

## **Project Update: December 2018**

### July Week IV & August Week I

#### **Summary**

This report entails our findings from last week of July to first week of August 2018. Through our constant observations, we have found out that one of the parent continues to feed the juveniles in the ground since the first discovery on July 23rd until today. However, observed feeding to only one juvenile which is the weakest from August 2nd, other two juveniles are more active and can possibly find their own food. They congregate in the same foraging spot. Two juveniles observed to night roost in the same tree since our last find. One juvenile night roost separately and parent as well. The shifting of the foraging ground is towards the upstream ~ 10-15 km from the previous foraging ground. They have found a much better place to fish and play around. Hope they would remain there for some time now.

Additionally, we also got numerous feathers and fecal samples from this region. With samples from the Zhemgang we now have much need materials for DNA analysis in the near future.

The weather continues to warm up escalating the temperature, unpredictable blockages of the roads and landslides caused due to onset of the peak monsoon season, leads too much hindrances to the daily observation of foraging activity of the WBH.

#### **Plan for the coming week**

We will continue to observe the foraging activity of the WBH in the newly found site. We will also devote a day to collection of the camera traps set in the night roosting trees. We will devote 2 days for fish sampling along the Burichu and Sunkosh River.



Left: A WBH foraging in the rapids. Right: A research assistant climbing up a tree to fix a camera traps.



Left: Feathers collected from its night roosts. Right: A view of the recently found foraging ground of the WBH.



My team making daily observation from a strategic point.

### August Week II & III

#### **Summary**

This report entail activities undertaken from 9th-20th August 2018. While daily observations were made in newly found foraging sites of white-bellied herons in PWCA and TCUA1, we also made effort to locate any new sites. We also carried out a prey sampling after observing the heron ingest a known prey.

Numerous feeding bouts had been videoed for later analysis as usual. Since the heron which had been foraging some 100 m below the highway which I must say is the closest so far being spotted and seems to be bit tolerant to human disturbances, we have been able to confirm the prey species being ingested. Later our prey sampling also confirmed the only species found in that micro-habitat was snow trout.

At PWCA, a parent had been observed to feed a juvenile as of 19th August. One to two WBH had been spotted daily. It was such a surprising and very rare to spot a total of eight WBH in a day which we did on 9th August. The six WBH was found to be together, which is so unusual for this solitary species and two individuals few 100 m in lower stream but in the same river basin.

**Plan for the coming week**

We will continue to observe the foraging activity of the WBH in PWCA and TCUA1. We will carry out prey species sampling along the Burichu and Sunkosh River for a day or two.



A WBH spotted in TCUA at 0615 hrs.



An assemblage of 6 WBH (The highest number spotted so far)



Snow trout (*Schizothorax richardsonii*) a known species of prey taken by WBH.

## August Week IV

### **Summary**

This report entail activities undertake from 21st to 31st August, 2018. While daily observations were made in newly found foraging sites of white-bellied herons in PWCA and TCUA1, we also went to the opposite bank site of the current heron site to get better quality documentations of the activity. Due to long distance and difficult terrain we could only make it twice. We prepared good blind to prevent the bird from knowing our presence and cause further disturbance. It was a successful one. Overall this month has been one of the best months in securing data.

We observed that the parent is still feeding the juvenile. We also observed that the parent fly to the smaller stream to derive its feed for the young ones.

### **Plan for the coming week**

We will continue to observe the foraging activity of the WBH in PWCA and TCUA1. At the same time we will also carry out review of the literature as usual and try to finish our first part of the paper.



A WBH juvenile in its feeding posture



A random display of leg stretch behavior while carrying out its daily foraging.

### September Week I

#### **Summary**

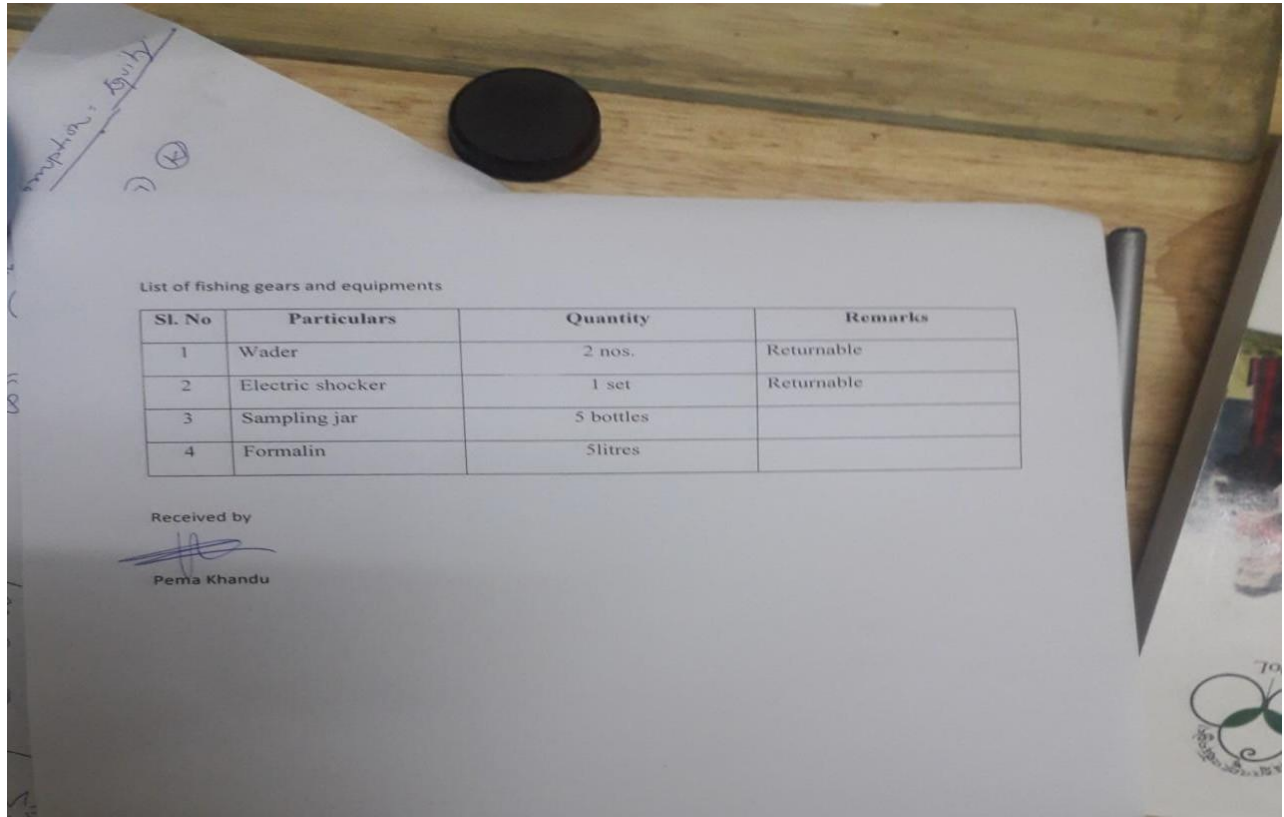
This report entail activities undertake from 1st to 7th September, 2018. Daily observations were made from 1st to 3rd September. Upon receiving Professor's good suggestion for the need to better sample the fish and also due to my own understanding of the low efficiency of the sampling method (cast nets) employed, I travelled to Haa district on 5th September, to request for the electro-fishing equipment from the National Research Centre for Riverine & Lake Fisheries.

They had been kind enough to let us use the replica of the actual electro fishing equipment. Since they had only one purchased standard electro fishing equipment which is very expensive, they didn't consent to give us that one. I reached back yesterday towards evening. We spotted two WBH in PWCA.

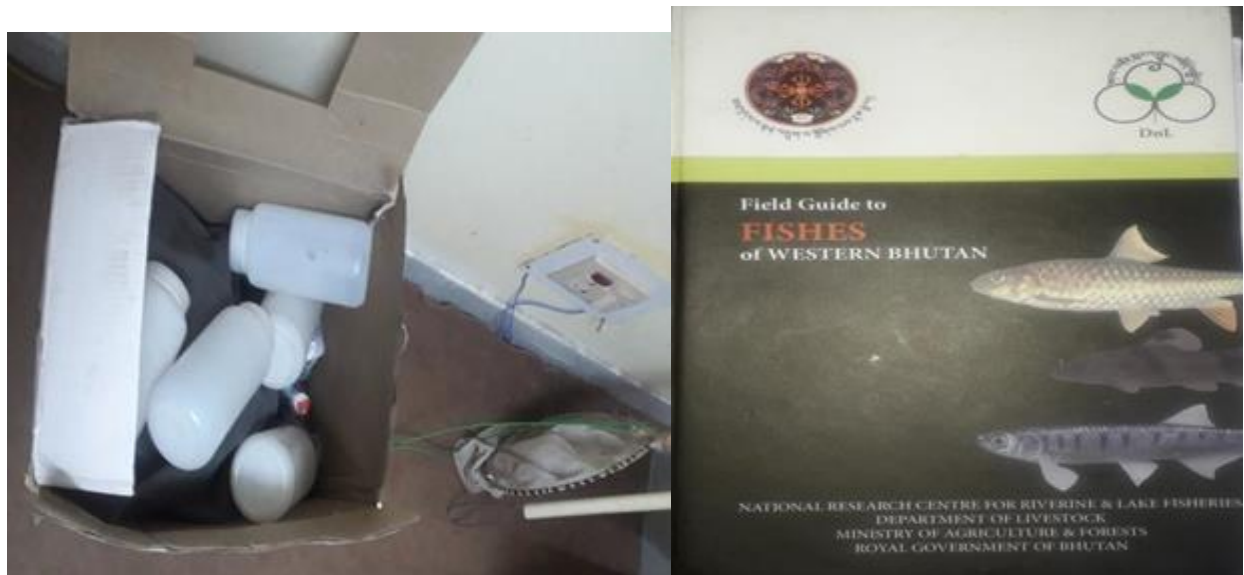
#### **Plan for the coming week**

We will continue to observe the foraging activity of the WBH in PWCA and TCUA1. Since we have the equipment starting from 17th September we will carry out intensive fish survey along the small streams and main river banks with the along

with the officials from the forestry division, Tsirang.



Checklist of materials receipt.



Left: Waders, Jars and Chemicals. Right: Field Guide Book to Fishes of Western Bhutan.



Fig. 2. A replica of standard electro fishing equipment.

#### September Week II-IV

##### **Summary**

This report entails activities undertaken from 10th to 23rd September. We could not follow the juveniles since it was spotted last on 1st September. The adults were not spotted for 3 days however we have spotted it return to the same spot in PWCCA and PWDC areas. Fish sampling had resulted to enlisting of about 17 various species. We sampled three small streams divided into five zones. These streams had been observed to be visited by the WBH in the past. We could not sample Nangzhina river which is the least disturbed stream and WBH mostly seen visiting the area. This is due to long and very difficult terrain to reach there. It would take at least 4 days journey by walk to reach there. But in the winter we will make an attempt to visit there at least once. The most abundant and common fishes found were *Neolissochilus hexagonolepis* (copper masheer), *Schizothorax richardsonii* (snow trout) and *Gara* sp. Few species of fishes had been yet to be identified. Last week of September was



Picture of sample species had been prepared as a separate file.



Burichu Zone 1



Left: Fish sampling team at Burichu. Right: Field assistant throwing cast net.



Left: Team mates with electrofishing equipment. Right: Team mates with electrofishing equipment.

#### September Week IV & October Week I

#### **Summary**

I would like to report on the activities undertaken from 27th-30th September and first week of October.

We submitted the borrowed electro-fishing machine and returned back to the site. I did more literature review from whatever little information is available from the RSPN webpage to follow upon Professor (Dr.) Gale's comments to our first paper.

During our daily survey we have also located the new foraging site of one of the WBH. Because the monsoon had passed by and the river volume had reduced, a seasonal Island (WPWC) had been formed about 100 m above Waklayter. We have continuously monitored a WBH in that new area. We continue to find a heron in the PWCA site.

#### **Plan for the coming week**

We will continue to observe the foraging activity of the WBH in PWCA and WPWC. At the same time I will also revise our paper.

A WBH with its prey (*Schizothorax* sp.) spotted at new site (WPWC) picture taken from a prepared blind.



## October Week II-IV

### **Summary**

I would like to report on the activities undertaken from 8th-30th October, 2018. The second week of October had been bit worrying due to very less sighting (observed twice only one WBH) even with our best of the best efforts. Therefore, it lead me decide to travel to Zhemgang with the better hope of spotting the heron. But much to our dismay, we could not spot even one sighting within our four consecutive surveys.

We returned back to Burichu and finally spotted two herons. We are monitoring the herons here. There is a small Island being created due to receding river about 200 m above the PWCA region.

### **Plan for the coming week**

We will continue to monitor the herons and try to find more spots where the herons might be foraging. Tomorrow (31/10/2018) we will be visiting a spot where we have seen the heron defecting to collect the fecal samples. Since it was already dark we could not go today.

## November Week I-II

### **Summary**

I would like to report on the activities undertaken from 1st-14th November. During our daily survey we could locate three new foraging sites (Burichu Island, Below Burichu Suspension Bridge, Suretar Zone A and Suretar Zone B). We also collected several fecal samples from its foraging grounds and one night roosting site. We could also discern the prey species (*Schizothorax* sp.) type ingested by the WBH, and upon fish sampling we found only one species from that area.

### **Plan for the coming week**

We will continue to observe and monitor the bird at Burichu, Sunkosh, Taktsha and Wakleytar areas till 19th November 2018. After that I would like to visit Phochu area because reliable sources had confirmed that a WBH at Phochu has returned. I wish to collect the fecal sample and make observation because I feel it's one of the Heron from Sunkosh area that has reached up there so local migration might have taken place.

## November Week III-IV

### **Summary**

I would like to report on the activities undertaken from 16th-30th November. We could observe WBH at Phochu, but due to human disturbances (children playing near the riverbank, rafting, human settlement near the river, we could observe the WBH being stressed out. As heron was observed to be perching on a pine tree from 8:04 am to 4:55 pm we found this is very unusual behaviour. Later it made a high flight which could only mean long distance flight and it would take some time to return to the same area back. We returned to Burichu and spotted the heron and its night roost. We also collected the fecal and feather samples.

**Plan for the coming week**

We will continue to monitor the heron at Burichu and measure the microhabitat variables.

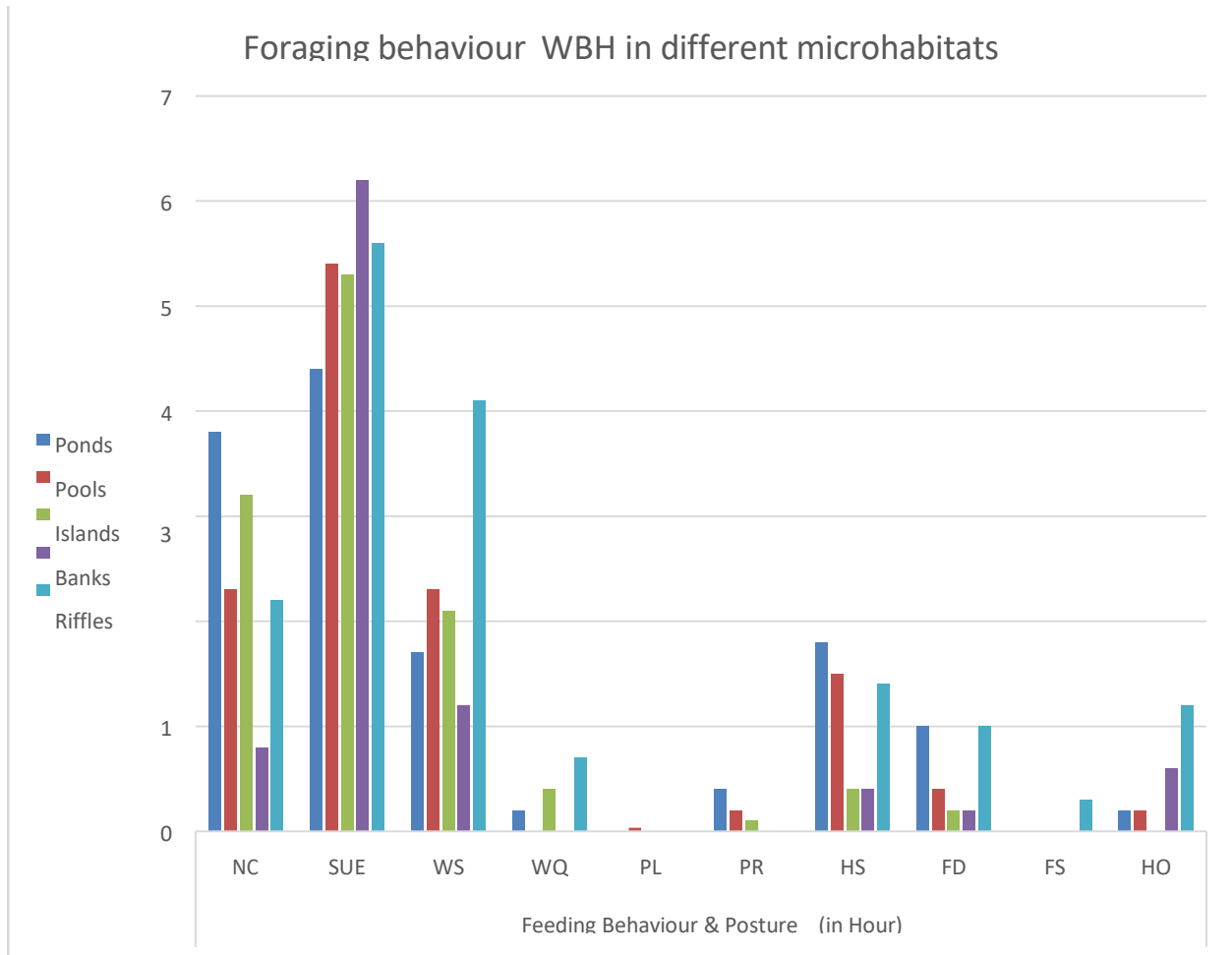


WBH roosting in Phochu.

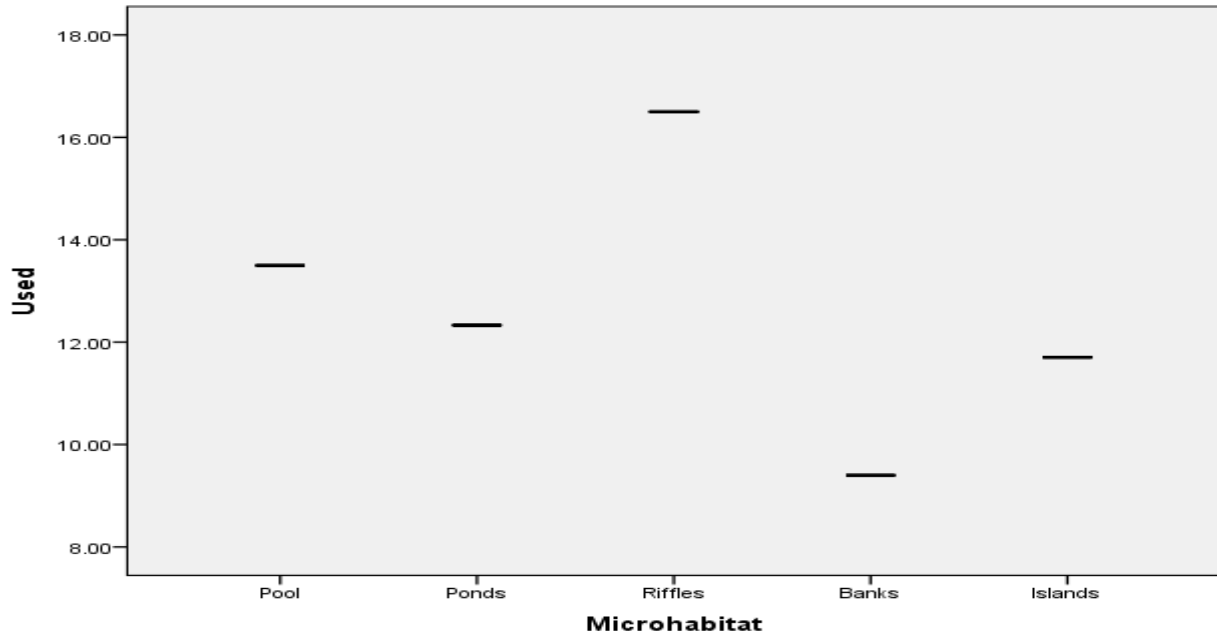


Feather and fecal samples collected from night roosting site at Suretar.

## Preliminary Results



Feeding Repertoire Show by WBH in Various Micro-habitat Types: NC (Neck Craning), SUE (Stand Upright and Erect), WS (Walk Slowly), WQ (Walk Quickly), PL (Plunge), PR (Probing), HS (Head Swaying), FD (Face Down), FS (Foot Stirring), HO (Hopping)



Comparison of Microhabitat Use by the WBH.

### Prey Size Preference

	Frequency	Percent	Valid Percent	Cumulative Percent
valid Small	4	13.3	13.3	13.3
Medium	6	20.0	20.0	33.3
Large	15	50.0	50.0	83.3
Very large	5	16.7	16.7	100.0
Total	30	100.0	100.0	

Prey size preference shown by WBH.

Checklist of known fish species found in the WBH habitat



**Fig 1: Scientific name:** *Schizothorax progastus*; **Common name:** Dinnawah snow trout



**Fig 2: Scientific name:** *Schistura* sp.; **Common name:**



**Fig 3: Scientific name:** *Schistura Cf. savona*; **Common name:** Gadera

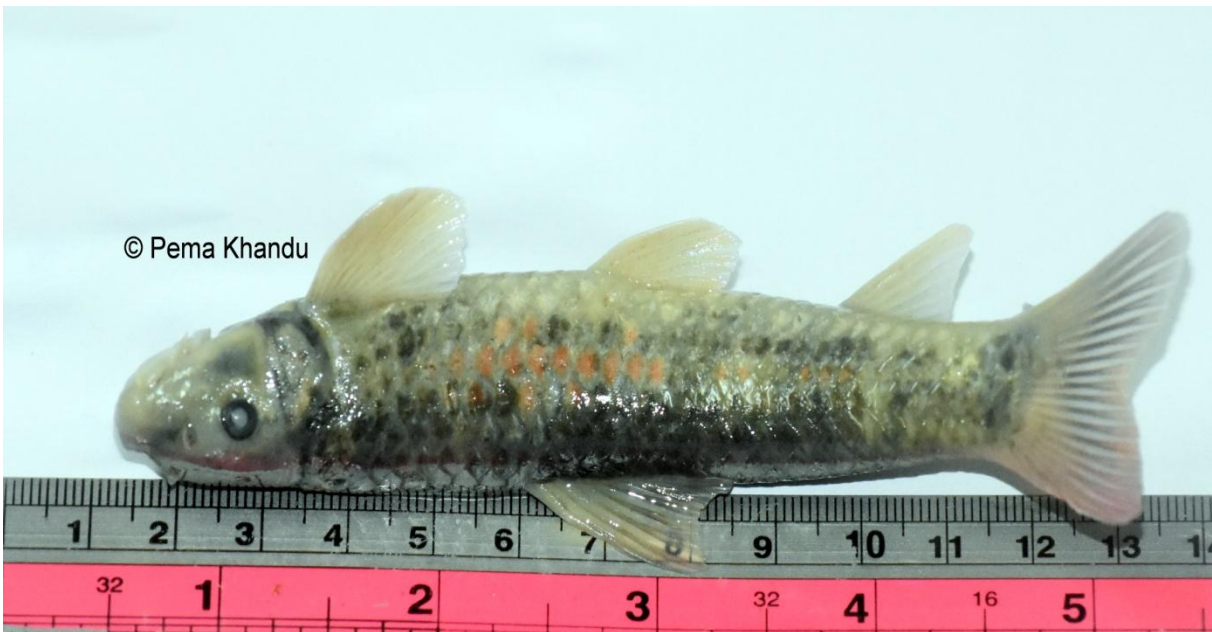


**Fig 4: Scientific name:** *Neolissochilus hexagonolepis* **Common name:** Copper masheer





**Fig 5: Scientific name:** *Labeo pangusia* **Common name:** Gardee



**Fig 6: Scientific name:** *Gara annandalei* **Common name:** Lorri buduna



**Fig 7: Scientific name:** *Gara sp.* **Common name:**



**Fig 8: Scientific name:** *Devaria assamensis* **Common name:** Bhatti



**Fig 9: Scientific name:** *Barilius barna* **Common name:** Fageta



**Fig 10: Unknown 1**



**Fig 11: Unknown 2**



**Fig 12: Unknown 3**



**Fig 13: Scientific name:** *Tor putitora* **Common name:** Golden masher



**Fig 14: Scientific name:** *Schizothorax richardsonii* **Common name:** Snow trout



**Fig 15: Scientific name:** *Schizothorax* sp. **Common name:**



**Fig 16: Scientific name:** *Gara arupi* **Common name:**

**Note:** Pictures of dead fishes were taken from the voucher specimen collected by Tsirang Forest Division.