



## Research paper

### Assessment of Malcofaunal diversity of Bilaspur district, Chhattisgarh from the collection of National Zoological Collection of, Zoological Survey of India, Jabalpur, Madhya Pradesh

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**Abstract:** The present study reported on Freshwater Mollusca in Bilaspur district, Chhattisgarh. The present study revealed a total of 128 specimens belonging to 12 species, 12 genera, 7 family, 4 orders and 2 classes of freshwater mollusks (Gastropod and Bivalvia) has been examined along with one species of Land Molluscs also reported from the district. This is the first report of the mollusks species from this area which will help in evaluate the mollusks diversity of this district.

**Keywords:** Molluscs, Gastropod, Bivalve, Bilaspur, First Report.

#### Introduction:

Phylum Mollusca is the second largest phylum followed by Arthropods. It is the most diverse group which inhabits various habitats ranging from deepest ocean trenches to intertidal zones and freshwater to land. It is considered to be the second largest group in kingdom Animalia and is known to contribute about 6 percent of the total known species on the earth (Clark

and May, 2002). The Indian freshwater molluscs fauna represented by Class Gastropoda and class Bivalvia harbour a rich diversity in India, which comprising 217 species of freshwater molluscs (150-Gastropods, 67-Bivalves) are distributed across the country including Islands (Mukhopadhyay *et al.*, 2017). The work on the Malcofaunal diversity of Central India was significantly contributed by Agarwal *et al.*, (1976, 1977a,b,c) and Ramakrishna *et al.*, (2006), Patil and Talmale (2011) have reported 72 species belonging to 38 genera, under 24 families of freshwater and land mollusc from Madhya Pradesh including Chhattisgarh. On the Malcofauna studies in Chhattisgarh, Mukhopadhyay *et al* (2018) reported 13 species of Freshwater and terrestrial molluscs under 9 genera and 4 families from Bastar district, Chhattisgarh. Similarly Rehnema *et al.*, (2020) reported a total of 17 species of molluscs belonging to 13 genera and 7 families from Bastar district, Chhattisgarh. The Present study is the first ever report on the Malcofauna diversity of Bilaspur district. The work

reported herein was undertaken to study the Malcofaunal specimen present in National Zoological Collection, Central Zone Regional Centre, ZSI, Jabalpur which was collected through the years 1979, 1991, 1992 and 2003 from different localities of Bilaspur district, Chhattisgarh. A total of 128 specimens belonging to 12 species, 12 genera, 7 family, 4 orders and 2 classes of freshwater mollusks (Gastropod and Bivalvia) has been examined along with one species of Land Molluscs also reported from the district.

**Study Area:** The present study was conducted in Different sites of Bilaspur which were collected over years 1979, 1991, 1992 and 2003 and were deposited in NZC, CZRC, ZSI. Bilaspur (22.0797° N, 82.1409° E) is the second largest city in Chatishgarh. The district is bounded by Gourela- Pendera- Marwahi district on the north, Annupur district and Dindori district of Madhya Pradesh state on the west, Kabirdham on the southwest, Durg and Raipur on the South and Kobra and Janigr-Champa on the east. The district Bilaspur spreads over the area of 6377 km<sup>2</sup>.



Image courtesy: Google Wikipedia.

### Materials and Methods:

The present paper deals with the data collected from the available molluscan specimens present in the National Zoological Collection of Central Zone Regional Centre, ZSI, Jabalpur which is collected over the years by different scientists and from the literature available. The Identification is done using the Taxonomic key based on Ramakrishna and Dey (2007). Identified species are sorted and stored in dry condition with cotton in suitable containers, labelled and preserved

in National Zoological Collection at Central Zone Regional Centre, Zoological Survey of India, Jabalpur.

### Result and Discussion:

The present study revealed the occurrence of 13 species of Freshwater and Land mollusc belonging to 13 genera, 8 families, 6 orders and 2 classes. The Complete list of the collected molluscan species from Bilaspur along with its taxonomic details and its population status is depicted in Table 1.

**Table: 1 List of Molluscs along with their Class, Order, Family and Population Status at Bilaspur (From the collection of NZC, CZRC, ZSI)**

Class	Order	Family	S.N.	Name of the Species	Population Status (Based on the collected Sample)
Gastropoda	Architaenioglossa	Viviparidae	01	<i>Filopaludina bengalensis</i> (Lamarck,1822)	A
			02	<i>Idiopoma dissimilis</i> (O.F.Mueller,1774)	R
		Ampullaridae	03	<i>Pila globosa</i> (Swainson,1822)	R
	Hygrophilla	Lymnaeidae	04	<i>Radix rufescens</i> (Gray,1822)	C
			05	<i>Racesina luteola</i> (Lamarck,1822)	R
		Bullinidae	06	<i>Indoplanorbis exustus</i> (Deshayes,1834)	R
	Caenogastropoda	Thiaridae	07	<i>Melanoides tuberculata</i> (O.F.Mueller,1774)	M
			08	<i>Mieniplotia scabra</i> (O.F.Mueller,1774)	R
			09	<i>Tarebia lineate</i> (Gray,1828)	M
	Stylommatophora	Achantinidae	10	<i>Lissachatina fulica fulica</i> (Bowditch,1821)	R
Bivalvia	Trigonoida	Unionidae	11	<i>Radiatula caerulea</i> (I. Lea,1831)	M
			12	<i>Lamellidens corrianus</i> (I. Lea,1831)	R
	Veneroida	Corbiculidae	13	<i>Corbicula striatella</i> (Deshayes,1834)	M

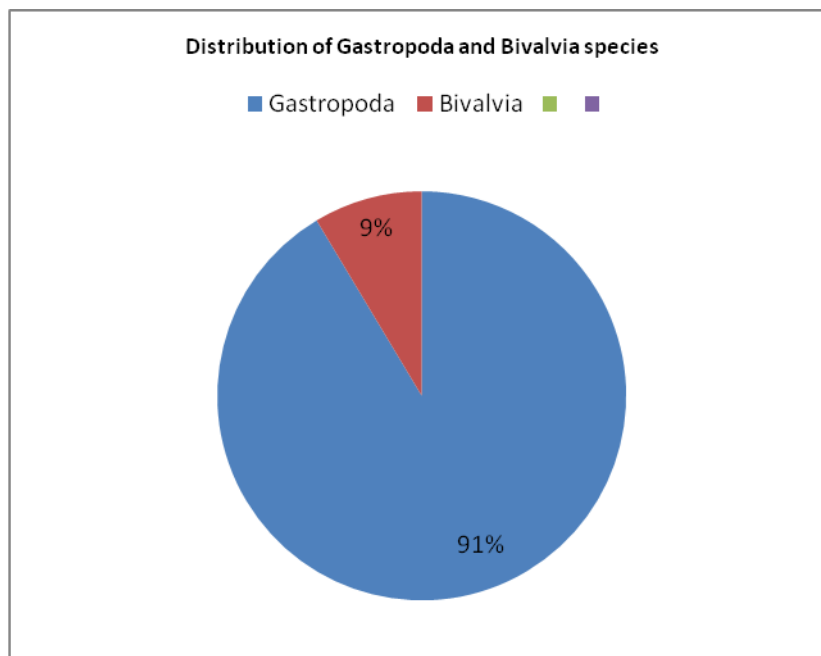
{Population status has been given on the basis of molluscs species collected. No of specimen (N) <4= Rare (R), N <10= Moderate(M), N < 30= Common (C) and N > 50= Aboundant (A) }

Total 91.4% of Gastropoda and 8.6% of Bivalvia from 128 specimens which were collected from different localities of Bilaspur over the years by different scientist, deposited in NZC, CZRC, ZSI. The Listed species are *Filopaludina bengalensis* (Lamarck,1822), *Idiopoma dissimilis* (O. F. Mueller, 1774), *Pila globosa* (Swainson, 1822), *Pila globosa* (Swainson,1822), *Radix rufescens* (Gray, 1822), *Racesina luteola* (Lamarck, 1822),

*Indoplanorbis exustus* (Deshayes, 1834), *Melanoides tuberculata* (O. F. Mueller, 1774), *Mieniplotia scabra* (O. F. Mueller, 1774), *Tarebia lineate* (Gray, 1828), *Lissachatina fulica fulica* (Bowditch, 1821), *Radiatula caerulea* (I. Lea, 1831), *Lamellidens corrianus* (I. Lea, 1831), *Corbicula striatella* (Deshayes, 1834). The species percentage wise distribution of collected molluscan species is given in Table:2

**Table:2 The individual No. of examples collected along with percentage of Distribution of species (Total No. of Collection : 128)**

Sl. No	Species	No. of examples collected	Distribution percentage in the studied localities of Bilaspur
01	<i>Filopaludina bengalensis</i> (Lamarck,1822)	64	50%
02	<i>Idiopoma dissimilis</i> (O.F.Mueller,1774)	2	1.56%
03	<i>Pila globosa</i> (Swainson,1822)	2	1.56%
04	<i>Radix rufescens</i> (Gray,1822)	27	21%
05	<i>Racesina luteola</i> (Lamarck,1822)	3	2.3%
06	<i>Indoplanorbis exustus</i> (Deshayes,1834)	2	3.9%
07	<i>Melanoides tuberculata</i> (O.F.Mueller,1774)	10	7.8%
08	<i>Mieniplotia scabra</i> (O.F.Mueller,1774)	1	0.7%
09	<i>Tarebia lineate</i> (Gray,1828)	5	3.9%
10	<i>Lissachatina fulica fulica</i> (Bowditch,1821)	1	0.7%
11	<i>Radiatula caerulea</i> (I. Lea,1831)	5	3.9%
12	<i>Lamellidens corrianus</i> (I. Lea,1831)	2	1.56%
13	<i>Corbicula striatella</i> (Deshayes,1834)	4 (Total=128)	3.1%



In the present study a total of 13 species and 13 genera were reported. The order Architaenioglossa reported more no. of specimens where the total no. of species reported is 23% of total species collected which is as equal to the order Hygrophilla

and Caenogastropoda, which also contributed 23% of species each. Similarly in Class Bivalvia Trigonoida is represented by 15% of species of Total species. Order Stylomatophora which is represented by a single alien species

*Lissachatina fulica fulica* (Bowditch,1821) contributed only 7.6% of total species. The number and percentage composition of

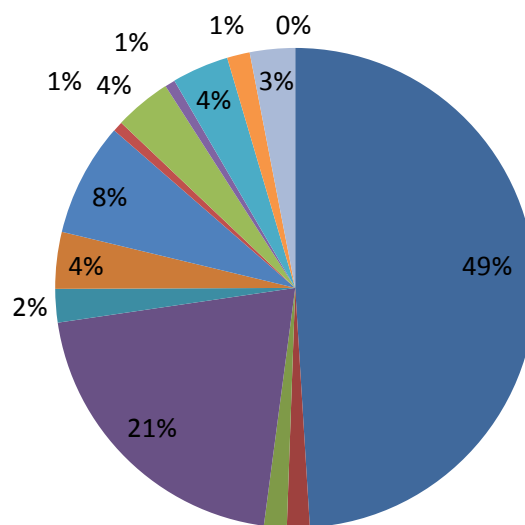
families, genera and species of mollusks under various order is presented in Table 3.

**Table: 3. The number and percentage composition of families, genera and species of mollusks under various order**

Sl.No.	Order	Families(%) in an order	Genera (%) in an order	Species (%) in an order
1	Architaenioglossa	25	23	23
2	Hygrophila	25	23	23
3	Caenogastropoda	12.5	23	23
4	Stylommatophora	12.5	7.6	7.6
5	Trigoinoida	12.5	15.3	15.3
6	Veneroida	12.5	7.6	7.6

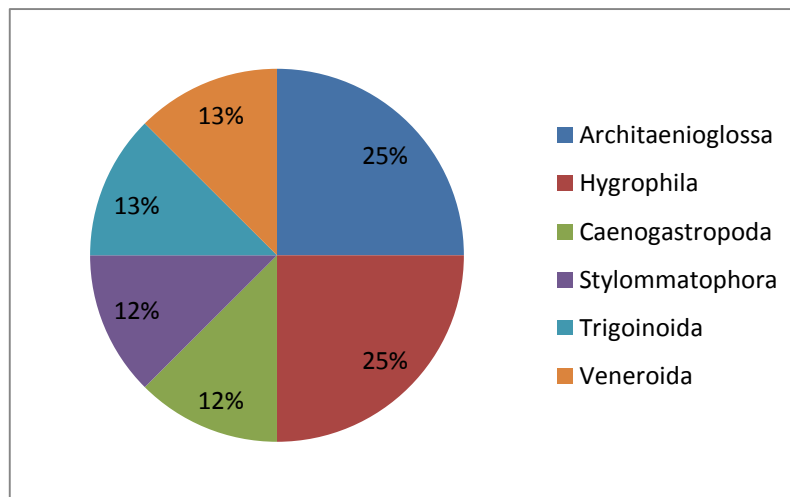
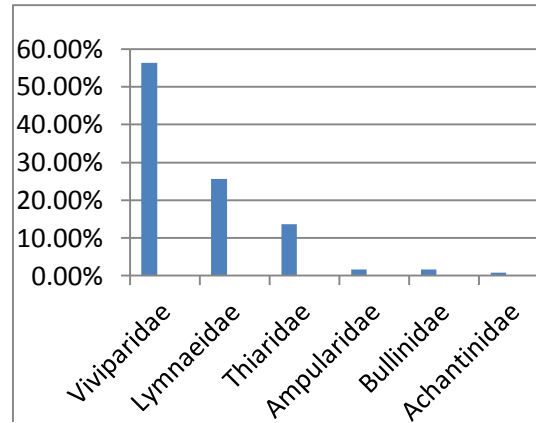
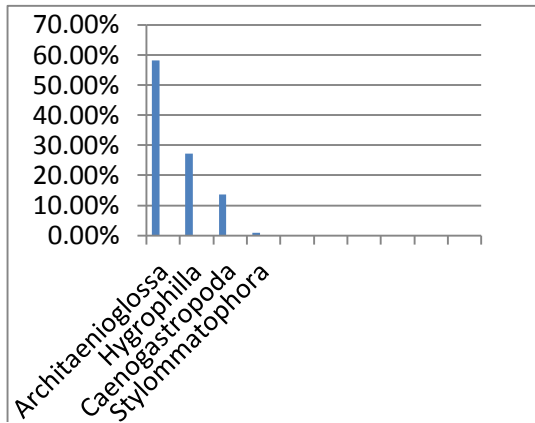
**The species wise distribution of collected molluscan species**

- *Filopaludina bengalensis* (Lamark,1822)
- *Pila globosa* (Swainson,1822)
- *Racesina luteola* (Lamark,1822)
- *Melanoides tuberculata* (O.F.Mueller,1774)
- *Tarebia lineate* (Gray,1828)
- *Radiatula caerulea* (I. Lea,1831)
- *Corbicula striatella* (Deshayes,1834)
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- *Indoplanorbis exustus* (Deshayes,1834)
- *Mieniplotia scabra* (O.F.Mueller,1774)
- *Lissachatina fulica fulica* (Bowditch,1821)
- *Lamellidens corrianus* (I. Lea,1831)



The order and Family wise distribution of Gastropoda fauna collected is shown in the

graph below.



### Percentage of Families in an order

#### Summary:

The present study reveals 13 species of Freshwater and Land mollusc belonging to 13 genera, 8 families, 6 orders and 2 classes. Given data is based on the unidentified collection of National Zoological Collection, Central Zone Regional Centre, Zoological Survey of India, Jabalpur, which were collected over the years by different tour parties. The present study is the first ever mollusks diversity assessment of Bilaspur dist. Furthermore studies of mollusks in this

region will help to access the exact diversity of this region.

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