



GREEN AUDIT REPORT

of

NARASINHA DUTT COLLEGE

*129, Belilious Road,
Howrah – 711 101.*

For the Year 2021-2022

PREPARED BY

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GPS Map Camera



Howrah, West Bengal, India

Shop No. 123, 129, Belilious Rd, Tikiapara,

Howrah, West Bengal 71101, India

Lat 22.59247°

Long 88.32789°

20/08/22 01:54 PM

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EXECUTIVE SUMMARY

Rapid urbanization and economic development at local, regional and global level has led to several environmental and ecological crises. On this background it becomes essential to adopt the system of the green campus for the institute which will lead for sustainable development. Narasinha Dutt College is deeply concerned and unconditionally believes that there is an urgent need to address these fundamental problems and reverse the trends. Being a premier institution of higher studies, the college has initiated 'The Green Campus' programme few years back that actively promote various projects for environment protection and sustainability.

Purpose of this audit is to ensure that the practices followed in the campus are in accordance with the green policy adopted by the institution, it works on several facets of Green Campus including water conservation, electricity conservation, tree plantation, waste management, paperless work, mapping of biodiversity etc. With this in mind, specific objectives of the audit is to evaluate adequacy of the management control framework of environment sustainability as well as the degree to which the departments are in compliance with the applicable regulations, policies and standards. It can make a tremendous impact on students' health and learning, college operational costs and the environment. The criteria methods and recommendations used in the audit were based on the identified risks.

ABOUT THE COLLEGE

Narasinha Dutt College occupies a place of pride in the annals of Higher Education in Howrah District of West Bengal. It has a glorious past for almost a century and affiliated to University of Calcutta. The institution has an impeccable academic record. Students intending to study the traditional courses come to the campus of Narasinha Dutt College every year. The academic record of this college is very strong. Among 17 subjects in undergraduate level, four languages (English, Bengali, Sanskrit and Urdu) along with the important subjects, like Political Science, Philosophy, History, Economics and Education are taught here. Physics, Chemistry, Mathematics are taught in pure science while Zoology, Botany and Anthropology are taught for the students of Biological Science. There is also Commerce stream, which is taught in the evening shift.

Though this is an undergraduate college, post graduate course is taught here in two subjects: English and Mathematics.

In addition, there is a study centre of Maulana Azad National Urdu University in the campus.

COLLEGE HISTORY

Narasinha Dutt College, one of the oldest colleges in Howrah district, of West Bengal had started the journey in 1924 in British India. Sri Suranjan Dutta had taken the main initiative to establish the institute and the college was named after his father late Sri Narasinha Dutta. Sri Motilal Chattopadhyay was the first principal of the college (1924-1940), after whom famous educationist Sri Jnanendranath Sen had taken the leadership of the institution for next two decades (1940-1960). Due to his valuable contribution for development, the college had become an institute of repute. With time, honours course in different subjects were introduced and student strength increased remarkably.

At the beginning, there were with only 7 teachers and 124 enrolled students. There was no specific building for the college at the initial stage. At that time, few rooms of the residence of the famous philanthropist of this region, I.R. Belilious were used as class rooms. The college is affiliated to the University of Calcutta from the beginning.

INTRODUCTION

Environmental or Green Audit is a systematic, documented, periodic and objective review by regulated entities of facility operations and practices adopted to meet the environmental requirements (EPA, 2003). In other words, it is a management tool, comprising of systematic, documented, periodic and objective evaluation of how well environmental organization, management and equipment are performing with the aim of helping to safeguard the environment by facilitating management control of practices and assessing compliance with Institutional policies, which would include regulatory requirements and standards applicable.

Environmental auditing is essentially an environmental management tool for measuring the effects of certain activities on the environment against set criteria or standards. Depending on the types of standards and the focus of the audit, there are different types of environmental audit. Organizations of all kinds now recognize the importance of environmental matters and accept that their environmental performance will be scrutinized by a wide range of interested parties.

Location of the College

The College is located on Bellilious Road at Tikiapara, the next station after Howrah, on the line to Kharagpur (South Eastern Railway) which is about 2 km away from Howrah station.

Communication and Transportation

This college is well connected with different parts of Howrah district by bus and local trains. Lot of bus services to Kolkata, is available here. The nearest railway station is Howrah railway station. The nearest international and domestic airport is Netaji Subhas Chandra Bose International Airport of Kolkata, the tween city of Howrah.

UTILITY OF GREEN AUDITING

Green audit is used to improve existing anthropogenic activities, with the object to reduce the adverse effects of these activities upon environment. An environmental auditor will study an organization's efforts to conserve the environment in a systematic and documented manner and will produce an environmental audit report.

OBJECTIVES OF THE STUDY

The basic objective of green audit is to promote environment management and conservation in the college campus. Purpose of the audit is to identify, quantify, describe and prioritize the framework of environmental sustainability in compliance with the applicable regulations, policies and standards. Major objectives of carrying out green audit are:

- To introduce an awareness among the students regarding real concerns of environment and its sustainability
- To secure the environment and cut down the threats posed to human health by analyzing the pattern and extent of resource use on the campus.
- To establish a baseline data to assess future sustainability by avoiding the interruptions in environment that are more difficult to handle and their corrections requires high cost.
- To bring out a present status report on environmental compliance.

METHODOLOGY

In order to perform green audit, methodology included different techniques such as physical inspection of the campuses, observation and review of the documentation, interviewing key persons and data analysis, measurement of the present status of environment management in the campuses:

- Water quality assessment, consumption and management
- Air quality assessment and management
- Electricity consumption and management
- Sound pollution monitoring
- Waste management
- Bio diversity status of the campus
- Land use and land coverage
- Rain water Harvesting
- Use of alternate energy sources.

LAND USE ANALYSIS, NARASINHA DUTT COLLEGE, WEST BENGAL (AS on 23/08/2022)

GENERAL OVERVIEW OF THE CONCEPT OF LANDUSE:

Land use refers to man's activities and the various uses which are carried on and derived from land. Viewing the earth from space, it is now very crucial in man's activities on natural resource. In situations of rapid changes in land use, observations of the Earth from space give the information of human activities and utilization of the landscape.

METHODOLOGY ADOPTED FOR LAND USE MAPPING.

Three types of data that are GPS points, field survey data and Google earth data for Geo-referencing have been used in this study. Land use map of the study area have been prepared using field survey

CLASSIFICATION SCHEME FOR LAND USE ANALYSIS OF BUILT UP AREA

Level-I	Level-II
1. Built- up land area	1.1 Dense 1.2 Moderate 1.3 Sparse

Therefore, attempt has been made in this study to map land use for Narsinha Dutta College with a view to detect the land consumption in the built-up land area.

LAND USE DATA OF COLLEGE OF NARASINHA DUTT COLLEGE

CATEGORIES OF LAND USE	AREA IN SQ METRES
OPEN SPACE AND PLANTATION	10120
Ground Coverage	10433
TOTAL AREA	20553

Ground coverage of 50.76% (i.e 10433 sq meters) consists of the buildings.

FINDINGS:

Narasinha Dutt College, which was established in the year 1924, has an eco-friendly environment. It has a long legacy of healthy environmental practices including periodic plantation, their preservation and maintenance. Its land use is such that about 49.24% of the total area is occupied by open land and plantation that generates a better and sustainable campus environment.

Water Quality Assessment, Consumption & Management

Water quality analysis was conducted by Qualissure Laboratory Services

TEST REPORT

DOC NO : QLS/SAMP/08-D/00

Name & Address of the Customer : M/s. NarasinhaDutt College 129, Belilious Road, Howrah 711 101	Report No.	: QLS/W/22-23/C/342
	Date	: 05.08.2022
	Sample No.	: QLS/W/22-23/342
	Sample Description	: Drinking Water
	Sample Mark	: Canteen Aqua guard
	Date of Performance	: 17.07.2022-26.07.2022
	Sample Drawn On	: 16.07.2022

Analysis Result

(A) Microbiological Analysis

Sl. No.	Characteristic	Limit as per Drinking Water Standard : IS:10500, 2012 Amd. 2	Test Method	Result
1.	Total Coliform Bacteria/100ml	Not Detectable	IS 15185-2016	Not Detected
2.	E.coli /100ml	Not Detectable	IS 15185: 2016	Not Detected

(B) Chemical Analysis

Sl. No.	Test Parameter	Test Method	As per Drinking Water Standard : IS:10500, 2012 Amd. 1 & 2		Result
			Acceptable Limit	Permissible Limit	
1.	pH Value at 25°C	IS 3025 (Part 11)- 1984 RA: 2012	6.5-8.5	No Relaxation	7.03
2.	Turbidity in NTU	IS 3025 (Part 10)- 1984 RA: 2012	1	5	<1.0
3.	Total Dissolved Solids (TDS) in mg/l	IS 3025(Part 16)- 1984 RA: 2012	500	2000	170
4.	Calcium(as Ca) in mg/l	IS 3025 (Part 40): 1991(RA 2014)	75	200	25.6
5.	Chloride(as Cl) in mg/l	IS 3025 (Part 32): 1988 (RA 2014)	250	1000	38.6
6.	Iron (as Fe) in mg/l	IS 3025(Part 53)-1988 RA: 2014	1.0	No Relaxation	<0.05
7.	Magnesium(as Mg) in mg/l	IS 3025 (Part 46)-1994 RA: 2014	30	100	6.3
8.	Nitrate (as NO ₃) in mg/l	IS 3025 (Part 34)-1986 RA: 2014	45	No Relaxation	<0.5
9.	Free Residual Chlorine in mg/l	IS 3025 (Part 26): 1986(RA 2014)	0.2	1.0	<0.1
10.	Sulphate (as SO ₄) in mg/l	IS 3025 (Part 24)-1986, RA: 2014	200	400	15.9
11.	Alkalinity (as CaCO ₃) in mg/l	IS 3025 (Part 23)- 1986, RA: 2014	200	600	101.2
12.	Total Arsenic(as As) in mg/l	IS 3025 (Part 37):1988,RA 2014	0.01	No Relaxation	<0.01
13.	Total Hardness (as CaCO ₃) in mg/l	IS 3025 (Part 21)-1983, RA: 2014	200	600	90.2



22°35'34", 88°19'42", 6.7m, 355°
16/07/2022

TEST REPORT

Name & Address of the Customer : M/s. NarasinhaDutt College 129, Belilious Road, Howrah 711101	Report No.	: QLS/W/22-23/C/343
	Date	: 05.08.2022
	Sample No.	: QLS/W/22-23/343
	Sample Description	: Waste Water
	Sample Mark/Location	: Drain Water
	Sample Drawn On	: 16.07.2022

Analysis Result

Sl. No.	Parameter	TEST METHOD	Result	Limit as per CPCB for discharge of effluents	
				Inland Surface Water	Public Sewers
1.	pH at 25°C	APHA 23 rd Edition-2017, 4500 H+	7.32	5.5 to 9.0	5.5 to 9.0
2.	Total Suspended Solid in mg/l	APHA 23 rd Edition-2017, 2540 D	30	100	600
3.	Chemical Oxygen Demand (as COD) mg/l	APHA 23 rd Edition-2017, 5220B	78	250	---
4.	Biochemical Oxygen Demand (as BOD) mg/l	IS 3025 (Part 44)-1993, RA:2014	22	30	350
5.	Oil & Grease in mg/l	APHA 23 rd Edition-2017, 5520A	3.2	10	20



22°35'33", 88°19'40", -14.6m, 200°
16/07/2022



22°35'33", 88°19'39", -47.7m, 202°
16/07/2022

Air Quality Assessment and Management

DOC NO : QLS/SAMP/08-A/00

TEST REPORT

Name & Address Of the Customer : M/s. NarasinhaDutt College 129, Belilious Road, Howrah 711101	Report No.	: QLS/A/22-23/C/466
	Date	:05.08.2022
	Sample No.	: QLS/A/22-23/466
	Sample Description	: Ambient Air
	Sample Mark	: Near Main Gate

Analysis Result

Location: Near Main Gate		Date of sampling : 16.07-17.07.2022		
Sampling Done by: D. Sahoo		Sampling done as per : CPCB Guidelines (Volume-1)		
Environmental Condition: Partly Cloudy & Light Drizzle		Average Temperature : 30°C		
Barometric Pressure : 756 mm of Hg		Average Humidity : 72%		
Sl. No.	Pollutants	Result	Limit as per CPCB	Method of Test Reference
1	Particulate matter (<10µm) in µg/m ³	82	100	IS: 5182 (Part-23), RA-2017
2	Particulate matter (<2.5µm) in µg/m ³	43	60	USEPA CFR-40,Part-50, Appendix-L
3	Sulphur dioxide (SO ₂) in µg/m ³	7.6	80	IS: 5182 (Part-2)-2001, RA-2017
4	Nitrogen dioxide (NO ₂) in µg/m ³	33.1	80	IS: 5182 (Part- 6)-2006, RA-2017
Sl. No.	Pollutants	Result	Limit as per CPCB	Method of Test Reference
NOTE: Limit as per CPCB notification, New Delhi, 18 th November 2009, for Ambient air quality.				



22°35'33", 88°19'39", -41.8m, 270°
16/07/2022

TEST REPORT

DOC NO : QLS/SAMP/08-A/00

Name & Address of the Customer : M/s. Narasinha Dutt College 129, Belilious Road, Howrah 711101	Report No.	: QLS/A/22-23/C/467
	Date	:05.08.2022
	Sample No.	: QLS/A/22-23/467
	Sample Description	: Ambient Air
	Sample Mark	: Near Canteen Area

Analysis Result

Location: Near Canteen Area		Date of sampling : 16.07-17.07.2022		
Sampling Done by: D. Sahoo		Sampling done as per : CPCB Guidelines (Volume-1)		
Environmental Condition: Partly Cloudy & Light Drizzle		Average Temperature : 30°C		
Barometric Pressure : 756 mm of Hg		Average Humidity : 72%		
Sl. No.	Pollutants	Result	Limit as per CPCB	Method of Test Reference
1	Particulate matter (<10µm) in µg/m ³	58	100	IS: 5182 (Part-23), RA-2017
2	Particulate matter (<2.5µm) in µg/m ³	26	60	USEPA CFR-40,Part-50, Appendix-L
3	Sulphur dioxide (SO ₂) in µg/m ³	6.0	80	IS: 5182 (Part-2)-2001, RA-2017
4	Nitrogen dioxide (NO ₂) in µg/m ³	28.1	80	IS: 5182 (Part- 6)-2006, RA-2017
Sl. No.	Pollutants	Result	Limit as per CPCB	Method of Test Reference
NOTE: Limit as per CPCB notification, New Delhi, 18 th November 2009, for Ambient air quality.				



22°35'34", 88°19'40", -17.5m, 130°
16/07/2022

Sound Pollution Monitoring

DOC NO : QLS/SAMP/08-C/00

TEST REPORT

Name & Address Of the Customer : M/s. NarasinhaDutt College 129, Belilious Road, Howrah 711101	Report No.	: QLS/A/22-23/C/468
	Date	: 05.08.2022
	Sample No.	: QLS/A/22-23/468(A-B)
	Sample Description	: Noise Monitoring
	Report No.	: QLS/A/22-23/C/468

Monitoring Result of Noise

Sampling Done By: D.Sahoo				
Sampling Guideline : As per IS: 9876: 1981 (RA-2001)				
Sample No.	Date of Monitoring	Location	Leq dB (A) Day Time	Leq dB (A)Night Time
468A	16.07- 17.07.2022	Near Canteen Area	59.9	48.9
468B		Near Main Gate	63.1	54.3

Code/ Category	Leq dB Day Time(A)	Leq dB Night Time(A)	<i>NOTE:</i> Day Time : 06.00 Hr. – 22.00 Hr. Night Time : 22.00 Hr. – 06.00 Hr.
A/Industrial	75	70	
B/Commercial	65	55	
C/Residential	55	45	
D/Ecological Sensitive	50	40	



22°35'33", 88°19'39", -55.7m, 317°
16/07/2022



22°35'34", 88°19'40", -40.3m, 316°
16/07/2022

RAIN WATER HARVESTING SYSTEM

After study of different options, the college authority considering all aspects has zeroed in on a particular design. Tendering and other formalities are being done. The way, as the things are, the system is likely to be commissioned within next 6 months.

Electricity Consumption [in Units] and Management

GENERALDETAILS

Sl.No.	PARTICULARS	DETAILS	
1	Name & Address of College	Narasinha Dutt College 129, Belilious Road, Howrah – 711 101.	
	Web Site	https://narasinhaduttcollege.edu.in/	
2	Name of Contact Officer	Dr. Soma Bandyopadhyay	
	Designation	Principal	
	Name of Alternative Officer	Dr. Swapan Khan	
	Designation	Bursar	
3	Telephone No.	NA	
	Mobile No.	8900131547	
	Fax No. e-mail ID	principal@narasinhaduttcollege.edu.in	
	No. of shift	03Shifts: 9.00 AM to 08.00 PM	
4	Electricity Consumption (Kwh)	Imported (Purchased) Power/Kwh	
		19928	
		Fuel	Electricity
		2,225/-	Rs. 10,709/- (Per month)
5	Specific Energy Consumption	Fuel	Electricity
6	LPD	1,600/- per month	
7	EPI	6.52	

I. DETAILS OF ELECTRICITY CONSUMPTION

1. TRANSFORMERS

	No. 1
Voltage Ratio	N/A
KVA	N/A
% Impedence	N/A

2. ELECTRICITY CONSUMPTION

	Particulars	Demand
A	Contract demand KVA	102.5
B	Maximum demand	102.5
C	Total Energy units consumed / year	19928
D	Avg. Power Factor(P.F.)	0.91
E	Avg. Energy bills (Rs/month)	Rs.12,851/-

3. DETAILED LIST OF ELECTRIC MOTORS OPERATING IN THE PLANT (SEPARATE SHEET CAN BEEN CLOSED)

S.NO.	NAME OF THE PLANT	RATING OF MOTOR (KW)	NO. OF MOTORS
1	Narasinha Dutt College, Howrah.	6.37	5 nos.

4. CONNECTED LOAD

	EQUIPMENT	TOTAL NUMBERS	LOAD IN KW (TOTAL)
A	Motors : Greater than 10kW	NIL	NIL
	: Less than 10 kW	5Nos.	6.37 KW
B	AC & Ventilation with TR capacity		
a)	Others (Package ACs/ Split ACs / Windows ACs) with TR	Room AC of Split/Window type – 43 Nos. 62.3KW	
C	Total Process Load (in kW)	68.40 KW	
D	Total Lighting Load (in kW) & Luminaries details	Number of lighting luminaries (LED+T/L+ (including fan) Tube Light, Led Light, Metal etc. -32.67 KW Electric Fan - 53.65 KW	
	Total Load (in kW)	154.72kw	

A. Lux Measurements :

Sl.no.	Room	LUX level	Remarks
1.	Administration Building		
	Ground Floor	182,175,176,163,163,143,132,150	
	1 st floor	184,183,174,164,179,147,144,151	
	2 nd floor	161,182,184,194,163,157,149,147	
2.	West Block	LUX level	
	Ground Floor	170,149,166,148,164,161,143,147	
	1 st floor	146,142,141,138, 153,137,144,143	
	2 nd floor	127,146,138,143,134,125,136,139	
3.	North Block	LUX level	
	Ground Floor	141,134,154,158,156,158,135,141,138	
	1 st floor	135,155,151,146,145,144,155,149,136	
	2 nd floor	156,144,139,131,154,136,151,156,129	
4	Computer Science Building	LUX level	
	Ground Floor	140,142,147,149,148,148,145,144,147	
	1 st floor	142,164,145,159,153,152,153,159,141	
	2 nd floor	143,143,146,148,144,147,144,145,139	
5	Chemistry Building	LUX level	
	Ground Floor	143,145,141,136,136,138,135,142,147	
	1 st floor	146,146,144,145,144,145,143,139,140	
	2 nd floor		

Illumination Level Comparison

Area	Average Lighting Level (LUX)	NBC Recommended
Administration Building	165	300-500
West Block	145	300-500
North Block	146	300-500
Computer Science Building	145	300-500
Chemistry Building	141	300-500

Remarks: Lights needs cleaning at an interval of one month and old light to be replaced by new to get desired LUX value

USE OF ALTERNATE ENERGY

With a view to reduce carbon emission, the authority has decided to harness solar energy. Open space available for installation of Solar Panels have been identified. Maximum number of solar panels that can be installed and capacity of energy generation has been worked out.

Purchase formalities are on and target date of commissioning has been fixed in end of March '2023'.

WASTE MANAGEMENT

The present Prime Minister of India Sri Narendra Modi launched 'Swachh Bharat Abhiyan' (Clean India Mission) on 2nd October, 2014. In this mission, the proper use of dust/waste bins is one of the major priorities. To implement this mission, collective mass effort is necessary. For proper segregation and management proper use of waste bins is the only solution for waste management purpose in the college campuses.

Solid Waste

Solid waste collection bin has been placed at strategic points. Waste thus collected is handed over to municipal collection system.





GPS Map Camera



Howrah, West Bengal, India
Shop no 127, 129, Belilious Rd, near N.D.College,
Tikiapara, Howrah, West Bengal 711101, India
Lat 22.592574°
Long 88.327927°
27/08/22 02:42 PM

E-Waste

Substantial quantity of e waste is generated due to extensive use of computer.

All members particularly students have been advised not to throw used pendrive etc. any where, but to keep in designated bins. Waste thus collected is stored in secured place. Waste is disposed through aurtotised agencies and certificates are obtained. Presently, these are stored in open enclosure.

A covered area is to earmarked for storage of e waste.



Certificate of E-Waste Disposal

This is to certify that the E-Waste was received from

NARASINHA DUTT COLLEGE

weighing 399.0 kgs during the period from 8th Aug '16 to 26th Aug '16
and has been disposed of as per environmentally friendly manner, vide

Certificate no. HWR/KOL/2016/098 dated 1st October '16



For Hulladek Recycling

US7100WB2014PTC205655

Company Registration

BIODIVERSITY STATUS OF THE COLLEGE CAMPUS

INTRODUCTION

Narasinha Dutt College campus is very rich in the term of biodiversity. To conserve this biodiversity, our first need is to learn about the existing diversity of the place. Unless we know whom to conserve, we will not be able to plan proper conservation initiatives. Also, it is important to have an understanding of the biodiversity of an area so that the local people can be aware of the richness of biodiversity of the place they are living in and their responsibility to maintain that richness.

OBJECTIVE

The main objective of this study is to get a baseline data of bio-diversity of the area which will include:

1. Documentation of the floral diversity of the area: its trees, herbs, shrubs, climbers and aquatic vegetations.
2. Documentation of the major faunal groups like mammals, reptiles, amphibians, birds and among the insects, butterflies and dragonflies.
3. Documentation of the specific interdependence of floral and faunal life.

Survey Area

Narasinha Dutt College premises and its surrounding areas: Situated at 129, Belilious Road, Dist. Howrah – 711101, Howrah Railway Station nearby around 3 km. from college.

Location Map



Method of Study

Brief methodology for the floral and faunal survey is given below:

01. Sampling was done mostly in random manner.
02. Surveys were conducted for the maximum possible hours in day time.
03. Tree species were documented through physical verification on foot and photographed each species as much as possible.
04. The total area was surveyed by walking at day time.
05. For faunal species we emphasized mainly on the direct sighting. Also call of various birds and amphibians and nesting of some faunal species were considered as direct evidences.
06. Observing mammals depend critically on the size of the species and its natural history. Diurnal species are common and highly visible. Nocturnal species, however, are rare and difficult to detect. Small mammals like the field rats were found near their burrows, particularly during their entry or exit times in or out from their burrows respectively. In some cases, deposits and footprints were also observed that served as a potential clue for the presence and absence of the concerned species. These secondary evidences were all noted with time and space co-ordinates.
07. Birds are often brightly coloured, highly vocal at certain times of the year and relatively easy to see. Sampling was done on the basis of direct sighting, call determination and from the nests of some bird species

08. Reptiles were found mostly by looking in potential shelter sites like crevices of building, logs, tree hollows and leaf litter and also among and underneath the hedges. Sometimes some species, particularly the garden lizards were also observed in open spaces (on twigs and branches and even on brick constructions) while they were basking under direct and bright sunlight.
09. Amphibians act as potential ecological indicators. However, most of them are highly secretive in their habits and may spend the greater part of their lives underground or otherwise inaccessible to biologists. These animals do venture out but typically only at night. They were searched near pond, road beside wetland and in other possible areas. Diurnal search operations are also successful.
10. Active invertebrates like the insects require more active search. For larger winged insects like butterflies, dragonflies and damselflies, random samplings were carried and point sampling was also done.
11. The easiest way to observe many of the invertebrates is simply looking for them in the suitable habitat or microhabitat. Searching was carried out under stones, logs, bark, in crevices in the walls and rocks and also in leaf litter, dung etc. slogs and snails are more conspicuous during wet weather and especially at night when they were found using torch.

Plant diversity in the College Campus

Actually, the college campus is eco-friendly with rich flora of bryophyte, pteridophytes, gymnosperms and flowering plants like trees, shrubs, herbs, grasses and aquatic plants too. The herbs mostly recorded are naturally grown in the campus. These plants are listed and depicted as following:



Caryota urens
Fish tail palm



Ravenala madagascariensis
Panthapadap

Tree

Sl.No.	Scientific name of the Plants	Family	Local/Common Names
1	<i>Syzygium cumini</i> (L.) Skeels.	Myrtaceae	Jam/Jamun
2	<i>Casuarina equisetifolia</i> L.	Casuarinaceae	Jhau/Australian Pine
3	<i>Roystonea regia</i> (Kunth) O. F. Cook	Arecaceae	Royal Palm
4	<i>Thespesia populnea</i> Corr.	Malvaceae	Paresh pipul /Indian Tulip
5	<i>Eucalyptus citriodora</i> (Hook.) K.D. Hill & L.A.S. Johnston	Myrtaceae	Lemon Scented Gum
6	<i>Alstonia scholaris</i> B. Br.	Apocynaceae	Saptaparni/Chhatim
7	<i>Ravenala madagascariensis</i> Sonn.	Strelitziaceae	Panthopadap/Traveller's Palm
8	<i>Caryota urens</i> L.	Arecaceae	Chaur/Solitary Fishtail Palm
9	<i>Callistemon linearis</i> Schrad.	Myrtaceae	Bottlebrush
10	<i>Mangifera indica</i> L.	Anacardiaceae	Aam, Mango
11	<i>Mimusops elengi</i> L.	Sapotaceae	Bokul
12.	<i>Neolamarckia cadamba</i> (Roxb.) Bosser	Rubiaceae	Kadam
13	<i>Acacia auriculiformis</i> A. Cunn. ex. Benth.	Fabaceae	Akashmoni/Sonajhuri
14	<i>Areca catechu</i> L.	Arecaceae	Shupari /betel nut
15	<i>Samanea saman</i> (Jacq.) Merr.	Fabaceae	Koroi/ Pink siris
	<i>Monoon longifolium</i> (Sonn.)B.Xue & R.M.K.Saunders	Annonaceae	Debdaru
16	<i>Vitex negundo</i> L.	Lamiaceae	Nisindha/Sindhubar
17	<i>Ficus racemosa</i> L.	Moraceae	Yogna Dumur
18	<i>Lagerstroemia speciosa</i> (L.) Pers.	Lythraceae	Jarul
19	<i>Livistona chinensis</i> (Jacquin.) R. Brown ex Martius	Arecaceae	Chinese Fan Palm/Fountain Palm
20	<i>Ficus benghalensis</i> L.	Moraceae	Bot/ Banyan tree

Sl. No	Scientific name of the Plants	Family	Local/Common Names
21.	<i>Terminalia arjuna</i> (Roxb.) Wight & Arn.	Combretaceae	Arjun
22.	<i>Borassus flabellifer</i> L.	Arecaceae	Tal/ Fan Palm
23	<i>Ficus hispida</i> L.	Moraceae	Dumur
24	<i>Bombax ceiba</i> L.	Malvaceae	Shimul
25.	<i>Phyllanthus emblica</i> L.	Euphorbiaceae	Amlaki
26.	<i>Peltophorum pterocarpum</i> (DC.) K.Heyne	Fabaceae	Radhachura

Shrubs

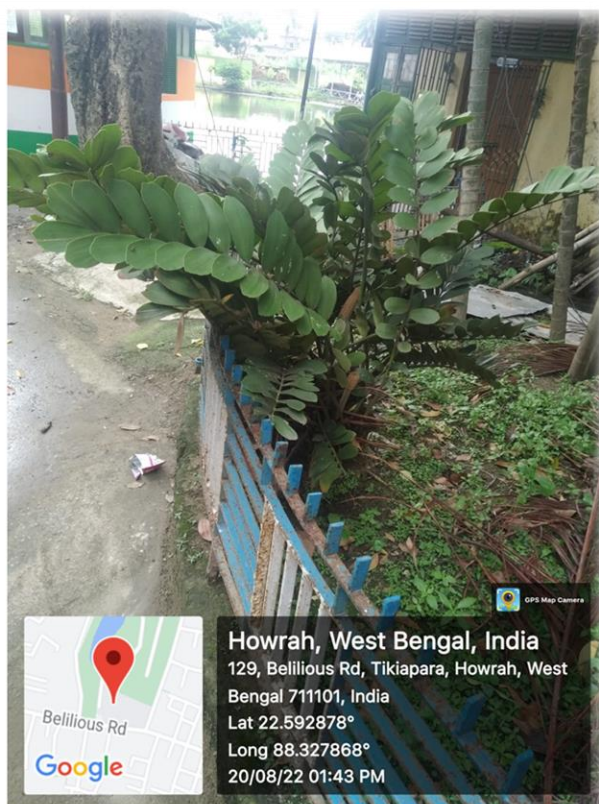
Sl. No	Scientific name of the Plants	Family	Local/Common Names
1	<i>Murraya exotica</i> L.	Rutaceae	Kamini
2	<i>Hibiscus rosa-sinensis</i> L.	Malvaceae	Jaba/China rose
3	<i>Tabernaemontana divaricata</i> R.Br.ex. Roem. & Schult.	Apocynaceae	Tagar
4.	<i>Gardenia jasminoides</i> J.Ellis	Rubiaceae	Gandharaj
5.	<i>Nerium oleander</i> L	Apocynaceae	Karabi
6	<i>Ricinus communis</i> L.	Euphorbiaceae	Reri
7	<i>Plumeria pudica</i> Jacq.	Apocynaceae	Nagchampa/Brindaban champa
8	<i>Clerodendrum indicum</i> L.	Lamiaceae	Bamanhati

Gymnosperm

Sl. No	Scientific name of the Plants	Family	Local/Common Names	Remarks
1	<i>Cycas circinalis</i>	Cycadaceae	Cycas	Ornamental
2	<i>Araucaria</i> sp	Araucariaceae	X-mas tree	Ornamental
3	<i>Zamia</i> sp	Zamiaceae		Ornamental
4.	<i>Thuja</i> sp	Cupressaceae	Jhau	Ornamental



***Cycas* sp. (left) and *Zamia* sp. (right)**





Ophioglossum sp.
A rare pteridophyte
growing in college campus

Pteridophyta

Sl. No	Scientific name of the Plants	Family	Local/Common Names	Remarks
1	<i>Ophioglossum reticulatum</i> L.	Ophioglossaceae	Adder's tongue	Rare in occurrence
2	<i>Pteris vittata</i> L.	Pteridaceae	Chinese brake	
3	<i>Ampelopteris prolifera</i> (Retz.) Copel	Thelypteridaceae		
4.	<i>Christella dentata</i>	Thelypteridaceae		



Bryophyta

Sl. No	Scientific name of the Plants	Family	Local/Common Names
1	<i>Cyathodium</i> sp	Targioniaceae	
2	<i>Semibarbula</i> sp	Pottiaceae	Velvet moss

Lichen

Different Crustose lichens are found to grown over the several tree trunks of the college. It is well known that lichen is the symbiotic association between algae and fungi and a very important indicator of pollution-free environment.



Crustose Lichen growing on tree bark in college campus

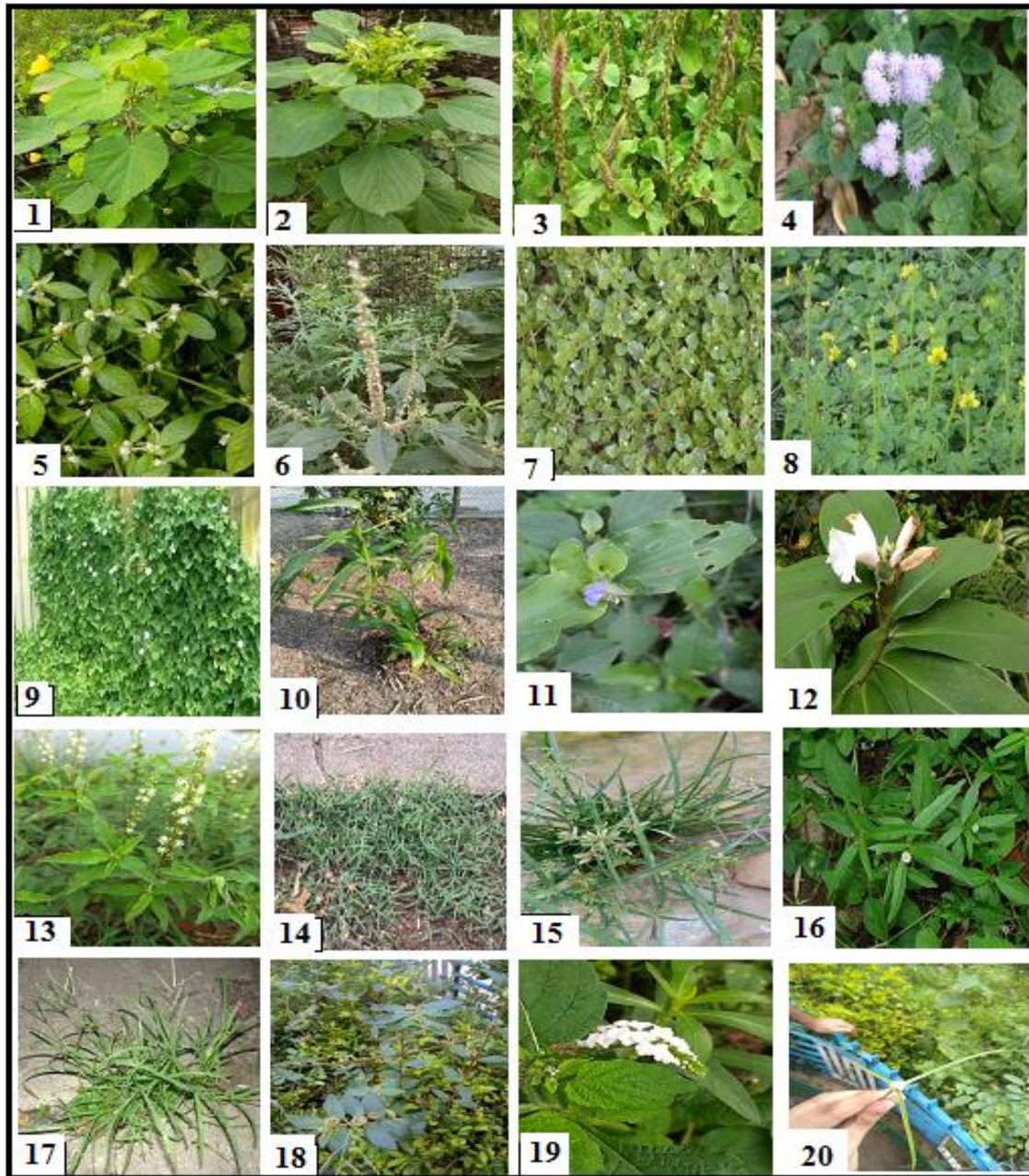
Aquatic Plants

Sl. No	Scientific name of the Plants	Family	Local/Common Names
1	<i>Nymphaea rubra</i>	Nymphaeaceae	Lal-shaluk

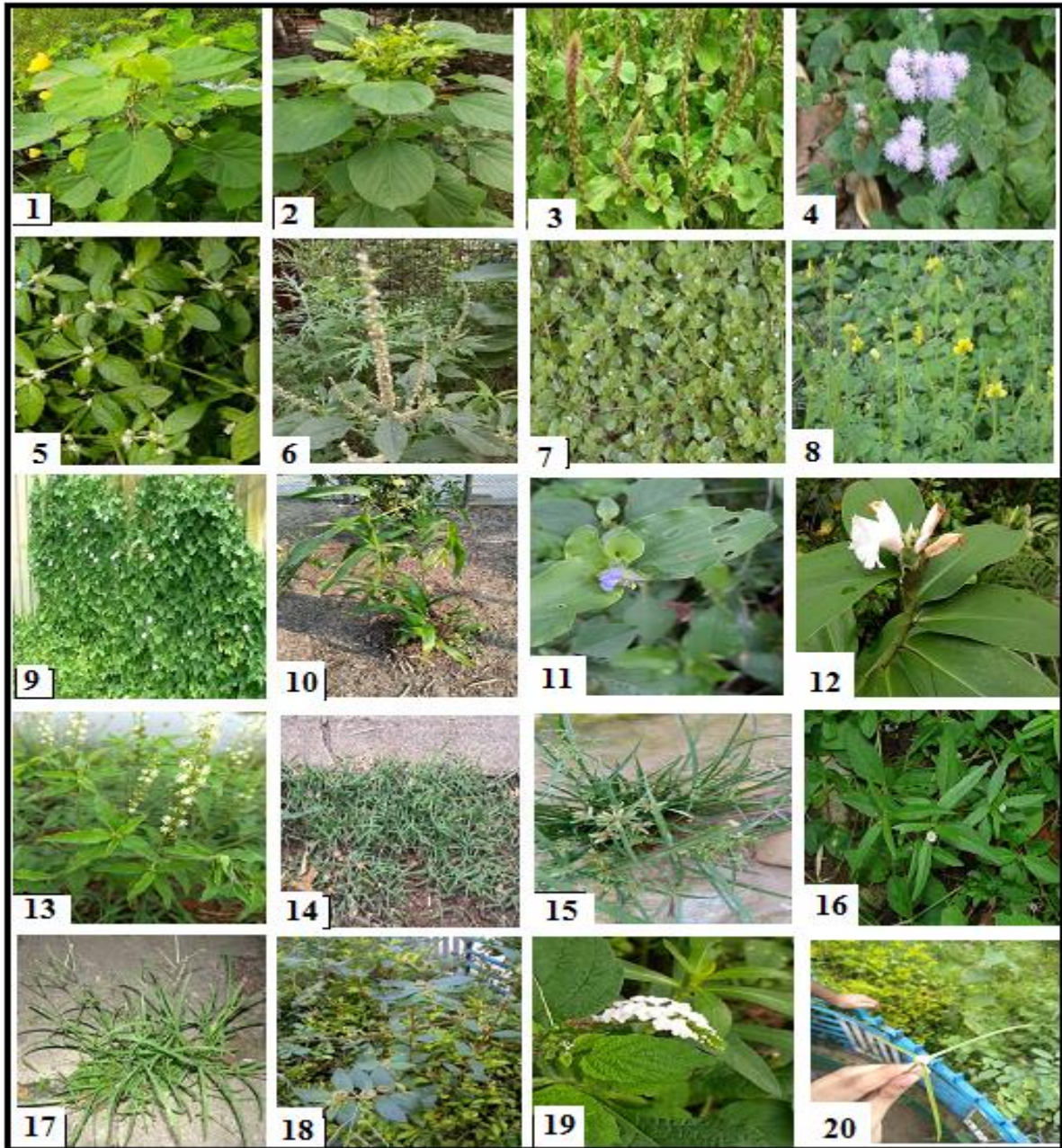


Herbs

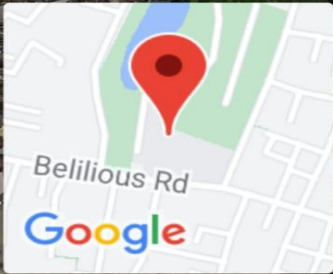
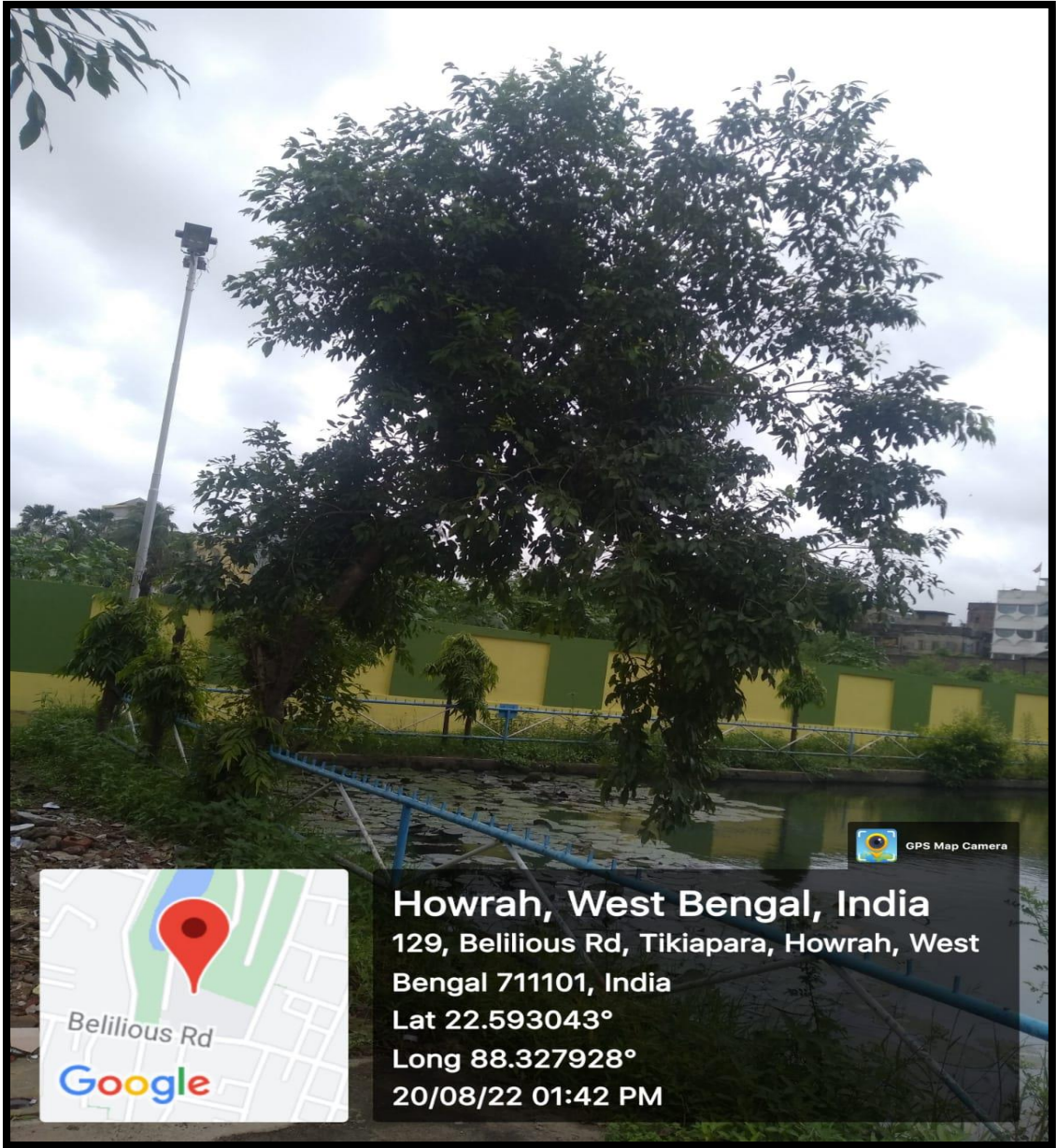
Sl.No.	Scientific name of the Plants	Family	Local/Common Names
1	<i>Nicotiana plumbaginifolia</i> Viv.	Solanaceae	Bontamak
2	<i>Phyla nodiflora</i> (L.)Greene	Verbenaceae	Bhuin-okra
3	<i>Nasturtium indicum</i> (L)DC.	Brassicaceae	Bon-sorse
4	<i>Euphorbia hirta</i> L.	Euphorbiaceae	
5	<i>Physalis minima</i> L.	Solanaceae	Bon- tepari
6	<i>Solanum nigrum</i> L.	Solanaceae	Kakmachi
7	<i>Solanum sisymbriifolium</i> Lam.	Solanaceae	Kanta- begun
8	<i>Oldenlandia corymbosa</i> L.	Rubiaceae	Khetpapra
9	<i>Oxalis corniculata</i> L.	Oxalidaceae	Amrul
10	<i>Parthenium hysterophorus</i> L.	Asteraceae	
11	<i>Phyllanthus urinaria</i> L.	Euphorbiaceae	Bhuin- amla
12.	<i>Polygonum hydropiper</i> (L.) Delabre	Polygonaceae	Panimorich
13	<i>Pouzolzia zeylanica</i> (L.) Benn.	Urticaceae	
14	<i>Rumex dentatus</i> L.	Polygonaceae	Bon-palong
15	<i>Lindernia crustacea</i> (L.) F.Muell.	Scrophulariaceae	
16	<i>Mazus pumilus</i> (Burm.f) Steenis	Scrophulariaceae	
17	<i>Scoparia dulcis</i> L.	Scrophulariaceae	Bon-dhone
18	<i>Blumea lacera</i> L.	Asteraceae	Kukshim
19	<i>Vernonia cinerea</i> (L.) Less.	Asteraceae	
20	<i>Alternanthera sessilis</i> (L.)DC.	Amaranthaceae	
21	<i>Alternanthera philoxeroides</i> (Mart.)Griseb	Amaranthaceae	Sanchi
22	<i>Gnaphalium indicum</i> L.	Asteraceae	
23	<i>Cynodon dactylon</i> L.	Cyperaceae	Durba
24	<i>Eclipta prostrata</i> (L.) L.	Asteraceae	Keshut
25	<i>Eleusine indica</i> (L.)Gaertn.	Poaceae	
26	<i>Ruellia tuberosa</i> L.	Acanthaceae	Chatpati
27.	<i>Eragrostis tenella</i> Steud.	Poaceae	
28	<i>Coix lachrymal-jobi</i> L.	Poaceae	
29	<i>Enydra fluctuens</i> Lour.	Asteraceae	Hinche
30	<i>Cyperus rotundus</i> L.	Cyperaceae	Mutha
31	<i>Cyperus iria</i> L.	Cyperaceae	
32	<i>Euphorbia microphylla</i> L.	Euphorbiaceae	
33	<i>Gomphrena celosoides</i> Mart.	Amaranthaceae	
34	<i>Ludwigia octovalvis</i> (Jacq.) Raven	Onagraceae	
35	<i>Lindenbergia indica</i> (L.) Vatke.	Scrophulariaceae	Halud basanti
36	<i>Boerhaavia diffusa</i>	Nyctaginaceae	Punarnaba



Herbs growing in the campus: (1) *Abutilon indicum*, (2) *Acalypha indica*, (3) *Aervaaspera*, (4) *Ageratum conyzoides*, (5) *Alternanthera sessilis*, (6) *Amaranthus spinosus*, (7) *Boerhaavia diffusa*, (8) *Cleome viscosa*, (9) *Coccinia grandis*, (10) *Coix lacryma-jobi*, (11) *Commelina benghalensis*, (12) *Cheilocostus speciosus*, (13) *Croton bonplandianus*, (14) *Cynodon dactylon*, (15) *Cyperus rotundus*, (16) *Eclipta prostrata*, (17) *Eleusine indica*, (18) *Euphorbia hirta*, (19) *Heliotropium indicum*, (20) *Kyllinga brevifolia*.



Herbs growing in the campus: (21) *Leucas aspera*, (22) *Lindernia crustacea*, (23) *Ludwigia octovalvis*, (24) *Mazus pumilus*, (25) *Mikania micrantha*, (26) *Mimosa pudica*, (27) *Oldenlandia corymbosa*, (28) *Oxalis corniculata*, (29) *Phyllanthus fraternus*, (30) *Physalis minima*, (31) *Scoparia dulcis*, (32) *Sida acuta*, (33) *Solanum nigrum*, (34) *Sphagneticola calendulacea*, (35) *Tridax procumbens*, (36) *Vernonia cinerea*.



Howrah, West Bengal, India
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Long 88.327928°
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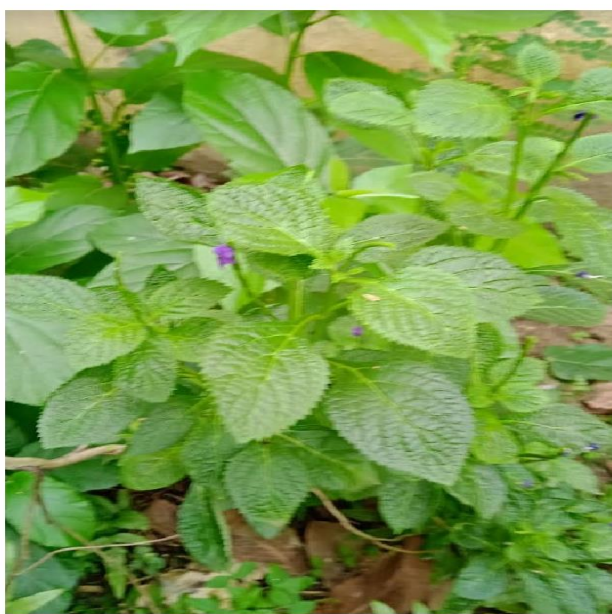
Medicinal Plants in the Campus:

A number of plants with medicinal properties are growing in the campus, specially in the medicinal plant garden.

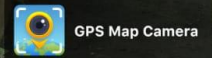
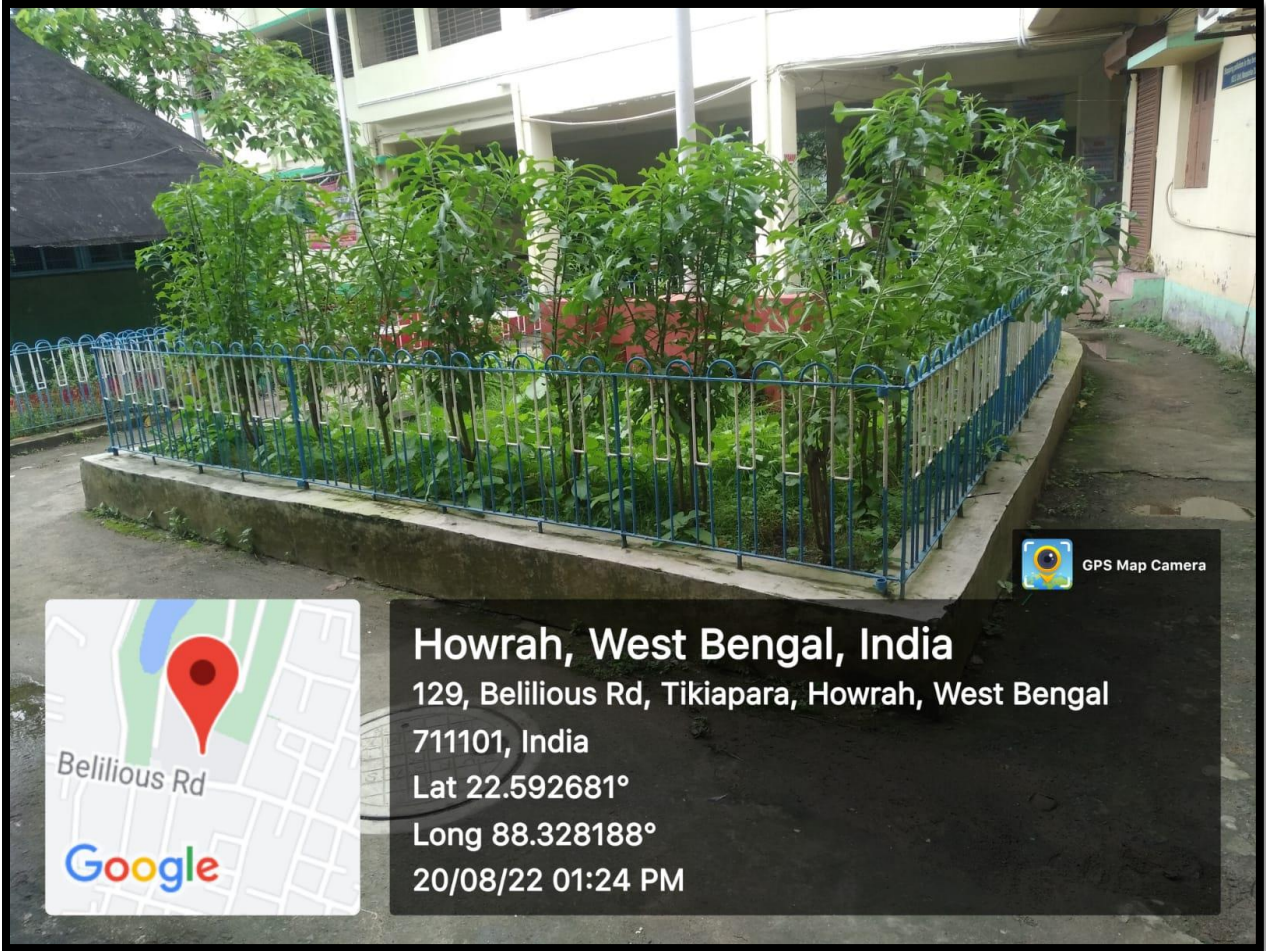
SL. NO.	COMMON NAME	SCIENTIFIC NAME	USES
1	Tulsi	<i>Ocimum sanctum</i>	Leaf
2	Ghritakumari	<i>Aloe vera</i>	Leaf
3	Thankuni	<i>Cantellaasiatica</i>	Leaf
4	Black Tulsi	<i>Ocimumtenuiflorum</i>	Whole Plant, Leaf, Seed
5	Muthagrass	<i>Cyperus rotundus</i>	Root
6	Blue porterweed	<i>Stachytarpheta jamaicensis</i> (<i>Verbenaceae</i>)	Root, leaves
7	Costus	<i>Costus sp (Zingiberaceae)</i>	Rhizome
8	Guava	<i>Psidium guajava</i>	Leaves
9	Atasi	<i>Crotalaria retusa L.</i>	Leaves
10	Lemon grass	<i>Cymbopogon microthecus</i>	Leaves
11	Adlay millet	<i>Coix lacryma-jobi</i>	Fruit
12	Nayantara	<i>Catharanthus roseus</i>	Leaves



Coix lacryma-jobi



Stachytarpheta jamaicensis



Howrah, West Bengal, India

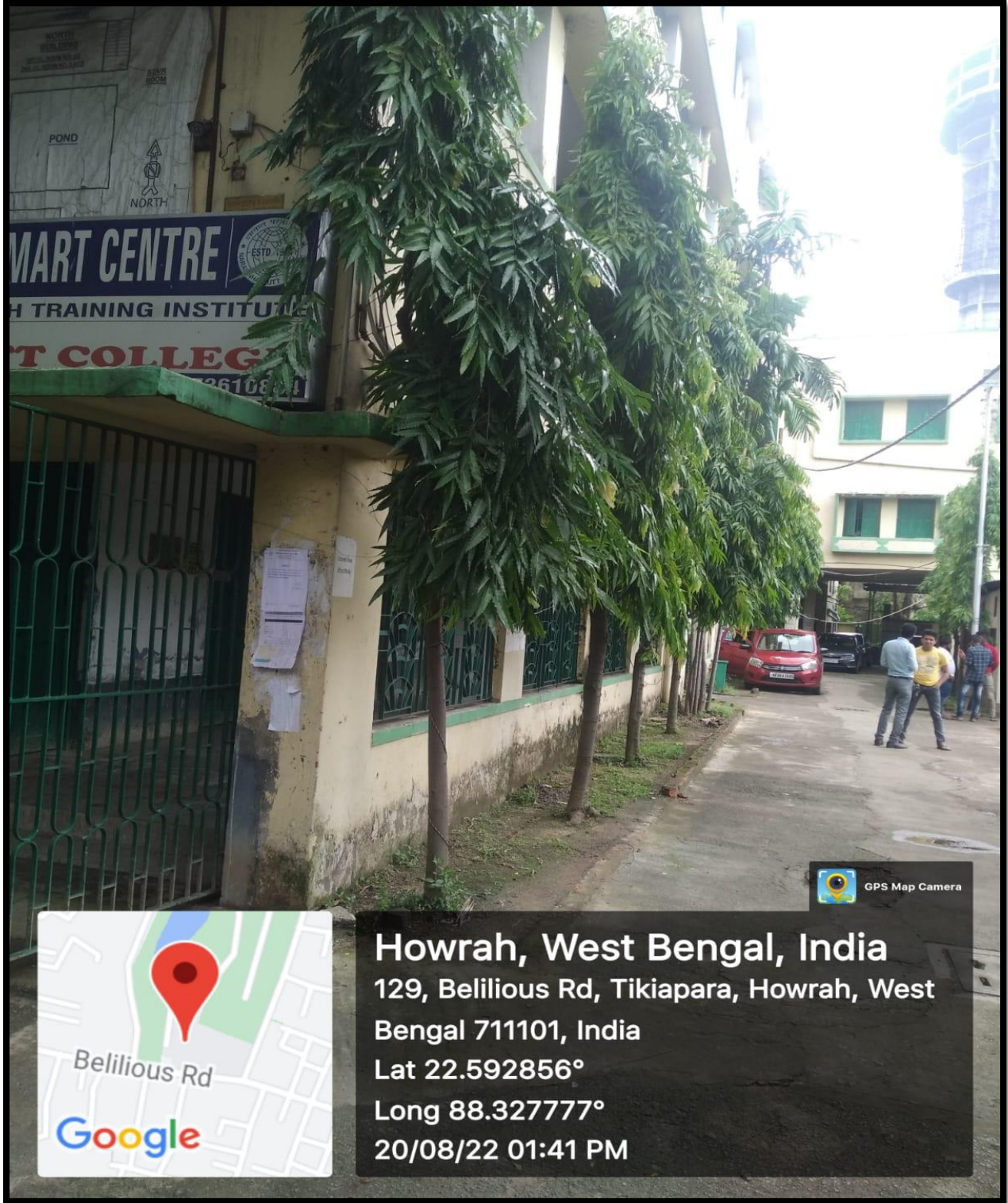
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711101, India

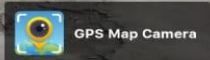
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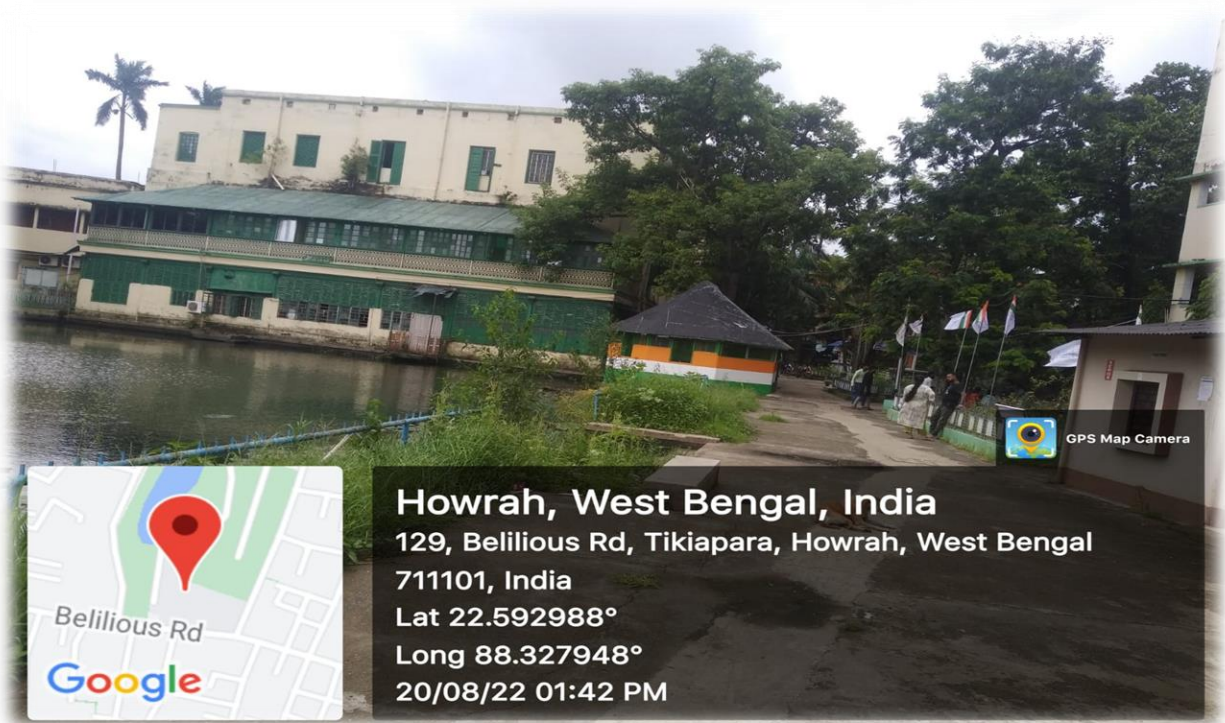
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Howrah, West Bengal, India
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Long 88.327777°
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Howrah, West Bengal, India

129, Belilious Rd, Tikiapara, Howrah, West Bengal

711101, India

Lat 22.592988°

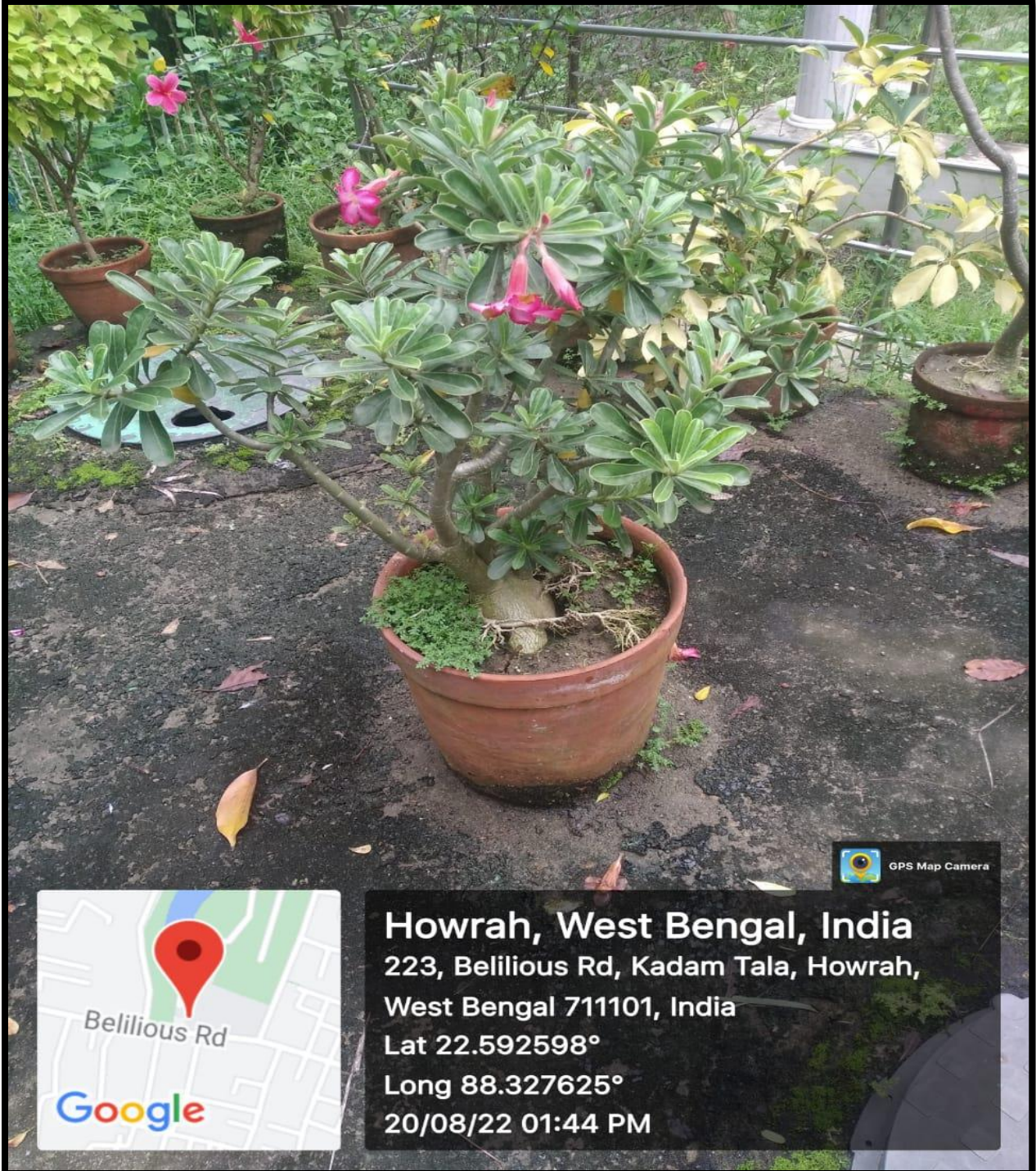
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Study of plant diversity in college campus through Quadrat method

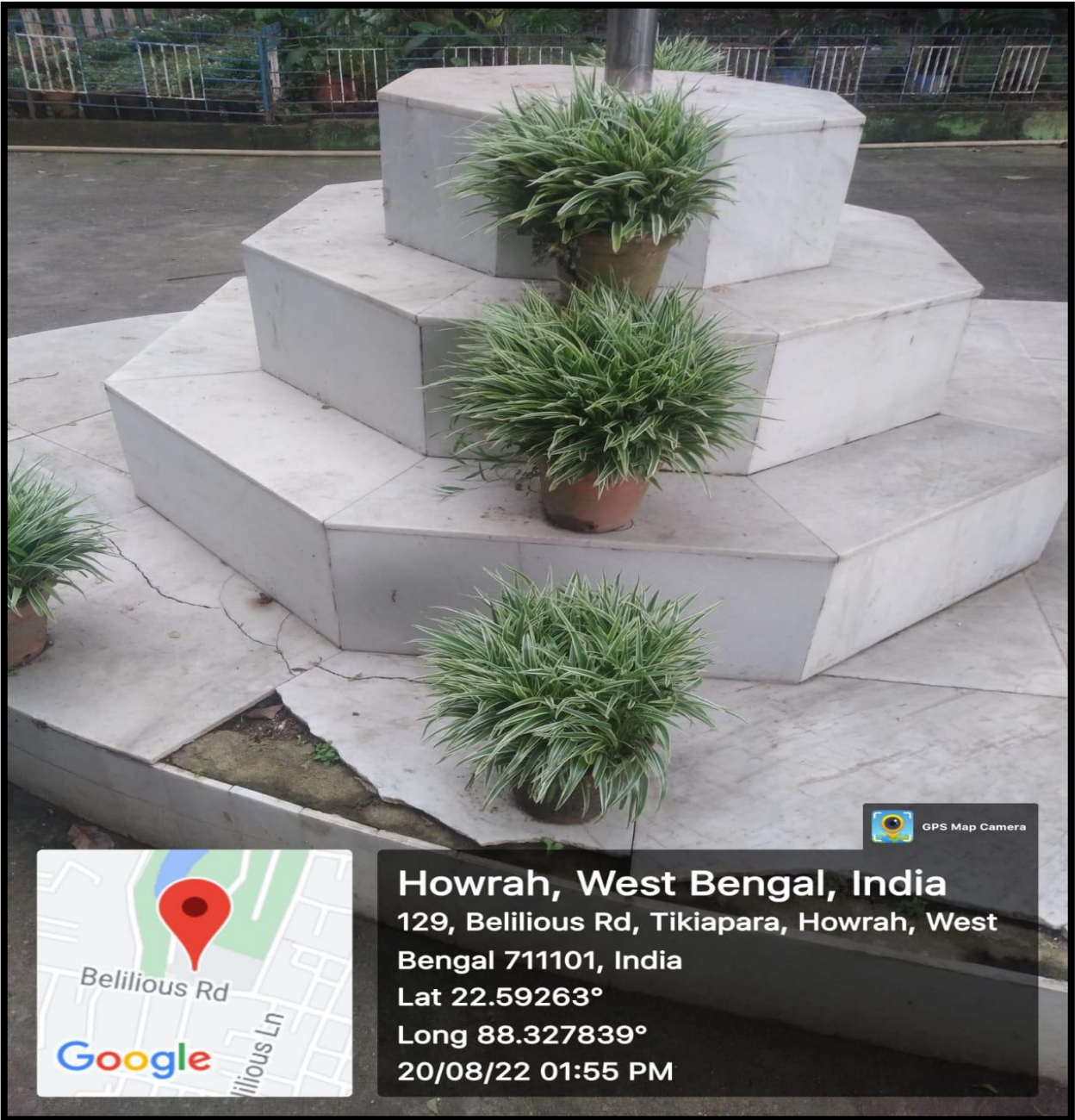


 GPS Map Camera



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West Bengal 711101, India
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Long 88.327625°
20/08/22 01:44 PM





GPS Map Camera



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Faunal diversity in the College Campus

The college campus has a rich faunal diversity with the existence of following members:

Sl. No	Division	Common Name	Scientific Name	Bengali Name
1.	Annelida	Earthworm	<i>Pheretima sp.</i>	Kencho
2.	Arthropoda	Carpenter ant	<i>Camponotus sp.</i>	Kath pipre
3.	Arthropoda	Fire ant	<i>Solenopsis sp.</i>	Pipre
4	Arthropoda	Yellow paper wasp	<i>Polistes sp.</i>	Bolta
5	Arthropoda	Italian bee	<i>Apis mellifera</i>	Moumachhi
6	Arthropoda	Little bee	<i>Apis florea</i>	Moumachhi
7	Arthropoda	Termite	<i>Microtermes sp.</i>	Uipoka
8	Arthropoda	<i>Water strider</i>	Gerris sp.	
9	Arthropoda	Dragonfly	<i>Zygoptera</i>	Phoring
10	Mollusca	Freshwater snail	<i>Bellamya bengalensis</i>	Gugli
11	Mollusca	Terrestrial snail	<i>Achatina fulica</i>	Sthal Shamuk
12	Mollusca	Apple snail	<i>Pila globosa</i>	Apel shamuk

Fishes (present in the pond in the campus)

Sl. No.	Common name	Scientific name	Bengali name
1	Tilapia	<i>Oreochromis sp.</i>	Telapia
2	Rohu	<i>Labeo rohita</i>	Rui
3	Catla	<i>Catla catla</i>	Catla
4	Mrigal	<i>Cirrhinus mrigala</i>	Mrigal
5	Kalbasu	<i>Labeo kalbasu</i>	Kalbos
6	Bata	<i>Labeo bata</i>	Bata
7	Common carp	<i>Cyprinus carpio</i>	Common carp

Reptiles

Sl. No.	Common name	Scientific Name	Bengali Name
1	Checkered Keelback	<i>Xenochrophis piscator</i>	Joldhora
2	Buff Striped Keelback	<i>Amphiprion stolidus</i>	Hele
3	Rat Snake	<i>Zamenis longissimus</i>	Darash
4	Skink	<i>Lampropholis sp.</i>	Anjani
5	Oriental Garden Lizard	<i>Colotes versicolor</i>	Girgiti
6	Common House Gecko/Gekko	<i>Hemidactylus frenatus</i>	Tiktiki

Birds

A total of 63 types of bird species were found in the campus, which is quite a good number, in spite of the industrialized surrounding around it.

Total bird species encountered in the college campus.

COMMON NAME	SCIENTIFIC NAME
1. Indian cormorant	<i>Phalacrocorax fuscicollis</i>
2. Little cormorant	<i>Microcarbo niger</i>
3. Little Egret	<i>Egretta garzetta</i>
4. Cattle Egret	<i>Bubulcus ibis</i>
5. Black Kite	<i>Milvus migrans</i>
6. Black shouldered kite	<i>Elanus axillaris</i>
7. Common kestrel	<i>Falco tinnunculus</i>
8. Shikra	<i>Accipiter badius</i>
9. White breasted water hen	<i>Amaurornis phoenicurus</i>
10. Pond Heron	<i>Ardeola grayii</i>
11. Common sandpiper	<i>Actitis hypoleucos</i>
12. Yellow Footed Green pigeon	<i>Treron phoenicoptera</i>
13. Rock pigeon	<i>Columba livia</i>
14. Spotted dove	<i>Spilopelia chinesis</i>
15. Ring necked dove	<i>Streptopelia capicola</i>
16. Alexandrian parakeet	<i>Psittacula eupatria</i>
17. Common Cuckoo	<i>Cuculus canorus</i>
18. Spotted Owlet	<i>Athene brama</i>
19. White throated Kingfisher	<i>Halcyon smyrnensis</i>
20. Small blue Kingfisher	<i>Alcedo atthis</i>
21. Stork billed Kingfisher	<i>Pelargopsis capensis</i>
22. Pied Kingfisher	<i>Ceryle rudis</i>
23. Common Hoopoe	<i>Upupa epops</i>
24. Chestnut headed Bee-eater	<i>Merops leschenaulti</i>
25. Green Bee-eater	<i>Merops orientalis</i>
26. Black-rumped Flameback	<i>Dinopium benghalense</i>
27. Brown-capped Pygmy Woodpecker	<i>Yungipicus nanus</i>

28. Coppersmith Barbet	<i>Megalaima haemacephala</i>
29. Blue throated Barbet	<i>Megalaima asiatica</i>
30. Lineated Barbet	<i>Megalaima lineata</i>
31. Brown-capped Woodpecker	<i>Dendrocopos nanus</i>
32. Brown Shrike	<i>Lanius cristatus</i>
33. Long tailed Shrike	<i>Lanius schach</i>
34. House Sparrow	<i>Passer domesticus</i>
35. Black hooded Oriole	<i>Oriolus xanthornus</i>
36. Golden Oriole	<i>Oriolus oriolus</i>
37. Black Drongo	<i>Dicrurus macrocercus</i>
38. Bronze winged Drongo	<i>Dicrurus aeneus</i>
39. Common Myna	<i>Acridotheres tristis</i>
40. Asian pied Starling	<i>Gracupica conta</i>
41. Chestnut tailed Starling	<i>Sturnia malabarica</i>
42. Jungle Myna	<i>Acridotheres fuscus</i>
43. Rufous Treepie	<i>Dendrocitta vagabunda</i>
44. Common Crow	<i>Corvus brachyrhynchos</i>
45. Red vented Bulbul	<i>Pycnonotus cafer</i>
46. Red whiskered Bulbul	<i>Pycnonotus jocosus</i>
47. Common Prinia	<i>Prinia inornata</i>
48. Ashy Prinia	<i>Prinia socialis</i>
49. Common Babbler	<i>Turdoides caudata</i>
50. Brown breasted Flycatcher	<i>Muscicapa muttui</i>
51. Taiga Flycatcher	<i>Ficedula albicilla</i>
52. Tailorbird	<i>Orthotomus sutorius</i>
53. Bluethroat	<i>Luscinia svecica</i>
54. Pied Bushchat	<i>Saxicola caprata</i>
55. Oriental Magpie robin	<i>Copsychus saularis</i>
56. Pale billed Flowerpecker	<i>Dicaeum erythrorhynchos</i>
57. White Wagtail	<i>Motacilla alba</i>
58. Pied Wagtail	<i>Motacilla alba</i>
59. Yellow Wagtail	<i>Motacilla flava</i>
60. Citrine Wagtail	<i>Motacilla citreola</i>
61. Purple rumped Sunbird	<i>Leptocoma zeylonica</i>
62. Silver billed Munia	<i>Lonchura punctulata</i>
63. White throated Fantail	<i>Rhipidura albicollis.</i>







Mammals

Sl. No.	Common name	Scientific name	Bengali name
1	Indian palm squirrel	<i>Funumbulus sp.</i>	Kathberali
2	Frugivorous bat	Suborder Megachiroptera	Badur
3	Insectivorous bat	Suborder Microchiroptera	Chamchike
4	House mouse	<i>Mus musculus</i>	Indur
5	Rat	<i>Rattus norvegicus</i>	Dhere indur



Rat



Squirrel

CONSOLIDATION OF AUDIT FINDINGS

Green Audit will create a greater appreciation and under-standing of the impact of college activities on the environment. Narasinha Dutt College has successfully been able to identify the impacts on the environment through the various auditing exercises. The green auditing exercise has brainstormed and provided insights on practical ways to reduce negative impact on the environment. Participating in this green auditing procedure has increased knowledge about the need of maintaining sustainability of the college campus. It will create awareness around the use of the Earth's resources in your home, college, local community and beyond. Narasinha Dutt College should adopt an Environmentally Responsible Purchasing Policy, and work towards creating and implementing a strategy to reduce the environmental impact of its purchasing decisions. White good producing companies are rapidly developing in the area of energy efficiency. Many computer hardware and electrical supply companies now cooperate with customers to reclaim old or damaged parts. Narasinha Dutt College has a tie with a Company (the entrepreneur is an alumnus of our College) which reclaims old or damaged computers and repair or replace them if possible. Although over twice as expensive up front, LCD monitors are estimated to us 40-60% less energy overall than CRTs. All computers purchased by the college have an Energy Star rating, which is beginning to be a standard requirement for computers.

PREPARATION OF ACTION PLAN

Management's policies referring to College and approach towards the use of resources need to be considered in purview of green audit report. An environmental policy should be formulated by the management of the college. The college should have a policy on green awareness raising or training programmes for students and staff, seminars on Environment Awareness are often organized by different departments of the institution, green awareness policy right from kitchen staff to procurement policy by the management. Based on the policies, college should have an action plan. The green auditing report will be a base line for the action plan to be evolved.

FOLLOW UP ACTION AND PLANS

Green Audit is an exercise which generates considerable quantities of valuable environment and resource management information. The time and effort and cost involved in this exercise is often considerable and in order to be able to justify this expenditure, it is important to ensure that the findings and recommendations of the audit are considered at the correct level within the organization and action plans and implementation programmes will be conducted on the basis of the audit findings.

ENVIRONMENTAL EDUCATION

The following environmental education programmes may be implemented in the college before the next green auditing:-

Training programmes in solid waste management, liquid waste management setting up of biodiversity garden, tree management, medicinal plant nursery, vegetable cultivation, water management, energy management, landscape management, pollution mitigation methods, and water filtration methods.

- Give priority to environmental clubs and its programmes
- Set up model rainwater harvesting system, vegetable garden, medicinal plant garden, butterfly garden etc.
- Conduct exhibition on throw away plastic danger, recyclable products etc.
- Display various slogans and pictures to protect environment.
- Implement chemical treatment system for waste water from the laboratories and incinerators.

CONCLUSION AND RECOMMENDATIONS

Green Audit is the most efficient way to identify the strength and weakness of environmentally sustainable practices and to find a way to solve problem. Green Audit is one kind of professional approach towards a responsible way in utilizing economic, financial, social and environmental resources. Green audits can “add value” to the management approaches being taken by the college and is a way of identifying, evaluating and managing environmental risks (known and unknown). There is scope for further improvement, particularly in relation to waste, energy and water management. In the recent years, the college is considering the environmental impacts in most of its actions to make a concerted effort to function in an environmentally responsible manner. Even though the college does perform fairly well, the recommendations in this report highlight many ways in which the college can work further improvement in its activities and become a more sustainable institution.

Suggestions

- a) Adopt the proposed Environmentally Responsible Purchasing Policy, and work towards creating and implementing a strategy to reduce the environmental impact of its purchasing decisions.
- b) Increase recycling education on campus.
- c) Increase awareness of Environmentally Sustainable Development – Use every opportunity to raise public, government, industry, foundation, and college awareness by openly addressing the urgent need to move toward an environmentally sustainable future.
- d) Collaborate for Interdisciplinary Approaches – Convene college faculty and administrators with environmental practitioners to develop interdisciplinary approaches to curricula research initiatives, operations, and outreach activities that support an environmentally sustainable future.
- e) Adopt the proposed Environmentally Responsible Purchasing Policy, and work towards creating and implementing strategy to reduce the environmental impact of its purchasing decisions.
- f) Increase reduce, reuse, and recycle education on campus.

Recommendations

- a) Arrange training programmes on environmental management system and nature conservation.
- b) Declare the campus plastic free and implement it thoroughly.
- c) Renovation of cooking system in the canteen to save gas
- d) Replace incandescent and CFL lamps with LED light
- e) Replace LCD computer monitors with LED monitors
- f) Avoid plastic / thermocol plates and cups in the college level or department level functions.
- g) A separate enclosure needs to be made for storage of scrap and waste materials.
- h) Existing water body(pond) to rejuvenated by desilting and cleaning.
- i) Exhaust Gas shall be monitored, analysed and check regularly
- j) Parking zone of college shall be neat & clean
- k) Use of bicycle within the campus to be encouraged
- l) World Environment Day to be celebrated in college premises every year on 5th June and whole college students and staff shall get involved and take OATH for ENVIRONMENT CONSERVATION not only in college but also in every span of life.
- m) Noise Level Monitoring shall be done as per the guideline of "Noise Pollution (Regulation and Control) Rules 2000
- n) Vehicular exhausts shall be examined regularly in the collage as per Central Motor Vehicle Act 1988.
- o) Total 33% area is to be reserved for plantation
- p) The Biodiversity has to be maintained while considering the plantation in future
- q) Reuse of the water shall be done instead of use of fresh water

- r) Special Tree Plantation shall be celebrated every year on environment day and also competitions for bird species identification and knowing the tree values in terms of medicinal and environment conservation
- s) Awareness for energy and water conservation among students and staff by displaying boards.
- t) Water usage reduction techniques to be used
- u) Tree plantation shall be done to maintain biodiversity as well as artificial nesting shall be installed.
- v) Awareness among students and staff about green environment shall be done use tools like display boards.
- x) General house-keeping needs to be improved. Scrap, waste materials were found scattered all over the campus. These needs to be accumulated and kept in designated place. Awareness programmes should be conducted more frequently. Inter class competition on cleanliness drive can be thought out.

Following spots where greenery can be developed:

Trees can be planted on both sides of the main road. Plantation can be done all around the play-ground and the pond. Broad leaf trees around the boundary will help in reducing air pollution and noise level.

Fire Safety Audit

Fire Safety audit be immediately conducted.



Certificate of Compliance
INTEGRATED QUALITY CERTIFICATION PRIVATE LIMITED
 hereby certifies that the Quality Management Systems of

Sonar Bharat Environment & Ecology Pvt. Ltd.

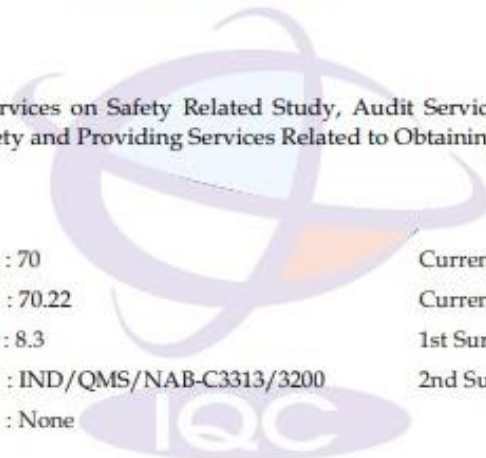
35, Chittaranjan Avenue, 3rd Floor,
Kolkata - 700 012.

has been assessed and conforms to the
Quality Management Systems
ISO 9001:2015



Scope: Consultancy Services on Safety Related Study, Audit Services for Energy, Green, Electrical & Safety and Providing Services Related to Obtaining Statutory Approvals

Division	: 70	Current issue date	: 14.10.2022
Class	: 70.22	Current expiry date	: 13.10.2025
Process(es) not applicable	: 8.3	1st Surveillance due	: 13.10.2023
Certificate number	: IND/QMS/NAB-C3313/3200	2nd Surveillance due	: 13.10.2024
Attachment(s)	: None		



H. Narasimhaiah
Director

Certificate of compliance has an expiry period of 3 years from the current certification cycle start date but shall be considered as expired if the surveillance audit programme indicated in this certificate of compliance is not implemented to maintain confidence that the certified management system continues to fulfil requirements unless otherwise supported by a letter of continued compliance issued by the registered office of Integrated Quality Certification Pvt. Ltd. Certificate of compliance shall be updated in website/registry as suspended and/or withdrawn if the surveillance programme prior to the due date indicated above is not coordinated and implemented. Written information on any significant organizational changes with impact on the certificate of compliance shall be communicated to Integrated Quality Certification Pvt. Ltd prior to the planned audit schedule.



SONAR BHARAT ENVIRONMENT & ECOLOGY (P) LIMITED

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sonarbharat2017@gmail.com

Date : 30-08-2022

Date : 29.08.2022

WORK COMPLETION REPORT

- Name of Work Project : Energy Audit of Narasinha Dutt College
129, Belilious Road, Howrah – 711 101.
- Duration of Audit : From 16/08/2022 to 18/08/2022
- Period of Audit : 2021-2022
- Sonar Bharat Environment & Ecology Pvt. Ltd. has conducted Energy Audit in the campus of Narasinha Dutt College, 129, Belilious Road, Howrah – 711 101
- With the cooperation of faculty members and other staff audit has been successfully completed.

A handwritten signature in blue ink that reads "Suvra Majumdar".

Suvra Majumdar

BEE-EA-5723, AEA-0221

Chartered Engineer (India) – Electrical Engineering Div.

Sonar Bharat Environment & Ecology Pvt. Ltd.

A handwritten signature in blue ink that reads "Parimal Sarkar".

Parimal Sarkar

Director



Qualissure Laboratory Services

361, Prantick Pally,
45/361, Bose Pukur Road,
Kolkata – 700 107

Email : qualissure@gmail.com

Web site : www.qualissure.com

Date : 05/08/2022

WORK COMPLETION REPORT

- Name of Project : Environmental Monitoring of Narasinha Dutt College.
129, Belilious Road, Howrah – 711 101.
- Duration of Audit : 16/07/2022
- Period of Audit : 2021-2022
- Sonar Bharat Environment & Ecology Pvt. Ltd. has conducted Environmental Monitoring in the campus of Narasinha Dutt College, 129, Belilious Road, Howrah – 711 101.
- With the cooperation of faculty members and other staff audit has been successfully completed.


Subrata De Sarkar
Auditor




Anupam Mandal
Quality Manager



SONAR BHARAT ENVIRONMENT & ECOLOGY (P) LIMITED

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sonarbharat2017@gmail.com

Date : 30.08.2022

WORK COMPLETION REPORT

- Name of Work Project : Green Audit of Narasinha Dutt College
129, Belilious Road, Howrah – 711 101.
- Duration of Audit : From 20/08/2022 to 21/08/2022
- Period of Audit : 2021-2022
- Sonar Bharat Environment & Ecology Pvt. Ltd. has conducted Green Audit in the campus of Narasinha Dutt College, 129, Belilious Road, Howrah – 711 101.
- With the cooperation of faculty members and other staff audit has been successfully completed.

**Subrata Desarkar
(Auditor)**



**Parimal Sarkar
(Director)**

THE END