

UNIVERSITY OF CALCUTTA.

B. SC Semester - IV (HONOURS)

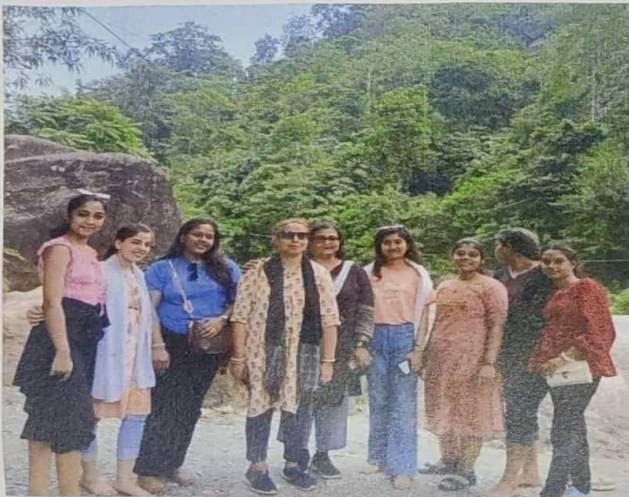
Exam - 2024 (CBCS)

Excursion To Phytogeographic Region to
Eastern Himalayan Region - Takdah, Tinchuley,
Chalsa and Lamahatter.

PAPER - (CC8) | Subject - Botany (BOTA)

CU ROLL NO. - 223044 - 11 - 0008

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TO WHOM IT MAY CONCERN

This is to certify that Ms. Riya Saha bearing Roll No. 223044-11-0008, Registration No 044-1211-0229, an examinee of B.Sc. Botany (Honours) Semester IV (CBCS) examination, 2024 of University of Calcutta has successfully completed an excursion in Tinchuley, Takdah, Lamahatta (Darjeeling district) and Chalsa (Jalpaiguri district) during 15th May, 2024-20th May, 2024 under my supervision. This is part of their syllabus on study of any Phytogeographical regions of India.

The examinee submitted a field report on local flora and Phytogeographical characteristics of Eastern Himalaya which partially completes the Practical part of paper CC-8 of Botany Honours Course.

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An Educational Excursion with 4th Semester and 2nd Semester Botany Honours, General students were planned during 15th May 2024 - 20th May 2024. As part of the curriculum. we visited Tinchuley, Takdah, Lamakatta and Chalsa which comes under Eastern Himalayas Phytogeographical region.

Route

We boarded Kanchankanya express from Sealdah on 15.05.2024 at 7:30 PM & reached Malbazar on 16.05.2024 at 9.30 AM. We proceeded for Chota Mangwa and

reached "Saryeeling Blossom Eco tourism"
home stay by noon. On 17.05.2024.
we surveyed areas in 2 around.
Tinchuley & Lamahatta. On 18.05.2024.
We visited Takdah Orchid garden,
proceeded for Chalsa and stayed at
Wagtail homestay. On 19.05.2024 we
surveyed areas near Murty river and
homestay. On our return journey
we visited Samsing Tea estate and
boarded train for Sealdah at 5:30 PM.



Astroemeria aurea

Takdah

It is a small village about 28km. from Darjeeling and located at altitude of 4000 ft. It once used to be a ~~military~~ cantonment during British ~~day~~ of early 1900s when several British Bungalows came up here for of the ~~officers~~. Some of them still exist. Takdah is known for its ~~serene~~ environment, lush tea garden, and colonial architecture. There is the range of orchids. It also have himalayan orchid. Cactus house, several herbs, medicinal plants are also present here.



Zephyranthes carinata

Takdah

Takdah is a small town located in the Darjeeling district of west Bengal, India. It offers unique climates and soil types that contribute to their lush landscape and tea gardens.

➤ Temperature

- ① Summer:- In the summer months (March to June), temperatures in Takdah typically range from 15°C to 25°C (59°F to 77°F). The weather is generally mild and pleasant.
- ② Winter:- During the winter months (December to February)



Digitalis purpurea

temperatures can drop to between 5°C and 15°C (41°F to 59°F). Frost may occur, and temperatures can occasionally fall below freezing at higher elevations.

2) Rainfall :-

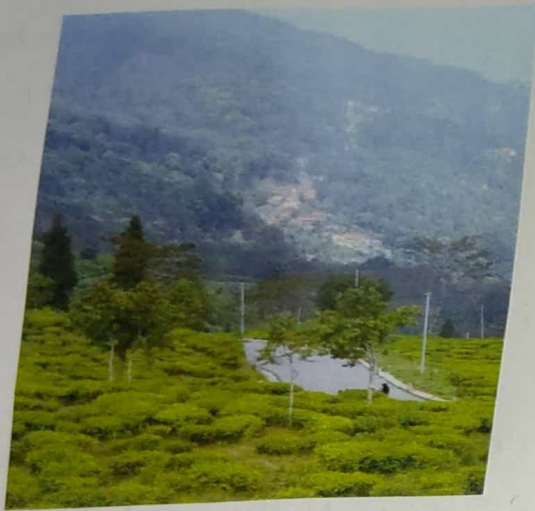
Takdah experiences considerable rainfall, especially during the monsoon season from June to September. The annual rainfall is usually around 2000 to 3000 mm (79 to 118 inches). This substantial rainfall occurs contributes to the lush greenery and thriving tea gardens in the region.



Digitalis purpurea f. albiflora

3) Soil

The soil in Takdah is generally loamy, which is ideal for tea cultivation. The loamy soil is rich in organic matter and has good drainage properties, making it suitable for growing a variety of crops, including tea and oranges. The surrounding areas are primarily a mix of alluvial and forest soil, influenced by its hilly terrain and the significant rainfall.



Tea plantation

Tinchuley

Tinchuley is a small hamlet which is about 24 km from Takdah. Tinchuley is famous for two things, wonderful views of the snow peak of Kanchenjunga and orange orchids. The village is a popular destination for those seeking a peaceful retreat away from the hustle and bustle of city life. Visitors can enjoy trekking, nature walks, and exploring the local culture. The area is also noted for its beautiful sunrise view. It provides a picturesque and tranquil atmosphere.



Tea plantation

Tinchuley.

Tinchuley is a small village located in the Darjeeling district of West Bengal, India known for its scenic beauty and tea gardens. It offers unique climates and soil-types.

1) Temperature:-

Summer:- In the summer months (March to June), temperatures in Tinchuley typically range from 15°C to 25°C (59°F to 77°F). The ~~weather~~ is generally cool and pleasant.

Winter:- During the winter months (December to February),



Bauhinia sp.

temperature can drop to between 5°C and 15°C (41°F to 59°F). Frost is possible and temperatures can occasionally fall below freezing at higher elevations.

2) Rainfall:-

Yinchuley receives substantial rainfall, particularly during the monsoon season from June to September. The annual rainfall is usually between 2000 and 3000 mm (79 to 118 inches) contributing to the lush and verdant techniques landscape of the region.



Agave americana

3) Soil :-

The soil in Tinnevely is generally loamy, which is ideal for tea cultivation. The loamy soil is rich in organic matter and has good drainage properties, making it suitable for growing a variety of crops, including tea and oranges. The surrounding area is a combination of alluvial and forest soils influenced by the mountainous terrain and high rainfall.



Lamahatta Lake

Lamahatta

Lamahatta is a village located in the Darjeeling district of West Bengal, India. It's known for its serene environment and stunning natural beauty. Situated at an elevation of about 5,700 feet (1700 meters) above sea level. Lamahatta offers panoramic views of the surrounding hills and valleys, as well as the majestic Kanchenjunga mountain range, which is the third highest peak in the world. Lamahatta Eco park is a prominent attraction, known for its beautiful landscape and well-maintained walking trails. The park offers



Lamahatta

Stunning views of the mountains and valleys, and it's a wonderful place for leisurely walk and photography. Lamahatta enjoys a temperate climate with cool weather throughout the year. The village has a rich cultural heritage with a blend of various communities. Visitors can experience local traditions, cuisines.

Lamahatta

Lamahatta, a serene village near Dayeeling, offers a unique climate and soil profile.

1) Temperatures

- Winter (Nov - Feb) - $2-10^{\circ}\text{C}$
- Spring (Mar - Apr) - $6-17^{\circ}\text{C}$
- Summer (May - Oct) - $11-19^{\circ}\text{C}$.

2) Rainfall

Lamahatta experiences significant rainfall, especially during the monsoon season from June to September.



Sonchus olerensis



Papaver somniferum

Monsoon (mid-May to mid-Oct) :-

- Heavy rainfall.

Annual Average :- 382 cm.

3) Soil :- The soil in lamahatta is generally fertile and well-drained suitable for various types of vegetation. It is primarily composed of :-

- Loamy Soil :- Rich in organic matter, ideal for agriculture.
- Sandy Soil :- Found in some areas, providing good drainage.

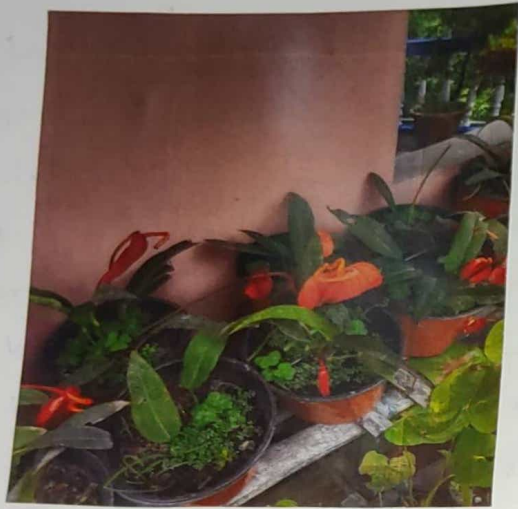


Rhynchosstylis retusa

Chalsa

Introduction:-

Chalsa Forest Range, a Himalayan foot hill forest range, represents one of the unique biodiversity region of world which is under little but continual disturbance by biological and anthropogenic factors. It is situated in Malbazar Subdivision of district Jalpaiguri, West Bengal, India. Vegetation of the forest is unique in the Nature. The forest is characterized by dense vegetation of the and a Rich wild life. The forest range is also very close to the river Jaldhaka. In addition Mithi river, Raidak river and



Anthurium scherzerianum

Diana silver are also very close to the forest range. Jaldhaka basin in the chalsa region created some excellent habitats which have rich biodiversity that contains diverse assemblage of herbs, shrubs, trees, animals and microbes. The range is 535 ft from sea level. The soil is fertile in nature and strongly acidic. The temperatures of this area varies from 20°C to 32°C during summer and from 8°C to 22°C during winter. Most of the area of this forest range is wet annual and humid. The forest is famous for some timber vegetation like



Ipomoea carnea

Shorea robusta Gaertn.,

Lagerstroemia speciosa Pers.,

Terminalia bellerica Roxb.,

Chukrasia tabularis A-Joss.,

Terminalia tomentosa Roth.,

Stemodia villosa Roxb.,

Ficus fructifera Kosterm.,

Berchemia roxburghiana Nees.

However there is no reliable study on different types of non-timber plants, their habitat, ecology and phytosociology. The forest range is also a source house of endemic



Prunus persica

and exotic medicinal plants. The plants having various properties, which are useful in our day to day life. Some are used as medicine, while some are consumed as edible nutritious vegetables or fruits.

Different tribal communities belonging to the villages adjacent to such forest are dependent upon the forest resources for their day livelihood practice. Many of the traditional healers, Kabisang, Bez, also collected the medicinal plants for treatment of various disease.



Senna sophora

Chalsa

Chalsa is a town in the Jalpaiguri district of West Bengal, India, located in the foothills of the Himalayas.

> Temperature

Chalsa experiences a subtropical highland climate. Summers can be ~~warm~~ with temperatures ranging from 20°C to 30°C (68°F to 86°F). Winters are cooler with temperatures typically ranging from 10°C to 20°C (50°F to 68°F).



Curcuma longa

2) Rainfall:- The region receives substantial rainfall, particularly during the monsoon season from June to September. Annual rainfall is usually between 2000 mm to 3000 mm (79 to 118 inches), due to the proximity to the Himalayan foothills, which can lead to heavy monsoons.

3) Soil:- The soil in Chalea and its surrounding areas tend to be a mix of alluvial and lateritic soil, influenced by the hilly terrain and river valleys.



Pseudocyclosorus esquirolii



Fragaria vesca

• Alluvial Soil :-

Fertile and well-suited for agriculture, especially in the river valleys and low lying areas. It is rich in nutrients and good for crops like rice, tea and various vegetables.

• Lateritic Soil :-

Found in the hilly and upland areas, this soil is often less fertile and may require additional input for successful agriculture. It tends to be well-drained and suitable for crops that can tolerate less fertile conditions.



Rhododendron Simsii

Forests in Takdah, Tinchuley, Lamahatta Hill areas :-

The principal economy of Sanyal-
ling Takdah, Tinchuley - Lamahatta
Hill areas depends on production,
~~horticulture~~, agriculture and
~~forestry~~. The major parts of the
forests are today found at
2000 mts and above.



Hydrangea macrophylla

Vegetation phytogeographical character-
istics of Eastern Himalayas (Tinchuly,
Takdah and Lamahatta).

- ① Temperate Vegetation.
- ② Primary Vegetation.
- ③ Tropical Deciduous Sal forests:
Altitude $\rightarrow$ 100 - 500 m.

heavy rainfall with relative
humidity of about 60% - 80%.
It grows as pure or mixed
with species such as sal (Shorea
robusta), Tectona grandis,
Cleodendrum barietatum,



Erigeron karvinskianus



Freziera vesca

C. viscosum, Dioscorea bulbifera,
D. glabra, Smilax perfoliata.
Thickets of Amaranthus spinosus,
Lantana camara, Sida acuta etc.

2.) Tropical Evergreen Zone :-

Altitude $\rightarrow$ 1200 m above sea level.

This zone receives heavy rainfall and the relative humidity is about 80%.

One striking feature of these tropical forests is extremely mixed dominance. The trees shed their leaves but no tree remains



Rhododendron indicum

completely leafless species include Castanopsis indica, Ficus auriculata, Lithocarpus fenestratus, Symplocos glomerata and etc. Some herbaceous species include Leucaemolissim, Crotalaria albida and etc.

3). Subtropical Evergreen Zone:-

Altitude between 1200 - 1800 m characterized by heavy rainfall, moderately cold temperature and high humidity.

Species of trees include Lithocarpus elegans, Persea napaulensis,



Begonia suex

Rhododendron arborescens, Alnus nepaulensis, etc. Species of second story include Quercus glauca, Acer oblongum, etc. Shrubby species of Solanum indicum, Urena lobata and etc. Orchids like Calanthe spp, Brodiaea spp. and etc.

4). Temperate Mixed Zone

Altitude between 1800m-2630m. Heavy rainfall, high humidity and very cold temperatures. Species include Rhododendron arborescens, R. grande,



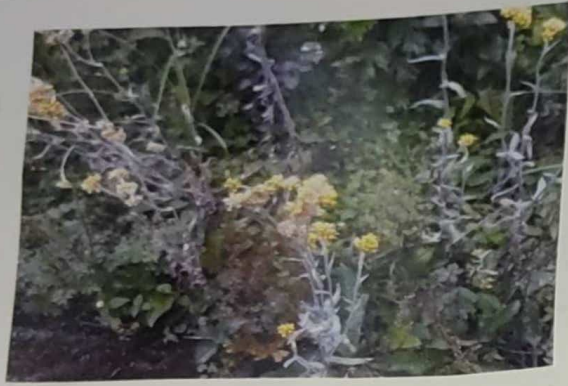
Beugmansia suaveolens

R. guiffithianum, Magnolia campbelli,
Michelia delstosa, Acer likkimensis,
Pearus undulata, Cinnamomum
befalghata, Brassalopsis alpinus,
Daphne tholua. Species of
Selaginella and Lycopodium found
everywhere.

Secondary Vegetation.

① Tropical Deciduous and
Energreen zone :-

Cassia tora, Oxalis corniculata,
Mimosa pudica are some species.
Some species of grasses are



Pseudonaphthalium affine



Geranium wilfordii

Cyperus spp, Digitaria cuneolata etc.
Herbaceous plants like Commelina pallidosa, Candelia scutellata etc.
Forest trees like Chenopodium amosisioides, Agaveatum conyzoides
and bamboos like Asundinella bengalensis and Bambusa pollida.

2. Subtropical Evergreen Zone :-

Tall grasses like Agrostis pilosa
and shorter ones like Eragrostis nigra. Common shrubby herbaceous
plants like Geranium nepalense,
Hydrocotyle himalaica and etc,
Common trees are Lithocarpus



Pilea pumila



Sambucus canadensis

elegans, Paeonia cerasoides Alnus nepalensis and etc. Species of Bamboo Arundinaria maing, Dendrocalamus hamiltonii and Orchids like Bulbophyllum striatum etc.

3. Temperate Mixed Zone:-

Genus like Quercus pachyphylla, species of symplocas and Rubus. herbaceous plants like edgaria claytonensis, Begonia megaptera and etc.



Cuphea sp.



Curculigo orchioides

(ii) Marshland :-

Species like Commelina paludosa,
Colocasia esculenta, Oenanthe
garaviana, Nemulus nepalensis,
Polygonum hydropiper, Commelina
sikkimensis, Pimpinella sikkimensis
 are some to name.



Phaius tankervilleae

Takdah Orchid Centre :-

Takdah Orchid Centre stands as an ideal reason to fall in love with the place. Normally accessible to the visitors from the months of February to April, Takdah Orchid center is an exclusive sanctuary to a ~~a~~ ^{seamless} and a wide variety of Orchids. This remarkable Orchid Center spreads over an area with historical importance.

Amongst the largest variety, ~~this~~ place conserves the wild orchids, including the rare variety of Himalayan orchids.



Cymbidium sp.

The center also boasts of a herbal garden that has a host of medicinal plants, grown and cultivated for the medicinal purposes.

Normally, the flowering season commences at the end of the month of October. Still, the place extends a magical experience throughout the year. Experts deem Takdah Orchid Centre presents an incredible experience, sufficing the aesthetic quest for every kind. Be it a nature lover, peace seeker, botanical enthusiasts, and more alike.

Scientific Name	Common Name	Status
1) <u>Fragaria vesca</u>	Wild Strawberry fruit	wild
2) <u>Sonchus olerensis</u>	Perennial sow thistle	wild
3) <u>Papaver somniferum</u>	Opium poppy	Cultivated
4) <u>Rhododendron simsii</u>	Red Azalea	Cultivated
5) <u>Agave americana</u>	Century plant	cultivated
6) <u>Curculigo orchioides</u>	Golden eye grass	wild
7) <u>Cuphea</u> sp.	Pink cigar plant	wild
8) <u>Alstroemeria aurea</u>	Peruvian lily	cultivated

Scientific Name	Common Name	Status
9) <u>Zephyranthes</u> <u>carinata</u>	Pink rain lily	wild/ cultivated
10) <u>Senna</u> <u>sophera</u>	Kalkasunda	wild
11) <u>Ipomoea</u> <u>carnea</u>	Pink morning glory	wild
12) <u>Digitalis</u> <u>purpurea</u>	Lady's glove	cultivated
13) <u>Digitalis</u> <u>purpurea</u> f. <u>albiflora</u>	White flowered foxglove	cultivated
14) <u>Phaius</u> <u>tankervillei</u>	nun's hood orchid	cultivated
15) <u>Rhododendron</u> <u>indicum</u>	evergreen azalea	cultivated
16) <u>Hydrangea</u> <u>macrophylla</u>	Big leaf hydrangea	wild/ cultivated

Scientific Name	Common Name	Status
17) <u>Anthurium schenzerianum</u>	Pigtail Anthurium	Cultivated
18) <u>Begonia rex</u>	Painted Leaf Begonia	Cultivated
19) <u>Pearus persica</u>	Peach	Cultivated
20) <u>Rhynchostylis retusa</u>	Foxtail Orchid	wild
21) <u>Bauhinia</u> sp.	Butterfly tree	Cultivated
22) <u>Pseudonaphalum affine</u>	Mouse yeast grass	wild
23) <u>Pseudocyclosorus esquirolii</u>	Christ cling	wild
24) <u>Geranium wilfordii</u>	Common heron's bill herb.	wild

Scientific Name	Common Name	Status
25) <u>Erigeron karvinskianus</u>	Mexical fleabane	Wild
26) <u>Cymbidium</u> sp.	Boat orchid	Cultivated
27) <u>Brugmansia suaveolens</u>	Angel's trumpet	Cultivated
28) <u>Curcuma longa</u>	Common turmeric	wild/ cultivated
29) <u>Sambucus canadensis</u>	American elder	wild
30) <u>Pilea pumila</u>	Cleomeed.	wild
31) <u>Fragaria vesca</u>	wild strawberry flower	wild
32) <u>Curcuma aromatica</u>	wild turmeric	wild

Conclusion

From this trip, I gathered important information regarding vegetation climate soil of Tinchulay, Takdah, Lamakatta of Chalsa. Considering the location (Eastern Himalaya Phytogeographic Zone). The climate was comparatively cool and humid. I observed various wild and cultivated plants characteristics of both tropical and temperate climate. Orchids requires special mention as many were in full bloom although the following season was over (*Cryptomeria japonica* was abundant).

In Lamahatta (Scopark) ^{all} the pictures of
the area and the view through the
clouds feed my mind with great
pleasure. Overall it was an amazing
and successful trip.

S. Seshou Dhruv
21.08.24

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