



## BIBECHANA

A Multidisciplinary Journal of Science, Technology and Mathematics

ISSN 2091-0762 (online)

Journal homepage: <http://nepjol.info/index.php/BIBECHANA>

### Description on some rescued turtles and their translocation at Turtle Rescue and Conservation Centre (TRCC), Sanischare, Jhapa

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Accepted for publication: February 12, 2014

#### Abstract

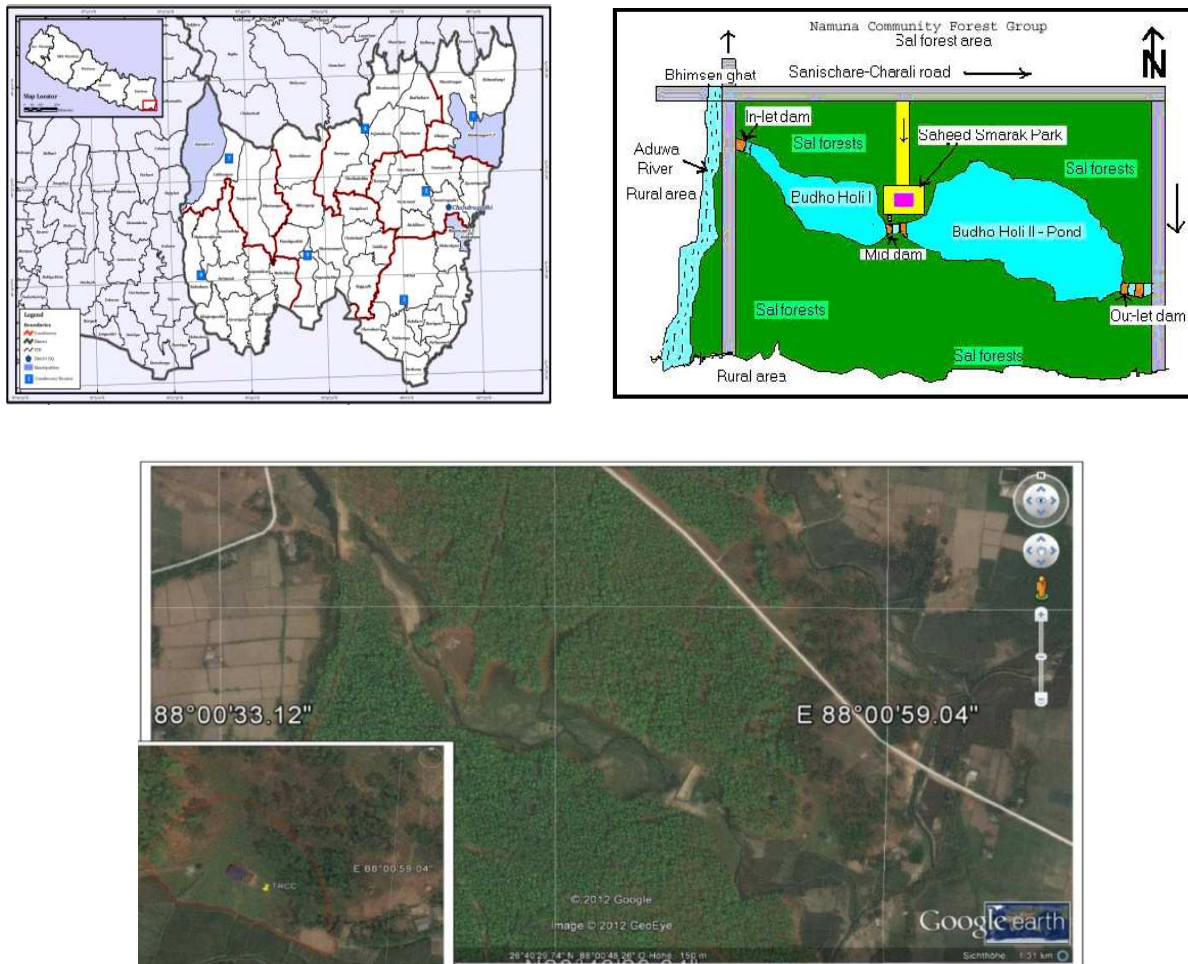
The present paper deals with the brief introduction of Turtle Rescue and Conservation Centre (TRCC) and description of some rescued turtles. Nine specimens of turtles belonging to five genera were rescued and translocated to the centre till date including 9.3 kg male Indian Peacock soft-shelled turtle (*Nilssonina hurum*) for the first time from Jhapa district. The rescue operations were conducted for the translocation of turtles confiscated from the local market, censorial collectors, fisherman and public residence. The high resolution photographs of captured specimens, their necessary biometry and GPS coordinates of location were taken. Species identification was done with the help of pictorial field guide and relevant literatures. Climatic data of study area were recorded from Gainde Irrigation Project, Maidhar, Jhapa. Interviews were taken during field visits with the help of structured questionnaire. Preliminary rescue data showed that the Indian flap-shelled turtle (*Lissemys punctata*) and Yellow bellied roofed turtle (*Pangshura flaviventer*) were the most overexploited species in the vicinities of the study area. The climatic condition of the rescue centre and water quality found suitable to support terrestrial and freshwater turtles and other various wetland flora and fauna. However, the rapid population growth and habitat destruction due to deforestation, unmanaged urbanization and expansion of agricultural land are found as the major threats to the survival of turtles and other wetland creatures at the study area and its vicinities.

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**Keywords:** *Nilssonina hurum*; *Lissemys punctata*; Freshwater turtle; Budhoholi wetland; TRCC.

#### 1. Introduction

Turtle Rescue and Conservation Centre (TRCC), is established for the first time in the Eastern Nepal having an ample motto of 'saving turtles for future generations'. The centre is located in the vicinity of wetland cum Sal dominated forest area formed by the old course of Aduwa River called Budho Holi or Bhimsen Pokhari, within the premises of Sukhani Martyr's Memorial Foundation (SUMMEF) at Sanischare-6, Salbari, Jhapa district in south-east Nepal. The area is about 0.235 sq km (22.4 ha) and geographically located between 88°00' 59.04" E to 26°40' 20.64" N at an altitude of 145 m from msl [1]. The Centre has been established by the joint venture of Amphibians and reptiles conservation Nepal (ARCO-Nepal) and Sukhani Martyr's Memorial Foundation (SUMMEF) with the legal consent of government of Nepal under the ministry of physical planning and construction. It was inaugurated jointly on 15<sup>th</sup> April 2012 by Prof. Dr. Hermann Schleich, Chair of ARCO-Nepal and Mr. Devraj Ghimire, President of SUMMEF on the auspicious presence of government authority, national and international delegates, subject experts distinguish scholars, locals and media persons. The first author is going



**Figure 1:** Location map of study area (TRCC), Jhapa, Nepal

to keep the records of rescued turtle scientifically, which are trans-located from various places to the centre; study the physico-chemical parameters of the Budhoholi lake and meteorological condition of study area. The study also helps to conclude whether the forest cum wetland site will be appropriate or not, for the development of Turtle rescue and conservation centre. The detailed study will help to protect turtles by identifying the root problem of their depletion and their rehabilitation. The centre will have multiple functions as a centre for education and research, conservation-tourism activities related to freshwater and terrestrial turtles. In the future, the centre will serve as “living” laboratories for freshwater and terrestrial turtle and encourage young scientist to conduct research regarding biology of freshwater and terrestrial turtles and threats to their survival in order to develop and implement innovative methods in the conservation of turtles.

### 1.1 Need for the study

Previous works revealed that the area was the suitable habitat for the various species of aquatic and terrestrial turtles. Records show that most of the endangered species of turtles are captured by local fisherman and sensorial collectors. The captured species were found either consumed as food or sell at local market for flesh and medicinal use [3]. Turtles have been used as food and in the preparation of traditional medicines since time immortal in Nepal [6]. Human impacts have affected the survival of turtles since prehistoric man has hunted them and gathered their eggs [4]. The burning poverty pressed the tribal ethnic group of Jhapa district such as *Satar*, *Mushar* to involve in catching to substitute their meal. The carapace and plastron was fed to the cattle after grinding [2]. All turtles in Nepal are threatened

by international trade, local use, making tourist articles and killed as pests on fishery farms [6]. Such type of socio-ecological information is lacking in Nepal which has prompted to conduct the present study. Genera occurring east and west of Nepal like *Geoclemys*, *Morenia*, *Hardella* and the big growing species such as *Kachugas* cannot be found any more in wild [5]. The realization of TRCC will be dedicated to the restoration and rehabilitation of depleted wild populations of aquatic and terrestrial turtles in South-East Nepal. Therefore, a detailed scientific study on the socio-ecological impacts on the turtle felt urgently with appropriate management strategies for their conservation.

## 2. Materials and methods

The study is based on survey method. Samples of flora and fauna collected were identified with the help of field guide and pictorial literatures. The meteorological data were collected from Gainde irrigation project (meteorological centre), Maidhar. Interviews were conducted with local during field work to gather necessary information. The various turtles were rescued from different places. Turtles were transported by vehicle carefully by keeping inside wet cotton sac. Necessary biometry and GPS coordinates of the place of reception of specimen were recorded. Photographs were taken and the species were identified by the help of literatures and experts.

**Table 1:** Summary of some rescued turtle: D = Dorsum, V = Venter

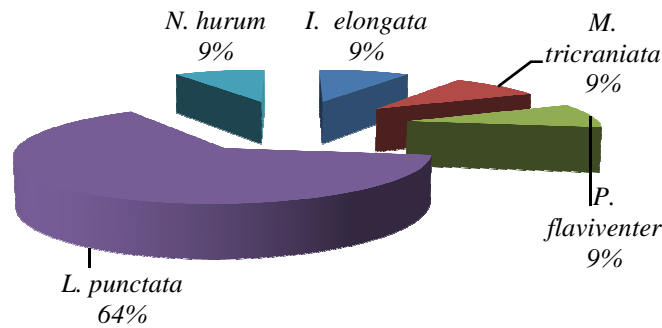
S N	Species	Size (l-b) cm	Wt (gm)	Rescued At	GPS- Coordinates	Trans-ocated @ TRCC on
1	<i>Lissemys punctata</i>	D 9.5-9.0 V 9.1-8.8	135	PG College, Biratnagar	N 26° 25' 43" E 87° 16' 8"	31/8/2012
2	<i>Lissemys punctata</i>	D 8.0-7.5 V 7.8-7.7	65	PG College, Biratnagar	N 26° 25' 43" E 87° 16' 8"	31/8/2012
3	<i>Lissemys punctata</i>	D 7.1-7.0 V 7.0-6.8	45	PG College, Biratnagar	N 26° 25' 43" E 87° 16' 8"	31/8/2012
4	<i>Nilssonina hurum</i>	D 47.0-37.0 V 42.2-37.5	9300	Dipeni River, Damak	N 26° 39' 43" E 87° 41' 36"	21/9/2012
5	<i>Pangshura flaviventer</i>	D 16.0-12.0 V 15.0-11.5	520	Koshi Barrage, Bhantabari	N 26° 37' 37" E 87° 01' 55"	11/10/2012
7	<i>Lissemys punctata</i>	D 10.5-9.5 V 10.0-8.5	180	Biratnagar-11, Madhumara	N 26° 27' 55" E 87° 17' 04"	30/11/2012
8	<i>Indotestudo elongata</i>	D 20.5-4.0 V 15.0-2.0	1004	Bharatganj-6, Bara	N 27° 12' 34" E 85° 13' 20"	26/1/2013
9	<i>Melanochelys tricarinata</i>	D 15.0-11 V 13.0-9.0	530	Bharatganj-6, Bara	N 27° 12' 10" E 85° 13' 25"	26/1/2013
10	<i>Lissemys punctata</i>	D 10.5-10 V 10.0-8.5	140	Bargachhi Biratnagar-4	N 26° 27' 35" E 87° 17' 15"	3/9/2013
11	<i>Lissemys punctata</i>	D 13.5-13 V 12.5-10	290	Bargachhi Biratnagar-4	N 26° 27' 35" E 87° 17' 15"	3/9/2013

### 3. Results and discussion

Five species of turtles, of which three belongs to hard-shelled viz. *Indotestudo elongata*, *Melanochelys tricarinata* and *Pangshura flaviventer* while rest two species belong to soft-shelles viz. *Lissemys punctata* and *Nilssononia hurum* have been successfully rescued and translocated to the turtle rescue centre so far (Table 1). Of them, IUCN has listed *Indotestudo elongata* as endangered and *Melanochelys tricarinata* and *Nilssononia hurum* as vulnerable species (Table 2). Most of the rescue operations were conducted during August to November.

**Table 2:** Status of rescued turtles

Turtle Species	Recorded No.	% Cover	IUCN	CITES	ARCO
<b>Hard-shelled</b>					
<i>Indotestudo elongata</i>	1	9	Endangered	II	Vulnerable
<i>Melanochelys tricarinata</i>	1	9	Vulnerable	I	Endangered
<i>Pangshura flaviventer</i>	1	9	Near threatened	II	Least concern
<b>Soft-shelled</b>					
<i>Lissemys punctata</i>	7	64	Lower Risk	II	Leastconcern
<i>Nilssononia hurum</i>	1	9	Vulnerable	I	Endangered



**Figure 2:** Pie-chart showing percentages cover of turtles (Species wise).

**Table 3:** Month-wise records of rescued species (2013).

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<i>I. elongata</i>	+	-	-	-	-	-	-	-	-	-	-	-
<i>M. tricarinata</i>	+	-	-	-	-	-	-	-	-	-	-	-
<i>P. flaviventer</i>	-	-	-	-	-	-	-	-	-	+	-	-
<i>L. punctata</i>	-	-	-	-	-	-	-	+	+	-	+	-
<i>N. hurum</i>	-	-	-	-	-	-	-	-	+	-	-	-

### 3.1. Description and locality records of some of rescued species

#### *Indotestudo elongata* (Blyth 1853)

Lat. Testudo or testa: brick, earthen pot; elongates: elongated

Status: IUCN: Endangered, CITES: II, ARCO: Vulnerable (hunted for masks)  
Etymology: E. Yellow-headed tortoise; N. Bhuin /Sun Kachhuwa  
Biometry: (l×b) cm: Carapace 20.0 × 8.0; Plastron: 15.0 × 6.0  
Weight: 1.4 kg  
Location: Bharatganj, Bara  
GPS coordinates: N 27° 12'34" / E 85° 13'20"  
Rescued on: 26/1/2013; 1750 hrs (crawling to bank of Dipeni river; caught by hand)  
Resource person: Om BK, Local person  
Identification key: Upper jaw tricuspid with pointed tip which is bent downwards  
Limbs: Greenish grey to dark grey, with yellow scales; claws yellow to whitish  
Carapace: Carapace yellow to grayish or greenish yellow, even reddish brown  
Plastron: Large, truncate anteriorly, notched posteriorly  
Egg size: 3 × 5cm  
Incubation period: 135 days

#### 3.1.1. *Melanochelys tricarinata* (Blyth, 1853)

Gr. melas: black; chelys: turtle; tria: three; carina: keel

Status: IUCN: Vulnerable, CITES: I, ARCO: Endangered  
Etymology: E. Three-keeled land tortoise; N. Tin-pate Pahadi Kachhuwa/ Thotari  
Biometry: (l×b) cm: Carapace 15.0 × 11.0; Plastron: 13.0 × 9.0  
Weight: 530 gm  
Location: Bharatganj-6, Bara  
GPS coordinates: N 27° 12' 34"; E 85° 13' 20 "  
Rescued on: 20/01/2013; 1830 hrs (caught by hand while hiding beneath wooden log)  
Resource person: Om B.K., Bara  
Identification key: Three narrow keels, prominent due to their yellow coloration  
Coloration: Light brown, with yellowish to light brown keels and margin;  
Carapace: Convex with three prominent keels runs parallel to each other  
Plastron: Light yellow to orange, formula: abd > pect > an > gul > fem > hum.  
Head: Posterior part of the upper head is divided into large shields  
Forelimbs: With elongated or pointed scales, fingers are half webbed; Tail short  
Sexual dimorphism: Male with concave plastron, large hind limbs, longer / thicker tail  
Diet: Crepuscular and omnivorous.  
Nesting: Clutch size 1-3 eggs. Produce Feb/Apr, Oct/Dec hatches after 60-72 days.

#### 3.1.2. *Pangshura flaviventer* (Gunther, 1864)

Bengal.pangshura: turtle; Lat.flavus: yellow; venter: belly

Status: IUCN: Near threatened, CITES: II, ARCO: Least concern  
Etymology: E. Yellow-bellied roofed; N. Pahelo bhunde dhuri Kachhuwa  
Biometry: (l×b) cm: Carapace 16.0 × 12.0; Plastron: 15.0 × 11.5  
Weight: 520 gm  
Location: Koshi Barrage  
GPS coordinates: N 26° 37' 37" ; E 87° 01' 55"  
Rescued on: 11/10/2012; 1400 hrs (trapped by fisherman and kept for sell)  
Resource person: Prem Narayan Yadav  
Identification key: 3<sup>rd</sup> vertebral plate carries a sharp projection.

Coloration: Carapace brownish; Posterior head pale pink  
Head: Grey pigmentation is present around the eyes  
Category: IUCN: listed as synonym to *P. tentoria*;  
CITES: listed as synonym to *P. tecta*  
ARCO-Nepal listed as *P. flaviventer* as an independent own species

### 3.1.3. *Lissemys punctata* (Bonnaterre, 1789)

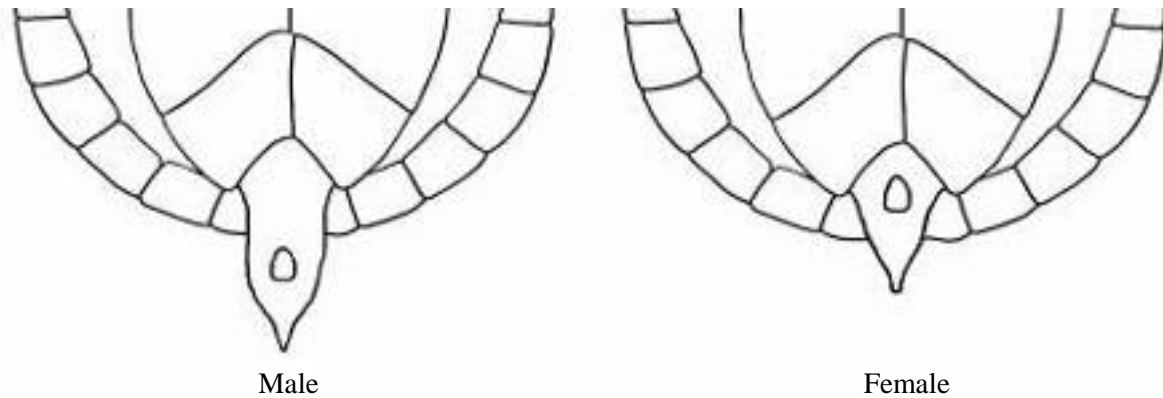
Gr.lissa: rage; Lat. punctatus: dotted

Status: IUCN: Lower Risk, CITES: II, ARCO: Least concern  
Etymology: E. Indian Flapshell turtle; N. Dhakani khabate/ Putali Kachhuwa  
Biometry: (l×b) cm: Carapace 13.5 × 13.0; Plastron: 12.5 × 10.0  
Weight: 290 gm  
Location: Bargachhi, Biratnagar  
GPS coordinates: N 26° 27' 35" ; E 87° 17' 15 "  
Rescued on: 03/09/2013; 0900 hrs (trapped by lab boy and kept in aquarium)  
Resource person: Dhan Bahadur  
Identification key: Carapace dotted with yellow. Semicircular flaps on plastron  
Coloration: Olive green to dark brown with yellow dots; plastron white  
Sexual dimorphism: Tail comparatively longer with thicker base in male  
Nesting: Between end of August and mid September in sandy or sand loam soil.  
Eggs: Brittle-shelled, spherical, 24-30 mm in diameter  
Clutch size: 2-14 eggs; incubation period 241-412 days  
Diet: Omnivorous, voracious, scavenger on animal corpses far from water bodies also takes tadpoles, fish, invertebrates and aquatic plants.  
Forelimbs: With 5 claws; hind limbs with 4 claws; tail ending in a horny nail.  
Coloration: Carapace olive green to dark brown with irregular yellow dots with a dark edge plastron white; head yellowish; limb greenish grey to dark grey.

### 3.1.4. *Nilssonina hurum* (Gray 1832)

Gr.aspis: shield; eretes: oarsman, rower

Status: IUCN: Vulnerable, CITES: I, ARCO: Endangered  
Etymology: E. Indian Peacock soft-shell turtle ; N. Mayurpankhi/ Chartari Kachhuwa  
Biometry: (l×b) cm: Carapace 47.0 × 37.0; Plastron: 42.2 × 37.5  
Weight: 9.3 kg;  
Sex: Male  
Location: Dipeni River, Damak, Jhapa  
GPS coordinates: N 26° 39' 43" ; E 87° 41' 36 "  
Rescued on: 21/09/2012; 1750 hrs (crawling to bank of Dipeni river; caught by hand)  
Resource person: Reported by M. Kharel for the first time from Jhapa district  
Identification key: Large aquatic turtle with a snout; juveniles have 4-6 distinct eyes spots on carapace  
Coloration: Head with dark green or black lines, with yellow spots.  
Carapace: Olive green with black reticulation, normally with 4 spots (5 /6 occasionally)  
Plastron: Brownish grey, pales with age.  
Nesting: August-December in clay-sandy soil.  
Egg: Spherical, hard- shelled, about 30 mm in diameter, 20-30 eggs per clutch  
Sexual dimorphism: Male poses comparatively longer and thicker tails than female



### 3.2. Meteorological data

During study some of the climatic parameters such as dissolved oxygen of main lake, temperature of water and average rainfall records, it was found that the following climatic factors of the study area were favorable to support their growth and conservation.

Average DO:	7.4* ( $\pm 0.301$ ) mg/l (Max. Jan)
Ave. water temp:	21* ( $\pm 0.283$ )°C
Ave. Rainfall:	6.25*mm (Max:25mm)

\* Considered sufficient enough to support aquatic life

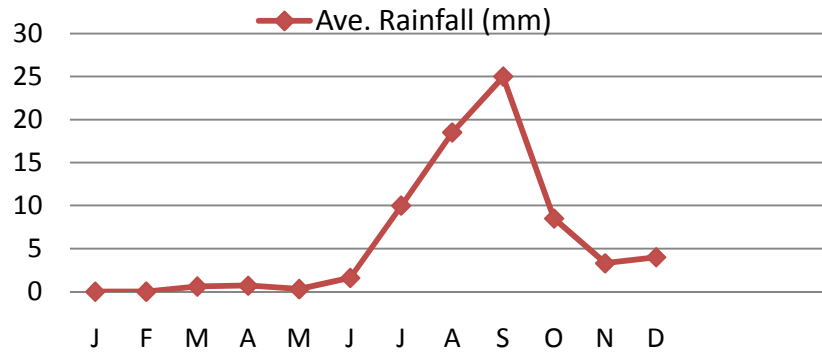


Figure 3: Average rainfall recorded in the study area (2013).

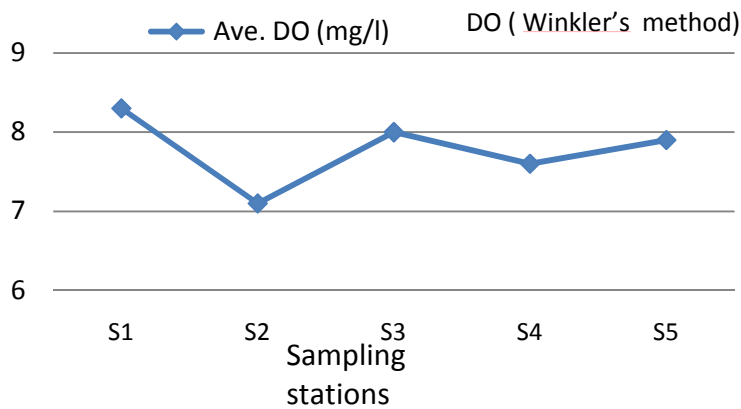
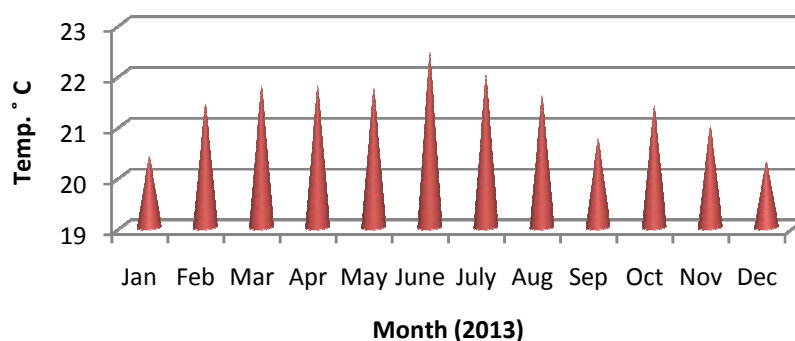


Figure 4: Average dissolved oxygen in study area.





**Figure 5:** Average water temperature of study area (month wise).

#### 4. Conclusion

Climatic data shows the average annual temperature and average rainfall pattern of Jhapa district is suitable to support the flora and fauna of tropical climatic zone. It could be one of the hotspot for the conservation of turtles. During, preliminary study, five species of turtles have been rescued and translocated in the TRCC. A male of *Nilssonina hurum* (9.3kg) reported for the first time from Jhapa district. During field visit, two species *Pangshura flaviventer* (as pet and ornament) and *Lissemys punctata* (for food and traditional medicine) were found overexploited by local fisherman specially from Koshi barrage area. However, the population growth rate is quite high and habitats of wildlife have been decreasing day by day. It indicated the urgent need of protection of turtle and other endangered flora and fauna in the study area.

Largest rescued species:	<i>Nilssonina hurum</i> (9.3 kg)
Frequently rescued species:	<i>Lissemys punctata</i> (64%)
Rare rescued species:	<i>Melanochelys tricarinata</i>
Popular pet trade species:	<i>Pangshura flaviventer</i>
Most easily captured species:	<i>Indotestudo elongata</i>
Popular area for turtle trade:	Koshi Barrage area

#### Acknowledgments

Thanks are due to Prof. Dr. Kalu Ram Rai 'Khambu', HOD (Department of Zoology), Mechi Multiple Campus, Bhadrapur, (T.U.), Nepal for giving us continuous guidance, inspiration, personal assistance during field trip and supply of useful literatures. We are grateful to the Sukhani Martyr's Memorial Foundation (SUMMEF) for granting my research in the premises of the park area. The first author is grateful to founder of ARCO-Nepal, Prof. Dr. H. Hermann Schleich, University of Munich (Germany) for providing financial assistance to conduct this study.

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