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INVENTORIZATION OF AMPHIBIAN DIVERSITY FROM BAVALI AND TALEGAON REGION OF RADHANAGARI WILDLIFE SANCTUARY (M.S.) INDIA

More S. B.

P.V.P. Mahavidyalaya Kavathe Mahankal, Sangli (M.S) India
Email: *spiderfauna@rediffmail.com*

Abstract: The Sanctuary area is home to several species, rich endemic flora and harbors different species of fauna. Amphibians are one of the most ubiquitous groups of predators in the animal kingdom commonly found in all terrestrial and many aquatic ecosystems. Baveli and Talegaon region is the part of Northern Western Ghats of Maharashtra. So far no body has worked out or studied the amphibian Diversity from Baveli, Talegaon region of Radhanagari Wildlife Sanctuary and hence we have decide to explore the amphibian diversity from this area. Most of the area is dense semi-evergreen forest with a wide range of flora. The area prevails humid and moderate climate and heavy rainfall This high diversity of habitats responsible for amphibian diversity. For the present study the survey of amphibians was carried out during rainy season (late May to late October). The presence of various species of frogs were noted on the bases of actual sighting, presence of egg clusters (for same species), on their calls. The specimens were obtained along the streams and through patches of forest during day light and early night hours. The most distinct feature of this area is the presence of numerous barons rocky and laetrile plateau called as sadas. Sodas provide good breeding ground for Bufo koynnayensis toads. Sadas are with less perennial vegetation and over hanging clips on the edges and numerous fallen boundaries with dense thorny vegetation .Amphibians from family bufonidae, ranidae, microhylidae ,rhacophoridae and caecillidae were reported.

Keywords: Amphibians, Western Ghats, Radhanagari Wildlife Sanctuary

Introduction:

The Western Ghats area of India is considered as an important biodiversity hot spot. Western Ghats are among the ecologically richest regions of India. The Radhanagari Wildlife Sanctuary covers an area of 351.16 Sq. Kms. The areas included in this sanctuary are reserved forests, protected forests, other government land, gairan and malakipad areas. This Wildlife Sanctuary is one of the important Protected Areas of the Maharashtra State, located in the Western Ghats. The total length of external boundary is 409.98 Kms. A major portion of the external boundary adjoins to the private lands forming the critical are from the protection point of view. The internal boundaries are mostly natural features, live rivers, Nala, Ridge etc. The Sanctuary is in the Western Ghats of Sahyadri mountain ranges. The main geological formation of the area is the Deccan trap. The most of the area of this Sanctuary is a undulating belt, which is characteristic feature of Western Ghats. The plateau region is mostly covered with the grasses. The climate is moderate. During summer the mean temperature ranges from 30^0C to 35^0C, Maximum being 41^0C. The minimum temperature during winter is 9^0C to 16^0C. The mean annual rainfall is about 2500 mm and maximum being 5000 mm. The rivers namely Bhogawati and Dudhganga are the main water source. The loss of diversity is also very severe in agricultural ecosystems. Thousands of wild crop varieties were replaced with a few hybrid species, during green revolution. This resulted in the disappearance of our genetic resources of crop plants especially for wheat and rice, with the disappearance of the plants; the associated micro-organisms and fauna were also lost. Besides this, indiscriminate use of fertilizers and other chemicals reduced the microbial species diversity. Live stock populations have already been homogenized and their diversity is extinct.

Man has always been fascinated by the diversity of life. These amphibian species must be monitored in future for a better understanding to human influences on local extinction [4]. The present study of amphibian biodiversity will be and great

significance from the point of view of diversity of Maharashtra. At Radhanagari Wildlife Sanctuary rainfall is spread over five months from June to October with peaks during July. The present work is to be carried out in the Baveli and Talegaon area. It is based on, personal field observation, study of specimens in the field and previously published records (1, 8, 10, 21, 22, 23, and 25).

Materials and methods:

A survey of amphibians was conducted since June 2009 to 2012 in the entire part of Baveli and Talegaon area of Radhanagari Wildlife Sanctuary in Kolhapur district. A site wise distribution table was prepared and various places visited during rainy season. (Late May to late October). Various species of frogs were studied on the basis of actual sighting, presence of egg clutches (for some species) or their calls. Specimens were obtained along streams and through patches of forest during daylight and early night hours. Rocks were turned, dead leaves scraped, Shrubs and trees were examined. Identification is carried out in the field with the help available identification keys. Record was prepared as per standard checklist and photography.

Results:

The part of Radhanagari Wildlife Sanctuary lies in Kolhapur district contains lakes perennial streams, rain forests grass lands, hill slopes and paddy fields. The high diversity of habitats is responsible for the amphibian diversity in this part of the district. At Baveli and Talegaon region of Radhanagari Wildlife Sanctuary rainfall is spread over five months from June to October with peaks during July. This part of district shows higher amphibian diversity. The high diversity of habitats is responsible for the amphibian diversity in this part of the district [13].

Amphibians comprise a large and diverse class of animals. In India amphibians are mainly known by Anura, which includes frogs and toads. The present study constitutes the observation and study of following amphibian species in various parts of Baveli, and Talegaon region of Radhanagari Wildlife Sanctuary. These amphibian species must be monitored in future for a better understanding to human influences on local extinction.

A. ORDER: ANURA

a) Family:Bufonidae

Genus: *Bufo*

1) *Dattapharynus melanostictus*
2) *Bufo koynayensis*

b) Family: Microhylidae

Genus: *Microhyla*

1. *Microhyla ornate*

Genus: Uperodon

Spherotheca sp. (Burrowing frogs)

c) Family: Ranidae

Genus: *Euphlyctis*

1. *Euphlyctis cyanophlyctis*

Genus: *Hoplobatrachus*

1. *Hoplobatrachus tigerinus*

Genus: Limnonectes

1. *Fejervarys sp.*

Genus: *Rana*

1. *Clinotarsus curtipes*- bicolored frog
2. *Sylvirana temporalis*
3. *Rana ornatica*

Genus: *Indirana*

1. *Indirana c. f. beddomii*

Genus: *Nyctibatrachus*

1. *Nyctibatrachus sp.* - wrinkled frog

d) Family: Rachophoridae

Genus: *polypedates*

1. *polypedates maculate* (common tree frog)

Genus: Philautus

1. *Philautus sp.*

e) Family: Caeciliidae – Gegeneophis sp.

Species account

i) *Hoplobatrachus tigerinus* – Indian bull frog Inhibiting all types of water bodies, especially near the water sources inhabited by crabs' hibernation frogs were encountered from drying ponds rivers at a considerable depth, in the loose moist soil.

ii) *Sylvirana Temporalis* – Bronze frog

The bronze frog can be seen sitting on rocks or logs near streams and also inhabitats like margins of ponds, tanks, among decaying moist vegetation. This speedy creature moves fast on land and in water females are smaller than males. A pale line along the sides and a fold of the skin that runs from behind the eye to its waist are easy marker that can help even amateur naturalists to positively identify the species in the wild.

iii) *Rana ornatica*
It is a median sized land frog. This handsome land frog is recognized by its flashy, bright orange back and contrasting black and white sides and under parts. The adult of this species reach about 8.1 cm in length. The ear drum is large. The tips of fingers and toes are enlarged into small discs and the toes are fully webbed.
iv) *Clinotarsus curtipes* – Bi- coloured frog
This is widely distributed species, inhabiting cool and wet regions of the moist evergreen forests. It is median sized, slow moving frog. The non breeding male has grey back with black markings along its sides, while a breeding male will change to golden yellow back. The adult reach a length of 7.4 cm. the females are larger than the males.
v) *Dattapharynus melanoastictus*- common Indian toad
Distributed near human inhabitations and secondary forests. Generally found near decaying logs and litter with insect colonies. This impressive creature is found nearly every part of India, in both cities and forests. Most individuals have a black line around their eyes, with two rows of warts running from behind to eyes to shoulder. The male is more yellow in the breeding season, which is probably what attracts the large female toads. The adult of species reach a maximum length of 15 cm. and females are larger than the males. The poison glands and the ridge on the head are very prominent. The back is covered with conical warts of various sizes. There are two rows of warts along the hind neck, which are considerably enlarged in adults.
vi) *Microhyla ornata*
This is common species inhabiting all types of habitats. Generally the banks of nallahs covered with grasses and weeds with litter and margins of the paddy fields and under stones form the habitat of this species. The adult of this species reach a length of 2.5 cm. the head is rather small with a narrowly pointed snout. The ear drum is not visible. The webbing on toes is rudimentary. The finger of the toes does not bear enlarged discs.
vii) *Euphlyctis cyanophlyctis* – skipping frog
The skipper frog is a median sized aquatic frog. It is easily identified by its habit of floating in open water. The adult attain a maximum length of 6.9 cm. the females are larger than the males. The eyes are placed more towards the top. The toes are fully webbed. The vocal sacs are external bluish and are visible on either side of the throat as the male call.
viii) *Nyctibatrachus Sp.*- wrinkled frog
The wrinkled frog is a medium sized water frog with enlarged discs on the fingers and toes. The adults of this species reach 3.6–5.4 cm in length. Ear drum is indistinct. There are numerous skin folds on the back. The toes are 2/3 - 3/4 webbed
ix) *Bufo koynayensis*- Koyna toad
Smaller than the common Indian toad. The toad ranges in colour from yellow to raddish black. Sodas provide good breeding ground for *Bufo koynnayensis* toads
x) Caecilian- Legless amphibian Family: Caecillidae: Gegenophis sp

This is an unique group of amphibians and highly specialized for burrowing amphibian reported at Baveli and Talegaon area of Radhanagari Wildlife Sanctuary. The body is elongated, legless and segmented (like that of earthworm). The tail is short and pointed. The eyes are small and covered with skin. Teeth are present. Sensory tactile situated between the eyes , The nostrils on either side of the head. The caecilians are amazing amphibians.

Discussion:

Frogs are often forgotten on platforms where conservation is discuses (6, 10, 17, 23, 26. 27). But this first denizen of the land is a very sensitive indicator of what is happening to the environment. Frogs study and documentation of details is thus a key aspect of biodiversity documentation (26, 27). Once gathered, baseline information can serve as a benchmark against which regular data for monitoring the health of the forest can be judged (4, 20). Once might even say, “Amphibian declines are perceived as one of the most critical threats to global biodiversity Recently, the decline of amphibian species throughout the different localities of the world has attracted considerable attention (2, 3, 5, 7, 12, 13, 18, 25). Needless to say, these creatures need protection, until and unless this happens they face a bleak future (25, 26)

and 27). Radhanagari wildlife Sanctuary provides wonderful vistas of the surrounding landscape. The most distinct feature of this Sanctuary is the presence of numerous barons rocky and laetrile plateau called as Sada. Sadas provide good breeding ground for *Bufo koynansis* toads. There is a fear of amphibian declines around the world in fact severe declines in populations of amphibian have been noted in parts of the world (6, 12, 13). In some cases amphibian declines have been observed in areas totally free from any human interference (18, 19). In the last few years urbanization and industrialization have been major threats causing habitat destruction on a very large scale. Unique races and populations can also be extinct, such species must be counted a biological loss, for the pool of further evolution(26). The amphibian population declines in a affected areas of Baveli and Talegaon region of Radhanagari Wildlife Sanctuary because of Indal mining. Most of the land at Bavali and Talegaon area is malakipad (own land). Amphibians as they possess an intimate contact with many components in natural habitat form the key functional role of many ecosystems and the best indicator of environmental health (3, 24, 4). The factors contributing to such a decline are the natural (Climate and succession) and anthropogenic factors (9, 7, 3, 4, 5). Among these most of the anthropogenic causes are related to habitat alteration and such threats are very apparent in evergreen forests (8). Our observations are in good agreement with above findings. Recently importance is being given to the conservation of amphibians and to the study of environmental resource utilization by different species. However there is little data on the amphibian community's function which is important for conservation (15).

Conclusion:

The part of Bavali and Talegaon area contains lakes perennial streams, rain forests grass lands, hill slopes and paddy fields. But because of many anthropogenic activities responsible for to decline the population and diversity of amphibians in such areas. When bauxite is extracted from earth it should removes all native flora and fauna in the mining region; .this results in to loss of habitat and loss of local biodiversity (30). Amphibians comprise a large and diverse class of animals (9, 16). In India amphibians are mainly known by Anura, which includes frogs and toads (27, 29),.The most characteristic feature of Baveli and Talegaon is presence of caecilians; the legless amphibian from family caeciliidae. Caecilians are good indicator of a healthy, unpolluted ecosystem. The other amphibians from family bufonidae, ranidae, microhylidae, rhacophoridae were reported from this area.

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