A survey of freshwater bodies at various locations in Aurangabad city and nearby places was carried out to have information on gastropod mollusks dwelling there. It was observed that few spots had no the snail population. Specifically snails preferred shallow water, lentic (stagnant water) and lotic (shallow running water) habitats, whereas land slug was available in moist soil of agriculture farms. In preliminary survey eight species of Gastropod mollusks were recorded from these diverse habitats. All the species were identified with taxonomic classification by experts of Zoological Survey of India (ZSI) at Pune. The collected species of freshwater habitat are Lymnea acuminate, and L. bicala (Templeton,1858), Tarebia lineate (Grey,1828), Indoplanorbis exustus (Deshayes,1854) are of lotic habitat and land slug Laecicaulis als (Ferusae, 1821), Achatina fulica (bowdich,1822) giant snail . are terrestrial ones Most of the snails are widely distributed in various aquatic habitats with wide range of ecological parameters tolerance. However, the few species L. acuminate, L. leucomela, and Tarebia lineate were found only in stagnant waters, i.e lentic habitat These gastropod snails are representatives of diverse freshwater ecological habitats.

INTRODUCTION

The phylum Mollusks comprises the soft bodies' animals with or without calcareous shell adapted to almost all habitats with varied ecology. The gastropods are an extremely diverse group, potentially making classification a difficult undertaking. They are divided into three major subclasses: Prosobranch, Opisthobranchia and Pulmonates. The two freshwater groups Gastropod and Pelecypoda, the former is divided further into two subclasses – Prosobranchia having gills for water respiration and the other Pulmonates possess lungs for aer respiration. A large number of Gastropods today varies from 80,000 species to 1, 35,000 species and the total diversity possibly as high as 2, 00,000. They are second only to arthropods in species richness (Strong et al., 2008). 5070 species of Mollusks are reported from India. The diversity is contributed mainly by marine mollusks, whose knowledge is far from complete. The global freshwater gastro pod fauna is estimated at approximately 4,000 described species, however, the total number is probably 8,000 (Strong et al., 2008). Mollusks are studied often for their beautiful shells, as source of nutritive food, as host for helminthes parasites and economic roles they have in human history. The gastropods mollusks as important part of the ecosystem, and many aquatic animals thrive on them. Gastropods, including slugs and snails are the most successful of all mollusks, and are of special concern in that they serve as intermediate and as paratenic hosts of a variety of helminthes parasites causing: diseases in man and domestic animals. Mollusks have particular importance in that in them form valuable fisheries in various parts of India as they are being used as food, as a source of lime, pearls and decorative shells, and as constituents of medical preparations. Most freshwater gastropods are micro-herbivorous and/or micro-omnivorous grazers feeding on bacterial films, algae and diatoms, but there are a number of exceptions: the predominantly marine Buccinidae, Marginellidae and Acocchilidiida and the entirely freshwater Glaciorsibidae are predators; Viviparidae and Bithyniidae are endotel suspension feeders at least in part; Ampullaridae are primarily macro herbivorous and are also known to feed on bryozoans and Planorbididae eggs. There are no pelagic/nektonic or parasitic species, with the great majority being benthic crawlers.

In India various freshwater snail species have been reported from different geographical provenance. Subba Rao and Mitra (1979) made a survey on land and freshwater mollusks of Pune district (Maharashtra) and collected a total of about 130 species/varieties falling into 22 families and 51 genera, also snail species belonging to diverse aquatic habitat have been reported (Ray and mukharjee,1963).Choubisa and Sharma,1982,1986,Rathore and Bohra,1987). Many Molluscs species are also used as bio-indicator for the paleoenvironment as well as water quality or pollution control on the basis of their power toler ance against the extremes condition on physio-chemical parameters of water quality (Harmon, 1974; Edmondson et al.2010, Druat et al.2011). The adaption of an ecosystem and its inhabitants to both natural & disturbance of anthropogenic (Joshi,1995). This study provided the bio-indicator should insight into potencies & casual mechanism. In India aquatic as well as terrestrial species of mollusk is present. Some workers have also reported that certain gastropods species Pelecypoda for the different regions tropic stages (Eutrophic, Mesotrophic and Oligotrophic) as well as lentic and eutrophic environments (Clarke, 1979, Choubisa, 1992). Lot of research has been done in mulluscans gastropods particularly freshwater species and very less attention has been paid on garden snail & slugs also studied from Maharashtra.(Chavhan , Pawar ,2011, Jadhao ,2015). This

KEY WORD: Freshwater,Gastropods, lentic and lotic water.
RESULT AND DISCUSSION

Collection of more than 100 snail specimens from different ecologically diverse freshwater habitat as well as land snail, slug etc. Nine snail species were detected and identified. The species were identified with taxonomic classification by experts of Zoological Survey of India (ZSI) at Pune. Some of those are Pulmonate and some are Operculate Family like Viviparidae, Bellamya bengalensis, (Lamarck,1882). B. dissimilis (Muller,1774). family Lymneidae. Lymnaea acuminata, (Lamarck,1822). L. leuteola (Lamarck,1822).Family Veronicaeidae, Laevicaulis alte.(Ferussac,1821).Family Thiariidae, Tarebia lineata (Gray,1828).Family Planorbidae Indoplanorbis exustus (Deshayes, 1834).Family Achatinidae, Achatina fulica (Bovdich,1822). Among these all snail species were found to be widely distributed in lentic, lotic and lands habitats, some species entirely or nearly restricted in particular areas only. Such as Lymnaea acuminata species inhabited mostly lentic and were as Lymnaea leuteola was found to be restricted area only lotic water. Namely Viviparous Bellamya bengalensis and B. dissimilis is a widely distributed and survival in various aquatic habitat. The Lymnaea acuminata, L. leuteola, Tarebia lineata are highly habitat specific they prove to bio-indicator of ecologically diverse aquatic habitat. Laevicaulis alte is a species of tropical land slug, a terrestrial pulmonate and Achatina fulica is garden snail.

However, for the further confirmation snails on particular habitats in the freshwater as well as land. The species such survey in different geographical regions is recommended. The individual classifications and identification key characters of snails and distribution in various countries are as following.

Systematic position and key characters of snail species

Species:- Bellamya bengalensis: (Lamarck,1822)

Phylum- Mollusca, Class- Gastropoda, Order- Architaeniogloss
Family- Viviparidae, Genus- Bellamya

Species- bengalensis

Key and characters

The shell of B. bengalensis is more or less oval in shape and acuminate. The upper part of the shell slightly conical rather than conical. The body whorl is even convex in profile. It is slightly oblique. The ground color is greenish and opaque. The operculum is moderately thin and of a deep brownish complexion. The external surface is convex, the outer margin strongly curved, the inner margin slightly sinuate and the posterior extremity bluntly pointed. This snail gives birth to a large number (30-120) of fully developed young's.

Distribution: INDIA, Maharashtra, Madhya Pradesh, common to northwestern India from Allahabad to Punjab and west to Mumbai.

Species:- Bellamya dissimilis:(Muller,1774)

Phylum- Mollusca, Class- Gastropoda, Order- Architaeniogloss
Family- Viviparidae, Genus- Bellamya

Species- dissimilis

Key and characters

The shell somewhat conic, smaller, narrowly and deeply umbilicate. Dark spiral band. With faint microscopic spiral striae. Body whorl subangulate at the periphery, rim of aperture often black.

Distribution. INDIA: Maharashtra, Madhya Pradesh, Orissa, Pondicherry and common to northwestern India from Allahabad to Punjab and west to Mumbai.

Species:- Lymnea leuteola (Lamarck, 1822)

Phylum- Mollusca, Class- Gastropoda, Order- Hygrophiola
Family- Lymneidae, Genus- Lymnea

Species- leuteola

Key and Characters

Shell thin and longish, whitish and translucent. The body whorl is large with oval shaped aperture. This freshwater mollusk is usually found attached to aquatic vegetation in lentic habitats.

Distribution: Widely distributed throughout south and Southeast Asia. It is very common and a widespread species with locally abundant population. It is a pest of paddy and aquatic plants (Azola) which are used to produce bio fertilizer in West Bengal, India (Subba Rao 1989). This species is used in research.

Species:- Lymnea acuminata (Lamarck.1822)

Phylum- Mollusca, Class- Gastropoda, Order- Hygrophiola
Family- Lymneidae, Genus- Lymnea

Species- acuminata

Key and characters

Shell thin, Semitransparent, Ovate with a short acuminate spire, body whorl much inflated, a little angular above, Aperture large and collumella twisted.

Distribution: INDIA; Maharashtra, Madhya Pradesh and common thought India

ELSEWHERE: Bangladesh, Myanmar and Pakistan.

Species:- Tarebia lineate (Gray, 1828)

Phylum- Mollusca, Class- Gastropoda, Order- Sorbecoconcha
Family- Thiariidae, Genus- Tarebia

Species- lineata

Key and Character

Tarebia lineate is a predominantly freshwater snail. It has a dextrally coiled, elongate-conical shell, with 8-12 whors. The apex of the spire is usually eroded and the sides are concave in outline. He shell is sculptured with prominent nodes overlapping the suture between whors and forming crenulations the base is marked with prominent spiral ridges. Adults range from 6 to 40 mm, but more normally reach 20-35 mm.

Distribution: INDIA; Maharashtra, M. Pradesh, Thought the plains of India

ELSEWHERE: Celebes, Indochina, Java, Malaya, Myanmar, Pakistan, Persia, Srilanka and Thailand.

Species:- Achatina fulica (Bowdich, 1822)

Phylum- Mollusca, Class- Gastropoda, Order- Systellimatophorida
Family- Achatinidae, Genus- Achatina

Species- fulica

Key and Character

Conical shell, twice as high as it is broad. Either clockwise (dextral) or counter-clockwise (sinisterly) directions can be observed in the coiling of the shell, although the right-handed (dextral) cone is the more common. Shell coloration highly variable and dependent on diet. Typically, brown bands running across the spirals. The adult snail is around 7 centimeters (2.8 in) in height and 20 centimeters (7.9 in) or more in length. The shell is particularly tough and has the highest heavy metal content of any snail species.

Species:- Laevicaulis alte (Ferussac, 1821)

Phylum- Mollusca, Class- Gastropoda, Order- Systellimatophorida
Family- Veronicaeidae, Genus- Laevicaulis

Species- alte

Key and Character

Body is elongated, oval when contracted, linear when extend. A deep furrow present around the margin separating the mantle from the foot. Head retractes under the mantle. Two pairs of tentacles Foot when retracted does not extend over the anus and opening slit like, not covered by any flap. "Dimension: length50 to 80 mm, width 24 to 30 mm" (Bentham-Jutting, 1952); "Body length: 50-80 mm; body is a round, dark-colored slug with no shell, 7 or 8 cm long. Its skin is slightly tuberculata. The central keel is beige in color. This slug has a unique, very narrow
foot; juvenile specimens have a foot 1 mm wide and adult specimens have a foot that is only 4 or 5 mm wide. The tentacles are small, 2-3 mm, (2008) this species lives in dry areas, mostly at lower, Hermaphrodite, both self and cross fertilization takes place.

Hence, the present study is that these gastropods snails’ species can be used for identification and classification of gastropods snails habitats without going for the details of physico-chemical parameters analysis in water as well as soil.

<table>
<thead>
<tr>
<th>Sr.No</th>
<th>Snail species</th>
<th>Lotic habitat</th>
<th>Lentic habitat</th>
<th>Terrestrial Habitat</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Lymnaea acuminata (Lamarck,1822)</td>
<td>+</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>L. leuteola (Lamarck,1822)</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>3</td>
<td>Indoplanorbis exustus (Deshayes,1834)</td>
<td>-</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>Tarebia lineata (Gray,1828)</td>
<td>-</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>5</td>
<td>Bellamya bengalensis (Lamarck,1882)</td>
<td>+</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>6</td>
<td>Bellamya dissimilis (Muller,1774)</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>7</td>
<td>Laevicaulis alte (Ferussac,1821)</td>
<td>-</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>8</td>
<td>Semperula maculate (Templeton,1858)</td>
<td>-</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>9</td>
<td>Family: Achatinidae, Achatina fulica (Bowdich,1822)</td>
<td>-</td>
<td>-</td>
<td>+</td>
</tr>
</tbody>
</table>

(\(+\), Inhabitat; \(-\), not found)

AKNOWLEDGEMENT
The authors express their sincere thanks to Molluscans Neuroendocrinology and Physiology Laboratory and Head, Department of Zoology, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad, and also thankful to UGC for providing the R.G.N. Fellowship.

PLATE-I

Fig. (A1) Satellite Jayakwadi Dam Aurangabad Canal (Paithan) (GPS) (L-19°30'44.24''N, Long-75 ° 22'29.95''E)

Fig. (B1) Godavari River (Kaygon) (GPS) (L-19° 37'30.37''N, Long-75° 18'42.29''E)

Fig. (C1)-Concrete Artificial Pond Botanical Garden Dr. B. A. M. University, Campus, Aurangabad. (GPS) (L-19° 54'9.58''N, Long-75° 18'42.29''E)

Plate-II

A)-Bellamya bengalensis (Lamarck, 1822)

(B) - Bellamya dissimilis (Muller, 1774)
Fig. 2- (A-H) Snails species collected from diverse ecological aquatic and terrestrial /slug in Aurangabad District

REFERENCES


