibatrachidae and Ranixalidae (4.8%). Each species is found closely associated with their micro habitat (Justin.A Nowakowski – 2016). The micro habitat of each species and IUCN Red list category are noted. Out of the observed species, 19% belong to Endangered category and 4.8% Critically endangered. Their species wise list with habitat and IUCN status is given below as table – 1

FAMILY: BUFONIDAE				
NO	COMMON NAME	SCIENTIFIC NAME	HABITAT	IUCN STATUS
1	Common Indian toad	*Duttaphrynus melanostictus*	On land, stream sides, rocks, moist places	LC

FAMILY: DICROGLOSSIDAE				
NO	COMMON NAME	SCIENTIFIC NAME	HABITAT	IUCN STATUS
1	Indian bull frog	*Hoplobatrachus tigerinus*	On land, near water bodies, pools, lakes, streams, human settlements, agriculture fields	LC
2	Common skittering frog	*Euphlyctis cyanophlyctis*	In water, ponds, lakes, tanks, streams	LC
3	Kerala cricket frog	*Minervarya keralensis*	On land, near water bodies, stream sides	LC
4	Small cricket frog	*Minervarya sahyadris*	On land, along water bodies, stream sides, agriculture fields	EN

FAMILY: MICRIXALIDAE				
NO	COMMON NAME	SCIENTIFIC NAME	HABITAT	IUCN STATUS
1	Wayanad dancing frog	*Micrixalus saxicola*	Near water bodies, on stones, on rocks, dense evergreen forests	VU
2	Naked dancing frog	*Micrixalus nudis*	Near water bodies, streams	VU

FAMILY: MICROHYLIDAE				
NO	COMMON NAME	SCIENTIFIC NAME	HABITAT	IUCN STATUS
1	Malabar balloon frog	*Uperodon triangularis*	On land, moist deciduous forests, evergreen forests, tree holes, gardens, human habitation	VU
2	Painted balloon frog	*Uperodon taprobanicus*	Burrowing, near water bodies and moist places, deciduous forest, human habitations	LC

FAMILY: NYCTIBATRACHIDAE				
NO	COMMON NAME	SCIENTIFIC NAME	HABITAT	IUCN STATUS
1	VUB night frog	*Nyctibatrachus vrijeuni*	Streams, evergreen patches	VU

FAMILY: RANIDAE				
NO	COMMON NAME	SCIENTIFIC NAME	HABITAT	IUCN STATUS
1	Golden backed frog	*Indosylvirana intermedia*	On land, stream side, dense forest.	NA
2	Bicoloured frog	*Clinotarsus curtipes*	On land, tree base, stream side, forest	NT
3	Fungoid frog	*Hydrophylax malabaricus*	On land, stream sides, rocks, dense evergreen forest	LC

FAMILY: RANIXALIDAE				
NO	COMMON NAME	SCIENTIFIC NAME	HABITAT	IUCN STATUS
1	Half webbed leaping frog	*Indirana semipalmata*	On land, near moist places, stream sides, moist deciduous forest, dense evergreen forest	LC

FAMILY: RHACOPHORIDAE				
NO	COMMON NAME	SCIENTIFIC NAME	HABITAT	IUCN STATUS
1	Malabar gliding frog	*Rhacophorus malabaricus*	On tree and shrubs, evergreen to deciduous forest, plantations	EN
2	Small tree frog	*Rhacophorus lateralis*	On shrubs, twigs, petiole, bark in evergreen and moist deciduous forests, plantations	EN
3	Anil's bush frog	*Raorchestes anili*	On shrubs, moist deciduous forest, evergreen forest, road side vegetation, plantations	LC
4	Variable bush frog	*Raorchestes akroparallagi*	On shrubs, moist deciduous forests, evergreen forests, tea and coffee plantations	LC
5	Large ponmudi bush frog	*Raorchestes ponmudi*	On trees, shrubs, plantations, canopy and higher parts of shrubs	CR
6	Common indian tree frog	*Polypedatus maculatus*	On shrubs and walls, forests, human settlements	LC
7	Wynaad bush frog	*Pseudophilatus wynaadensis*	On shrubs, forest, plantations, human settlements	EN

* CR – Critically Endangered. * EN – Endangered. * LC – Least Concern. * NT – Near Threatened

* VU – Vulnerable. *NA – Not Assessed.

Conclusion

Amphibians are the sensitive ecological indicators of the ecosystem in which each species has its own micro habitat. Conservation of such micro habitats eventually leads to the conservation of all species in that area. Thus it prevents them from the threat of extinction.

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