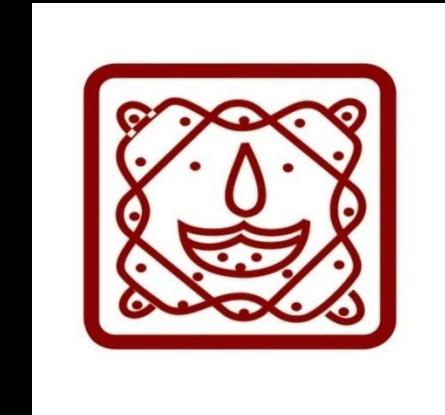


NATURE SCIENCE INTERNSHIP PROGRAMME

ADAMYA CHETANA

BGS NATIONAL
PUBLIC SCHOOL



TEAM DETAILS

NSIP MEMBERS :

STUDENTS

1. LOCHAN
2. ARYAN
3. NIDHI
4. PRANEETHA
5. TEJAS

OUR GUIDES

1. Ms. RAJSREE NAIR
2. Ms. SMITHA
3. Ms. DEBJANI
4. Ms. MONICA
5. Ms. VIJAYA
6. SHREYA (senior)
7. SMRITI (senior)
8. NAYANA (senior)

STUDY AREA DETAILS

AREA 1 :

AREKERE LAKE

Arekere lake was originally spread over an area of approximately 37 acres, the lake is bounded on the west by Bannerghatta road, on the north by BDA Eighty Feet Road, on the east by Shantinikethan Layout and on the south by Hulimavu Main Road.

According to the BBMP , the perimeter of the lake is about three kilometers. It was possibly a manmade water reservoir created approximately 100 years ago.

The lake is under the jurisdiction of the BDA. As is the case with many other lakes in Bangalore, in the last two decades the Arekere Lake has been encroached upon by real estate developers, and the current extent of the lake according to our observation has been estimated to be only 23.2 acres .

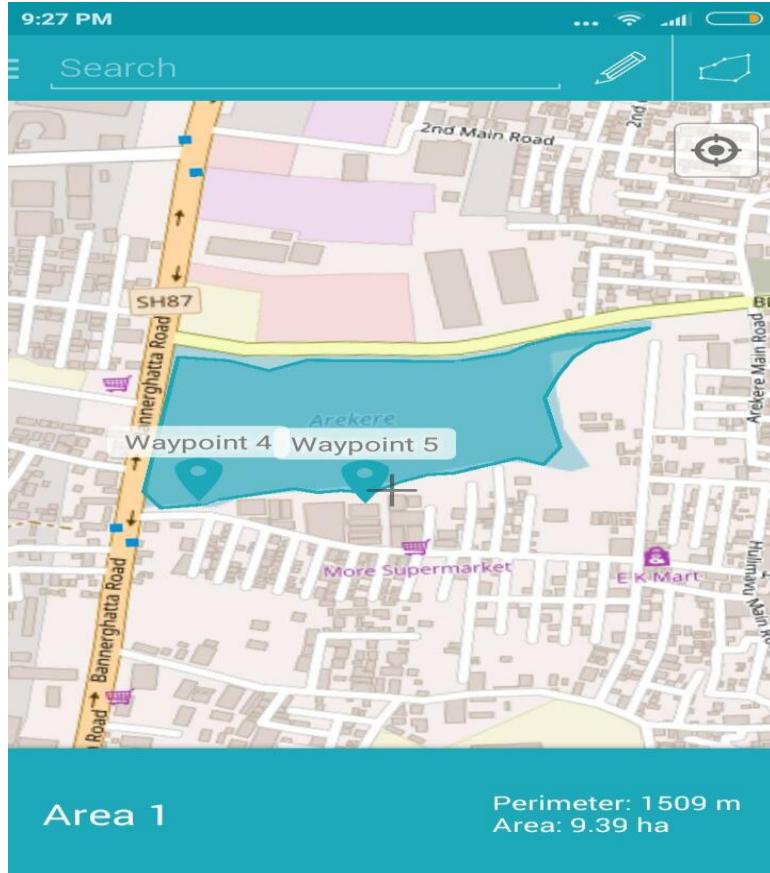
AREA 2 :

MINI FOREST

Mini forest is in JP Nagar, 3rd phase, which is a forest in the middle of a concrete jungle. The park is well maintained and kept clean by the BBMP and also some of the locals who use the park as a nice get away from their daily activities. According to our recent observations, the park is being dumped with garbage at various places.

MAPPING OF BOTH AREAS

AREKERE LAKE



12.8830 degree N, 77.5981 degree E

MINI FOREST



12.9116 degree N, 77.5987 degree E

Birds found in AREKERE LAKE

COMMON NAME	SCIENTIFIC NAME	PICTURE	ACTIVITY	NO.
1. Red-Whiskered Bulbul	<i>Pycnonotus Jocosus</i>		PERCHING	2.
2. Black Kite	<i>Milvus Migrans</i>		FLYING	5.
3. White Browed Wagtail	<i>Motacilla Maderaspatensis</i>		FLYING	3.
4. Common Myna	<i>Acridotheres Tristis</i>		FLYING	3.

COMMON NAME	SCIENTIFIC NAME	PICTURE	ACTIVITY	NO.
5. Koel	<i>Eudynanys</i>		PERCHING	2.
6. Indian Pond Heron	<i>Ardeola Grayii</i>		FLYING AND PERCHING	3.
7. Plain Parakeet	<i>Brotogeris tirica</i>		PERCHING AND FLYING	2.
8. Black-Headed Ibis	<i>Threskiornis Melanocephalus</i>		FLYING	5.
9. Rose-Ringed Parrot	<i>Psittacula Krameri</i>		PERCHING	1.

COMMON NAME	SCIENTIFIC NAME	PICTURE	ACTIVITY	NO.
10. Blue Rock Pigeon	<i>Columba Livia</i>	 A photograph of a Blue Rock Pigeon perched on a branch. The bird has a distinctive blue-grey plumage on its back and wings, with a white patch on its wing. Its head is a mix of blue and purple, and it has a dark blue-grey tail.	FLYING	3.
11. Barn Swallow	<i>Hirundo Rustica</i>	 A photograph of a Barn Swallow perched on a barbed-wire fence. The bird is primarily blue on top with a white belly and a prominent red-orange patch on its throat.	FLYING	1.
12. Jungle Crow	<i>Corvus Macrorhynchos</i>	 A photograph of a Jungle Crow perched on a metal railing. The bird has a dark, almost black, plumage with a slightly lighter patch on its wing.	FLYING	4.
13. Purple Moor Hen	<i>Porphyrio Porphyrio</i>	 A photograph of a Purple Moor Hen standing in a shallow pond. The bird has a vibrant purple and blue plumage on its head and neck, with a white patch on its wing.	WALKING	3.
14. Little Egret	<i>Egretta Garzetta</i>	 A photograph of a Little Egret standing in shallow water. The bird is entirely white, with a long, thin beak and long legs.	WALKING	3.

COMMON NAME	SCIENTIFIC NAME	PICTURE	ACTIVITY	NO.
15. Jungle Myna	<i>Acridotheres Fuscus</i>		PERCHING	3.
16. Red - Wattled Lapwing	<i>Vanellus Indicus</i>		FLYING	2.
17. Baya Weaver	<i>Ploceus Philippinus</i>		FLYING	1.
18. Greater Cormorant	<i>Phalacrocorax Carbo</i>		FLYING	1.
19. Brahminy Kite	<i>Haliastur Indus</i>		FLYING	1.

COMMON NAME	SCIENTIFIC NAME	PICTURE	ACTIVITY	NO .
20. Scaly-Breasted Munia	<i>Lonchura Punctulata</i>		FLYING	7.
21. Indian Silver Bill Munia	<i>Euodice Malabarica</i>		FLYING	1.
22. Spotted Dove	<i>Spilopelia Chinensis</i>		FLYING	2.
23. Ashy Prinia	<i>Prinia Socialis</i>		FLYING	1.
24. Purple Rumped Sunbird	<i>Leptocoma zeylonica</i>		PERHING AND FLYING	2.

COMMON NAME	SCIENTIFIC NAME	PICTURE	ACTIVITY	NO .
25. Asian Palm Swift	<i>Cypsiurus balasiensis</i>		FLYING	3.
26. Common Coot	<i>Fulica atra</i>		WALKING	4.
27. Bronze-Winged Jacana	<i>Metopidius indicus</i>		WALKING	3.
28. Tricoloured Munia	<i>Lonchura malacca</i>		FLYING	2.
29. Kingfisher	<i>Alcedinidae</i>		FLYING	1.

COMMON NAME	SCIENTIFIC NAME	PICTURE	ACTIVITY	NO.
30. Plain Prinia	<i>Prinia inornata</i>		FLYING	2.
31. Shikra	<i>Accipiter badius</i>		PERCHING	1.
32. House Crow	<i>Corvus splendens</i>		FLYING	5.
33. Pied Bushchat	<i>Saxicola caprata</i>		FLYING	1
34. Greater Coucal	<i>Centropus sinensis</i>		FLYING	1.

COMMON NAME	SCIENTIFIC NAME	PICTURE	ACTIVITY	NO.
35. White-Cheeked Barbet	<i>Psilopogon viridis</i>		FLYING	1.

BUTTERFLIES FOUND IN THE AREKERE LAKE

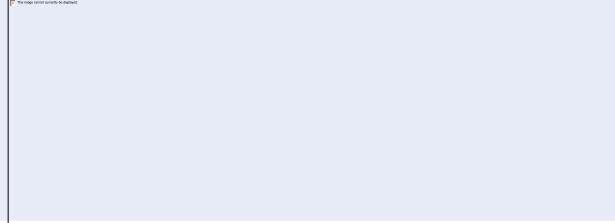
COMMON NAME	SCIENTIFIC NAME	PICTURE
1. Common Mormon Male	<i>Papilio polytes</i>	 A black butterfly with white spots on the wings, resting on a green leaf.
2. Blue Mormon	<i>Papilio polymnestor</i>	 A blue butterfly with black spots on the wings, feeding on red flowers.
3. Common Indian Crow	<i>Euploea core</i>	 A dark brown butterfly with white spots on the wings, resting on a textured surface.
4. Tailed Jay	<i>Graphium agamemnon</i>	 A green butterfly with black spots on the wings, resting on a leaf.

COMMON NAME	SCIENTIFIC NAME	PICTURE
5. Common Grass Yellow	<i>Eurema hecabe</i>	 A bright yellow butterfly with a black border on the wings, resting on a green leaf.
6. Angled Castor	<i>Ariadne ariadne</i>	 A large orange butterfly with a distinct black 'angle' on the forewing, resting on a brown leaf.
7. Plain Tiger	<i>Danaus chrysippus</i>	 A brown butterfly with white spots and a black border, feeding on a flower.
8. Common Gull	<i>Cepora nerissa</i>	 A white butterfly with black veins and a yellow border, resting on a green leaf.
9. Mottled Emigrant	<i>Catopsilia pyranthe</i>	 A green butterfly with black veins and a yellow border, resting on a pink flower.

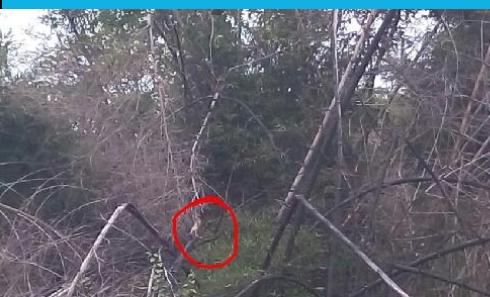
COMMON NAME	SCIENTIFIC NAME	PICTURE
10. Red Pierrot	<i>Talicada nyseus</i>	 A close-up photograph of a Red Pierrot butterfly (Talicada nyseus) resting on a green leaf. The butterfly has a white base color with black spots and a prominent red patch on its forewing.
11. Common Emigrant	<i>Catopsilia pomona</i>	 A photograph of a Common Emigrant butterfly (Catopsilia pomona) resting on a green leaf. The butterfly is a vibrant lime green color.
12. Common Castor	<i>Ariadne merione</i>	 A photograph of a Common Castor butterfly (Ariadne merione) resting on a green leaf. The butterfly has a bright orange color with intricate black patterns on its wings.
13. Plains Cupid	<i>Chilades pandava</i>	 A photograph of a Plains Cupid butterfly (Chilades pandava) resting on a green leaf. The butterfly has a light blue-grey color with a distinct orange patch on its forewing.
14. Common rose	<i>Pachliopta aristolochiae</i>	 A photograph of a Common rose butterfly (Pachliopta aristolochiae) resting on a white surface. The butterfly has dark wings with white and red markings.

PLANTS FOUND IN AREKERE LAKE

COMMON NAME	SCIENTIFIC NAME	PICTURE
1. Cattail	<i>Typha</i>	
2. Sessile joyweed	<i>Alternanthera sessilis</i>	
3. Castor	<i>Ricinus communis</i>	

COMMON NAME	SCIENTIFIC NAME	PICTURE
4. Lantana camara/ Big sage	<i>Lantana camara</i>	 A close-up photograph of a Lantana camara plant, showing clusters of small, tubular flowers in shades of orange, yellow, and red, surrounded by green leaves.
5. Bryophyllum	<i>Bryophyllum</i>	 A photograph showing a cluster of long, narrow, serrated leaves, characteristic of the Bryophyllum genus.
6. Lemna or Duckweed	<i>Lemnoideae</i>	 A photograph of a dense layer of small, heart-shaped green leaves floating on the surface of water, representing duckweed.
7. Ipomoea	<i>Ipomoea</i>	 A photograph showing a large, blank white area, indicating that no image is available for this entry.
8. Bamboo (grass)	<i>Bambusoideae</i>	 A photograph of a dense forest of tall, slender green bamboo plants growing in a lush, tropical environment.

PICTURES TAKEN IN MINIFOREST AND AREKERE LAKE



SOIL ANALYSIS (COMPLETED)

1. PHYSICAL PROPERTIES

COLOUR :

The colour of the soil can either be black, red or white . Depending on the colour of the soil, we need to classify our soil sample



TEXTURE :

Based on the soil particles' size, soils can either be sandy, clayey or silt.

Sandy soil particle- 2mm to 0.475mm

Silt soil particle- 0.002mm to 0.075mm

Clayey soil particle- less than 0.002mm

Method – take the soil sample and put it in a beaker of water, mix well and allow them to settle down. Particles that settle within a minute are sand particles, particles that settle down within 2-3 minutes are silt particles and the particles that are suspended in the water even after 3 minutes are the clay particles.

MOISTURE CONTENT :

Method –

1. Crush the big/clumped particles and sieve them.
2. Calculate the weight of the soil samples with the petridish.
3. Then, heat the soil samples in an oven for a very long time so as to diminish all the moisture present in it.
4. Now, weigh the soil samples again. Subtract the new weight from the initial weight.
5. You will get the moisture content of the soil.



WATER HOLDING CAPACITY :

Method-

1. Take 10gm of soil and 10ml of water.
2. Take a funnel with a filter paper inside and place it in a measuring cylinder.
3. Put the soil sample in and pour water inside it.
4. After a while, record the quantity of water that is present inside the measuring cylinder.
5. Subtract this reading(in ml) from 10ml (initial reading)
6. You will get the water absorbed by the soil i.e. water holding capacity of the soil.

2. CHEMICAL PROPERTIES

pH:

Method –

1. Take a mixture of 25 gm soil and 45ml of water
2. Shake the sample well and allow it to settle.
3. Dip the pH paper or litmus paper into it. The reading below 7 is acidic and above is basic.

3. BIOLOGICAL PROPERTIES

ORGANIC MATTER :

Method-

1. Mix the soil sample in water.
2. Some particles would either be suspended in water or settled at the bottom.
3. But the portion that floats on water is the organic matter present in it.

TESTS TO BE DONE ----

- 1) FIELD DENSITY
- 2) BULK DENSITY
- 3) POROSITY
- 4) MEASUREMENT OF SOILS, METALS, AND NUTRIENTS

SOIL ANALYSIS IMAGES



WATER ANALYSIS (completed)

1. WATER TEMPERATURE :

Check the temperature of the water sample on the spot by dipping it into the water contained in the BOD bottle.

2. pH:

dip the pH paper into the water sample contained in the clean container. Then, try to relate the colour you have got with the different shades of the colour chart.

3. DISSOLVED OXYGEN (WINKLER'S METHOD) :

Method-

- The sample is collected in a BOD bottle.
- Add 1ml of manganese sulphate and 1ml of potassium iodide into it and close the lid.
- Shake it well and allow the precipitate to settle down

- Then add 1ml of concentrated sulphuric acid. Shake it well until all the precipitate dissolves
- 25ml of the sample needs to be measured and put into a conical flask.
- Add the starch indicator into it.
- Titrate it against sodium thiosulphate.
- Record the reading and substitute the values into the formula to find the dissolved oxygen.



TESTS REMAINING :

1. SOLIDS
 - TOTAL SOLIDS
 - TOTAL DISSOLVED SOLIDS
2. ALKALINITY
3. TOTAL HARDNESS
4. CALCIUM HARDNESS
5. MAGNESIUM HARDNESS
6. CHLORIDES
7. PLANKTON ANALYSIS

ONGOING :

- CARBON FOOTPRINT
- FOOD MILE
- STUDY OF TREES AND PLANTS
- STUDY OF BIRDS
- STUDY OF BUTTERFLIES

TO BE DONE :

- STUDY OF TEXTILES

THANK YOU