

Excursion of the Post Graduate Department of Zoology at Sundarbans National Park, West Bengal

Introduction:

Going on an educational excursion entails more than just leaving the campus. Although an educational trip should have a primary educational goal, the influence of an educational trip can be far-reaching. The tour offers us the opportunity to apply what we've learned in class to the real world. As a result, the major relevance of the educational excursion may be attributed to the application of theoretical knowledge to match and recognize real-world specimens and occurrences. According to the Cooch Behar Panchanan Barma University, the B. Sc. and M. Sc. the syllabi include an excursion mentioning a visit to a National Park/Biodiversity Park/Wildlife sanctuary/Forest ecosystem or Sea Coast. A project report of the fieldwork is submitted as per the instruction of the syllabus.

Excursion is stair towards enhancement of our knowledge about our nature. Zoology is the study of life. Only book knowledge has no value for a student of the subject, as it deals with a constant interaction between organisms. There are various practical as well as observational aspects of the subject, for which practical field experience is a must, otherwise the study becomes incomplete. The field work supplies the information of biodiversity; it is extremely useful to study the habit, habitat and various kinds of behaviours of animals; study of ecosystem not only help us to understand the interactions of various groups but also throw some species of light to its applied field, so that one can utilize the knowledge in a better way in our daily life or can use it human welfare like fishery, agriculture, pest control management.

The necessity of ecological balance and its implication to society was traced back since prehistoric dates. The Great philosopher like Aristotle also gave much importance about necessity of ecological balance. To follow the tradition the subject like zoology which has closer relation with environment has designed study of natural fauna in their natural habitat. An educational excursion was undertaken by the Post Graduate Department of Zoology, Acharya Brojendra Nath Seal College, Sundarbans National Park which are excellent sites of the study of mangrove ecosystem. Moreover, variety of plants and animals were also observed by us during field study. For these reasons, undoubtedly the site of excursion was a good choice.

A field trip has been organized by the department to the Sundarbans. Our main aim will be the study of various features of the Biosphere reserve, to gain knowledge of in situ conservation and the study of various species and endemic species also by a combination of direct search techniques and opportunistic sighting method.

Aims and Objectives:

Aims and Objectives of this excursion is to make ourselves more familiar with wild varieties of flora and fauna. We worked in group to understand the characteristic of the rich biodiversity, studying ecology of the mangrove forest which really helped us to enrich our knowledge.

The objectives for this field trip were –

- 1) To study faunal diversity in Mangrove ecosystem employing standard tools and technique.
- 2) Analysis of the data obtained through widely available free software.
- 3) Sundarbans is the biggest and most loved natural Delta in the world.
- 4) This is the only place where the Royal Bengal tigers can survive and adjust with the environment.
- 5) The name Sundarbans came from the trees name 'sundori'. These trees are in abundance in Sundarban Mangrove.
- 6) A place joins 2 countries India and Bangladesh.
- 7) Characteristic study of a National Park, its management, and its natural inhabitant.
- 8) Characteristic study of a wildlife sanctuary and the difference between the National Park and a wildlife sanctuary.
- 9) Characteristic study of endemic species and the habitat or ecology of that species.
- 10) Study about the In-Situ conservation and bio-diversity by direct search technique and opportunistic sighting method.

Dates of Field Trip: 09. 01. 2024 to 14. 01. 2024

Group members:

Escorting Teachers:

1. Sri. Hemen Biswas, Assistant Professor of Zoology
2. Sri Koustav Kundu, Assistant Professor of Zoology

Students:

Sl. No.	UG 3RD SEMESTER	UG 5TH SEMESTER	PG 3RD SEMESTER
1.	Sandip Sarkar	Kinnar Sarkar	Arko Pratim Poddar
2.	Subhojit Kumar Dutta	Nikita Sarkar	Pallab Das
3.	Subhajyoti Barman	Anish Dey Sarkar	Soumyadeep Das
4.	Arpita Paul	Risha Dey	Ambalika Das
5.	Moumita Paul	Debatree Chatterjee	Nipaban Das
6.	Soyeta Das		Ankita Sutradhar
7.	Muskan Parveen		Nabanita Ganguly
8.	Rubia Khatun		Indrakshi Saha

9.	Didhiti Basak		Barnali Talukdar
10.	Arghyashree Mohanta		Sraboni Pramanik
11.	Soha Nag		Debarupa Datta
12.	Aheli Datta		
13.	Koyel Saha		
14.	Nandita Saha		
15.	Jhuma Parvin		
16.	Kankana Roy		
17.	Susmita Barman		
18.	Juhi Bhattacharjee		
19.	Sonalika Marandi		

Group Photos



The Mangrove Forest of Sundarbans:

Mangrove forests are fertile wetlands found in coastal intertidal zones. They are sometimes referred to as mangrove swamps, mangrove thickets, or mangals. Mangroves cannot tolerate cold temperatures, so mangrove forests are found mostly in tropical and subtropical latitudes.

Mangroves come in roughly eighty different species, and they always develop on low-oxygen soils with slowly flowing rivers that allow fine sediments to build up. A common identification feature of mangrove forests is the thick tangle of prop roots that give the impression that the trees are elevated above the water. Since most mangroves flood at least twice a day, this web of roots enables the trees to withstand the daily rise and fall of the tides. The roots cause sediments to settle out of the water and accumulate on the muddy bottom by slowing the flow of tidal waters. By stabilizing the shoreline, mangrove trees lessen erosion caused by storm surges, currents, waves, and tides. Mangrove forests' complex root systems also draw fish and other species looking for food and protection from predators. Mangrove forests are hubs for the movement of matter and energy between the land, ocean, and atmosphere. They are found where these systems meet. The numerous ecological roles that mangrove ecosystems play, such as preventing flooding and runoff, storing and recycling nutrients and trash, cultivating, and converting energy, have piqued scientific attention. The woods are significant blue carbon systems that store a significant quantity of carbon in marine sediments, making them crucial climate change regulators. An essential component of these mangrove ecosystems are marine microorganisms. On the other hand, there is still much to learn about the role mangrove microbiomes play in high ecosystem production and effective element cycling. Mangrove wetlands are distinguished by their saltwater environment, humid climate, and muddy or wet soil. According to Selvam and Karunakaran (2004), mangrove plants can withstand salinities ranging from 2‰ to 90‰ and thrive in soggy soils. Mangroves range in size from little bushes to enormous trees. The mangrove biome, also known as the mangal or mangrove forest, is a type of unique saline woodland or shrubland ecosystem that is defined by depositional coastal conditions. In these environments, fine sediments, frequently with a high organic content, accumulate in regions shielded from strong waves.



Fig.: Stilt roots of Garjan tree

Sundarbans as UNESCO World Heritage Site:

The Sundarbans mangrove forest, one of the largest forests in the world (140,000 ha), lies on the delta of the Ganges, Brahmaputra and Meghna rivers on the Bay of Bengal. It is adjacent to the border of India's Sundarbans World Heritage site inscribed in 1987. The site is intersected by a complex network of tidal waterways, mudflats and small islands of salt-tolerant mangrove forests, and presents an excellent example of ongoing ecological processes. The area is known for its wide range of fauna, including 260 bird species, the Bengal tiger and other threatened species such as the estuarine crocodile and the Indian python.

The Sundarbans is the biggest delta, back water and tidal phenomenon of the region and thus provides diverse habitats for several hundreds of aquatics, terrestrial and amphibian species. The property is of sufficient size to adequately represent its considerably high floral and faunal diversity with all key values included within the boundaries. The site includes the entire landscape of mangrove habitats with an adequate surrounding area of aquatic (both marine and freshwater) and terrestrial habitats, and thus all the areas essential for the long-term conservation of the Sundarbans and its rich and distinct biodiversity

The World Heritage property is comprised of three wildlife sanctuaries which form the core breeding area of a number of species of endangered wildlife. Areas of unique natural beauty, ethno botanical interest, special marine faunal interest, rivers, creeks, islands, swamps, estuaries, mud flats, and tidal flats are also included in the property. The boundaries of the property protect all major mangrove vegetation types, areas of high floral and faunal values and important bird areas. The integrity of the property is further enhanced by terrestrial and aquatic buffer zones that surround, but are not part of the inscribed property.

How can we talk of or represent the Sundarbans without taking into account its people and their understandings of the place? A failure to provide people with a stake in conservation will simply result in an alienation of these communities, an alienation that has in the past resulted in an active undermining of state-initiated conservation policies. What the Sundarbans islanders point out is that they are willing to protect the forest—which for many is their main source of livelihood—but that the government too should be showing some concern to protect them by investing in the region so that they will not have to work in the dangerous forests of the Sundarbans. For any one society, and specifically here in the case of the Sundarbans, the animal or natural 'world' is not an indivisible category but has an historically constituted and morally loaded field of meanings that derive from the human habit of extending/imposing social logics, complexities and conflicts onto the natural world, and particularly onto animals other than ourselves. The portrayal of the region as a 'beautiful garden' is closely linked to urban idea of

nature and wildlife. This urban image, feel the villagers, unjustly silences their legitimate demand for a more equal allocation of resources between them and the surrounding wildlife.

The location of the history of the Sundarbans within the frameworks of influence of successive polities is important. What the islanders contemplate with increasing hostility is that the redistribution of wealth from such projects never reaches them partly because the Government's Sundarbans images' positive outlook rests on their absence from such an image. They argue that while the world is becoming a global village where people all over the world are increasingly brought to relate to the tigers of Sundarbans forests, their villages are shrinking, their very presences seen as illegitimate or even criminal in what has become a World Heritage Site.

Faunal Contents Reported in The Sundarbans National Park:

Sundarbans mangrove forest is the single largest home of the Royal Bengal Tiger (*Panthera tigris*). Sundarbans is also the only mangrove forest in the world having the tiger as its indigenous population. According to Hunter's Statistical Account of Sundarbans, written in 1878, "Tigers, Leopards, Rhinoceros, Wild Buffaloes, Wild Hogs, Wild Cats, Barasingha, Spotted Deer, Hog Deer, Barking Deer, and Monkeys are the principal varieties of wild animals found in Sundarbans". As per 2004 census, the tiger population in Indian Sundarban is around 274, out of which Sundarban Tiger Reserve and South 24-Parganas Forest Division have 249 Tigers and 25 tigers respectively. There are 58 species of mammals, 55 species of reptiles and around 248 bird species.

Sundarbans also harbours a good number of rare and globally threatened animals including Estuarine Crocodile (*Crocodilus porosus*), Fishing Cat (*Felis viverrina*), Common otter (*Lutra lutra*), Water Monitor lizard (*Varanus salvator*), Gangetic Dolphin (*Platinista gangetica*), Snubfin dolphin (*Orca brevirostris*), River Terrapin (*Batagur baska*), marine turtles like Olive Ridley (*Lepidochelys olivacea*), Green Sea Turtle (*Chelonia mydas*), Hawksbill Turtle (*Eretmochelys imbricata*).

Dominant fauna:

Mammals: Barasingha, Spotted Deer, Indian Hog Deer, Barking Deer, Royal Bengal Tiger, Leopard, Otter, Wild Water Buffalo, Wild Boar, Wild Cat.

Reptiles: Crocodile, Gharial, Turtle.

Birds: Mangrove Whistler, Mangrove Pitta, Collared Kingfisher, Brown Winged Kingfisher, Spoon-billed Sandpiper, Black-capped Kingfisher, Ruddy Kingfisher, Stork-billed Kingfisher, Pied Kingfisher, Greater Adjutant, Black-necked Stork, Buffy Fish Owl, White Bellied Sea Eagle, Pallas's Fish Eagle, Eurasian Whimbrel.



Fig: Some faunal representatives of the Sundarbans Mangrove Forest

Methodology Applied:

Sampling:

Sampling is a process used in statistical analysis in which a predetermined number of observations are taken from a larger population. The methodology used to sample from a larger population depends on the type of analysis being performed but may include simple random sampling or systematic sampling. Model-based distance sampling is commonly used to understand spatial variation in the density of wildlife species. The standard approach assumes that individuals are distributed uniformly and models spatial variation in density using plot-level effects. Thinned point process (TPP) models for surveys of unmarked populations (spatial distance sampling) better leverage the spatial information underlying individual encounters, and in the presence of within-plot variation in density, may explain a larger proportion of the spatial variation in density.

1. **Data collection:** While walking along the transect line at a consistent pace, stopping periodically, about every 5 mins or 100m, to detect bounds and recording their name, number or any other notable observation, the for the survey is recorded.
2. **Environmental factors:** Any environmental factor affecting bird detectability and behavior during survey is noted.
3. **Data management:** the collected data is organized and stored in a systematic manner, ensuring easily accessible for future analysis and reference.

GPS:

The global positioning system (GPS) is a network of satellites and receiving devices used to determine the location of something on Earth. Some GPS receivers are so accurate they can establish their location within one centimeter (0.4 inches). GPS receivers provide location in

latitude, longitude, and altitude. They also provide the accurate time. GPS includes 24 satellites that circle Earth in precise orbits. Each satellite makes a full orbit of Earth every 12 hours. These satellites are constantly sending out radio signals. GPS receivers are programmed to receive information about where each satellite is at any given moment. A GPS receiver determines its own location by measuring the time it takes for a signal to arrive at its location from at least four satellites. Because radio waves travel at a constant speed, the receiver can use the time measurements to calculate its distance from each satellite. Using multiple satellites makes the GPS data more accurate. If a GPS receiver calculates its distance from only one satellite, it could be that exact distance from the satellite in any direction. Think of the satellite as a flashlight. When you shine it on the ground, you get a circle of light. With one satellite, the GPS receiver could be anywhere in that circle of light. With two more satellites, there are two more circles. These three circles intersect, or cross, in only one place. That is the location of the GPS receiver. This method of determining location is called trilateration.

Concluding Remarks:

An educational tour is too little to know the specialized flora and fauna of the Sundarbans National Park and other side scenery of islands. However, everything about the ecosystem is so different from the places we are familiar with and even from other places in our memory. We know that we had only a bird's eye view to the beautiful ecosystem, but we have no regrets. We now have a real-life experience of the mangroves and field collected data to write our report.

We have seen how geography dictates biology of an ecosystem. We have seen struggle everywhere in the mangroves, in the saline water, in the periodically submerged lands, in dense vegetation of the small islands and even in the small vulnerable villages. Sundarbans is not an easy place to live but being stronger than those obstacles modified its own form to survive there.

We also learn the importance of discipline, cooperation, and teamwork from this excursion. It also teaches us how to handle situations on our own and exposes us to the outside world, which teaches us the value of independence.

The charming and refreshing memories of those tours will remain evergreen in my memories forever.

Government of West Bengal
Education Directorate
Bikash Bhavan, Salt Lake, Kolkata – 700 091

Memo No. _____

Date _____

Sri Hemen Biswas, Assistant Professor, Sri Anirban Pandey, Assistant Professor and Sri Koustav Kundu, Assistant Professor are permitted to undertake an educational excursion / field training in Zoology of 35 (Thirty Five) students of M.Sc. Sem-III, B.Sc. Sem-III and V of A. B. N. Seal College and visit Sundarbans of South 24 Parganas district of West Bengal. The party will leave Headquarters on 09.01.2024 and will return to Headquarters on 14.01.2024.

As the prolonged half, exceeding 10 days for the excursion / field training in question, will be / was necessary in the interest of Public Service, the aforesaid staff are exempted from the operation of Rule 73 of the W.B.S.R. Part – II and are permitted to draw travelling allowances as admissible under the Rules and daily allowance for a continuous half of more than 10 days at full rates. The aforesaid staff accompanying the excursion party will draw Travelling Allowances and other allowances as admissible under the Rules.

Travelling Allowances and Daily Allowances @ Rs. (as admissible) each in favour of Sri Hemen Biswas, Sri Anirban Pandey and Sri Koustav Kundu, be drawn as per Rules subject to future adjustment.

The expenditure will be met from the Current Year's allotment under the Head 'TRAVELLING ALLOWANCES' placed at the disposal of the Principal / Officer-in-Charge, A.B.N. Seal College.

The Accountant General (A&E), West Bengal and the Treasury Officer, Cooch Behar-I, has been informed.

Sd/- Dr. M. Manna
Additional Director of Public Instruction (Admn.),
West Bengal

Memo No. 06 /1(3)-A

Date 03/01/2024

Copy forwarded for information and necessary action to:

1. The Accountant General (A&E), West Bengal, Treasury Buildings, Kolkata – 700 001.
2. The Treasury Officer, Cooch Behar, P.O. & Dist. Cooch Behar.
3. The Principal, Acharya B. N. Seal College, P.O. & Dist. Cooch Behar, Pin Code- 736101 with reference to his/her Memo No. 745/23 dated 12.12.2023.

M. Manna
Additional Director of Public Instruction (Admn.),
West Bengal

O/c
Sn
22-12-2023



Government of West Bengal
Office of the Principal
Acharya Brojendra Nath Seal College
Cooch Behar, PIN-736 101, West Bengal, India

Memo No.: 08/24

Date: 06. 01. 2024

MOVEMENT ORDER

This is to state that a group of 35 (Thirty five) students UG 3rd Semester (Zoology Honours), UG 5th Semester (Zoology Honours) and PG 3rd Semester (Zoology) along with the escorting teachers of the Post Graduate Department of Zoology of this College whose details are given below will remain engaged in an educational excursion/field study in the Sundarbans from 09. 01. 2024 to 14. 01. 2024 vide Memo No.: 06/1 (3)-A, Dated: 03. 01. 2024.

The educational excursion/field study is related to the practical syllabi of UG (Zoology Honours) and PG (Zoology) courses of the affiliating university.

List of Escorting Teachers of the Department:

1. SRI HEMEN BISWAS, Assistant Professor of Zoology, Acharya Brojendra Nath Seal College, Cooch Behar
2. SRI KOUSTAV KUNDU, Assistant Professor of Zoology, Acharya Brojendra Nath Seal College, Cooch Behar

List of Participating Students:

<u>M. Sc. 3rd Semester Students with their Age in Years</u>			
	Boys		Girls
1.	Arko Pratim Poddar (22)	1.	Ambalika Das (24)
2.	Pallab Das (23)	2.	Ankita Sutradhar (22)
3.	Soumyadeep Das (22)	3.	Nabanita Ganguly (22)
		4.	Nipaban Das (22)
		5.	Barnali Talukdar (22)
		6.	Debarupa Datta (23)
		7.	Indrakhshi Saha (22)
		8.	Srabani Pramanik (25)



सत्यमेव जयते

Government of West Bengal
Office of the Principal
Acharya Brojendra Nath Seal College
Cooch Behar, PIN-736 101, West Bengal, India

B. Sc. 3rd Semester Students with their Age in Years

	Boys		Girls
1.	Subhojit Kumar Dutta (19)	1.	Arpita Paul (19)
2.	Sandip Sarkar (19)	2.	Moumita Paul (18)
3.	Subhajyoti Barman (19)	3.	Sonalika Marandi (19)
		4.	Didhiti Basak (19)
		5.	Soha Nag (19)
		6.	Koyel Saha (19)
		7.	Aheli Dutta (19)
		8.	Kankana Roy (20)
		9.	Rubia Khatun (19)
		10.	Muskan Parveen (18)
		11.	Soyeta Das (18)
		12.	Susmita Barman (19)
		13.	Nandita Saha (20)
		14.	Jhuma Parvin (19)
		15.	Arghyashree Mohanta (20)
		16.	Juhi Bhattacharjee (20)



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B. Sc. 5th Semester Students with their Age in Years			
BOYS		GIRLS	
1.	Kinnar Sarkar (20)	1.	Nikita Sarkar (21)
2.	Anish Dey Sarkar (20)	2.	Risha Dey (20)
		3.	Debatree Chatterjee (20)

TOTAL BOYS: 8

TOTAL GIRLS: 27

GRAND TOTAL OF STUDENTS: 35

Principal
Acharya Brojendra Nath Seal College
Cooch Behar, PIN-736146
West Bengal

Principal
Acharya Brojendra Nath Seal College