DOCUMENTING AND REGISTERING BIODIVERSITY OF NIJHUM DWIP, NOAKHALI

A research project report

Submitted by

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Abstract

A six month study was conducted in order to register the diversity of flora and fauna of Nijhum dwip, Noakhali. During the study period 68 species of flora, 24 invertebrate and 115 vertebrate species were identified. The study area has an area of about 16,352 hectares. Of the 115 vertebrate fauna, number of species of fish, amphibians, reptiles, birds and mammals are 40, 03, 09, 43 and 20 respectively.

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INTRODUCTION

Biodiversity or Biological Diversity is the wealth of life forms found on earth including the millions of plants, animals and microorganisms, the genes they contain, and the ecosystem they form. It is considered at three different levels: genetic diversity, spices diversity and ecosystem diversity. Genetic diversity is the variability within a species, as measured by the variation in genes within a particular species, variety, subspecies or breeding. Species diversity is the variety of living organisms on earth, measured by the total number of species in the world or in a given area. Ecosystem diversity is a measure of the variety of the ecological complexes of organisms and is related to physical and ecological variations in an area. Cultural diversity coevolves along with the availability of the above mentioned levels of biodiversity (Islam, 2003).

The extent of genetic diversity cannot be quantified with our current level of knowledge. It will be much greater than species diversity. Diversity at the species level is only a little better known. Scientists have variously estimated that there are from 3 to 30 million extant (living) species, of which 1.4 million have been classified, including 250,000 plants, 750,000 insects, 41,000 vertebrates; the reminders are invertebrates, fungi, algae and microorganisms. Although other species remain to be discovered, many are becoming extinct though deforestation, pollution human settlement and activity (Islam, 2003).

Much of this diversity is found in the world's tropical areas, in the humid tropics, particularly in the forest regions. It is estimated that over 50% of the world's species are found in the tropical moist forests, which cover only 5-7% of earth's land area. The following areas are high in biological diversity and endemism in the South Asian Region: (1) moist forests of Sri Lanka (2) Western Ghats forests of India (3) forests of Andaman and Nicobar islands, India (4) forests of NE India, e.g. Meghalaya and adjacent areas in Bangladesh and Myanmar (5) forests and alpine meadows of East Himalaya, Nepal, Bhutan and India (6) alpine meadows and scrublands of NW Himalayas, Afghanistan, Pakistan and India (7) deserts of Afghanistan, Pakistan and western India and (8) tropical seas, especially coral reef communities of South Asia (Islam,2003).

A habitat in equilibrium has a balance between the number of species present and its resources. Among the factors affecting diversity are an area's history, resources, productivity and climate. The more pristine a diverse habitat, the better change it has to survive a change threat – either natural or human because that change can be balanced by an adjustment elsewhere in the community, whereas damaged habitats may be destroyed by breaking the food chain with the removal of a single species. Thus, biological diversity helps prevent extinction of species and helps preserve the balance of nature, At 1992 United Nations Conference of Environment and Development, over 150 nations signed a treaty to preserve the planets biological diversity. Bangladesh is also a signatory to this treaty. The available data on

the diversity of the biological resources of Bangladesh, both at species and ecosystem level, are discussed here (Islam, 2003):

Flora: Bangladesh has been endowed with a rich plant diversity base because of its fertile alluvial land and a warm and humid climate. More than 6000 plant species occur in Bangladesh, of which 300 or so species are exotic and 8 are endemic. One hundred and six vascular plants have been rated as threatened. About 300 species and varieties of algae have been recorded from fresh water habitats alone. There are many more in the brackish water and seawater habitats. The fungal flora has not been fully recorded. There are about 250 species of bryophytes in the country. Of the 250 species of pteridophytes that occur in Bangladesh, 230 are fens. Bangladesh has 4 species of gymnosperms; of these 3 are threatened (1 cycas, 2 gnetum). Bangladesh has 3 species of rice and there are about 10,000 varieties.

The main types of forests occur in Bangladesh can be distinguished as the following: (1) Tropical evergreen and semi evergreen, (2) Tropical moist deciduous (inland soil forests), (3) Tidal swamp forests and (4) Fresh water swamp forest. Bangladesh has been also tentatively divided into 30 AGROECOLOGICAL ZONES.

Fauna: Bangladesh possesses a wide range of invertebrates and vertebrates in its aquatic and terrestrial habitats. The invertebrate fauna of the country has not yet been fully recorded. However, the warm and humid climate of the country is favorable for lower organisms especially the insect fauna to thrive. There has been a fairly good stocktaking of the vertebrate fauna.

Invertebrate fauna: Of the homopteran insects only about 30 aphid species under 20 genera have so far been listed in the country. In Bangladesh 18 species of bees have so far been reported, of which 4 honey bees are: *Apis cerana indica, A. dorsata, A. florae* and *A. mellifera*, and 2 are bumblebees: *B. eximius,* reported from Sylhet and *B. montivagus,* reported from Chittagong Hill Tracts.

In Bangladesh the common indoor fly species are house fly (*Musca domestica*), the lesser house fly (*Fannia canicularis*), the biting house fly or stable fly (*Stomoxys*), the blue bottles or blow flies (*Calliphora*), the green bottles (*Lucilia*), and the flesh flies (*Sarcophaga*). Outdoor flies include the flies, the deer flies, the horse flies, the hover flies, the daddy long legs or crane flies and many muscoids. The sand flies (*Phlebotomus*) are common in both indoor and outdoor. So far 5 species of fruit flies have been recognized: *D.* (*Z.*) *tau, D.* (*Hemigymnodacus*) *diversus, D.* (*Bractrocera*) *dorsalis, D.*(*B.*) *zonatus.*

Over 1600 species of mosquitoes are known worldwide; 113 species have so far been recorded from Bangladesh. *An. Minimus, An. dirus, An. philippinensis,* and *An. sundaicus* are the malaria vectors. Filariasis is transmitted by *Culex quinquefasciatus* and *Mansonia sp. Aedes aegypti* and

Ae. Albopictus are responsible for spreading Dengue; Japanese Encephalitis is transmitted by *Cx. Tritaeniorhynchus.* Worldwide there are more than 17,000 species of true wasps. Bangladesh has representative of all the families of wasps.

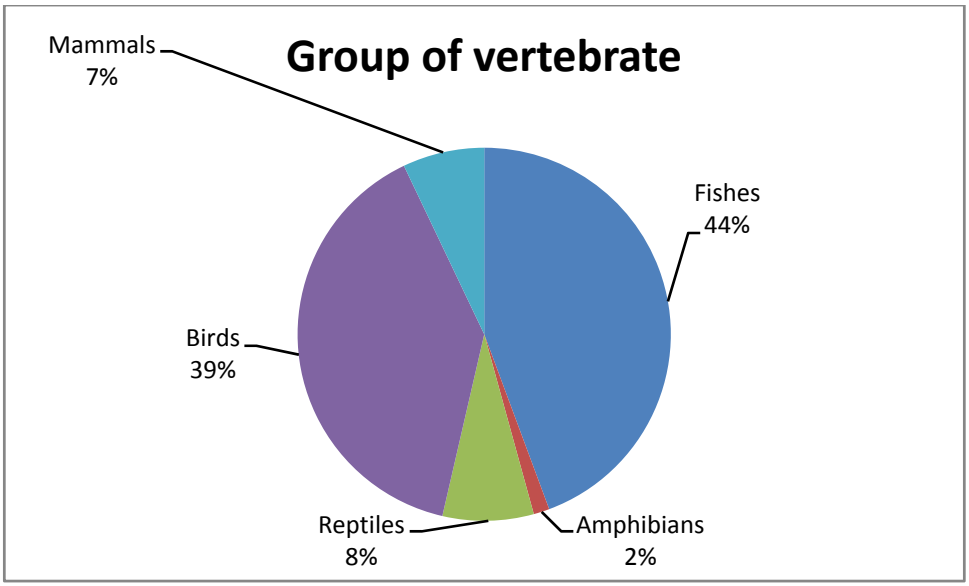
Worldwide more than 50,000 species of spiders have so far been recorded in 3000 genera, and 106 families. It is presumed that the present recorded number of species represent only about 40% of the total. In Bangladesh more than 400 species of spiders have been recorded in 134 genera, and 22 families. Cruistacea comprises some 42,000 species. Many commercially important fresh and marine water crabs, shrimps and lobsters are abundantly found in Bangladesh. Of the 04 species of fresh water and 11 species of marine crabs recorded from Bangladesh.

Vertebrate fauna: It includes the animals with a backbone i.e. the fishes, amphibians, reptiles, birds and mammals. Today some 22,000 species of fishes, 5000 species of amphibians, 7,400 reptiles, 9000 birds and 4,500 mammals are known worldwide. Bangladesh also possesses a rich diversity in vertebrate fauna, especially in the in the forested and wetland areas. The country has about 1600 species of vertebrate fauna (Table 1), of them 701 are fishes: 259 inland and 442 marine, 22 amphibians, 126 reptiles: 109 inland and 17 marine, 628 birds: 388 resident and 240 migratory and 113 mammals: 110 inland and 3 marine. The country has lost more than a dozen vertebrate fauna during the last century. The IUCN-Bangladesh (2000) review of the status of the vertebrate fauna revealed that 54 inland fishes, 8 amphibians, 58 inland reptiles, 40 resident birds and 40 inland mammals have come under different categories of threats. A large number remained as data deficient, which could not be evaluated due to paucity of data.

Table 1. Vertebrate fauna of Bangladesh

Group	Total no. of living species		Total
Fishes	266(fresh water & brackish water)	442 (marine)	708
Amphibians	22 (inland)	-----	22
Reptiles	109 (inland)	17 (marine)	126
Birds	388 (resident)	240 (migratory)	628
Mammals	110 (inland)	3 (marine)	113
Total	895	702	1597

Source: Internet



Biodiversity is considered as the most important wealth for mankind. Countries like Bangladesh should derive economic benefits from the country's rich biodiversity resource base. Unfortunately there is no proper inventory of the biological diversity of the country. Documentation, monitoring and conservation of local biodiversity and indigenous knowledge should be considered as the thrust area of activities since the said tasks remain significantly incomplete in the country. This needs extensive countrywide activities. Therefore an initiative has been taken to prepare a biodiversity resources of Nijhum Dwip of Noakhali district during June to November 2009.

Objective of the present study

Preparation of a biodiversity resources of Nijhum dwip of Noakhali district.

A Biodiversity Register is a document that

1. could be claimed as the proof of existence of naturally occurring flora and fauna variety of crops, breeds of domesticated animals, and traditional knowledge within the limit of the village;

2. could be the information base to design and implement any conservation or sustainable management action plan for the local environment and society;

3. could be the source of information for scientific, socioeconomic research and centralized planning and even for entrepreneurships based on the exploitation of locally available species, varieties, cultivars, breeds and/or traditional knowledge.

Why Nijhum dwip?

A large number of biodiversity usually exists in the forested areas, non-forested areas and villages. Nijhum dwip has been chosen as a pilot programme since it has a typical agro-ecological set up in its flood plains that do not have any forests adjacent to the village. Documentation of the biodiversity of wild flora and fauna and of crop cultivars and of animal breeds, of pests and their natural enemies, of the land and water habitats in the fully agricultural landscapes and related knowledge of local people, their approach and attitude regarding the use and management of them were much due. To understand human elements like people's knowledge, parallel to village programme will also be undertaken in forested areas eventually.

Justification of the study

- The biodiversity occurring in the village and knowledge of local people regarding their management are coevolved components of the village ecosystem. Whether or not they are of specific global importance (for example, globally threatened species or having patent potentials), they are very much important for the sustainable management of the local ecosystem. In being so, they are also important for global environment health, as, global health is ultimately the sum of local health.
- Documentation, monitoring and conservation of local biodiversity should ultimately be one of the major regular programmes of the local government system.
- The process of biodiversity registration should be a both way learning process for the external expert team and the local people.
- The interactions for biodiversity register preparation should lead to some actions by local people and/or local authorities relating conservation, enterprising use and sustainable management of local biodiversity resources.

Study period: June to November 2009

Outcome

- Landscape: the biodiversity and characterization of different habitats like farmlands, ponds, within the village and dynamics of changes in them.
- Lifescape: wild flora and fauna; domesticated flora and fauna.
- Peoplescape: user groups and knowledgeable individuals, their traditional knowledge regarding the species and/or habitats used in relation to their profession. For example, rich traditional knowledge regarding the species and/or habitats used in relation to their profession. For example, rich traditional knowledge of aged people regarding the soil health, advantages of different cultivars and different farming methods have been noted in as much details as possible.

- Timescape: ecological history of the village.
- Mindscape: attitude, approach, aspirations of the local people.
- Species diversity of different populations of flora and fauna.
- Threats and impacts of species and ecosystems.
- The final report could be published in the form of a book and booklet. This could be given to the villagers and local government for further use.
- This pilot study programme could be a model, which could be used in preparing the biodiversity resources of other villagers in the country.

STUDY AREA

Location and area

Nijhum dwip incorporating an area of about 164 km² (16,352 hac.) and was established in 2001. This virgin new island of Nijhum dwip raised on the estuary of the great Meghna channel in the mouth of The Bay of Bengal. The geographical location has been identified just 2 kilometers south west of Hatia under Noakhali district. This newly accredited island may be called as cluster of islands consist of more than 4-5 small islands like Char Osman, Char Kamla, Corner of Char Osman and isolated from the mainland by Hatia channel. It is about 26 km southwest of Hatiya Upazila complex. Latitude is 22°02′30.89″ N and Longitude is 90°59′05.85″ E. The island is about 4-5 meters high from the sea level. It is about 120 km south of Maijdee bazaar. Two sides of the Nijhum dwip island is enclosed by the Bay of Bengal (south and west), Domerchar and the Meghna river on the east and Hatiya island on the north.

Topography

Nijhum dwip island is enclosed by the Bay of Bengal and the Meghna river. The area is formed by mostly of sandy-loamy soil and lacks uplands. During monsoon half of the land mass goes under water. However, during lean period these areas are dried up, except forested area other areas where seasonal crops are cultivated. These are mainly riverbeds. Of the 164 km² (16,352 hac.) about 10% are occupied as human habitation, 30% are used for cultivation and other purposes, rest areas are occupied by forest. Human habitation is occupied by about 550 living houses, 6 markets having shops of different necessities, 10 mosques, 1 high school, 2 primary school and 2 madrasha. A 5.5 km north-south road transected the island. 10 canals and numerous ponds are the source of water for domestic use. These are also home for birds like White-breasted Water hen (Dahuk).

Climate

The climate of the Nijhum dwip island is equable. The annual temperature: maximum 32° C and minimum 14° C; total rainfall is 1200 cm and average humidity is 72%.

Human population

The total population of the study area is more than 10,000 of which 57.05% female and 42.95% are male. Of the males adults are about 60% and 40% are young. Of the females adults are 45% and 55% are young. All the villagers are Muslims except some few and most of them are fishermen and some are agriculturists. Most of the houses are made of wood, tin and straw.

Biodiversity

The study area has rich plant diversity base because of its fertile alluvial land, warm and humid climate. The vegetation is relatively young. The oldest trees are about 14 years. Animal diversity has been discussed in the Results and Discussion section.

Other information

This Island was brought under settlement during 1969 and subsequently the forest department under took massive drive for aforestation by mangrove species. Now this island has been declared as the unique eco-touristic spot for its ideal natural setup with the rich biodiversification factors and the perennial mangrove forest with wild animals like spotted deer, wild boar and rhesus macaque and for the ideal habitat for fish resources. Since south coast is open to the mouth of great span of Bay of Bengal, the appearance of whale sometimes occurred. There are some NGO like Red Crescent, Proshika, Human Development centre and JAICA are involved with their development projects on this island. Due to its rich natural and biodiversical resources, the touristic potentiality has enormously enhanced. In spite of difficult access and lack of good residential facilities, a few thousand enthusiastic local tourists visit this island during winter every year.

Natural calamities

Devastations caused by the cyclone Aila that raged through the entire length and breadth of the country from Thakurgaon to Patuakhali are yet to be fully assessed. The primary official figures show that some 113 people were killed and over 6,600 people were injured by the cyclonic storm. However, unofficial estimates put the death toll at 155. And it will not be surprising, if the number of deaths rise further with time as rescue teams are able reach further into the areas slammed by the cyclone. The trails of destruction that Aila has left in its wake before it entered neighbouring India are slowly coming into full view. Of the 17 districts that the cyclone has lashed all over the country, the southern coastal districts are as usual the worst affected.

There are some worrisome reports about Nijhum dwip , a coastal island and home to some 25,000 people in the Bay. It is feared that the island might have gone under water. In fact, it will take months before the complete picture of the havoc wreaked on the entire country by the latest cyclone may emerge. The cyclone that tore into southern coast of Bangladesh, caused similar damage in the West Bengal in India. Or in other words, the ferocity and extent of the latest visitation from the Bay are unique in many respects compared to many other cyclonic storms of the past. To all appearances, the intensity and characteristics of the modern cyclonic storms are also changing with time.

Map 1. Hatia Upazila

Map 2. Nijhum dwip

METHODS

Mapping: A reconnaissance map was prepared by criss-crossing the island by walking and boating, to realize the topography, vegetation and land use pattern of the island.

Field visits: The study area was visited twice during June-November 2009. The area was usually visited from dawn to dusk (around 6:00 am to 6:00 pm). The whole area was observed by walking, boating and also by rickshaw. A total of about 168 hours was spent over 8 days during the study period.

Data collection: Different aspects of studies were identified for data collection such as wild flora, cultivated flora, wild fauna and domesticated fauna, local knowledge related to biodiversity. Notes were kept on the quality and quantity of each aspect related to biodiversity. Data sheets and questionnaires (Appendix 1) were used to kept notes and to collect information. Data were analyzed at the end of every time to assess the seasonal variation (if any).

Identification: Different publications like field guides were used for the identification of flora and fauna in the field. A binocular was used in the field. Photographs were taken for future identification and for documentation. At that time specimens/samples were collected for identification in the laboratory. For flora *Bangladesher Proyojoneo Gachgachra* (Dey, 1995), *Baboharik Udbhidbiggyan* (Hasan, 1998); for invertebrates *Simons and Schuster's Guide to Butterflies and Moths* (Daccordi et al., 1998), Fresh Water Mollusca of Munshiganj, Bangladesh (Begum, 1980), *General Zoology* (Storer T.I and Usinger, R.L. 1983). For fish fauna *Red Book of Threatened Fishes of Bangladesh* (IUCN, 2000), *Freshwater Fishes of Bangladesh* (Rahman, 1989) ; for amphibians *Wildlife of Bangladesh – a systematic List with status, distribution and habitat* (Sarker and Sarker, 1988), *Red Book of Threatened Amphibian and Reptiles of Bangladesh* (IUCN, 2000); for reptiles *Red Book of Threatened Amphibian and Reptiles of Bangladesh* (IUCN, 2000), *Wildlife of Bangladesh – a systematic List with status, distribution and habitat* (Sarker and Sarker, 1988), *The Book of Indian Reptiles* (Daniel, 1983)*;* for birds *The Book of Indian Birds* (Ali, 1996), *Pocket Guide to Birds of Indian Subcontinent* (Grimmet et al., 2001), *Red Book of Threatened Birds of Bangladesh* (IUCN, 2000), *Wildlife of Bangladesh – a systematic List with status, distribution and habitat* (Sarker and Sarker, 1988) and for mammals *The Book of Indian Animals* (Prater, 1980), *Red Book of Threatened Mammals of Bangladesh* (IUCN, 2000), *Wildlife of Bangladesh – a systematic List with status, distribution and habitat* (Sarker and Sarker, 1988). For crops *Banglapedia* (Khair, 2003) was followed.

Time was spent with the knowledgeable individuals for discussion and for documenting the oral history of the area. Questionnaires were used to collect information from the local people (Appendix 1).

RESULTS AND DISCUSSION

During the present study period 68 plant species (Table 1) have been recorded of which 20 are trees (Table 3), 10 are shrubs (Table 4), five are herbs (Table 5), two are climbers (Table 6), five are creepers (Table), two are grasses (Table 8), two are fresh water plants (Table 9), four algae (Table 10), one fern (Table 10), 17 are cultivated plants (Table 11).

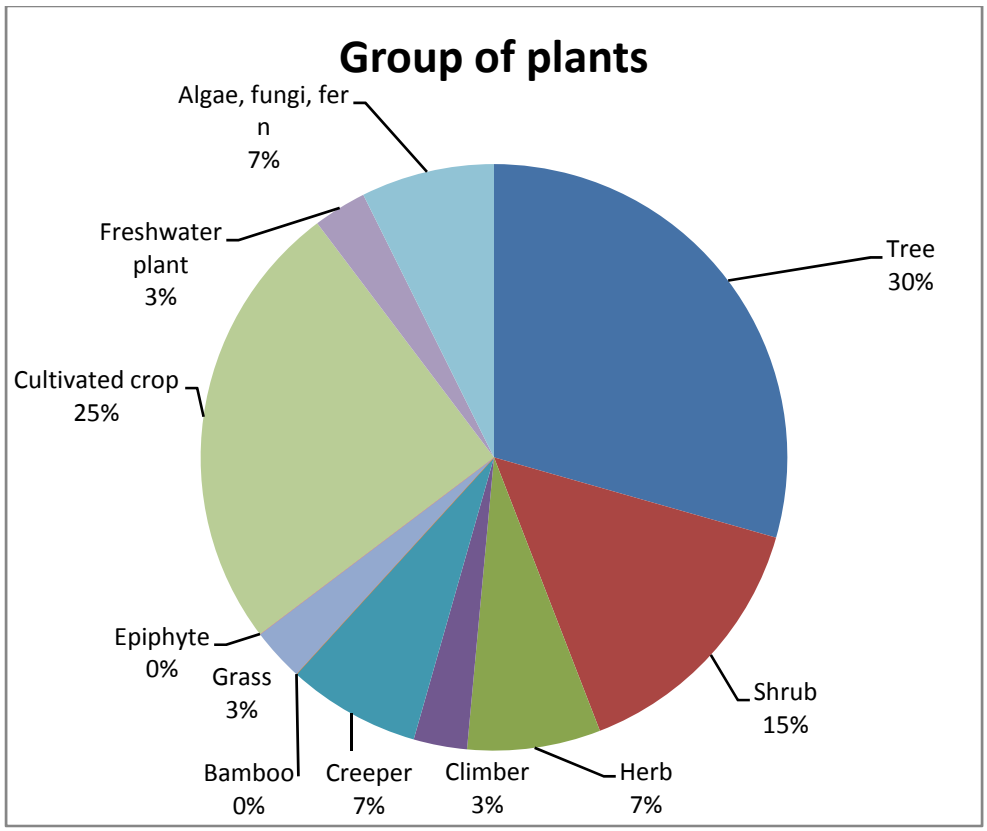
Among the 20 trees 'Gewa (*Excoecaria agallocha*) and Keora (*Soneratia apetala*)' are the dominant species. Of the five species of herbs 'Jangli Kachu' (*Colocasia nymphaefolia*) are common. Of the two species of grasses, both are used as food for wild and domestic animals. Rice, potato, bean are the main cash crops. A total of 18 medicinal plants have been recorded (Table 12) some are the chief source of medicine for the villagers.

Fauna, as recorded during the present study period, occupy all available habitats- such as sea, river, canal, pond, grassland, agricultural fields, homestead plantations, bushes, understorey, trunk of large trees etc. 24 invertebrate fauna (Table 13) have been recorded of which two are annelids (Table 14), six are mollusks (Table 15) and 16 are arthropods. Among annelids earthworm is commonly found and is used as fishing bait. Of the 16 arthropods, 10 are butterflies (Table 16) and six are crop insects (Table 17). All of these insects are responsible for crop damage.

A total of 115 species vertebrate fauna could be identified (Table 18) of which 40 are fishes (Table 19), three are amphibians (Table 20), nine are reptiles (Table 21), 37 are birds (Table 22,23) and 26 are mammals (Table 24). During monsoon, fishing activities are visible everywhere. Major fishing gears of the village are 'Moia Jal' , 'Tana Jal', 'Khepa Jal', 'Polo', 'Barsi', etc (Table 26). The common fishes are 'Hilsa', 'Bata labeo', 'Ticto Barb'. Of the nine species of reptiles House lizard is commonly found. Of 37 birds species, 32 are resident (Table 22) and five are migratory (Table 23).House crow, Common Myna, White throated Kingfisher and Pond heron are commonly found. 12 species of domesticated animals (Table 25) have also been recorded of which there are one variety of goat, one variety of sheep, one domestic dog, one fishing cat, one domestic fowl, three pigeon and one swan. Domesticated animals play a great role in the economy of the villagers. During the study period a few knowledgeable people (Table 27) have also been interviewed for registration and documentation purpose of the biodiversity.

Table 2. Group of different types of plants observed during the study period

Type	Number of species
Tree	20
Shrub	10
Herb	05
Climber	02
Creeper	05
Bamboo	00
Grass	02
Epiphyte	00
Cultivated crop	17
Freshwater plant	02
Algae, fungi, fern	05
Total	68



Source: Internet

Table 3. Trees

Sl no.	Local name	English name	Scientific name	Abundance	Status*	Uses
1	Gewa	Gewa	*Excoecaria agallocah*	Common	W	Wood
2	Keora	Keora	*Soneratia apetala*	Common	W	Wood
3	Bean	Bean	*Avicennia officinalis*	Common	W	Wood
4	Rhendi koroi	-------	*Albizzia lucida*	Rare	D	Timber
5	Shil koroi	White Siris	*Albizzia procera*	Rare	D	Timber
6	Boroi/Kul	Indian Jujube	*Zizyphus jujuba*	Common	W,D	Fruit and fuel wood
7	Piyara	Guava	*Psidium guayava*	Rare	D	Fruit and fuel wood
8	Narikel	Coconut palm	*Cocos nucifera*	Common	W,D	Fruit, oil and fuel wood
9	Bel	Golden Apple	*Aegle marmelos*	Rare	D	Fruit, medicine and fuel wood
10	Mehagani	Mahogany	*Swietenia mahagoni*	Rare	D	Timber
11	Tentul	Tamarind	*Tamarindus indica*	Rare	W	Fruit and fuel wood
12	Sisookath	Sissoo	*Delbergia sisoo*	Rare	D	Timber and medicine
13	Nim	Neem tree	*Azadirachta indica*	Rare	D	Medicine and fuel wood
14	Jambura	Pumelo	*Citrus grandis*	Rare	D	Fruit, medicine and fuel wood
15	Khejur	Wild date palm	*Phoenix sylvestris*	Rare	W	Fruit, fuel wood and juice
16	Katagolap	Jesmine Tree	*Plumeria acuminata*	Rare	W	Aesthetic
17	Shaorha	Siamese Roughbush	*Streblus asper*	Rare	E	Fuel wood
18	Supari	Betel Nut	*Areca catechu*	Common	W,D	Fruit and fuel wood
19	Boro lebu	Lemon	*Citrus limon*	Common	D	Fruit and fuel wood
20	Kamranga	Karambola Apple	*Averrhoa carambola*	Rare	D	Fruit and fuel wood

*(D= Domestic, W= Wild)

Table 4. Shrubs

Sl no.	Local name	Scientific name	Abundance	Status*	Uses
1	Hasna hena	*Cestrum nocturnum*	Rare	D	Aesthetic
2	Raktajaba	*Hibiscus rosa-sinensis*	Rare	D	Aesthetic and medicine
3	Jhumkjaba	*Hibiscus schizopetalus*	Rare	D	Aesthetic
4	Deshi Jaba	*Hibiscus sabdariffa*	Common	D	Aesthetic
5	Gandharaj	*Gardenia jasminoides*	Rare	D	Aesthetic
6	Rangan	*Ixora coccinea*	Rare	D	Aesthetic
7	Beli	*Jasminum sambac*	Rare	D	Aesthetic
8	Mendi	*Lawsonia inermis*	Rare	D	Use in cultural program and as medicine
9	Pepe	*Carica papaya*	Common	D	Fruit and medicine
10	Katagolap	*Plumeria acuminata*	Rare	W	Aesthetic

*(D= Domestic, W= Wild)

Table 5. Herbs

Sl no.	Local name	Scientific name	Abundance	Status*	Uses
1	Nointara	*Catharanthus roseus*	Common	D	Aesthetic
2	Jangli Kachu	*Colocasia nymphaefolia*	Common	W	Vegetable
3	Thankuni	*Hydrocotyle asiatica*	Rare	W	Medicine and vegetable
4	Genda	*Tagetes erecta*	Rere	D	Aesthetic and medicine
5	Zinnia	*Zinnia elegans*	Rare	D	Aesthetic

*(D= Domestic, W= Wild)

Table 6. Climbers

Sl no.	Local name	Scientific name	Abundance	Status*	Uses
1	Pui	*Basella alba*	Common	D	Vegetable
2	Halkalmi	*Ipomoea alba*	Common	W	Vegetable

*(D= Domestic, W= Wild)

Table 7. Creepers

Sl no.	Local name	Scientific name	Abundance	Status*	Uses
1	Metealu	*Dioscorea alata*	Rare	D	Food
2	Oshi/Sim	*Lablab purpureus*	Common	D	Vegetable
3	Jhinga	*Luffa acutangula*	Common	D	Vegetable
4	Dhundal	*Luffa cylindrical*	Common	D	Vegetable
5	Usta	*Momordica charantea*	Common	D	Vegetable

*(D= Domestic, W= Wild)

Table 8. Grasses

Sl no.	Local name	Scientific name	Abundance	Status*	Uses
1	Durba	*Cynodon dactylon*	Very common	W	Food for wild and domestic animal
2	Lemon	*Cymbopogon citrates*	Common	W	Food for wild and domestic animal

*(D= Domestic, W= Wild)

Table 9. Freshwater plants

Sl no.	Local name	Scientific name	Abundance	Status*	Uses
1	Shapla	*Nymphaea nouchalli*	Rare	W	Vegetable
2	Helencha	*Alternanthera philoxeroides*	Common	W	Vegetable

*(D= Domestic, W= Wild)

Table 10. Algae, fungi and fern

Sl no.	Local name	Scientific name	Abundance	Status*	Uses
1	Shewla	*Microcystis*(Algae)	Very common	W	No use
2	Shewla	*Oscillatoria*(Algae)	Common	W	No use
3	Shewla	*Chamydomonas*(Algae)	Common	W	No use
4	Shewla	*Chara*(Algae)	Common	W	No use
5	Dheki Shak	*Pteris*(Fern)	Rare	W	Vegetable

*(D= Domestic, W= Wild)

Table 11. Cultivated crops

SI no.	Local name	English name	Scientific name	Family
1	Tomato	Tomato	*Lycopersicon esculentum*	Solanaceae
2	Piaz	Onion	*Allium cepa*	Liliaceae
3	Allal Dhan	Rice	*Oryza sativa*	Gramineae
4	Boro Dhan	Rice	*Oryza sativa*	Gramineae
5	IRRI Dhan	Rice	*Oryza sativa*	Gramineae
6	Morich	Chili	*Capsicum sp*	Solanaceae
7	Mula	Radish	*Raphanus sativus*	Cruciferae
8	Lau	Bottle gourd	*Lagenaria siceraria*	Cucurbitaceae
9	Seem	Hyacinth bean	*Lablab niger*	Leguminoseae
10	Begoon	Brinjal	*Solanum melongena*	Solanaceae
11	Alu	Potato	*Solanum tuberosum*	Solaneceae
12	Misti alu	Sweet potato	*Ipomoea batatus*	Convolvualceae
13	Palong shak	Garden spinach	*Spinacia oleracea*	Chenopodiaceae
14	Badha kopi	Cabbage	*Brassica oleracea var capitata*	Cruciferae
15	Phul kopi	Cauliflower	*Brassica oleracea var botrytis*	Cruciferae
16	Misti kumda	Sweet gourd	*Cucurbita maxima*	Cucurbiceae
17	Dhania	Coriander	*Coriandrum sativum*	Umbelliferae

Table 12. Medicinal plants

Serial no.	Local name	English name	Scientific name	Usable part	Uses	Abundance
1	Amlaki	Embolic	*Phyllanthus embelica*	Fruit, leaf, flower and bark	Fruit is used in anemia, skin disease, dyspepsia, jaundice, coughing, gonorrhea, fever, losing of hair, leaf; juice is used in dysentery, etc.	Rare
2	Bel	Golden Apple	*Aegle marmelos*	Fruit, leaf, root and bark	Used in constipation, dysentery, dyspepsia, eye disease, diarrhea, coughing, asthema, etc.	Rare
3	Mendi	Henna, Samphire	*Lawsonia inermis*	Leafs, bark, seeds and flower	Paste of leaves and bark used in skin disease, calculus, headache, gout, leprosy, etc.	Rare
4	Thankuni	Indian Pennywort	*Hydrocotyle asiatica*	Whole plant	Used in intestinal disease, pain, cataract and other eye disease wound, dysentery, etc.	Rare
5	Supari	Betel nut	*Areca catechu*	Fruit and leaf	Used in intestinal pain, ulcer, dental disease, diarrhea, gout, constipation, etc.	Common
6	Nim	Neem tree	*Azadirachta indica*	Leaf, seed, bark and root	Antiseptic; used in fever, ulcer, boils, skin disease, eczema,	Rare

					etc.	
7	Piaz	Onion	*Allium cepa*	Juicy part	Used in skin disease, scurvy.	Rare
8	Rashun	Garlic	*Allium sativum*	Juicy part	Carminative, diuretic, hypotensive; used in diabetes.	Common
9	Pepe	Papaw tree	*Carica papaya*	Fruit, leaf and root	Used in constipation and dysentery	Common
10	Boro lubu	Lemon	*Citrus limon*	Fruit	Used in scurvy and disinclination.	Common
11	Dhonia	Coriander	*Coriandrum sativum*	Seed and leaf	Carminative, diuretic; paste of leaves used in pain.	Common
12	Narikel	Coconut palm	*Cocos nucifera*	Fruit and root	Used in dyspepsia	Common
13	Jaba	China rose	*Hibiscus rosa-sinensis*	Flower, leaf and root	Paste of flower used in losing hair; paste of leaf used as painkiller; root used in coughing.	Rare
14	Khejur	Date palm	*Phoenix sylvestris*	Fruit	Fruit is used in cardiac disease	Rare
15	Piyara	Guava	*Psidium guayava*	Fruit and leaf	Fruit is used in intestinal pain; leaf used in dental decay and wound	Common
16	Genda	French Marigold	*Tagetes erecta*	Leaf and flower	Leaf extract is used in bleeding; flower is used in piles	Rare
17	Tentul	Tamarind	*Tamarindus indica*	Bark, fruit and seed	Bark is used in constipation; fruit purgative; seed is used in dysentery	Rare
18	Shapla	Water lily	*Nymphaea nouchalli*	Roots, rhizome and flower	Used for piles, dysentery and dyspepsia	Rare

Table 13. Groups of invertebrate fauna

Group	Number of species
Annelids	02
Molluscs	06
Arthropods	16
Total	24

Source: Internet

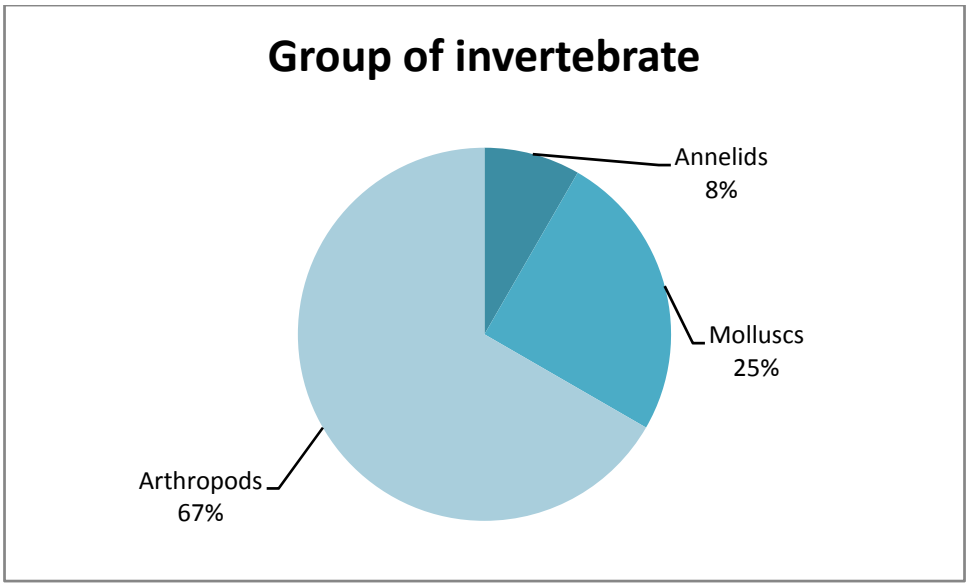


Table 14. Annelids

Serial no.	Local name	English name	Scientific name	Abundance	Uses
1	Kecho	Earth warm	*Pheretima posthuma*	Very common	Bait for fishing
2	Joke	Leach	*Hirudo medicinalis*	Very common	Bait for fishing

Table 15. Molluscs

Serial no.	Local name	English name	Scientific name	Abundance	Uses
1	Shamuk	Snail	*Pila globosa*	Common	Poultry feed
2	Shamuk	Snail	*Viviparus bengalensis*	Common	Poultry feed
3	Shamuk	Snail	*Viviparus dissimilis*	Common	Poultry feed
4	Shamuk	Snail	*Sulcospira variabilis*	Common	Poultry feed
5	Shamuk	Snail	*Lymnea luteota*	Common	Poultry feed
6	Jhinuk	Mussel	*Lamellidens marginalis*	Common	Poultry feed

Table 16. Butterflies

Sl no.	Local name	English name	Scientific name	Family	Order	Economic importance	Habitat	Comments
1	Sonali	Plain Tiger	*Danaus chrysippus*	Nymphalidae	Lepidoptera	Catterpillars feed on the leaves of different plants; adult help in pollination	Bushy area	Good flier; protected from predators because of their unpleasant taste and by warming coloration
2	Raja	Striped Tiger	*Danaus genutia*	Nymphalidae	Lepidoptera	Catterpillars feed on the	Within aquatic	Migratory; protected

						leaves of plants and are considered as pest; adult help in pollination	habitat	from predators because of their unpleasant taste and by warming coloration
3	Sathdora	Lime Butterfly	*Papilio demoleus*	Papilionidae	Lepidoptera	Catterpillars feed on leaves *Citrus* plants	Garden	Leisurely flight pattern
4			*Euploea sp.*	Nymphalidae	Lepidoptera	Larvae usually feed on leaves of poisonous plants	Bushy areas	Distasteful to birds and other predators
5	Khatabdhari	Baron	*Euthalia aconthea*	Nymphalidae	Lepidoptera	Adult help in pollination	Mostly mango tree	Resembles *Apatula* sp
6	Lez Bahari	Tailed Jay	*Graphium agamenon*	Papilionidae	Lepidoptera	Causes damage to plant leaves	Lantana flower	Rapid flier
7		African Migrant	*Catopsilia sp.*	Pieridae	Lepidoptera	Catterpillars cause damage to Leguminosac plants	Garden	Migrant
8			*Eurema hecabe*	Pieridae	Lepidoptera	Caterpillars feed on leaves	Tree like Cassia and Acacia	Miggrant
9	Dushar Sonali Chakra	Grey Pansy	*Precis atlites*	Nymphalidae	Lepidoptera	Adults help in pollination	Garden	Active flier
10	Ramdhanu	Common Egg Fly	*Hypolimnas*	Nymphalidae	Lepidoptera	Caterpillars cause damage to plant leaves	Garden	Males fiercely defend terriories

Table 17. Agricultive insects

SL no.	Local name	English name	Scientific name	Order	Family	Host plant
1	Pamri poka	Rice Hispa	*Dicladispa armigera*	Coleoptera	Hispidae	Rice
2	Leda poka	Rice ear cutting Catterpillar	*Mythimna unipuncta*	Lepidoptera	Noctuidae	Rice
3	Jub poka	Bean Aphid	*Aphis medicagenesis*	Homoptera	Aphidae	Bean
4	------	Onion Thrips	*Thrips tabaci*	Thysanoptera	Thripidae	Onion
5	Hailla	Potato Tuber Moth	*Phthorimaea operculella*	Lepidoptera	Gelechiidae	Potato
6	------	Aphid	*Aphis craccivora*	Homoptera	Aphidae	Tomato

Table 18. Groups of vertebrate fauna

Group	Wild	Domesticate	Number of species
Fish	36	04	40
Amphibians	03	00	03
Reptiles	09	00	09
Birds	37	06	43
Mammals	14	06	20
Total	99	16	115

Source: Internet

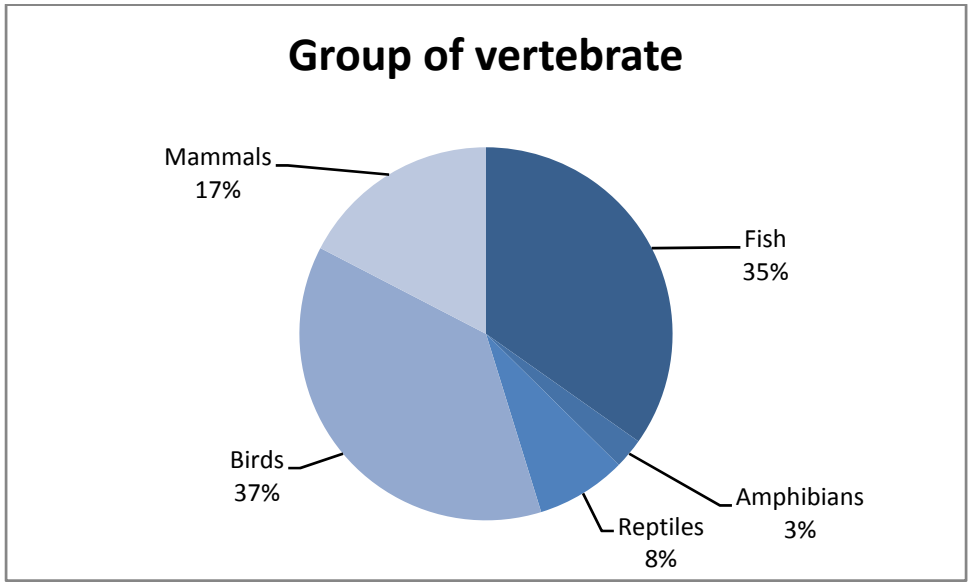


Table 19. Fish fauna

Serial no.	Local name	English name	Scientific name
1	Ilisha	Hilsa	*Tenualosa ilisha*
2	Ghaura	Garua Bacha	*Clupisoma garua*
3	Bailla	Tank Goby	*Glossogobius giuris*
4	Ghosha	Gangetic Mustus	*Mystus cavasius*
5	Shingi	Stinging Catfish	*Heteropneustes fossilis*
6	Magur	Magur	*Clarius batrachus*
7	Koi	Climbing Perch	*Anabas testudineus*
8	Chital	Humped Feather Back	*Notopterus chitala*
9	Chapila	Indian river shad	*Gudusia chapra*
10	Rui	Rohu	*Labeo rohita*
11	Shol	Striped or banded snakehead	*Channa striatus*
12	Taki	Spotted snakehead	*Channa punctata*
13	TeloTaki	Asiatic snakehead	*Channa orientalis*
14	Bata	Bata Labeo	*Labeo bata*
15	Khakkia	Freshwater Garfish	*Xenentodon cancila*
16	Tengra	Stripe Dwarf Catfish	*Mystus vittatus*
17	Poa	Pama	*Pama pama*
18	Gutum	Guntea Loach	*Lepidocephalus guntea*
19	Tit Punti	Ticto Barb	*Puntius ticto*

20	Meni/Bheda	Mottled Nandus	*Nandus nandus*
21	Aor	Long whiskered Catfish	*Aorichthys aor*
22	Tara Baim	One striped spiny eel	*Macrognathus aral*
23	Pabda	Pabdah Catfish	*Ompok pabda*
24	Boal	Freshwater shark	*Wallago attu*
25	Catla	Catla	*Catla catla*
26	Phasa	Gangetic Hairfin Anchovy	*Setipinna phasa*
27	Mola	Pale Carplet	*Amblpharyngodon mola*
28	Kalibaus	Black Rohu	*Labeo calbasu*
29	Darkina	Black line Rasbora	*Parluciosoma daniconius*
30	Batashi	Indian Potasi	*Pseudeutropius atherinoides*
31	Tapasi	Paradise Threadfin	*Polynemus paradiseus*
32	Pangus	Pangus	*Pangasius pangasius*
33	Rani	Necktie Loach	*Botia dario*
34	Foli	Grey Featherback	*Notopterus notopterus*
35	Rita	Rita	*Rita rita*
36	Khailsha	Striped Gourami	*Colisa fasciatus*
37	Potka	Ocellated Pufferfish	*Tetraodon cutcutia*
38	Kachki	Ganga Riversprat	*Corica soborna*
39	Baghair	Gangetic Goonch	*Bagarius yarrellii*
40	Kajuli	Jamuna Ailia	*Ailia punctata*

Table 20. Amphibians

Serial no.	Local name	English name	Scientific name	Status
1	Kuno Bang	Toad	*Duttaphyrnus melanostictus*	Common
2	Gecho Bang	Tree Frog	*Polypedates maculatus*	Common
3	Sona Bang	Bull Frog	*Hoplobatrachus tigerinus*	Rare

Table 21. Reptiles

Serial no.	Local name	English name	Scientific name	Status
1	Dhora shap	Checkered Keelback	*Xenochrophis piscator*	Common
2	Daraish	Rat snake	*Colubar mucosus*	Rare
3	Pana shap	Common smooth water snake	*Enhydris enhydris*	Rare
4	Dumukha shap	Common warm snake	*Ramphotyphlops braminus*	Rare
5	Shankhani shap	Banded krait	*Bungarus fasciatus*	Rare
6	Gokhra shap	Kobra	*Naja naja*	Common
7	Tikti	Common house lizard	*Hemidactylus flaviviridis*	Common
8	Tiktiki	House lizard	*Hemidactylus brooki*	Rare
9	Kachim	Soft shell Turtle	*Aspideretes hurum*	Rare

Table 22. Resident birds

Serial no.	Local name	English name	Scientific name	Status
1	Machranga	Common kingfisher	*Alcedo atthdis*	Common
2	Machranga	White throated kingfisher	*Halcyon smynensis*	Very common
3	Kokil	Asian cuckoo	*Eudynamys scolopacea*	Common
4	Tia	Rose ringed parakeet	*Pissitacula krameri*	Rare
5	Laxmi Pencha	Barn Owl	*Tylo alba*	Rare
6	Bhutum Pencha	Brown fish owl	*Ketupa zeylonensis*	Rare
7	Jalali kobutor	Rock pigeon	*Columba livia*	Common
8	Tila Ghughu	Spotted Dove	*Streptopelia chinensis*	Rare
9	Dahuk	White breasted Waterhen	*Amaurornis phoenicurus*	Very common
10	Kura	Water cock	*Gallinuda chloropus*	Rare
11	Pirpira pakhi	Bronze winged Jacana	*Metopidius indicus*	Rare
12	Night heron	River Tern	*Sterna aurantia*	Common
13	Shankho Chil	Brahminy Kite	*Haliastur indicus*	Common
14	Bhuban Chil	Black Kite	*Milvus migrans*	Common
15	Night heron	Indian Pond Heron	*Ardeola grayii*	Very common
16	Night heron	Cattle Egret	*Bubulcus ibis*	Very common
17	Shada Bok	Great Egret	*Casmerodius albus*	Very common
18	Pati Bok	Little Egret	*Egretta gazretta*	Common
19	Bok	Intermediate Egret	*Mesophoyx intermedia*	Common
20	Pati kak	House Crow	*Corvus splendens*	Very common
21	Dar kak	Jungle Crow	*Corvus macrorhynchos*	Common
22	Doel	Magpie Robin	*Copsychus saularis*	Common
23	Shalik	Common Myna	*Acrirotheres tristis*	Very common
24	Go-shalik	Pied Myna	*Sturnus contra*	Very common
25	Kath shalik	Grey headed Myna	*Sturnus malabaricus*	Common
26	Jhuti shalik	Jungle Myna	*Acrirotheres fuscus*	Very common
27	Choroi	House Sparrow	*Passer domesticus*	Very common
28	Tuntuni	Tailorbird	*Orthotomus sutorius*	Common
29	Kaththokra	Fulvous breasted Woodpecker	*Dendrocrops macei*	Rare
30	Kaththokra	Grey capped Pygmy Woodpecker	*Dendrocrops canicapillus*	Rare
31	Bagha Tiki	Long tailed Shrike	*Lanius schach*	Rare
32	Machranga	Pied kingfisher	*Ceryle rudis*	Rare

Table 23. Migratory birds

Serial no.	Local name	English name	Scientific name	Status
1	Kada-khocha/Chaga	Fantail Snipe	*Gallinago gallinago*	Rare
2	Gonga Koitor	Brown-headed gull	*Larus brunnicephalus*	Common
3	Gangchil	Common Tern	*Sterna hirundo*	Rare
4	Koshai Pakhi	Brown Shrike	*Lanius cristatus*	Common
5	Holud Khanjan	Yellow Wagtail	*Motacilla flava*	Uncommon

Table 24. Mammals

Serial no.	Local name	English name	Scientific name	Status
1	Horin	Spotted deer	*Cervus axis*	Very common
2	Kukur	Dog	*Canis domesticus*	Very common
3	Mecho biral	Fishing Cat	*Prionailurus viverrinus*	Common
4	Banor	Rhesus Macaque	*Macaca mulatta*	Rare
5	Beji	Common Mongoose	*Herpestes jabanicus*	Uncommon
6	Chika	Grey Musk Shrew	*Suncus murinus*	Common
7	Baitta Indur	Lesser bandicota rat	*Bandicota bengalensis*	Common
8	Boro Indur	Greater bandicota rat	*Bandicota indica*	Uncommon
9	Nengti Indur	House mouse	*Mus musculus*	Common
10	Indur	Common house rat	*Rattus rattus*	Very Common
11	Badur	Flying Fox	*Pteropus giganteus*	Common
12	Badur	False Vampire	*Megaderma lyra*	Common
13	Chamchika	Indian Pipistrelle	*Pipistrellus coromandra*	Common
14	Shusuk	Gangetic dolphin	*Platanista gangetica*	Uncommon

Table 25. Domesticated animals

Sl no.	Local name	English name	Scientific name	Variety	Abundance	Uses
1	Deshi goru	Cow	*Bos indicus*	Deshi	Very common	Source of meat, milk, skin, manure and hoof.
2	Chagol	Goat	*Capra hircus*	Black Bengal	Very common	Source of meat, milk, skin, manure and hoof.
3	Verha	Sheep	*Ovis aries*		Very common	Source of meat, milk, skin, manure and hoof.
4	Kukur	Dog	*Canis domesticus*		Common	Scavenger
5	Belai	Cat	*Felis domesticus*		Common	Biological control
6	Murgi	Fowl	*Gallus gallus*	Deshi	Common	Source of egg and meat
7	Pati hash	Mallard	*Anas poecilorhyncha*		Common	Source of egg and meat
8	Raj hash	Swan	*Anser anser*		Common	Source of egg and meat
9	Kobutor	Pigeon	*Columba livia*	Jalali	Very common	Source of egg and meat
10	Kobutor	Pigeon	*Columba livia*	Bangla	Common	Source of egg and meat
11	Kobutor	Pigeon	*Columba livia*	Seraji	Common	Source of egg and meat
12	Mohish	Water buffalo	*Bubalus bubalus bubalis*	Deshi	Very common	Source of meat, milk, skin, manure and hoof.

Table 26. Fishing Gears used by the local people

Types of Gears		Name of Gears
Fishing nets	Drag net/ Push net	Moia jal
		Thela jal
		Chandi jal
		Ber jal
		Rakkhosh jal
	Lift net/ Farmed net/ Dip net	Dharma jal
		Bheshal jal
		Ghurni jal
		Lathi jal

		Bash jal
		Bawa jal
	Cast net	Khepa jal
		Kachki jal
Fishing rods		Hazari Borshi
		Chip
Fishing traps		Chai
		Anta
		Polo
		Dhak
Fishing barricades		Pati/ Bana
Fishin spears and harpoons/ Wounding gears		Konchi
		Juti

Table 27. Knowledgeable persons

Serial no.	Name	Age	Sex	Family member	Occupation	Flow of knowledge
1	Babor Ali	80+	M	08	Shopkeeper	None
2	Abdul Razzaque Mollah	60+	M	07	Farmer	None
3	Md. Yousuf Ali	60+	M	11	Fisherman	None
4	Md. Omor Ali	50+	M	05	Fisherman	Children
5	Md. Alam Matbar	35+	M	03	Fisherman	None
6	Md. Anwar Hossain	40+	M	09	Fisherman	None
7	Md. Naser Ali	30+	M	04	Fisherman	None
8	Md. Deel Mohammad	25+	M	05	Shopkeeper	None
9	Md. Nurul Islam Mollah	45+	M	06	Fisherman	None
10	Md. Alawddin	55+	M	13	Farmer	None
11	Md. Rashida Begum	40+	F	07	Housewife	None
12	Md. Jahirul Islam	50+	M	11	Fisherman	None
13	Md. Abdul Karim	55+	M	13		None

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Appendix I. Questionnaire to register the knowledge of the knowledgeable people

Name:
Age:
Address:
Occupation:
Family size:
Type of knowledge:
Flow of knowledge:

Questions:

1. What do you think about the status of the biodiversity of your island?
2. Do you know anything about the medicinal value of plants?
3. Do you pass your knowledge?
4. Do you know the effects of over cultivation?
5. What do you think about the beneficial role of different species?
6. What are your experiences about the past and present status of livelihood?
7. What are the major natural calamities?
8. What are the control measures to protect natural disasters?
9. W hat do think about the educational status of your island?
10. What are the basic rules for islanders?
11. What do you think about increasing the rate of human population?
12. What do you think about over exploitation of natural resources?
13. What are the cultural activities in the island?
14. What are the major threats for the islanders?
15. Are you aware of the Bangladesh Wildlife Preservation (Amendment) Act, 1974?