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Population Studies on Snails

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ABSTRACT

Jodhpur city have a large number of natural and manmade water bodies in which different variety of aquatic snail fauna present. The population study from May 2019 to March 2020 was undertaken in Ranisar Pond at Jodhpur. The time period was divided into three seasons, summer (Mar, May, Jun), monsoon (Jul, Aug, Sep, Oct) and winter (Nov, Dec, Jan, Feb). The following molluscan species were identified – *Lymnea accuminata, Indoplanorbis exustus.* The highest population of these molluscs was recorded during the monsoon season. The population of *Lymnea accuminata* was higher as compare to *Indoplanorbis exustus*. A comparative account of the limnological studies by previous workers and the present investigation indicates that Ranisar Pond which was built in 1459 for the conservation of natural water is being polluted by human activities.

Keywords : Ranisar Pond, Molluscs, Population, *Lymnea accuminata, Indoplanorbis exustus.*

INTRODUCTION

Most of the gastropods and pelecypods (bivalvs) represent the fresh water habitats for molluscs. Molluscs are unsegmented coelomate animals found almost in all fresh water habitats. Fresh water snails are in cluded as an interesting addition to many ponds and aquariums. They are very peaceful animals and should not be housed with any other animals that may eat or harsh them. It is need less to emphasize upon the importance of ecological studies on the aquatic molluscs for their role in agriculture as well as vectors which spread well known pathogens causing various dreaded disease.

In the life cycle of digenetic trematodes the molluscs usually act as intermediate host for metacercariae of the same or different trematode species. LUHE (1909) was the first who classify the cercariae into five groups as monostome, amphistome, distome, lophocercouse and gastrostome. CHINTAWAR(1975) studied the biology of *I.planorbis*. NASIR AND ERASMUS (1964) made a survey on cercariae of British fresh water molluscs. GAUTAM(1982) reported nineteen cercariae on Jayakwadi project. A considerable work has been done on larval trematodes of fresh water snails in various part of the world, but no major attempts have been made in western Rajasthan except the work of NAMA & BHATNAGAR (1990).

MATERIAL AND METHODS

For the population study the snails were collected from a fixed point of the pond. The samples were collected at an interval of thirty days for 11 months i.e. May 2019 to Mar 2020, then this period was divided into three main seasons like summer (Mar, May, Jun), monsoon (Jul, Aug, Sep, Oct) and winter (Nov, Dec, Jan, Feb). This division helps in the study of seasonal variation of molluscan population.

COLLECTION OF SNAILS

Studies on cercaria commenced with collection of first intermediate host snails. They were collected either

handpicking or dragging a net through water and were transported to the laboratory. The snails were then transferred to glass water bowls and well aerated aquaria already provided with rich water plants like *Vallisneria, Spirogyara, Chara, Hydrilla*. In the laboratory most preferably the same because the purified tap water supplied to the laboratory proved to be unstable.

IDENTIFICATION OF SNAILS

The snail species were identified according to TONAPI (1980) and with the help of ZSI, Jodhpur. Biotic factors include different typed of snails found in Pond. These snails were identified on the basis of shell *Lymnea accuminata* and *Indoplanorbis exustus* were identified during study period.

1. *Lymnea accuminata :* Shell of *L.accuminata* is thin smooth and semitranslucent. The body whorl is inflated and sperture is large, wide and spirally twisted. Shell of this species is extremely variable especially in the proportions of the breadth to the height. They are herbivorous in nature.
2. *Indoplanorbis exustus :* large tick depressed, discoidal and more or less concavely flattened shell is identification point of it. The whorls are concave and three in numbers. Shell of this snail is greenish brown in color. They are herbivorous in nature.

TABLE 1: POPULATION STUDY OF SNAIL (April Lockdown Period)

MONTH	DIFFERENT TYPES OF SNAILS FOUND IN RANISAR		
	L. accuminata	I.exustus	Total
May 5	8	5	13
June 5	-	8	8
July 5	7	-	7
August 5	9	-	9
September 5	-	9	9
October 5	7	-	7
November 5	6	2	8
December 5	5	2	7
January 5	-	5	5
February 5	6	2	8
March 5	-	7	7

TABLE 2: SEASONAL POPULATION STUY OF SNAIL (April Lockdown Period)

Season	*L. accuminata*	*I. exustus*	Total
Summer	8	20	28
Monsoon	23	9	32
Winter	17	11	28
TOTAL	48	40	88

TABLE 3: STUDY OF CERCARIAL INFECTION (April Lockdown Period)

MONTH	SNAIL POPULATION (per sq. ft.)	SNAIL EXAMINED			SNAIL INFECTED			% OF INFECTION			TYPES OF INFECTION	
		L.a.	I.e.	Total	L.a.	I.e.	Total	L.a.	I.e.	Total	L.a.	I.e.
MAY	13	8	9	17	4	1	5	50.00	11.11	29.41	1 Amphi, 2 gymno	2 furco
JUNE	8	12	6	18	2	2	4	16.66	33.33	22.22	2 redia	1 meta
JULY	7	10	4	14	2	-	2	20.00	00.00	20.00	3 xiphidio	2 amphi
AUGUST	9	7	6	13	1	1	2	14.28	16.66	15.38	-	1 gymno
SEPTEMBER	9	9	8	17	-	1	1	00.00	12.50	5.88	-	-
OCTOBER	7	13	6	19	12	2	14	92.30	33.33	73.68	2 amphi	-
NOVEMBER	8	14	9	23	3	-	3	21.42	00.00	13.04	2 furco	1 redia
DECEMBER	7	7	14	21	1	-	1	14.28	00.00	4.76	1 meta	1 xiphidio
JANUARY	5	23	5	28	2	1	3	8.69	20.00	10.71	-	-
FEBRUARY	8	17	9	26	-	3	3	00.00	33.33	11.53	-	-
MARCH	7	16	11	27	1	3	4	6.25	27.27	14.81	1 gymno	2 redia

RESULT

From Table 1, it was found that *L. accuminata* was present for 7 months and *I. exustus* was present for 8 months. The highest population of *L. accuminata* was in the month of August and least in the month of December. The highest population of *I. exustus* was in the month of September and least in the month of November, December and February. Table 1 also shows that in some months molluscs were totally absent i.e. *L. accuminata* was absent in June, September , January and March while *I. exustus* was absent in July, August and October.

Table 2 represent for seasonal variation of snails. Highest population was recorded in monsoon season due to favorable condition. Total recorded population was 32 in which *L. accuminata* population was 23 while *I. exustus* population was 9. The highest population of *L. accuminata* was 23 in monsoon season and lowest population was 8 in summer season. The highest population of *I. exustus* was 20 in summer season and lowest population was 9 in monsoon season.

Table 3 represents cercarial infection.

In *L. accuminata* cerciral infection found were amphistome, gymnostome, redia, xiphidio, meta and furco out of which amphistom, gymnostome and xiphidio was most prevalent.

In *I. exustus* cercarial infection found were amphistome, gymnostome, redia, xiphidio, meta and furco out of which redia was most prevelant.

DISCUSSION

This study has revealed that the highest number of snails was observed in Monsoon season due to favorable condition and plenty of water while the % of infection was highest in October 2019 which was 73.68 % more than the rest.

Declaration: *We also declare that all ethical guidelines have been followed during this work and there is no conflict of interest among authors.*

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