Study of Physico-Chemical Parameters and Amphibia Fauna (Anurans) Population of Bada Talab, Parasi at Rewa (M.P.)

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ABSTRACT: **Bada Talab, Parasi at Rewa district were studied in the present study. The pollutants and drastic environmental variation have also adversely effected and changed water qualities i.e. Temperature, hardness, turbidity, alkalinity, pH. COD, BOD and DO etc. Aquatic life, thus, also is affected. Changes in morphology of amphibian, like- colour, pigmentation, length, weight mass, etc. may occur. This cannot be ignored that the afore-mention variation may be responsible to develop new varieties or sub species. Unfortunately, negligible work is done in relation to amphibian fauna of the area in recent-past. Though, appreciable limnological work is done, yet the amphibian fauna remained unexplored. The fauna study is of tremendous significance in determining population density and specific diversity and conservation of ecosystem in Rewa District.**
KeyWords: **Amphibia Fauna, Bada Talab and Rewa** .

INTRODUCTION

Amphibian (class Amphibia), any member of the group of vertebrate animals characterized by their ability to exploit both aquatic and terrestrial habitats. The name amphibian , derived from the Word Greek- amphibios meaning "living a double life," reflects this dual life strategy though some species are permanent land dwellers, while other species have a completely aquatic mode of existence. More than 6,500 species of living amphibians are known. First appearing about 340 million years ago during the Middle Mississippian Epoch, they were one of the earliest groups to diverge from ancestral fish-tetrapod stock during the evolution of animals from strictly aquatic forms to terrestrial types. Today amphibians are represented by frogs and toads (order Anura), newts and salamanders (order Caudata), and caecilians (order Gymnophiona). These three orders of living amphibians are thought to derive from a single radiation of ancient amphibians, and although strikingly different in body form, they are probably the closest relatives to one another. As a group, the three orders make up subclass Lissamphibia. Neither the lissamphibians nor any of the extinct groups of amphibians were the ancestors of the group of tetrapods that gave rise to reptiles. Though some aspects of the biology and anatomy of the various amphibian groups might demonstrate features possessed by reptilian ancestors, amphibians are not the intermediate step in the evolution of reptiles from fishes.

The Global Amphibian Assessment (GAA) represents the first time that every known amphibian species has been evaluated in order to assess its risk of extinction and distribution. More than 500 scientists from over 60 countries contributed to the three year study. The study's results provide the best baseline for monitoring global amphibian conservation, and will be used to design strategies to save the world's rapidly declining amphibian populations. The GAA analyzed all 5,743 amphibian species known to science. It found that:

• At least 1,856 species are considered threatened with extinction, representing 32 percent of all amphibian species. By comparison, 12 percent of birds and 23 percent of mammals are threatened.

• At least nine species have gone extinct since 1980. Another 113 species have not been found in recent years and are considered to be possibly extinct. Scientists suspect that many species have declined due to chytridiomycosis, a disease found primarily in the Americas, the Caribbean, and Australia. These numbers suggest that we are experiencing an epidemic number of extinctions hundreds of thousands of years' worth in just a century.

• 43 percent of all species are in population decline -fewer than one percent is increasing. Twenty-seven percent are stable, and the rest are unknown.

• 427 species are considered Critically Endangered (CR), 761 are Endangered (EN) and 668 are Vulnerable (VU). More information on these categories appears on page four of this fact sheet.

• Scientists estimate that the conservation status of 435 amphibian species has worsened since 1980.

Amphibian species are particularly sensitive to environmental change. They are often the first animals to noticeably decline in areas just beginning to experience environmental degradation. For this reason, amphibians are considered to be important *bio-indicators*, meaning that the status of their populations can be used to monitor the health of the surrounding ecosystem. While deforestation and pollution are two well-known causes of amphibian decline, some species are undergoing declines in seemingly undisturbed habitats. These population changes may indicate environmental deterioration that otherwise would not be visible. Some scientists believe that the subtle environmental changes created by global warming could be contributing to these mysterious die-offs, with sensitive amphibian species suggesting the fate of other forms of life.

Description of study area: Study was carried out at bada talab parasi at rewa district (M.P.) India the area is situated between latitude 20^0 18 and 25^0 12 N and longitude 81^0 20 and 82^0 18 E. the big talab of this area bada talab, Parasi the water from this pond is mainly used for the cattle washing, clothes washing, irrigation and other domestic purpose.

MATERIALS AND METHODS:

The water samples were collected during August 2013 to July 2014. The Method of water analysis would be adopted as per APHA standard method. Eleven Physico-chemical parameters were analyzed and Amphibians were grouped accordingly. Amphibian, collected seasonally, from all polluted and non-polluted selected sites by hand picking or fishing nets and would be preserved in 5-10% formaldehyde in glass or plastic bottle. Authentic keys for identification and classification of amphibian would be used. The key for identification of amphibian is available in ZSI Jabalpur and Calcutta would be taken. Boulenger (1990), Amphibia fauna of British India, Annandale (1919); Dutta (1997) etc would be sought for amphibian identification.

Reason for amphibian decline is exposure to chemical contaminants and in general decrease in fresh water quality. Permeable skin of amphibians is allowing easy accumulation of pollutants into their body (Ross, A.A, et.al., 1999). Pesticides are influencing species behavior by reducing the feeding activities and predator avoiding. It also leads to weaker immune system and can increase amount of malformations (Chanson, J., et.al. 2008).

RESULTS AND DISCUSSION:

The present investigation is planned to emphasize of physico-chemical component with fresh water amphibian fauna of Bada Talab, Parrasi. The physico-chemical and biological parameters do not show favorable effect on the amphibian fauna of study area, but decline of amphibian (anurans) population is also marked due to pollution and progressive eutrofication of the water bodies. Thus the water bodies are not suitable for the good of amphibian fauna. Fresh water bodies of the Bada Talab, Parrasi at Rewa district, present the maximum diversification regarding amphibian fauna. In the present study it is noticed that the protected areas play an important role in conservation of amphibian fauna. River sections with forest areas and heterogeneity in substrates shows maximum diversity Efforts would be made to find out the factors relating with the decline or increase in the biodiversity, for morphological variations and populations density.

Table- : Mean value of physico-chemical parameters of the Bada Talab Parasi at four sampling stations (August 2013 to July 2014).

S.N.	Temp. of water(^{0}C)			pH value			Total Alkalinity (mg/l)			Hardness (mg/l)			Turbidity (NTU)			DO (mg/l)			BOD (mg/l)			COD (mg/l)		
	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
S_1	36.6	17.4	28.6	8.5	7.4	7.9	166	88	125	92	80	85	288	12	48	8.6	5.2	7.3	37	8.0	16	40	20	29
S_2	38.8	22.0	30.0	8.4	7.4	7.5	138	96	119	98	70	84	286	16	92	9.6	5.4	7.5	38	8.0	16	60	22	34
S_3	38.0	20.8	29.4	9.3	6.8	8.2	300	108	163	172	76	128	572	52	203	74	3.0	5.0	476	78.0	243	582	112	287
S_4	38.0	20.0	31.0	10.6	6.0	8.7	316	76	150	142	38	92	660	57	232	8.0	1.6	3.8	950	82.0	501	992	142	591

The study will provide information of water pollution and morphological variation with population density of amphibian fauna. The population density of amphibian may help to know about the species which may be endangered, or at the verge of extinction in the locality. Due to pollution, human invasion and production of selective many species of amphibian has fallen to alarming level, because of this also the biodiversity of this region has become unaffordable. The decline in amphibian population is a major concern throughout the world. The causes of catastrophic decline vary and include diseases, increased exposure to UV-B radiation, impact of urbanization, habitat destruction, pollution and specimen hunting Gupta (1975). As amphibian inhabits both terrestrial and aquatic habitats, a change in either or both the ecosystem can lead to a catastrophic effect in amphibian diversity.

Thus, the widespread approach of surveys and preparation of checklist should be combined with quantitative estimates so as to devise potential conservation measures. Monitoring and occurrence of amphibian fauna of Gwalior-Chambal region with impacts and their populations have been a basis for assessing the effect of environmental impacts (Saxena 1988). Amphibian fauna of an area may disappear for reasons such as habitat alteration, pollution and over fishing. To have an insight into the various threats that contribute to the decline of a species or an assemblage of species, there has to be a basis data of the distribution and abundance of the species of an area, such information could be the basis of evaluation of past, present or future change in the species composition and abundance of the amphibian fauna. Distribution, population and present status of their species were also studied in this region, however it more extensive survey.

As a result of the extensive survey of the study area since from August 2013 to July 2014, I documented the presence of 09 species of frogs belonging to 07 genera and 4 families Family Ranidae was the most dominant with 65% of the total anuran species. Microhylidae is the next contributing 22%, while Bufonidae and Hylidae,

contributed to 8% and 5% respectively. Though Ranidae contributes only 65% of the total anuran species, its abundance is high.

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