

DIVERSITY OF WILDLIFE AT RUHITPUR UNION, KERANIGANJ, DHAKA

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Abstract

The study was carried out through direct field observation by plot counting; transect line method and interviewing the local people from September 2011 to March 2012. A total of 83 species of wildlife belonging to 18 orders, 34 families and 64 genera was recorded. Of them, 4 (4.82%) species were amphibians, 17 (20.48%) reptiles, 55 (66.27%) birds and 7 (8.43%) mammals. Of the amphibians, 3 (75%) were frogs and rest 1 (25%) was toad. Of the reptiles, 3 (17.65%) were turtles, 7 (41.18%) lizards and 7 (41.18%) were snakes. Of the birds, 30 (54.55%) were passerines and remaining 25 (45.45%) were non-passerines. Regarding the resident status, 44 (80.00%) species of birds were resident and 11 (20.00%) were winter migrants. Of the mammals, 4 (57.13%) were rodents, 1 (14.29%) bats, 1 (14.29%) carnivore and 1(14.29%) insectivore. The relative abundance showed that 16 (20.00%) were very common, 17 (21.18%) common, 22 (25.88%) fairly common and 28 (32.94%) were few. Among the threatened categories, 2 (2.35%) were critically endangered, 3 (3.53%) endangered, 13 (15.29%) vulnerable, 50 (61.18%) lower risk and 15 (17.65%) species were data deficient. Some threats were identified as the cause for the declining of the biodiversity i.e. habitat degradation, climate change, over exploitation of agricultural lands. Implementation of conservation and management practice is necessary to protect the diversity of present species and their population in the studied habitats.

Key words: Wildlife diversity, Population density, Habitat, Ruhitpur

Introduction

Biodiversity encompasses multiple values and is vital for the production of food and to conserve the ecological foundations needed to sustain people's livelihood (Mukul 2007). Distinct physiographic characteristics, variations in hydrological and climatological conditions, and difference in the soil properties in Bangladesh contribute in developing diverse forms of ecosystems enriched with great diversity of flora and fauna (Mittermeier *et al.* 1998). Due to its unique geo-physical location Bangladesh is exceptionally characterized by a rich biological diversity (Nishat *et al.* 2002, Hossain 2001 and Barua *et al.* 2001). Bangladesh has approximately 113 species of mammals, more than 628 species of birds (both passerine and non-passerine), 126 species of reptiles and 22 species of amphibians (Islam 2005). It is widely supposed that the poorest people of those poor countries, who depend most immediately upon local ecosystems for

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their livelihoods are somehow responsible for the degradation of biodiversity and will mostly affected by the consequence of this biodiversity loss (CBD 2006 and 2007). Human beings have extensively modified aquatic and terrestrial ecosystems in Bangladesh.

Preparation of base line data on wildlife diversity through scientific study is important to protect them in the study area. Studies had been carried out in different habitats of Bangladesh (Haque 1975, Banerjee 1978, Sarker and Sarker 1983, 1985 and 1988, Rosario and Hai 1996, Jasmin 1996, Hossain and Sarker 1997, Sarker *et al.* 2001, Jaman *et al.* 2004, Hossain *et al.* 2004, Jaman *et al.* 2011, Rahman *et al.* 2011 and Rabbi *et al.* 2011). The present investigation was undertaken to study species composition of wildlife, local status, density of each species and habitat utilization that may help to make conservation plan for wildlife protection in the study area.

Materials and Methods

Study Area: Ruhitpur union is situated on the bank of Dhaleshwari and Ichamati river in between $23^{\circ}40'29.12''$ north latitude and $90^{\circ}18'41.14''$ east longitude. It is bounded by Kalatia union on the north, Basta union on the east, Serajdikhan upazila on the south, Nawabganj and Singair upazilas on the west (Fig. 1). It is about 12 km south west from Dhaka city. The total area of the Union is about 15.10 km^2 (3,730 acres). The study area is mainly covered by cultivated land with a number of ponds, swamps, ditches, canals, beels and homestead areas.

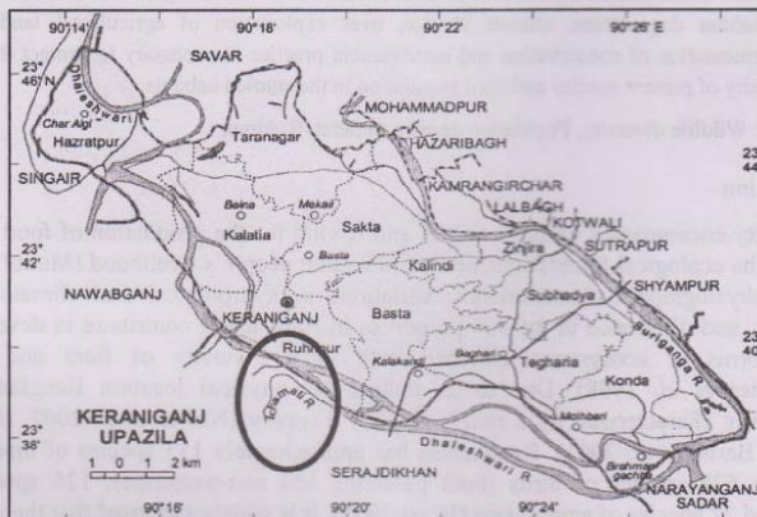


Fig. 1. Study area – map of Keraniganj Upazila.

There are 16 villages in this union. The villages in Ruhitpur union are lush with vegetation. The backyards of village homes often have dense vegetation, and are particularly important in supporting a number of wildlife. This wildlife use the homestead vegetation and surrounding crop fields (rice, wheat, jute, etc.) for their food and shelter.

The climate of the study area has a moist tropical climate with high rainfall concentrated during the monsoon period from June to October. There were generally four to five months of dry period. The relative humidity remains high, 69% - 89% with minor variation. The temperature also remains high with small seasonal differences. Pre-monsoonal storms were observed from March to May.

The maximum temperature in the year is reached between the first week of April and the end of July. The temperature raises high in February and begins to decrease from October.

The field work for observing and collecting data on wildlife was started in September, 2011 and continued till March, 2012. The observations started in the morning and continued the day long to observe the wild animals including their number, habitats, ecological condition, movement and behavioral activities. The study was based on direct field observation. Observation was made by plot counting and transects line methods. The whole area was divided into 40 plots to observe the amphibians and reptilians fauna. In total 50 transect lines were made for the observation and counting of avifauna. Some avifaunas which were normally hidden in the bush, jungle and branches of trees were recorded by hearing songs and calls. For the mammalian species transect line and plot counting method was used. Some people were interviewed in the study area to collect the data of wild animals especially nocturnal and threatened animals which were not usually observed. Some questionnaires were distributed among the inhabitants of the study area for collecting data on species composition, density and habitat utilizations. During observations, a field binocular was used for watching the animals, a Garmin etrex H high sensitivity GPS device was used for navigation. Digital camera and maps were also used. Population density was calculated by dividing the total number of each species by the surface area (sq. km) where the individual species was counted. The specific method used for the study of different groups of wildlife is as follows:

Amphibians: Plot counting method was used for collecting data on species diversity and population density of amphibians. A total of 40 plots (100m×100m) was selected in study area. For the identification and taxonomical studies Husain and Rahman (1978) and Khan (2008) were consulted.

Reptiles: In order to survey the lizards and snakes plot counting and transect line method were used. For the identification and taxonomical study Daniel (1983), Sarker and Sarker (1985) and Khan (2008) were consulted.

Birds: Only transect line method (500 m length and 50 m width) was applied for the census of birds. Ali and Ripley (1983), Hossain and Sarker (1997) and Khan (2008) were consulted for the identification and taxonomical study.

Mammals: Mammals were studied using transects line and plot counting method. For their identification and taxonomical studies Green (1978), Prater (1993) and Khan (2008) were consulted.

Results And Discussion

A total of 83 species of wildlife belonging to 18 orders and 34 families was recorded during the study period. Among the total species, 4 were amphibians, 17 reptiles, 55 birds and 7 species were mammals (Fig. 2). Relative abundance showed that 16 species were very common, 17 common, 22 fairly common and 28 were few.

Amphibia Reptiles Birds Mammals

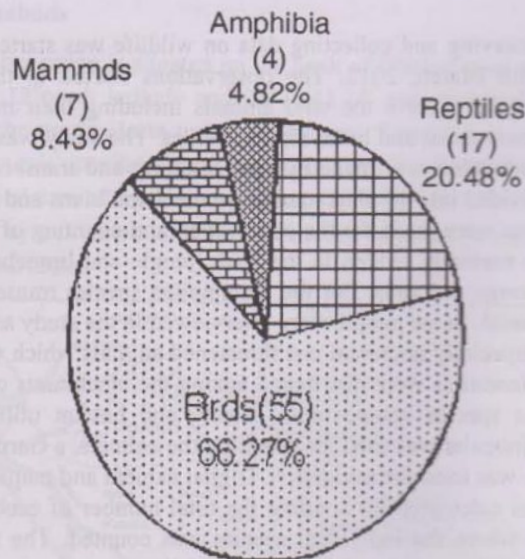
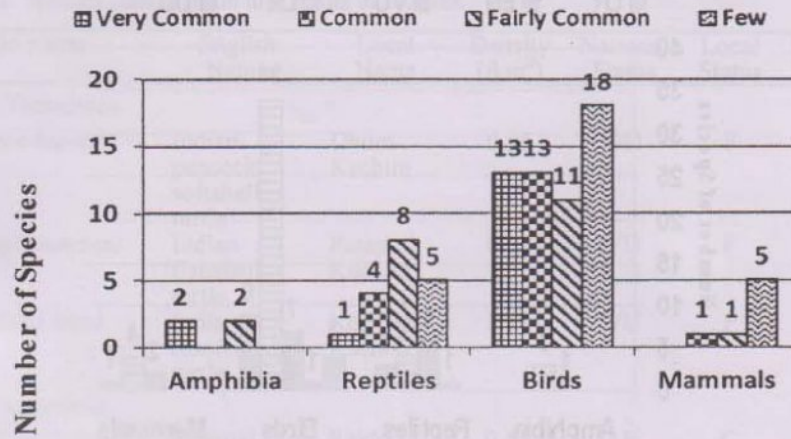


Fig. 2. Wildlife species observed in the study area.

Amphibians: Among the amphibians, 75% species were frogs and only 25% was toad. Relative abundance showed that 50% species were very common and 50% fairly common (Fig. 3). IUCN threatened categories showed that 3 species were at lower risk and 1 was vulnerable nationally. Population density was the highest in case of *Duttaphrynus melanostictus* ($9.44/\text{km}^2$) followed by *Hoplobatrachus tigerinus* ($9.16/\text{km}^2$) and the lowest in *Fejervarya limnocharis* ($2.77/\text{km}^2$) and *Euphlyctis cyanophlyctis* ($2.77/\text{km}^2$) (Table 1).



Wildlife species studied

Fig. 3. Relative abundance of recorded wildlife.

Table 1. Species composition and status of amphibians.

Scientific Name	English Name	Local Name	Density (/km ²)	National Status	Local Status	Habitat
Order: Anura <i>Duttaphrynus melanostictus</i>	Asian Common Toad	Kuno Bang	9.44	LR	VC	P, h, t
<i>Hoplobatrachus tigerinus</i>	Indian Bull Frog	Sona Bang	9.16	VU	VC	P, e, l
<i>Fejervarya limnocharis</i>	Cricket Frog	Jhijhi Bang	2.77	LR	FC	P, e, l
<i>Euphlyctis cyanophlyctis</i>	Indian Skipper Frog	Mali Bang	2.77	LR	FC	P, e

Reptiles: Among the reptiles, 3 (17.65%) species were turtles, 7 (41.18%) lizards and 7 (41.18%) were snakes. Among the snakes, 3 (42.86%) species were poisonous and remaining 4 (57.14%) non-poisonous. Relative abundance showed that only one (5.88%) species was very common, 3 (17.65%) common, 8 (47.06%) fairly common and 5 (29.41%) few (Fig. 3). IUCN threatened categories showed that 7 species at lower risk, 5 vulnerable, only one endangered and 4 were data deficient (Fig. 4). Population density of *Hemidactylus frenatus* (8.05/km²) was the highest followed by *Hemidactylus brookii* (5.27/km²) and *Calotes versicolor* (5.00/km²) and the lowest in *Pangshura tecta* (1.11/km²) followed by *Lissemys punctata* (0.55/km²), *Nilssonina hurum* (0.55/km²) and *Varanus salvator* (0.83/km²) (Table 2).

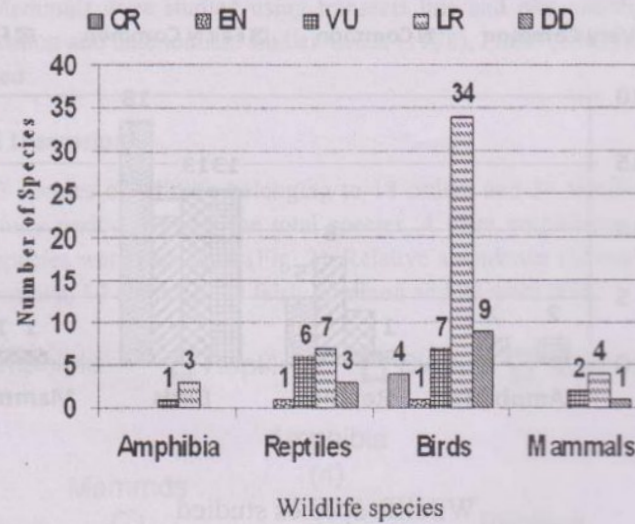


Fig. 4. Threatened status of recorded wildlife.

Birds: Among the total species of birds, 25 (45.45%) were non passerines and remaining 30 (54.55%) were passerines. Of the non-passerine birds, 21 (84.00%) were resident and 4 (16.00%) winter migrants. Of the passerine birds, 22 (73.33%) were resident and rest 8 (26.66%) were winter migrants. Relative abundance showed that 13 (23.63%) species were very common, 13 (23.63%) common, 11 (19.30%) fairly common and 18 (31.58%) were few (Fig. 3). Threatened status showed that 36 species were lower risk, 10 endangered, 6 vulnerable and only 2 were critically endangered (Fig. 4). The highest population density of birds was *Acridotheres tristis* (245.60/km²) followed by *Dicrurus macrocercus* (198.00/km²) and *Lanius cristatus* (100.80/km²) and the lowest was *Anas poecilorhyncha* (0.80/km²) (Table 3).

Mammals: Of the mammals, one (14.29%) was shrew, 4 (57.14%) rodents, one (14.29%) bat and one (14.29%) was mongoose. Relative abundance showed that one (14.29%) was common, 1 (14.29%) fairly common and 5 (71.43%) were few (Fig. 3). Of the threatened categories, 4 species were at lower risk, only one vulnerable and 2 species were data deficient (Fig. 4). The highest population density was *Herpestes edwardsii* (4.16/km²) and the lowest was *Bandicota bengalensis* (0.55/km²) (Table 4).

Table 2. Species composition and status of reptiles.

Scientific Name	English Name	Local Name	Density (/km ²)	National Status	Local Status	Habitat
Order: Testudines						
<i>Nilssonia hurum</i>	Indian peacock softshell turtle	Dhum Kachim	0.55	DD	F	P, p
<i>Lissemys punctate</i>	Indian flapshell turtle	Patapori Kachim	0.55	VU	F	P, c, p
<i>Pangshura tecta</i>	Indian Roofed turtle	Kori/Hail Kachim	1.11	VU	F	P, p
Order: Lacertelia						
<i>Calotes versicolor</i>	Oriental Garden Lizard	Rakto chosa	0.55	LR	C	P, t
<i>Gekko gekko</i>	Tokyo Gecko	Takkhak	2.77	VU	FC	P, b, x
<i>Hemidactylus frenatus</i>	Common House Gecko	Tiktiki	8.05	LR	VC	P, h, t
<i>Hemidactylus brookii</i>	Brook's Gecko	Tiktiki	5.27	LR	C	P, h
<i>Varanus bengalensis</i>	Bengal Monitor	Gui Shap	1.38	EN	FC	P, d, e, u
<i>Mabuya carinata</i>	Common Skink	Anjan	3.05	LR	C	P, b, l
<i>Mabuya dissimilis</i>	Stripped Skink	Achila	0.83	VU	FC	L, b
Order: Serpentes						
<i>Ramphotyphlops braminus</i>	Common Blind Snake	Dumukha Shap	2.22	LR	FC	L, h
<i>Xenochrophis piscator</i>	Checkered keelback water snake	Dora Shap	1.38	LR	FC	P, c
<i>Amphiesma stolatum</i>	Buff Striped Keelback	Dora Shap	1.11	VU	FC	c
<i>Ptyas mucosus</i>	Oriental Rat Snake	Daraj Shap	1.11	LR	FC	P, b
<i>Enhydris enhydris</i>	Rainbow Water-snake	Pani Shap	1.66	DD	FC	P, c
<i>Bungarus fasciatus</i>	Banded Krait	Shankhini Shap	1.11	VU	F	c, d
<i>Bungarus caeruleus</i>	Common Krait	Kalkeutey	0.83	DD	F	c, d

Table 3. Species composition and status of birds.

Scientific Name	English Name	Local Name	Density (/km ²)	National Status	Local Status	Habitat
Order: Pelecaniformes						
<i>Phalacrocorax niger</i>	Little Cormorant	Choto Pankouri	3.60	VU	FC	P, a, c, e
Order: Ciconiiformes						
<i>Ardeola grayii</i>	Pond Heron	Kani Bok	21.60	LR	VC	P, a, d, e
<i>Bubulcus ibis</i>	Cattle Egret	Go Bok	8.40	LR	C	P, c, d, e
<i>Egretta alba</i>	Large Egret	Baro Bok	3.20	VU	F	P, c, d, e
<i>Egretta intermedia</i>	Intermediate Egret	Majhari Bok	3.60	VU	FC	P, c, d, e
<i>Egretta garzetta</i>	Little Egret	Choto Bok	3.20	LR	F	P, c, d, e
Order: Anseriformes						
<i>Dendrocygna javanica</i>	Lesser Whistling-Duck	Choto Sarali Hans	3.60	VU	FC	P, a, e
<i>Anas acuta</i>	Northern Pintail	Lenja Hans	4.80	DD	C	P, c, e
<i>Anas poecilorhyncha</i>	Spot-billed Duck	Pati/ Mete Hans	0.80	CR	F	P, a, c, e
Order: Columbiformes						
<i>Columba livia</i>	Blue Rock Pigeon	Jalali Kabutor	15.60	LR	VC	P, a, h
<i>Streptopelia chinensis</i>	Spotted Dove	Tila Ghugu	12.00	EN	VC	P, a, b, d, t
<i>Streptopelia decaocto</i>	Ring Dove	Raj Ghughu	4.40	CR	F	P, a, d, l, t
<i>Chalcophaps indica</i>	Common Emerald Dove	Sabuj/ Raj Ghughu	2.40	VU	F	P, h, t
Order: Cuculiformes						
<i>Eudynamis scolopacea</i>	Asian Koel	Kokil	6.80	LR	C	P, t
<i>Cacomantis merulinus</i>	Plaintive Cuckoo	Sorgom	5.60	LR	FC	P, l
<i>Hierococcyx varius</i>	Common Hawk Cuckoo	Chokh gelo	1.20	DD	F	b, l, x
<i>Centropus sinensis</i>	Greater Coucul	Baro Kana Kukka	6.00	VU	C	P, l, t

Contd.

Scientific Name	English Name	Local Name	Density (/km ²)	National Status	Local Status	Habitat
Order: Coraciiformes						
<i>Alcedo atthis</i>	Common Kingfisher	Khude Machranga	7.20	LR	C	P, e
<i>Halcyon smyrnensis</i>	White breasted Kingfisher	Shadabuk Machranga	5.20	LR	FC	P, e, t
<i>Merops orientalis</i>	Green Bee Eater	Suichora/ Bashpoti	27.6	DD	VC	P, a, b, e
<i>Merops leschenaulti</i>	Chestnut Headed Bee Eater	-	10.80	VU	C	P, a, b, e
Order: Passeriformes						
<i>Passer domesticus</i>	House Sparrow	Charui	26.80	LR	VC	P, a, h, l
<i>Anthus campestris</i>	Tawny Pipit	-	5.20	LR	FC	P, a, b
<i>Anthus hodgsoni</i>	Olive-backed Pipit	-	5.60	DD	FC	P, a, b
<i>Anthus rufulus</i>	Paddy-field Pipit	-	54.00	LR	VC	P, a, b, d
<i>Motacilla citreola</i>	Citrine Wagtail	-	5.60	DD	F	P, b, d, t
<i>Dicrurus macrocercus</i>	Black Drongo	Kalo Fingey	198.00	LR	VC	P, a, b, d, e, l, t, x, y
<i>Dicrurus aeneus</i>	Bronzed Drongo	Dhusor Fingey	24.80	LR	VC	P, a, d, l, t
<i>Sturnus contra</i>	Pied Starling	Gobrey Shalik	8.40	LR	C	P, a, d, t
<i>Sturnus malabaricus</i>	Chestnut-tailed Starling	Shalik	2.80	LR	F	P, t
<i>Acridotheres tristis</i>	Common Myna	Bhat Shalik	245.60	LR	VC	P, a, b, d, l, t, x, y
<i>Acridotheres fuscus</i>	Jungle Myna	Jhuti Shalik	10.40	LR	C	P, a, b, d, l, t, x, y
<i>Corvus splendens</i>	House Crow	Pati Kak	92.80	LR	VC	P, a, h, t
<i>Corvus macrorhynchos</i>	Jungle Crow	Dar Kak	8.00	LR	FC	P, a, h, t
<i>Dendrocitta vagabunda</i>	Rufos Tree-pie	Harichacha	10.00	LR	C	P, l, t, x

Contd.

Scientific Name	English Name	Local Name	Density (/km ²)	National Status	Local Status	Habitat
<i>Aegithina tiphia</i>	Common Iora	Fatik Jal	5.20	LR	FC	b, l
<i>Oriolus oriolus</i>	Golden Oriole	Bene Bou	8.40	LR	FC	P, a, b, t
<i>Oriolus xanthornus</i>	Black Headed Oriole	Haldey Pakhi	7.60	LR	FC	P, a, b, l, x, y
<i>Pycnonotus cafer</i>	Red Vented Bulbul	Bulbuli	8.80	LR	C	P, t, x, y
<i>Pycnonotus jocosus</i>	Red Whiskered Bulbul	Shipahi Bulbuli	3.60	CR	F	b, t
<i>Orthotomus sutorius</i>	Common Tailor Bird	Tuntuni	23.60	LR	VC	P, b, h, t, x, y
<i>Phylloscopus fuscatus</i>	Dusky Warbler	-	3.20	LR	F	P
<i>Phylloscopus reguloides</i>	Blyth's Leaf Warbler	-	2.00	DD	F	P
<i>Acrocephalus stentoreus</i>	Clamorous Reed Warbler	Tikra	2.80	LR	F	P, l, t
<i>Mirafra assamica</i>	Rufous-winged Bush Lark	Bharat	6.00	LR	F	P, b
<i>Calandrella raytal</i>	Sand Lark	Dhulcharai	43.20	LR	VC	P, d, l
<i>Lanius cristatus</i>	Brown Shrike	Badami Kosai	100.80	DD	VC	P, a, b, d, l, t
<i>Lanius schach</i>	Rufous-backed Shrike	Dabra/Baghat iki	5.20	LR	F	P, a, b, d, l, t
<i>Copsychus saularis</i>	Oriental Magpie Robin	Doel	8.00	LR	C	P, a, b, h, l, t
Order: Piciformes						
<i>Dinopium benghalense</i>	Black-rumped Flameback	Kath thokra	8.40	LR	C	P, t
<i>Dendrocopos macei</i>	Fulvous-breasted Woodpecker	Kath thokra	5.60	LR	F	P, t
Order: Charadriiformes						
<i>Actitis hypoleucos</i>	Common Sandpiper	-	9.20	DD	C	P, d, e

Contd.

Scientific Name	English Name	Local Name	Density (/km ²)	National Status	Local Status	Habitat
<i>Calidris ferruginea</i>	Curllew Sandpiper	-	5.60	DD	F	P, d, e
Order: Falconiformes						
<i>Milvus migrans</i>	Black Kite	-	4.00	CR	F	P, a, b, t
<i>Haliastur indus</i>	Brahminy Kite	-	2.00	LR	F	P, a, b, t

Table 4. Status of Mammals.

Scientific Name	English Name	Local Name	Density (/km ²)	National Status	Local status	Habitat
Order: Soricomorpha						
<i>Suncus murinus</i>	Asian House Shrew	Chika/ Chhucho	2.22	LR	FC	P, b, h
Order: Rodentia						
<i>Mus musculus</i>	House mouse	Nengti Idur	1.11	LR	F	P, h
<i>Vandeleuria oleracea</i>	Asiatic Long-tailed Climbing Mouse	Gecho Idur	0.83	DD	F	P, d, h
<i>Bandicota indica</i>	Greater Bandicot Rat	Dhari/Baro Idur	0.83	LR	F	P, d, h, l
<i>Bandicota bengalensis</i>	Lesser Bandicot Rat	Dhari/Baro Idur	0.55	LR	F	P, d, h, l
Order: Chiroptera						
<i>Pteropus giganteus</i>	Indian Flying-fox	Baro Badur	0.83	VU	F	a, t
Order: Carnivora						
<i>Herpestes edwardsii</i>	Indian Gray Mongoose	Baro Benji	4.16	VU	C	P, b, l, y

Note: VC = Very Common; C = Common; FC = Fairly Common; F = Few; CR = Critically Endangered; EN = Endangered; VU = Vulnerable; LR = Lower Risk; DD = Data Deficient; Habitat: p = Plain land; a = flying in the air; b = bushes and scrubs; d = cultivated land; e = water edge; h = houses in the plain land; l = open land in the plain land; t = trees in the plain land; x = road side; y = grave yard.

From the above results and discussion it may be mentioned that some factors are affecting biodiversity of Ruhitpur union such as (1) Habitat degradation due to the increase of human population, (2) Extending of agricultural land and increase of land use in the above mentioned habitats, (3) Wide scale destruction of the natural habitat where wild animals are inhabiting, (4) Illegal hunting, trapping and collecting of young birds and mammals from their nests causing depletion of wildlife population from the study

area. (5) Agrochemicals are being randomly used by the farmers without having proper knowledge, thus adding pollutants to the environment of wildlife and (6) Ignorance of local people about the importance of the biodiversity and conservation of wildlife species.

To protect wildlife species, habitat degradation should be prevented, so that the habitats occupied by the wildlife cannot be hampered by the human population. Killing, hunting or trapping of wildlife must be stopped for the survival of threatened (critically endangered, endangered and vulnerable) wildlife. Creation of public awareness through organizing public programs, like discussion in the educational institutions and stakeholders, etc. and distribution of leaf-lets, hand notes, etc. may help to create consciousness about the importance of the biodiversity.

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