GREEN AUDIT

Assam Science and Technology University

2023-2024

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ASSAM SCIENCE AND TECHNOLOGY UNIVERSITY

2023-2024

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EXECUTIVE SUMMARY

A Green Audit is an official evaluation of a university's environmental impact. At Assam Science and Technology University (ASTU), an internal Green Audit is conducted to assess the current environmental practices on campus. The Green Audit is essential for identifying how resources are utilized, where savings can be made, and areas where sustainable changes can be implemented. By conducting Green Audits and implementing eco-friendly measures, ASTU fosters a win-win situation for the institution, its students, and the planet. It raises health consciousness, promotes environmental awareness, and inspires values of environmental ethics among faculty, staff, and students. Environmental sustainability is an increasingly important issue, and higher education institutions, like ASTU, play a crucial role in advancing sustainable practices. The Green Audit process at ASTU involved consultations with management, faculty, staff, and students to clarify policies, activities, and cooperation in implementing eco-friendly measures. This process included data collection through interviews, surveys, and reviewing existing records. Faculty, staff, and students actively participated in the audit, ensuring a comprehensive evaluation of current practices. The data gathered will serve as a foundational tool for future campus greening initiatives, resource management, and sustainable development planning. By benchmarking ASTU's environmental practices against peer institutions, the university will be able to identify areas for improvement and prioritize future sustainability projects. The management is expected to take the necessary steps to implement the recommendations arising from the Green Audit, demonstrating a commitment to fostering an environmentally sustainable campus for future generations.

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CHAPTER 1

INTRODUCTION

A Green Audit at a university is a comprehensive environmental assessment aimed at evaluating the institution's sustainability practices and identifying areas for improvement. This process includes examining various facets of campus operations, such as tree plantation, biodiversity conservation, and resource usage. By analyzing infrastructure and the environmental impact of the university's activities, the audit helps determine the institution's ecological footprint and evaluates its adherence to environmental regulations and best practices. The findings from the green audit provide actionable recommendations, such as enhancing recycling programs, promoting eco-friendly transportation options, and fostering a culture of sustainability among students and staff. Ultimately, a Green Audit acts as a strategic guide for universities, helping them adopt more sustainable practices and work towards becoming carbon-neutral institutions.

A university campus that seamlessly integrates sustainability into its operations, infrastructure, and culture is often referred to as a green campus. Green campuses prioritize eco-friendly construction methods and the development of green spaces, including gardens and natural habitats, to promote biodiversity. These campuses also incorporate sustainability into their academic programs, encouraging research on environmental issues and actively engaging students in sustainability initiatives. By adopting green practices, a green campus not only minimizes its ecological footprint but also becomes a living laboratory that inspires students and the surrounding community to embrace sustainable lifestyles, ultimately contributing to the global effort to combat climate change.

1.1 TOTAL CAMPUS AREA & UNIVERSITY BUILDING AREA

- Total Campus Area: 14125.08 m^2.
- University Buildings Area: 3217.92 m^2.
- Open Space Area: 10907.16 m^2.
- Tree Plantation Area and Green Coverage: 130.40 m^2.

1.2 GREEN CAMPUS INITIATIVES

The institutional initiatives for greening the campus are as follows:

1.2.1 Restricted entry of automobiles

The restricted entry of automobiles focuses on reducing the environmental impact of transportation within the campus. This policy can significantly lower carbon emissions, improve air quality, and promote sustainable living practices. Key components of such an initiative include:

Cycling and Walking: The university management encourages the use of bicycles or walking, which can help reduce dependence on automobiles.

Electric Buses: The electric bus services operating within the city offer eco-friendly transportation alternatives for faculty, staff and students.

Carpooling Programs: The authority encourages carpooling practice for those who still need to use automobiles, which can reduce the total number of vehicles on campus.

1.2.2 Landscaping with trees and plants

Landscaping at Assam Science and Technology University (ASTU) enhances the campus environment by promoting sustainability, creating pleasant outdoor spaces, and fostering biodiversity. Assam's rich ecosystem and the university's commitment to green initiatives provide an excellent opportunity to incorporate native species and sustainable landscaping practices. By using native plants, the university achieves low-maintenance and sustainable landscaping. Indigenous species are naturally adapted to local climatic and soil conditions, requiring less water, fertilizers, and pesticides while supporting local wildlife.

1.2.3 Ban on the Use of Plastics

University authority bans single-use plastics inside the campus, which is a significant step toward reducing environmental pollution, conserving natural resources, and promoting sustainability, aiming to become greener. This policy helps mitigate the negative impact of single-use plastics, encourage eco-friendly alternatives, and foster environmental awareness among students, staff, and visitors.

CHAPTER 2

PRE-AUDIT STAGE

A pre-audit meeting provided an opportunity to reinforce the scope and objectives of the audit and discussions were held on the practicalities associated with the audit. This meeting is an important prerequisite for the green audit because it is the first opportunity to meet the auditee and deal with any concerns. It was held at Assam Science and Technology University (ASTU) on 5th January 2024. The meeting was an opportunity to gather information that the audit team could study before arriving on the site. The audit protocol and audit plan were handed over at this meeting and discussed in advance of the audit itself. In Assam Science and Technology University (ASTU) pre-audit meeting was conducted successfully and necessary documents were collected directly from the university before the initiation of the audit processes. Actual planning of audit processes was discussed in the pre-audit meeting. The audit team was also selected in this meeting with the help of staff and the university management. The audit protocol and audit plan were handed over at this meeting and discussed in advance of the audit itself. The audit team worked together, under the leadership of the lead auditor, to ensure completion within the brief and scope of the audit.

2.1 COMMITMENT OF THE UNIVERSITY MANAGEMENT

The university management showed commitment to green auditing during the pre-audit meeting. They were ready to encourage all green activities. After the green auditing, it was decided to promote all environmentally friendly activities, such as environmental awareness programs, campus farming, planting more trees, etc. The university management was willing to formulate policies based on green auditing reports.

2.2 SCOPE AND GOALS OF GREEN AUDITING

A clean and healthy environment aids effective learning and provides a conducive learning environment. There are various efforts around the world to address environmental education issues. Green Audit is the most efficient and ecological way to manage environmental problems. It is necessary to conduct green audits on university campuses because students and staff become aware of the green audit, and its advantages to saving the planet. Thus, Green audit becomes necessary at the university level. A very simple indigenized system has been devised to monitor the environmental performance of Assam Science and Technology University (ASTU). It comes with a series of questions to be answered regularly. This

innovative scheme is user-friendly and voluntary. The aim of this is to help the institution to set environmental examples for the community, and to educate the young learners.

2.3 BENEFITS OF THE GREEN AUDITING

- ✓ To provide the basis for improved sustainability.
- ✓ To create a green campus.
- ✓ To create a plastic-free campus and evolve health consciousness among the stakeholders.
- ✓ More efficient resource management.
- ✓ Point out the prevailing and forthcoming complications.
- ✓ Authenticate conformity with the implemented laws.
- ✓ Empower the organizations to frame a better environmental performance.
- ✓ Enhance the alertness for environmental guidelines and duties.
- ✓ Impart environmental education through a systematic environmental management approach and improving environmental standards.
- ✓ Benchmarking for environmental protection initiatives.
- ✓ Financial savings through a reduction in resource use.
- ✓ Development of ownership, and personal and social responsibility for the university and its environment.
- ✓ Enhancement of university profile.
- ✓ Developing an environmental ethic and value systems in youngsters.
- ✓ Green auditing is a valuable tool to monitor environmental and sustainable development goals.

2.4 TARGET AREAS OF GREEN AUDITING

Green audit forms part of a resource management process. Although they are individual events, the real value of green audits is that they are carried out, at defined intervals, and their results can illustrate improvement or change over time. The target areas included in this green auditing are tree plantation and biodiversity conservation.

2.4.1 AUDITING FOR GREEN CAMPUS MANAGEMENT

Biodiversity faces serious threats from habitat loss, pollution, overconsumption and invasive species. Species are disappearing at an alarming rate and each loss affects nature’s delicate balance and our quality of life. Without this variability in the living world, ecological systems and functions would break down, with detrimental consequences for all forms of life, including human beings. Existing and newly planted trees decrease the amount of carbon dioxide in the

atmosphere. Trees play an important ecological role within the university environment, support improved public health and provide aesthetic benefits to campus. In one year, a single mature tree can absorb up to approximately 21 Kg of carbon dioxide from the atmosphere, and release it as oxygen. The amount of oxygen, a single tree produces is enough to provide one day's oxygen requirement for people. Trees can also increase the mental health of the students.

2.5 METHODOLOGY OF GREEN AUDITING

The purpose of the audit was to ensure that the practices followed on campus are by the Green Policy adopted by the institution. The criteria, methods and recommendations used in the audit were based on the identified risks. The methodology includes preparing and filling out a questionnaire, physical inspection of the campus and documents, interviewing responsible persons, data analysis, and recommendations. The methods adopted for this audit were a three-step process comprising of:

2.5.1 DATA COLLECTION

In the preliminary data collection phase, exhaustive data collection was performed using different tools such as observation, survey communication with responsible persons and measurements.

The following steps were taken for data collection:

- The team went to each site and every corner of the campus.
- The general information was collected from students, staff and faculty.

2.5.2 DATA ANALYSIS

Detailed analysis of data collected including tree plantation and biodiversity was also analysed using appropriate methodology.

2.5.3 RECOMMENDATION

Based on the data analysis and observations, some steps for biodiversity conservation were recommended.

The information about the university was evaluated through a questionnaire circulated among the students and staff for data collection. The format of this is given in the next page.

2.6 SURVEY FORMS

FORM I

Auditing for Green Campus Management

1. Is there a garden in your university? Area?
2. Do students spend time in the garden?
3. List the plants in the garden, with approx. numbers of each species.
4. Suggest plants for your campus. (Trees, vegetables, herbs, etc.)
5. List the species planted by the students, with numbers.
6. Whether you have displayed the scientific names of the trees on the campus?
7. Are there any plantations on your campus? If yes specify the area and type of plantation.
8. Is there any vegetable garden in your university? If yes, how much area?
9. Is there any medicinal garden in your university? If yes, how much area?
10. What are the vegetables cultivated in your vegetable garden? (Mention the quantity of harvest in each season)
11. How much water is used in the vegetable garden and other gardens? (Mention the source and quantity of water used).
12. Who is in charge of gardens in your university?
13. Are you using any type of recycled water in your garden?
14. List the name and quantity of pesticides and fertilizers used in your gardens.
15. Whether you are doing organic farming in your university? How?
16. Do you have any composting pit in your university? If yes, what are you doing with the compost generated?
17. What do you doing with the vegetables harvested? Do you have any student market?
18. Is there any botanical garden in your campus? If yes give the details of campus flora.
19. Give the number and names of the medicinal plants in your university campus.
20. Any threatened plant species planted/conserved?
21. Is there a nature club in your university? If yes, what are their activities?
22. Is there any arboretum in your university? If yes details of the trees planted.
23. Is there any fruit yielding plants in your university? If yes details of the trees planted.
24. Is there any groves in your university? If yes details of the trees planted.
25. Is there any irrigation system in your university?
26. What is the type of vegetation in the surrounding area of the university?
27. What are the nature awareness programmes conducted in the campus? (2020-21)

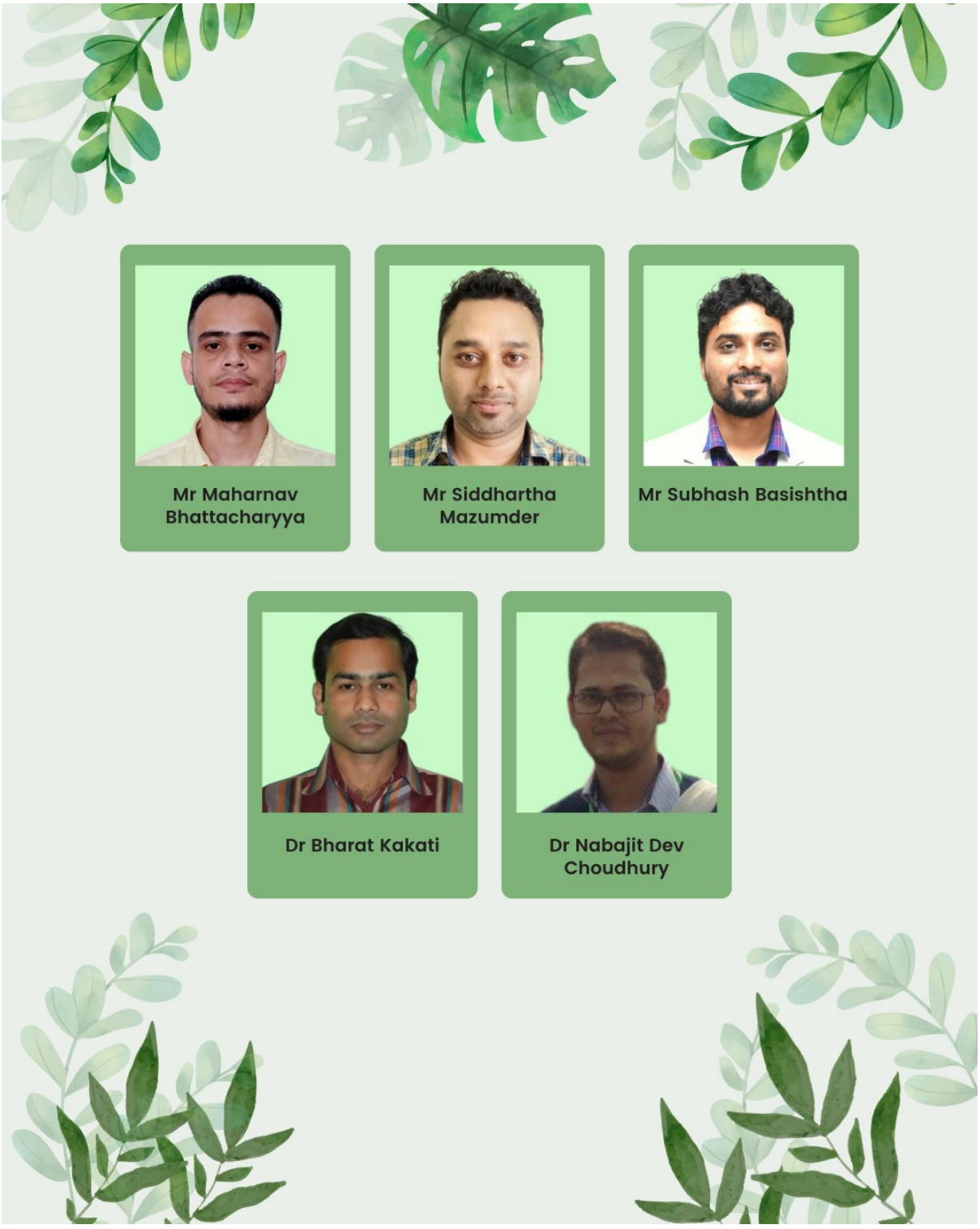
28. What is the involvement of students in the green cover maintenance?
29. What is the total area of the campus under tree cover? Or under a tree canopy?
30. Share your IDEAS for further improvement of green cover.

CHAPTER 3

AUDIT STAGE

At Assam Science and Technology University (ASTU) green auditing was done with the help of Prof. Subhendu Sekhar Bag, (CChem, FRSC, FICS) Professor, Department of Chemistry & Centre for the Environment, IIT Guwahati and his team involving different student groups, teaching and non-teaching staff. The green audit began with the teams walking through the campus area and facilities at the university. The staff and students were interviewed to get details of tree plantation and animal species encountered on the campus. Data collection was done for the biodiversity of the campus. University records and documents were verified several times to clarify the data received through surveys and discussions. The process was completed within twelve months from 5th January 2024 to 30th December 2024.

3.1 FACULTY AND STAFF INVOLVED IN GREEN AUDITING


Mr Maharnav Bhattacharyya
Mr Siddhartha Mazumder
Mr Subhash Basishtha
Dr Bharat Kakati
Dr Nabajit Dev Choudhury

3.2 CLUBS AND FORUMS

ECO-CLUB

As part of its vibrant commitment to environmental awareness and community engagement, the Eco-Club at Assam Science and Technology University (ASTU) has organized a series of impactful activities throughout the academic year:

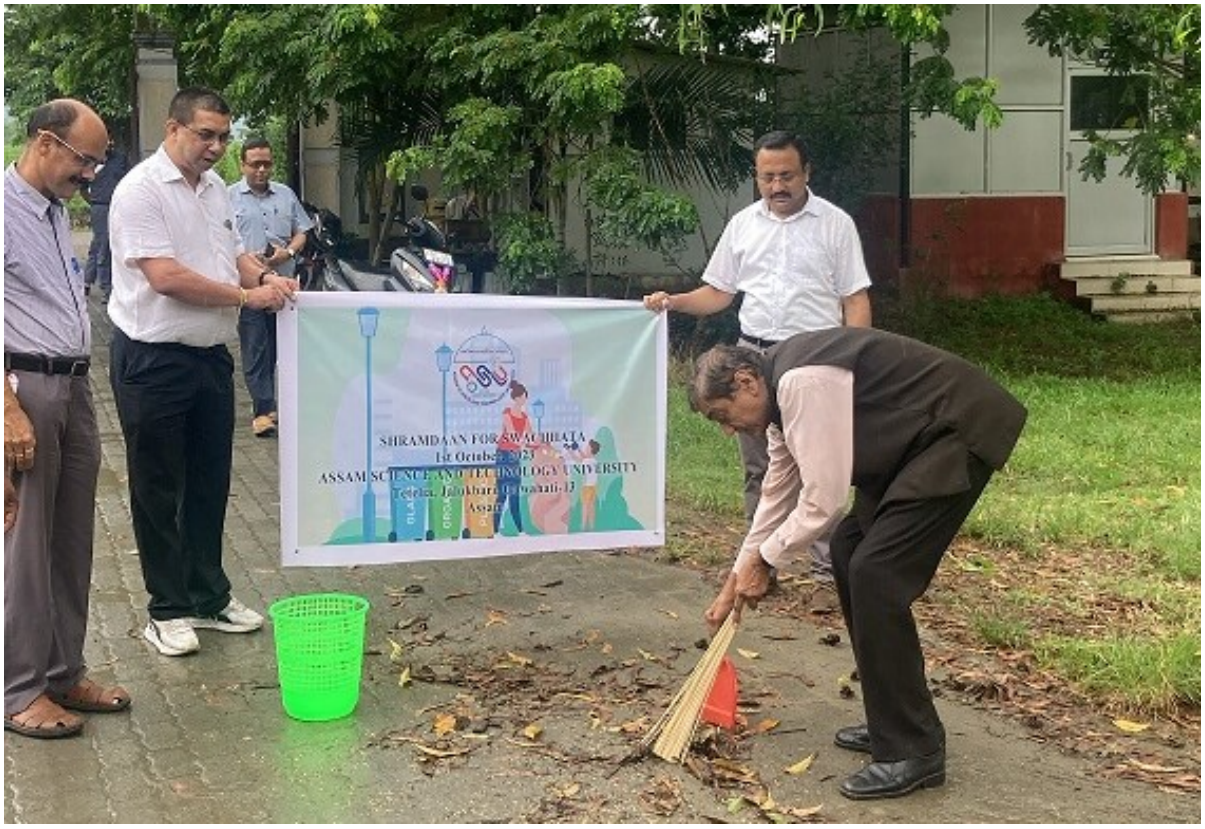
Celebration of World Environment Day 2024 at ASTU Campus

On June 5, 2024, Assam Science and Technology University (ASTU) enthusiastically celebrated World Environment Day, aligning its activities with the year's theme, "Land restoration, desertification and drought resilience." The event brought together students, faculty, and environmental enthusiasts for a day of meaningful action and reflection. Activities included a tree plantation drive on campus. Participants were encouraged to adopt sustainable practices and explore innovative solutions to mitigate environmental challenges. The celebration highlighted ASTU's commitment to fostering awareness and action for a healthier planet, reinforcing the importance of collective efforts in ecosystem restoration.

Celebration of Shramdaan for Swachhata at ASTU

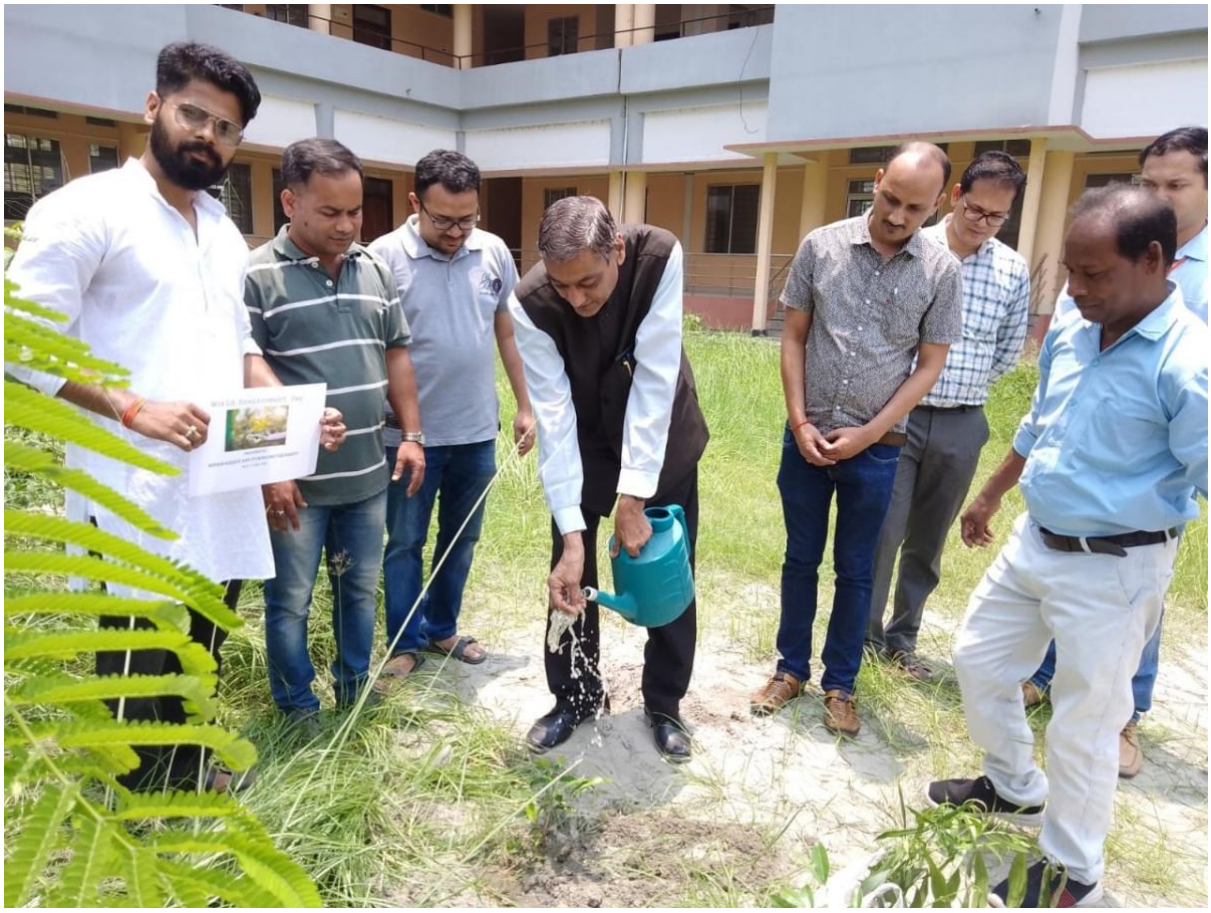
On October 1, 2023, Assam Science and Technology University (ASTU) celebrated Shramdaan for Swachhata with great enthusiasm, reflecting its commitment to the Swachh Bharat Abhiyan. The event saw active participation from students, faculty, and staff, who collectively engaged in a campus-wide cleanliness drive. Volunteers cleaned classrooms,

laboratories, and open spaces while segregating waste into biodegradable and non-biodegradable categories. Awareness sessions were conducted to educate participants about waste management and the importance of maintaining cleanliness in their surroundings. The event also included the installation of new dustbins and a pledge-taking ceremony to uphold cleanliness in daily life. Through this initiative, ASTU reinforced the value of community efforts in achieving a cleaner and greener India.



Celebration of World Environment Day 2023 at ASTU Campus

On June 5, 2023, Assam Science and Technology University (ASTU) celebrated World Environment Day with great zeal, aligning with the global theme "Solutions to Plastic Pollution." The event aimed to raise awareness about the detrimental impacts of plastic waste and promote sustainable alternatives. Activities included a campus-wide cleanup drive, a discussion on innovative plastic recycling methods, and the urgent need to reduce single-use plastics and adopt sustainable lifestyles. The day concluded with a pledge by participants to minimize plastic use and work towards a cleaner environment. ASTU's celebration reinforced its commitment to fostering environmental stewardship and combating plastic pollution.



Celebration of Chief Minister's Institutional Plantation Programme 2022

On July 19, 2022, Assam Science and Technology University (ASTU) actively participated in the Chief Minister's Institutional Plantation Programme, reinforcing its commitment to environmental conservation. The event was inaugurated by Prof. Pratap Jyoti Handique, Vice Chancellor of Gauhati University and attended by students, faculty, and staff. As part of the initiative, numerous saplings of indigenous plant species were planted across the campus, transforming the university grounds into a greener and more vibrant space. Expert speakers highlighted the critical role of afforestation in combating climate change and preserving biodiversity. The program concluded with a pledge by participants to nurture the saplings and promote sustainable environmental practices. ASTU's involvement in this initiative demonstrated its dedication to supporting state-led efforts for a cleaner and greener Assam.

3.3 COMMENTS ON-SITE TOUR

Site inspection was done along with students and staff. Questionnaires were answered during the site tour. Students and staff took much interest in the data collection processes. It was an environmental awareness program for the students and staff in the green auditing. The experience of green auditing was a new experience for most of the students. They have shared their expectations about a green campus and gave suggestions for the audit recommendations.

3.4 REVIEW OF DOCUMENTS AND RECORDS

Documents such as purchase registers and office registers were examined and data were collected. University calendars, magazines, annual reports, UGC reports etc. were also verified as part of data collection.

3.5 REVIEW OF POLICIES

Discussions were made with the university management regarding their policies on environmental management. Plans for the university were also discussed. The university management formulated a green policy for the university in light of green auditing. The purpose of the green audit was to ensure that the practices followed on the campus are according to the Green Policy adopted by the institution.

3.6 INTERVIEWS

To collect information for green auditing different audit groups interviewed office staff, teaching and non-teaching staff, students, and other stakeholders of the university. Discussions were also made with the office bearers to clarify doubts regarding certain points.

3.7 SITE INSPECTION

The university and its premises were visited and analysed by the audit-teams several times to gather information. Campus trees were counted and identified. Gardens, playgrounds, and parking grounds were also visited to collect data.

CHAPTER 4

POST AUDIT STAGE

The basis of any green audit is that documents and verifiable information support its findings. The audit process seeks, on a sampled basis, to track past actions, activities, events, and procedures to ensure that they are carried out according to systems requirements and correctly. Green audits form a part of a process. Although they are individual events, the real value of green audits is the fact that they are carried out, at defined intervals, and their results can illustrate improvement or change over time. Although green audits are carried out using policies, procedures, documented systems and objectives as a test, there is always an element of subjectivity in an audit. The essence of any green audit is to find out how well the environmental organization, environmental management and environmental equipment are performing. Each of the three components is crucial in ensuring that the organization's environmental performance meets the goals set in its green policy. The individual functioning and the success of integration will all play a role in the degree of success or failure of the organisation's environmental performance.

4.1 KEY FINDINGS AND OBSERVATIONS

4.1.1 GREEN CAMPUS

Total number of tree species identified – 26.

Total number of fruit tree species identified – 6.

Total number of medicinal plant species identified – 3.

Total number of trees and plants for campus beautification identified – 26.

Total number of mammalian species identified – 16.

Total number of bird species identified – 80.

Total number of butterfly species identified – 29.

Total number of amphibian species – 5.

Total number of snake species – 7.

Total number of lizard species – 6.

Total number of fish species – 12.

Table 1: List of trees within the university campus.

Sl. No.	Scientific name	Family	Common Name
1	*Acacia auriculiformis*	Fabaceae	Earleaf Acacia
2	*Albizia lucidior*	Mimosaceae	Moj
3	*Alstonia scholaris*	Apocynaceae	Satiana
4	*Aquilaria malaccensis*	Thymelaeaceae	Agar
5	*Averrhoa carambola*	Oxalidaceae	Kordoi
6	*Azadirachta indica*	Meliaceae	Mahaneem
7	*Bauhinia variegata*	Fabaceae	Gulapi Kanchan
8	*Bombax ceiba*	Malvaceae	Himalu
9	*Dalbergia sissoo*	Fabaceae	Sisoo
10	*Delonix regia*	Caesalpiniaceae	Krishnasura
11	*Dypsis lutescens*	Arecaceae	Momai Tamol
12	*Lagerstroemia speciosa*	Lythraceae	Azar
13	*Leucaena leucocephala*	Fabaceae	Subabul
14	*Melia azedarach*	Meliaceae	Ghoraneem
15	*Mesua ferrea*	Clusiaceae	Nahor
16	*Mimusops elengi*	Sapotaceae	Bokul
17	*Phyllanthus emblica*	Phyllanthaceae	Aamlokhi
18	*Polyalthia longifolia*	Annonaceae	Devadaru
19	*Psidium guajava*	Myrtaceae	Madhuriaam
20	*Samanea saman*	Mimosaceae	Siris
21	*Spondias pinnata*	Anacardiaceae	Amora
22	*Syzygium cumini*	Myrtaceae	Jaam
23	*Tectona grandis*	Verbenaceae	Segun
24	*Terminalia chebula*	Combretaceae	Xilikha
25	*Toona ciliata*	Meliaceae	Poma, Jatipoma
26	*Ziziphus mauritiana*	Rhamnaceae	Bogori

Table 2: List of medicinal plants within the university campus.

Sl. No.	Scientific name	Family	Common Name
1	*Kalanchoe pinnata*	Crassulaceae	Duportenga
2	*Murraya koenigii*	Rutaceae	Norosingho
3	*Ocimum tenuiflorum*	Lamiaceae	Kola Tulasi

Table 3: List of fruit trees within the university campus.

Sl. No.	Scientific name	Family	Common Name
1	*Averrhoa carambola*	Oxalidaceae	Kordoi
2	*Phyllanthus emblica*	Phyllanthaceae	Aamlokhi
3	*Psidium guajava*	Myrtaceae	Madhuriaam
4	*Spondias pinnata*	Anacardiaceae	Amora
5	*Syzygium cumini*	Myrtaceae	Jaam
6	*Ziziphus mauritiana*	Rhamnaceae	Bogori

Table 4: List of trees and plants for beautifying the university campus.

Sl. No.	Scientific name	Family	Common Name
1	*Alternanthera brasiliana*	Amaranthaceae	Bishalya Karani
2	*Araucaria columnaris*	Araucariaceae	Christmas tree
3	*Araucaria heterophylla*	Araucariaceae	Narphok Pine
4	*Bauhinia variegata*	Fabaceae	Gulapi Kanchan
5	*Canna indica*	Cannaceae	Parijat
6	*Cascabela thevetia*	Apocynaceae	Korobi
7	*Catharanthus roseus*	Apocynaceae	Nayantara
8	*Clitoria ternatea*	Fabaceae	Nila Aparajita
9	*Dracaena marginata*	Asparagaceae	Dragon Tree
10	*Dracaena trifasciata*	Asparagaceae	Snake Plant
11	*Dypsis lutescens*	Arecaceae	Momai Tamol
12	*Ficus elastica*	Moraceae	Rubber Tree
13	*Hibiscus × rosa-sinensis*	Malvaceae	Jaba
14	*Hyophorbe lagenicaulis*	Arecaceae	Bottle Palm
15	*Ixora coccinea*	Rubiaceae	Rongial
16	*Jasminum sambac*	Oleaceae	Tagar
17	*Murraya paniculata*	Rutaceae	Kaminikanchan
18	*Mussaenda species*	Rubiaceae	Masunda
19	*Nyctanthes arbor-tristis*	Oleaceae	Sewali
20	*Platycladus orientalis*	Cupressaceae	Thuja
21	*Portulaca oleracea*	Portulacaceae	Malbhog Khutura Hakh
22	*Ricinus communis*	Euphorbiaceae	Era
23	*Rosa × damascena*	Rosaceae	Gulap
24	*Tradescantia spathacea*	Commelinaceae	Boat Lily
25	*Wodyetia bifurcata*	Arecaceae	Foxtail Palm
26	*Zephyranthes candida*	Amaryllidaceae	Lily

Table 5: Mammalian species of ASTU Campus.

Sl. No.	Scientific name	Family	Common Name
1	*Bandicota bengalensis*	Muridae	Lesser Bandicoot-Rat
2	*Bandicota indica*	Muridae	Large Bandicoot-Rat
3	*Callosciurus pygerythrus*	Sciuridae	Himalayan Hoary-bellied Squirrel
4	*Canis aureus indicus*	Canidae	Indian Jackal
5	*Macaca mulatta*	Cercopithecidae	Rhesus Macaque
6	*Mus musculus*	Muridae	House Mouse
7	*Paradoxurus hermaphroditus*	Viverridae	Common Palm Civet
8	*Pipistrellus javanicus*	Vespertilionidae	Javan Pipistrelle
9	*Pipistrellus tenuis*	Vespertilionidae	Least Pipistrelle
10	*Pteropus giganteus*	Pteropodidae	Indian Flying Fox
11	*Rattus rattus*	Murinae	House Rat
12	*Scotophilus heathii*	Vespertilionidae	Asiatic Greater Yellow House Bat
13	*Suncus etruscus*	Soricidae	Savi's Pygmy Shrew
14	*Suncus murinus*	Soricidae	House Shrew
15	*Viverra zibettha*	Viverridae	Large Indian Civet
16	*Viverricula indica*	Viverridae	Small Indian Civet

Table 6: Bird species of ASTU Campus.

Sl. No.	Scientific Name	Family	Common Name
1	*Acridotheres fuscus*	Sturnidae	Jungle Myna
2	*Acridotheres ginginianus*	Sturnidae	Bank Myna
3	*Acridotheres tristis*	Sturnidae	Common Myna
4	*Acrocephalus dumetorum*	Acrocephalidae	Blyth's Reed Warbler
5	*Acrocephalus stentoreus*	Acrocephalidae	Clamorous Reed Warbler
6	*Alcedo atthis*	Alcedinidae	Common Kingfisher
7	*Amaurornis phoenicurus*	Rallidae	White-breasted Waterhen
8	*Anas crecca*	Anatidae	Green-winged Teal
9	*Anas poecilorhyncha*	Anatidae	Indian Spot-billed Duck
10	*Anastomus oscitans*	Ciconiidae	Asian Openbill
11	*Anhinga melanogaster*	Anhingidae	Oriental Darter
12	*Anthus roseatus*	Motacillidae	Rosy Pipit
13	*Anthus rufulus*	Motacillidae	Paddyfield Pipit
14	*Arachnothera longirostra*	Nectariniidae	Little Spiderhunter
15	*Ardea cinerea*	Ardeidae	Gray Heron
16	*Ardea intermedia*	Ardeidae	Medium Egret
17	*Ardea purpurea*	Ardeidae	Purple Heron
18	*Argya earlei*	Leiothrichidae	Striated Babbler
19	*Argya striata*	Leiothrichidae	Jungle Babbler
20	*Arundinax aedon*	Acrocephalidae	Thick-billed Warbler
21	*Cacomantis merulinus*	Cuculidae	Plaintive Cuckoo
22	*Calliope calliope*	Muscicapidae	Siberian Rubythroat
23	*Centropus bengalensis*	Cuculidae	Lesser Coucal
24	*Ceryle rudis*	Alcedinidae	Pied Kingfisher
25	*Chroicocephalus ridibundus*	Laridae	Black-headed Gull
26	*Copsychus saularis*	Muscicapidae	Oriental Magpie-Robin
27	*Coracias affinis*	Coraciidae	Indochinese Roller
28	*Corvus macrorhynchos*	Corvidae	Large-billed Crow
29	*Cuculus micropterus*	Cuculidae	Indian Cuckoo
30	*Cypsiurus balasiensis*	Apodidae	Asian Palm Swift
31	*Dendrocitta vagabunda*	Corvidae	Rufous Treepie
32	*Dendrocopos macei*	Picidae	Fulvous-breasted Woodpecker
33	*Dendrocygna bicolor*	Anatidae	Fulvous Whistling-Duck
34	*Dicrurus macrocercus*	Dicruridae	Black Drongo
35	*Dinopium benghalense*	Picidae	Black-rumped Flameback
36	*Eudynamys scolopaceus*	Cuculidae	Asian Koel
37	*Ficedula albicilla*	Muscicapidae	Taiga Flycatcher
38	*Gallinago gallinago*	Scolopacidae	Common Snipe
39	*Gallinula chloropus*	Rallidae	Eurasian Moorhen
40	*Glareola lactea*	Glareolidae	Small Pratincole

Sl. No.	Scientific Name	Family	Common Name
41	*Gracupica contra*	Sturnidae	Indian Pied Starling
42	*Halcyon smyrnensis*	Alcedinidae	White-throated Kingfisher
43	*Hieraaetus pennatus*	Accipitridae	Booted Eagle
44	*Hierococcyx varius*	Cuculidae	Common Hawk-Cuckoo
45	*Himantopus himantopus*	Recurvirostridae	Black-winged Stilt
46	*Lanius cristatus*	Laniidae	Brown Shrike
47	*Leptoptilos dubius*	Ciconiidae	Greater Adjutant
48	*Leptoptilos javanicus*	Ciconiidae	Lesser Adjutant
49	*Limosa limosa*	Scolopacidae	Black-tailed Godwit
50	*Lonchura punctulata*	Estrildidae	Scaly-breasted Munia
51	*Mareca penelope*	Anatidae	Eurasian Wigeon
52	*Mareca strepera*	Anatidae	Gadwall
53	*Merops orientalis*	Meropidae	Asian Green Bee-eater
54	*Merops philippinus*	Meropidae	Blue-tailed Bee-eater
55	*Microcarbo niger*	Phalacrocoracidae	Little Cormorant
56	*Motacilla alba*	Motacillidae	White Wagtail
57	*Oriolus xanthornus*	Oriolidae	Black-hooded Oriole
58	*Orthotomus sutorius*	Cisticolidae	Common Tailorbird
59	*Parus cinereus*	Paridae	Asian Tit
60	*Passer montanus*	Passeridae	Eurasian Tree Sparrow
61	*Phalacrocorax carbo*	Phalacrocoracidae	Great Cormorant
62	*Phylloscopus fuscatus*	Phylloscopidae	Dusky Warbler
63	*Phylloscopus reguloides*	Phylloscopidae	Blyth's Leaf Warbler
64	*Ploceus philippinus*	Ploceidae	Baya Weaver
65	*Prinia inornata*	Cisticolidae	Plain Prinia
66	*Psilopogon asiaticus*	Megalaimidae	Blue-throated Barbet
67	*Psilopogon haemacephalus*	Megalaimidae	Coppersmith Barbet
68	*Psittacula krameri*	Psittaculidae	Rose-ringed Parakeet
69	*Pycnonotus cafer*	Pycnonotidae	Red-vented Bulbul
70	*Riparia chinensis*	Hirundinidae	Gray-throated Martin
71	*Rubigula flaviventris*	Pycnonotidae	Black-crested Bulbul
72	*Saxicola maurus*	Muscicapidae	Siberian Stonechat
73	*Spilopelia chinensis*	Columbidae	Spotted Dove
74	*Tadorna ferruginea*	Anatidae	Ruddy Shelduck
75	*Tringa ochropus*	Scolopacidae	Green Sandpiper
76	*Tringa totanus*	Scolopacidae	Common Redshank
77	*Upupa epops*	Upupidae	Eurasian Hoopoe
78	*Vanellus indicus*	Charadriidae	Red-wattled Lapwing
79	*Treron phoenicoptera*	Columbidae	Yellow-footed Green Pigeon
80	*Athene brama*	Strigidae	Spotted Owlet

Table 7: Amphibian species of ASTU Campus.

Sl. No.	Scientific Name	Family	Common Name
1	*Duttaphrynus melanostictus*	Bufonidae	Asian Common Toad
2	*Hoplobatrachus tigerinus*	Ranidae	Indian Bull Frog
3	*Humerana humeralis*	Ranidae	Bhamo Frog
4	*Polypedates teraiensis*	Rhaphoridae	Common Tree Frog
5	*Sylvirana leptoglossa*	Ranidae	Assam Forest Frog

Table 8: Snake species of ASTU Campus.

Sl. No.	Scientific Name	Family	Common Name
1	*Chrysopelea ornata*	Colubridae	Ornate Flying Snake
2	*Coelognathus radiatus*	Colubridae	Copper-headed Trinket Snake
3	*Lycodon aulicus*	Colubridae	Common Wolf Snake
4	*Nerodia sipedon*	Colubridae	Water Snake
5	*Ptyas mucosa*	Colubridae	Indian Rat Snake
6	*Ramphotyphlops braminus*	Typhlopidae	Brahminy Blind Snake
7	*Rhabdophis subminiatus*	Colubridae	Red-necked Keelback

Table 9: Lizard species of ASTU Campus.

Sl. No.	Scientific Name	Family	Common Name
1	*Calotes versicolor*	Agamidae	Oriental garden lizard
2	*Hemidactylus frenatus*	Gekkonidae	Common house gecko
3	*Hemidactylus garnotii*	Gekkonidae	Indo-Pacific Gecko
4	*Hemidactylus platyurus*	Gekkonidae	Flat Tailed Gecko
5	*Lampropholis guichenoti*	Scincidae	Common garden Skink
6	*Lygosoma albopunctata*	Scincidae	White-spotted Supple Skink

Table 10: Fish species of ASTU Campus.

Sl. No.	Scientific Name	Family	Common Name
1	*Anabas testudineus*	Anabantidae	*Kawoi*
2	*Channa punctata*	Channidae	*Goroi*
3	*Channa gachua*	Channidae	*Sengeli, Taki, Sen*
4	*Clarias magur*	Clariidae	*Magur*
5	*Danio rerio*	Danionidae	*Dorikona, dorkina*
6	*Esomus danrica*	Danionidae	*Dorikana, Dorkina*
7	*Heteropneustes fossilis*	Heteropneustidae	*Xingi maas, Singi*
8	*Macrognathus aral*	Mastacembelidae	*Gosi, Tora, Tura, Turi*
9	*Mystus tengara*	Bagridae	*Singorah, Tingora*
10	*Notopterus notopterus*	Notopteridae	*Kandhuli*
11	*Puntius chola*	Cyprinidae	*Puthi*
12	*Puntius sophore*	Cyprinidae	*Puthi maas, Xendurdia puthi*

Table 11: Butterfly species of ASTU campus

Sl. No.	Scientific Name	Family	Common Name
1	*Pseudocoladenia dan*	Hesperiidae	Fulvous pied flat
2	*Suastus gremius*	Hesperiidae	Common Palm Bob
3	*Tagiades japetus*	Hesperiidae	Common snow flat
4	*Castalius rosimon*	Lycaenidae	Common Pierrot
5	*Pseudozizeeria maha*	Lycaenidae	Pale grass blue
6	*Tarucus nara*	Lycaenidae	Striped pierrot
7	*Zizeeria karsandra*	Lycaenidae	Dark Grass blue
8	*Zizina otis*	Lycaenidae	Lesser grass blue
9	*Ariadne merione*	Nymphalidae	Common Castor
10	*Cethosia cyane*	Nymphalidae	Leopard Lacewing
11	*Danaus chrysippus*	Nymphalidae	Plain Tiger
12	*Elymnias hypermnestra*	Nymphalidae	Common Palmfly
13	*Euploea core*	Nymphalidae	Common Crow
14	*Euthalia aconthea*	Nymphalidae	Common Baron
15	*Junonia almana*	Nymphalidae	Peacock Pansy
16	*Junonia atlites*	Nymphalidae	Grey Pansy
17	*Junonia lemonias*	Nymphalidae	Lemon Pansy
18	*Kaniska canace*	Nymphalidae	Blue admiral
19	*Melanitis leda*	Nymphalidae	Common Evening Brown
20	*Moduza procris*	Nymphalidae	Commander
21	*Neptis hylas*	Nymphalidae	Common Sailer
22	*Graphium doson*	Papilionidae	Common Jay
23	*Papilio clytia*	Papilionidae	Common Mime
24	*Papilio demoleus*	Papilionidae	Lime Butterfly
25	*Papilio polytes*	Papilionidae	Common Mormon
26	*Catopsilia pomona*	Pieridae	Lemon Emigrant
27	*Catopsilia pyranthe*	Pieridae	Mottled Emigrant
28	*Delias eucharis*	Pieridae	Common Jezebel
29	*Eurema brigitta*	Pieridae	Small Grass Yellow

4.2 EVALUATION OF GREEN AUDIT FINDINGS

The Assam Science and Technology University (ASTU) campus spans a total area of 14,125.08 m², with 3,217.92 m² occupied by university buildings and the remaining 10,907.16 m² as open space. The campus boasts a tree plantation and green coverage area of 130.40 m², comprising 26 identified tree species, including six fruit tree species and three medicinal plant species. For campus beautification, 26 varieties of trees and plants are cultivated. The campus is a hub of biodiversity, hosting 16 mammalian species, 80 bird species, 29 butterfly species, five amphibian species, seven snake species, six lizard species, and 12 fish species. This rich biodiversity highlights ASTU's commitment to environmental sustainability and ecological balance.

4.3 CONSOLIDATION OF AUDIT FINDINGS

We hope that students and staff will develop a greater appreciation and understanding of the impact of their actions on the environment. By participating in this green audit, they know the need for sustainability on the university campus. It will create awareness of using the Earth's resources in their home, university, local community and beyond.

4.4 MAJOR GREEN AUDIT OBSERVATIONS

- The tree covers of the university concerning the stakeholder strength is not enough.
- Regular planting of trees on the campus is inadequate.
- Display boards for all plants identified are lacking.
- No arboretum is set up on the university campus.
- The university has a limited number of fruit trees that attract birds.
- Registry for flora and fauna on the campus is lacking.

4.5 PREPARATION OF ACTION PLAN

Policies referring to the university's management and approaches towards the use of resources need to be considered. The green policy formulated by the management of the university should be implemented meticulously. The university should have a policy on awareness raising or training programs for ground staff.

4.6 FOLLOW UP ACTION AND PLANS

Green Audits are exercises which generate considerable quantities of valuable management information. The time, effort, and cost involved in this exercise are often considerable, and 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 that action plans and implementation programs result from the findings.

Audit follow-up is part of the wider process of continuous improvement. Without follow-up, the audit becomes an isolated event that soon becomes forgotten in the pressures of organisational priorities and the passing of time.

4.7 ENVIRONMENTAL EDUCATION

The following environmental education program may be implemented in the university before the next green auditing:

- Training programs in solid waste management, liquid waste management, setting up of medicinal plant nurseries, water management, vegetable cultivation, tree planting, energy

management, landscape management, pollution monitoring methods, and rainwater harvesting methods.

- Increase the number of display boards on environmental awareness such as – saving water, saving electricity, no wastage of food/water, no smoking, switching off lights and fans after use, plastic-free campus etc.
- Activate participation from environmental clubs.
- Set up model rainwater harvesting systems, rainwater pits, vegetable gardens, medicinal plant gardens etc. to provide proper training to the students and staff.
- Conduct an exhibition of recyclable waste products.
- Implement a chemical treatment system for wastewater from the laboratories.
- Students and Staff members may be made aware of the pollution caused by the use of vehicles.
- The carbon consumption awareness programs on carbon emission at the individual, as well as social level, will help to avoid air and noise pollution on the campus due to vehicles.

4.8 CONCLUSION AND FULL LIST OF RECOMMENDATIONS

The green audit assists in the process of testing performance in the environmental arena and is fast becoming an indispensable aid to decision-making in a university. The green audit reports assist in the process of attaining an eco-friendly approach to the sustainable development of the university. Hope that the results presented in the green auditing report will serve as a guide for educating the university community on the existing environment-related practices and resource usage at the university as well as spawn new activities and innovative practices. A few recommendations are added to curb the menace of waste management using eco-friendly and scientific techniques. This may lead to a prosperous future in the context of Green Campus and thus a sustainable environment and community development. It has been shown frequently that the practical suggestions, alternatives, and observations that have resulted from audits have added positive value to the audited organization. An outside view, perspective, and opinion often help staff who have been too close to problems or methods to see the value of alternative approaches. A green audit report is a very powerful and valuable communication tool when working with various stakeholders who need to be convinced that things are running smoothly and that systems and procedures are coping with natural changes and modifications.

4.9 RECOMMENDATIONS FOR GREEN CAMPUS

- All trees on the campus should be named scientifically.
- Create more space for planting.
- Grow potted plants in both corridors and classrooms.
- Create an automatic drip irrigation system.
- Beautify the university building with indoor plants.
- Providing funds to the eco club to make the campus greener.

List of plants proposed for "Tree Plantation Programme" on the ASTU campus

Sl. No.	Botanical name	Family	Local name
1	*Abelmoschus manihot*	Malvaceae	Usipak
2	*Abelmoschus moschatus*	Malvaceae	Gorokhia koroi
3	*Abroma augusta*	Sterculiaceae	Gorokhia koroi
4	*Abrus precatorius*	Papilionaceae	Latumoni
5	*Abutilon indicum*	Malvaceae	Pera petari
6	*Acacia catechu*	Mimosaceae	Khair
7	*Achyranthes aspera*	Amaranthaceae	Hatisur
8	*Acarus calamus*	Araceae	Bach
9	*Actinodaphne angustifolia*	Lauraceae	Petarichawa
10	*Aegle marmelos*	Rutaceae	Bel
11	*Ajuga bracteosa*	Lamiaceae	Nilakantha
12	*Allium sativum*	Liliaceae	Naharu
13	*Alocasia macrorrhiza*	Araceae	Boro mankachu
14	*Aloe barbadensis*	Liliaceae	Sal konwari
15	*Alstonia scholaris*	Apocynaceae	Satiana
16	*Alternanthera sessilis*	Amaranthaceae	Mati-kanduri
17	*Altingia excelsa*	Altingiaceae	Jutuli
18	*Amaranthus spinosus*	Amaranthaceae	Khutura
19	*Andrographis paniculata*	Acanthaceae	Sirata
20	*Anthocephalus cadamba*	Rubiaceae	Kadom
21	*Antidesma accuminatum*	Euphorbiaceae	Bor-heloch
22	*Antidesma diandrum*	Euphorbiaceae	Abutenga
23	*Antidesma ghaesembilla*	Euphorbiaceae	Heloch
24	*Aquilaria malacensis*	Thymelaeaceae	Agaru, Sasi-goss
25	*Areca catechu*	Arecaceae	Tamul
26	*Argemone maxicana*	Papaveraceae	Kuhum kata
27	*Aristolochia tagala*	Aristolochiaceae	Belikol, Chohu
28	*Asparagus racemosa*	Liliaceae	Satmul
29	*Azadirachta indica*	Meliaceae	Mahanim
30	*Azanza lampas*	Malvaceae	Bon kapah
31	*Baccaurea ramiflora*	Euphorbiaceae	Leteku
32	*Bacopa monnieri*	Scrophulariaceae	Brahmi
33	*Belamcanda chinensis*	Iridaceae	Surjakanti
34	*Blechnum orientale*	Blechnaceae	Dhekia
35	*Boerhavia diffusa*	Nyctaginaceae	Ponownua

36	*Bombax ceiba*	Bombacaceae	Simalu
37	*Brassica juncea*	Brassicaceae	Lai
38	*Butea monosperma*	Fabaceae	Palas
39	*Byttneria grandiflora*	Sterculiaceae	Tikani barua
40	*Calotropis gigantea*	Asclepiadaceae	Akan
41	*Calotropis procera*	Asclepiadaceae	Akan
42	*Camellia chinensis*	Theaceae	Sah goss (Tea plant)
43	*Cardiospermum helicacabum*	Sapindaceae	Kapalphuta
44	*Carallia brachiata*	Rhizophoraceae	Kanthekera
45	*Cassia alata*	Caesalpiniaceae	Khor goss
46	*Cassia fistula*	Caesalpiniaceae	Sunaru
47	*Catharanthus roseus*	Apocynaceae	Nayantara
48	*Cayratia carnosa*	Vitaceae	Ghepeta Iota
49	*Cedrela toona*	Meliaceae	Poma
50	*Centella asiatica*	Apiaceae	Manimuni
51	*Chenopodium album*	Chenopodiaceae	Jilmil sak
52	*Cinnamomum tamala*	Lauraceae	Tejpat
53	*Cinnamomum obtusifolium*	Lauraceae	Patihonda, patichanda
54	*Chukrasia tubularis*	Meliaceae	Boga poma
55	*Cissus rependa*	Vitaceae	Medmedia lota
56	*Clerodendrum colebrookianum*	Verbinaceae	Nephaphu
57	*Clerodendrum indicum*	Verbinaceae	Dhaptita
58	*Clerodendrum infortunatum*	Verbinaceae	Dhapatita
59	*Clitoria ternatea*	Fabaceae	Aparajita
60	*Coriandrum sativum*	Apiaceae	Dhania
61	*Costus speciosus*	Zingiberaceae	Jomlakhuti
62	*Crotalaria albida*	Fabaccae	Ban-methi
63	*Croton caudatus*	Euphorbiaceae	Lata-mahudi
64	*Croton joufra*	Euphorbiaceae	Mahudi
65	*Croton tighlium*	Euphorbiaceae	Koni bih
66	*Curcuma amada*	Zingiberaceae	Amada
67	*Curcuma aromatica*	Zingiberaceae	Ban-haladhi
68	*Curcuma caesia*	Zingiberaceae	Kola-haladhi
69	*Curcuma domestica*	Zingiberaceae	Haladhi
70	*Curcuma longa*	Zingiberaceae	Haladhi
71	*Cuscuta reflexa*	Convolvulaceae	Akashi-lota
72	*Cymbopogon flexuosus*	Poaceae	Lemon grass
73	*Datura fastuosa*	Solanaceae	Dhatura
74	*Datura stramonium*	Solanaceae	Kola-dhatura
75	*Deeringia amaranthoides*	Amaranthaceae	Rangoli lota
76	*Dillenia indica*	Dilleniaceae	Outenga
77	*Dillenia pentagyna*	Dilleniaceae	Akshi
78	*Dillenia scabrella*	Dilleniaceae	Banji-ou
79	*Dioscorea alata*	Dioscoreaceae	Kathalu
80	*Dioscorea bulbifera*	Dioscoreaceae	Kathalu
81	*Dischidia rafflesiana*	Asclepiadaceae	Honkha ojhar mana
82	*Dregea volubilis*	Asclepiadaceae	Khomal Iota
83	*Eclipta alba*	Asteraceae	Kenharaj

84	*Elaeocarpus sphaericus*	Elaeocarpaceae	Ridra rudrakhya
85	*Elsholtzia blanda*	Lamiaceae	Bon-tulasi
86	*Emblica officinalis*	Euphorbiaceae	Amlakhi
87	*Engelhardita spicata*	Juglandaceae	Lewa Lal-amiri
88	*Enhydra fluctuans*	Asteraceae	Helochi
89	*Entada phaseoloides*	Mimosaceae	Gila-lewa
90	*Erioglossum rubiginosum*	Sapindaceae	Abigran
91	*Eryngium foetidum*	Apiaceae	Jongoli-memedhu
92	*Erythrina stricta*	Fabaceae	Madar
93	*Eugenia jambolana*	Myrtaceae	Loha-jam
94	*Eugenia kurzii*	Myrtaceae	Bogijamuk
95	*Eupatorium cannabinum*	Asteraceae	Tong-loti
96	*Eupatorium odoratum*	Asteraceae	Jarmoni ban
97	*Euphorbia neriifolia*	Euphorbiaceae	Hiju
98	*Eurya japonica*	Theaceae	Saseni, murmura
99	*Euryale ferox*	Nymphaeaceae	Makhana
100	*Ficus bengalensis*	Moraceae	Bor goss
101	*Ficus benjamina*	Moraceae	Chilubor goss
102	*Garcinia cowa*	Clusiaccae	Kujithekera
103	*Garcinia morella*	Clusiaceae	Kujithekera
104	*Garcinia pedunculata*	Clusiaceae	Bor-thekera
105	*Gardenia campanulata*	Rubuaceae	Bitmara, bhi-mona
106	*Gmelina arborea*	Verbenaceae	Gomari
107	*Gloriosa superba*	Liliaceae	Agnisikha
108	*Glycosmis pentaphylla*	Rutaceae	Hengena poka
109	*Gnetum montanum*	Gnetaceae	Mameilet
110	*Grewia hirsuta*	Tiliaceae	Sukta-pata
111	*Gynocardia odorata*	Flacourtiaceae	Lamtem
112	*Hedychium spicatum*	Zingeberaceae	Karpur
113	*Hedyotis scandens*	Rubiaceae	Bhedeli -lota
114	*Hibiscus rosa-sinensis*	Malvaceae	Joba
115	*Hiptage benghalensis*	Malpighiaceae	Kerek-Iota
116	*Holarrhena antidysenterica*	Apocynaceae	Dudkhuri, kutuj
117	*Homonoia riparia*	Euphorbiaceae	Hil-kadam
118	*Horsfieldia kingii*	Myrsticaceae	Amol
119	*Hovenia dulcis*	Rhamnaceae	Chetia-bola
120	*Hydnocarpus kurzii*	Flacourtiaceae	Chalmugra, lamtem
121	*Hymenodictyon excelsum*	Rubiaceae	Kodam
122	*Ichnocarpus frutescens*	Apocynaceae	Lomakandol
123	*Impatiens tripetala*	Balsaminaceae	Koria bijol, dumdeuka
124	*Ipomea batats*	Convolvulaceae	Mitha-alu
125	*Ipomea eriocarpa*	Convolvulaceae	Kalmow
126	*Ixora coccinea*	Rubiaceae	Rangol
127	*Jatropha curcas*	Euphorbiaceae	Bongali bhotera
128	*Jatropha gossypifolia*	Euphorbiaceae	Bhotera
129	*Juglans regia*	Juglandaceae	Akhrot
130	*Justicia gendarussa*	Acanthaceae	Tita-bahek
131	*Kayea assamica*	Clusiaceae	Sia-nahar

132	*Kirganelia reticulata*	Euphorbiaceae	Amloki
133	*Knema angustifolia*	Myrtaceae	Mota-pasuti, tezranga
134	*Lagenaria siceraria*	Cucurbitaceae	Jati-lau, lau
135	*Lagerstroemia speciosa*	Lythraceae	Azar
136	*Laportea crenulata*	Urticaceae	Sorat goss
137	*Lawsonia inermis*	Lythraceae	Jetuka, mehendi
138	*Leea indica*	Vitaceae	Kukurathengia
139	*Leucas linifolia*	Lamiaceae	Doron bon
140	*Linostoma decandrum*	Thymelaeaceae	Bakalbih, ruteng
141	*Lithocarpus fenestratus*	Fagaceae	Kuhi
142	*Litsea glutinosa*	Lauraceae	Heluka, bagnala
143	*Litsea monopetala*	Lauraceae	Hoanlu
144	*Litsea salicifolia*	Lauraceae	Dighloti
145	*Macrosolen cochinchinensis*	Loranthaceae	Raghumola
146	*Maesa indica*	Myrsinaceae	Awuapat, maahpora
147	*Mallotus philippensis*	Euphorbiaceae	Jorat, losan
148	*Mangifera sylvatica*	Anacardiaceae	Bon-am
149	*Manihot esculenta*	Euphorbiaceae	Simalu-alu
150	*Melastoma malabathricum*	Melastomataceae	Phutuka
151	*Melia azedarach*	Meliaceae	Ghora-nim
152	*Merremia umbellata*	Convolvulaceae	Goria loti, kolia lata
153	*Mesua ferrea*	Clusiaceae	Nahor
154	*Meyna laxiflora*	Rubiaceae	Kutkura, moin
155	*Mezoneuron cucullatum*	Caesalpiniaceae	Bagh-anchora
156	*Michelia champaca*	Magnoliaceae	Titasopa
157	*Michelia Montana*	Magnoliaceae	Pansopa
158	*Microtoena insuavis*	Lamiaceae	Asomia patchouli
159	*Millettia pachycarpa*	Fabaceae	Bokol bih
160	*Mimosa pudica*	Mimosaceae	Nilajiban
161	*Mimusops elengi*	Sapotaceae	Bokul, gokul
162	*Mirabilis jalapa*	Nyctaginaceae	Gadhuli -gopal
163	*Mitragyna rotundifolia*	Rubiaceae	Timi
164	*Momordica dioica*	Cucurbitaceae	Bhatkarela
165	*Moringa oleifera*	Moringaceae	Sajina
166	*Morus alba*	Moraceae	Nuni goss
167	*Mucuna prurita*	Fabaceae	Bandar kekua
168	*Murraya koenigii*	Rutaceae	Narasingha
169	*Mussaenda glabra*	Rubiaceae	Sonarupa
170	*Myrica esculenta*	Myricaceae	Nagatenga
171	*Nelumbo nucifera*	Nymphaeaceae	Podum
172	*Nerium indicum*	Apocynaceae	Karabi
173	*Nyctanthus arbor-tristis*	Oleaceae	Sewali phul
174	*Nymphaea alba*	Nymphaeaceae	Bhet, Kumud
175	*Nymphaea stellata*	Nymphaeaceae	Neel-padma
176	*Ocimum basilicum*	Lamiaceae	Tulasi
177	*Ocimum gratissimum*	Lamiaceae	Ram-tulasi
178	*Ocimum sanctum*	Lamiaceae	Kola-tulasi
179	*Oroxylum indicum*	Bignoniaceae	Bhatghila

180	*Osbekia nepalensis*	Melastomataceae	Boga-phutuka
181	*Oxalis corniculata*	Oxalidaceae	Tengeshi-tenga
182	*Paederia foetida*	Rubiaceae	Bhedeli-lota
183	*Phlogocanthus thyrsiflorus*	Acanthaceae	Tita-phul
184	*Phylanthus fraternus*	Euphorbiaceae	Bhui-amlakhi
185	*Phyllanthuis urinaria*	Euphorbiaceae	Bhui-amlakhi
186	*Phytolacca acinosa*	Phytolaccaceae	Jaiong
187	*Picrasma javanica*	Simaroubaceae	Bon-posala, nimita
188	*Piper betle*	Piperaceae	Pan
189	*Piper longum*	Piperaceae	Pipoli
190	*Piper nigram*	Piperaceae	Jaluk
191	*Pithecellobium clypearia*	Mimosaceae	Bhasahu
192	*Pithecellobium monadelphum*	Mimosaceae	Moj, Bhasahu
193	*Plumbago indica*	Plumbaginaceae	Ronga-agechi
194	*Plumbago zeylenica*	Plumbaginaceae	Boga-agechi
195	*Plumeria acuminata*	Apocynaceae	Gulanchi, Gulancha
196	*Pongamia pinnata*	Fabaceae	Karchaw
197	*Pothos cathcartii*	Araceae	Hathi dhekiya
198	*Rauvilfia serpentina*	Apocyanaceae	Arachontita
199	*Rubia cordifolia*	Rubiaceae	Majathi
200	*Schima wallichii*	Theaceae	Makriasal, Nogabhe
201	*Setaria italica*	Poaceae	Kaon
202	*Sida acuta*	Malvaceae	Boriala
203	*Sida cordifolia*	Malvaceae	Sun-borial
204	*Sida rhombifolia*	Malvaceae	Boriala
205	*Solanum indicum*	Solanaceae	Tid bhakuri
206	*Solanum nigrum*	Solanaceae	Pichkati
207	*Solanum torvum*	Solanaceae	Bhit-tita, Hathibhekuri
208	*Spilanthus acmella*	Asteraccae	Pirazha
209	*Spondias pinnata*	Anacardiaceae	Amora
210	*Stephania hernandifolia*	Menispermaceae	Tubuki-lot, Goldua
211	*Symplocos racemosa*	Symplocaceae	Kavirang, bhomroti
212	*Syzygium cumini*	Myrtaceae	Kalajam
213	*Tamarindus indica*	Caesalpinaceae	Tetuli
214	*Tectona grandis*	Verbanaceae	Ching-jagu
215	*Tephrosia candida*	Fabaccae	Boga medaloa
216	*Terminalia arjuna*	Combretaceae	Arjun
217	*Terminalia chebula*	Combretaceae	Hilikha
218	*Terminalia myriocarpa*	Combretaceae	Hollock
219	*Typhonium trilobatum*	Araceae	Samakosu
220	*Vesica adhatoda*	Acanthaceae	Bahek
221	*Viburnum colebrookianum*	Caprifoliaceae	Mezenga
222	*Vitex negundo*	Verbenaceae	Posotia
223	*Wedelia calandulacea*	Asteraceae	Maha -bhringraj
224	*Wrightia tomentosa*	Apocynaceae	Atkuri
225	*Xanthium strumarium*	Asteraceae	Agara
226	*Xanthozylum budrunga*	Rutaceae	Bajramani, bajranali

CHAPTER 5

EXIT MEETING

Prof. Subhendu Sekhar Bag conducted the exit meeting. It was a mechanism to provide the management and staff with broad feedback on the preliminary findings of the audit team before completing the audited report. The exit meeting was held at the university on 27th December 2024. The audit team sought clarification on information gathered from the university's management and staff.

DRAFT AUDIT REPORT

The information gathered by the audit team was consolidated as a draft audit report. This draft report was then circulated to the audit team and those directly concerned with the audit to check the report for accuracy. The draft green audit report was also discussed in the exit meeting.

FINAL AUDIT REPORT

The final audit report is the corrected final document which contains the findings and recommendations of the audit. It will also form one of the bases of future audits because the information it contains informs some of the tests and analyses that need to be performed in the future. The final audit report was submitted on 30th December 2024 to the university's Vice-Chancellor.

FOLLOW UP AND ACTION PLANS

Green audits form a part of an ongoing process. Innovative green initiatives have to be designed and implemented every year to make the university environmentally sustainable. Follow-up programs of green auditing recommendations should be done meticulously before the next audit.

NEXT AUDIT

To promote continuous improvement, it is recommended to conduct the next green auditing during the year 2027.

TRANSPARENCY OF GREEN AUDIT REPORT

The green audit report is one of the useful means of demonstrating an organisation’s commitment to openness and transparency. If an organisation believes it has nothing to hide from its stakeholders, then it should feel confident enough to make its green audit reports freely available to those who request them. As a basic rule, green audit reports should be made available to all stakeholders.

ACKNOWLEDGEMENTS

Prof. Subhendu Sekhar Bag and his team are thankful to the Management and the Vice-Chancellor of the Assam Science and Technology University (ASTU) for entrusting processes of Green auditing with us. We thank all the participants especially students, faculty and non-teaching staff who took pain along with us to gather data through survey. We also thank the office staff who helped us during the document verification.

BIODIVERSITY OF ASSAM SCIENCE AND TECHNOLOGY UNIVERSITY CAMPUS

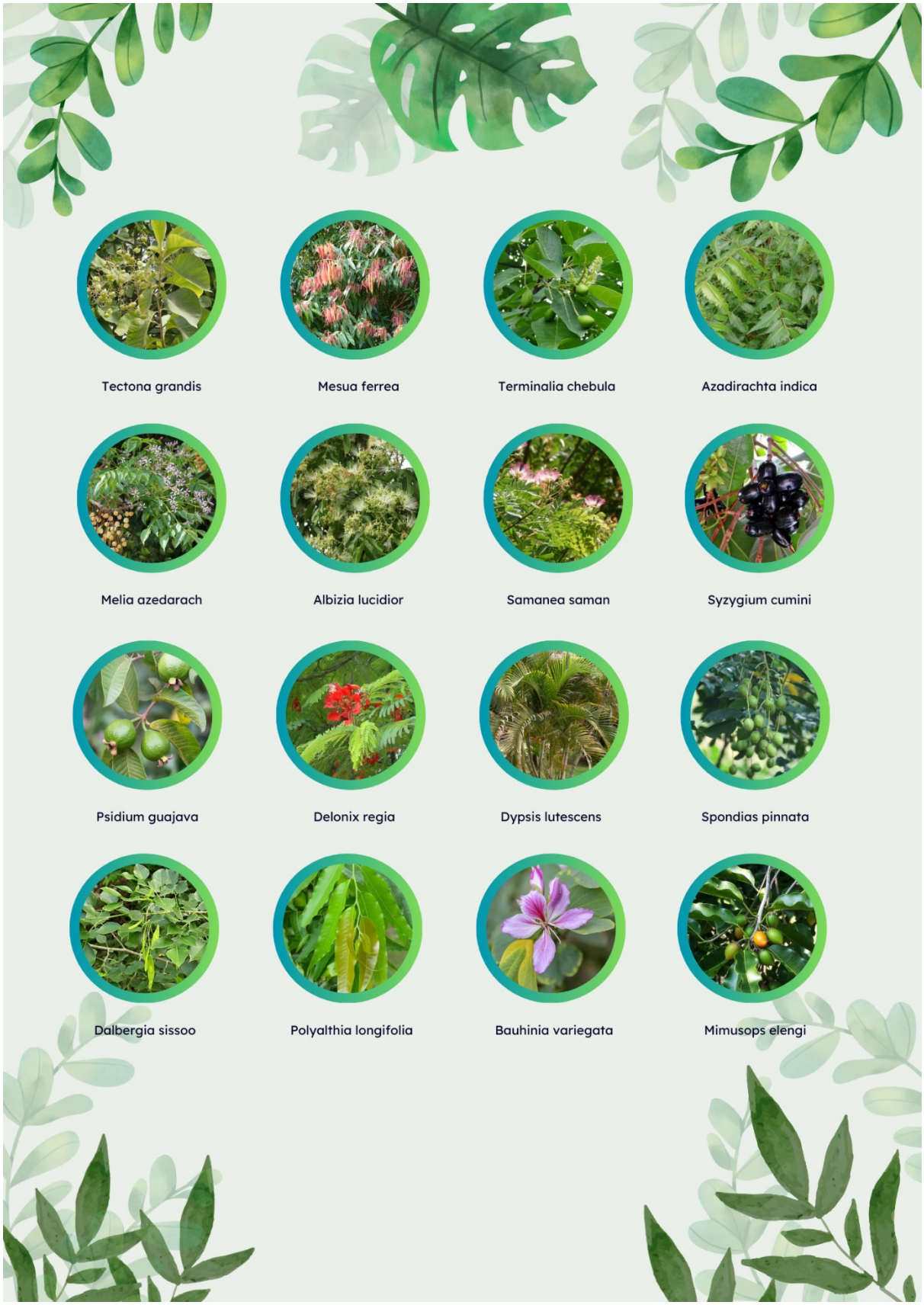


Figure 1A: Trees of ASTU campus.

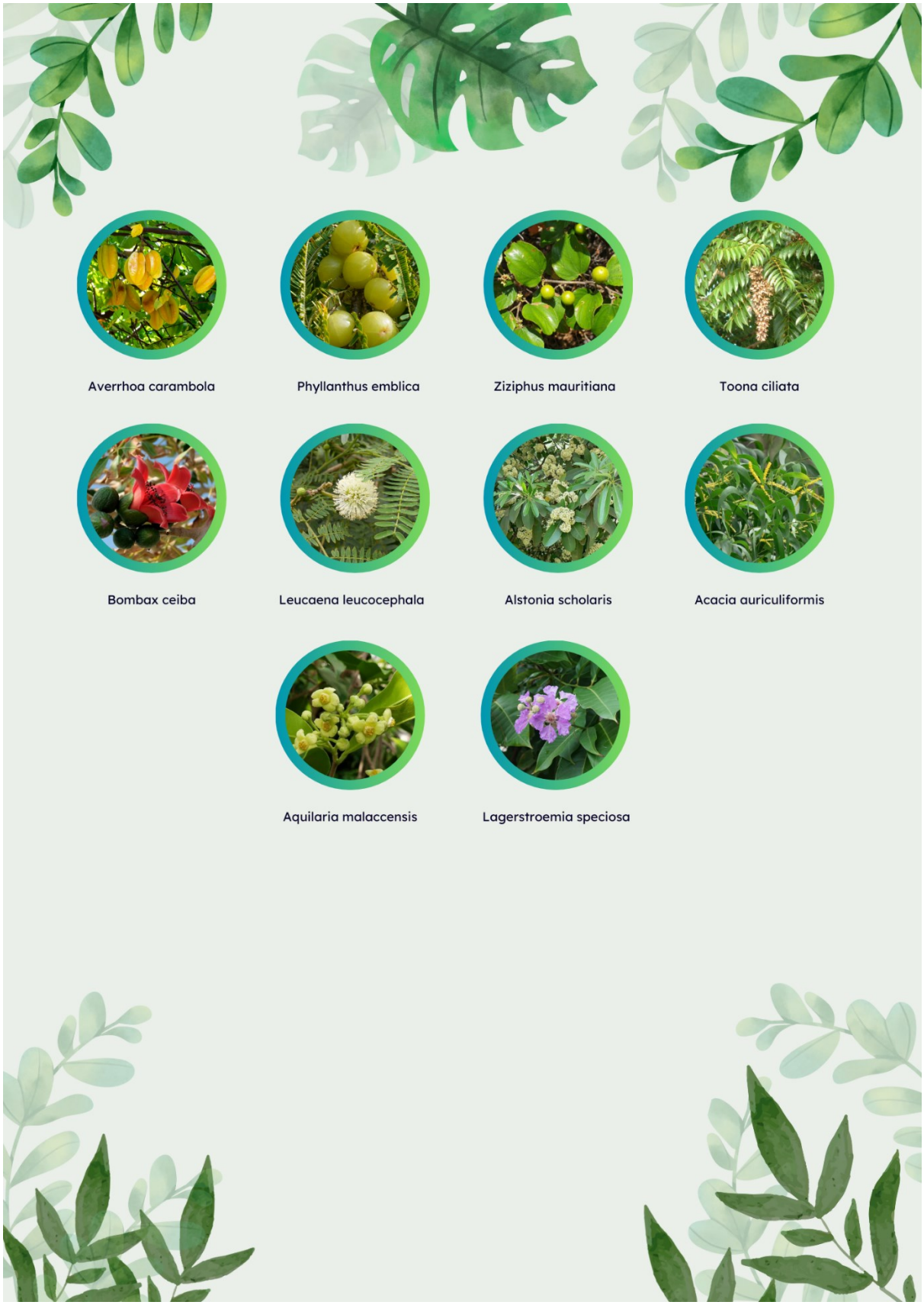


Figure 1B: Trees of ASTU campus.

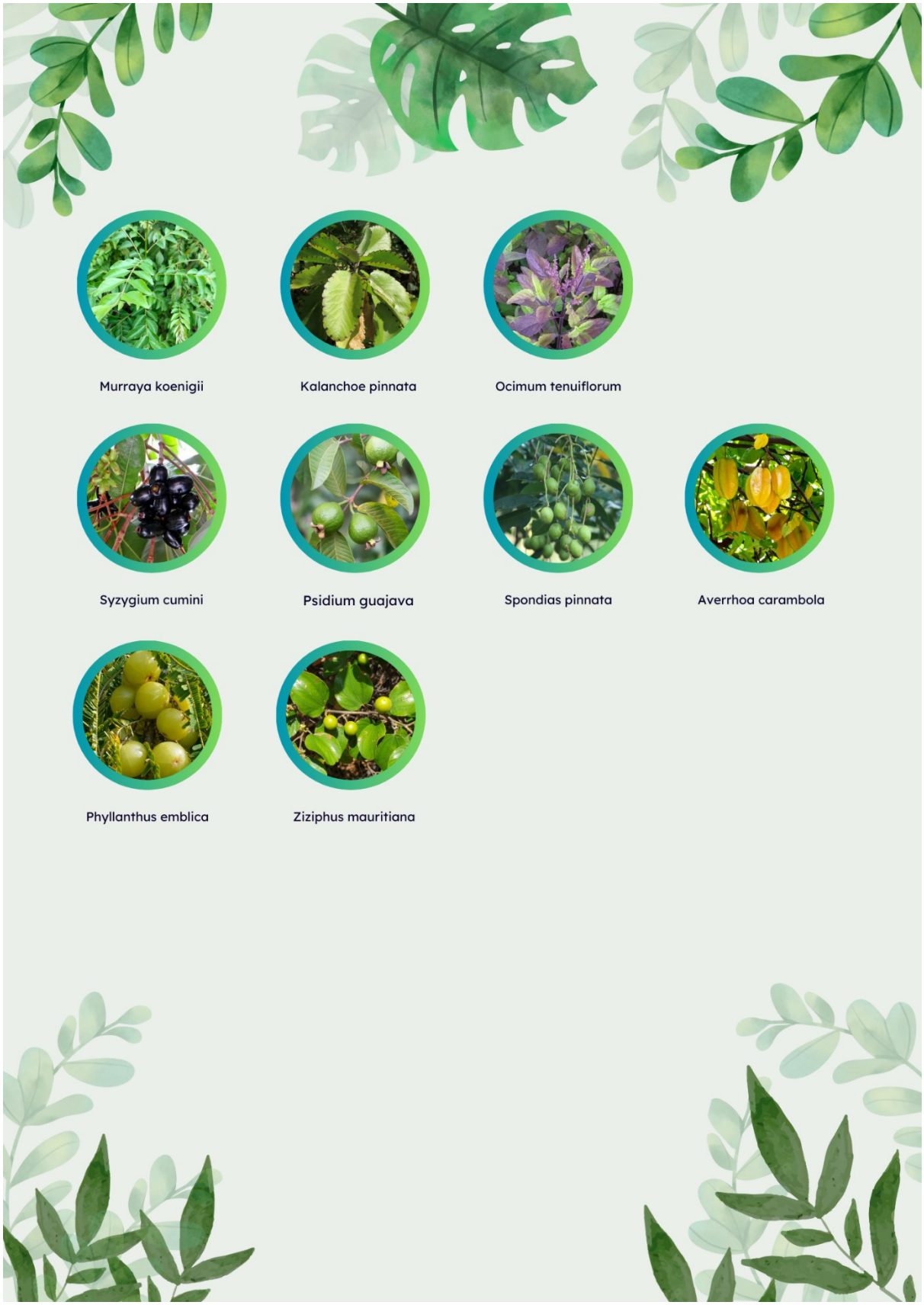


Figure 2: Medicinal plants (3 species) & fruit trees (5 species) of ASTU campus.

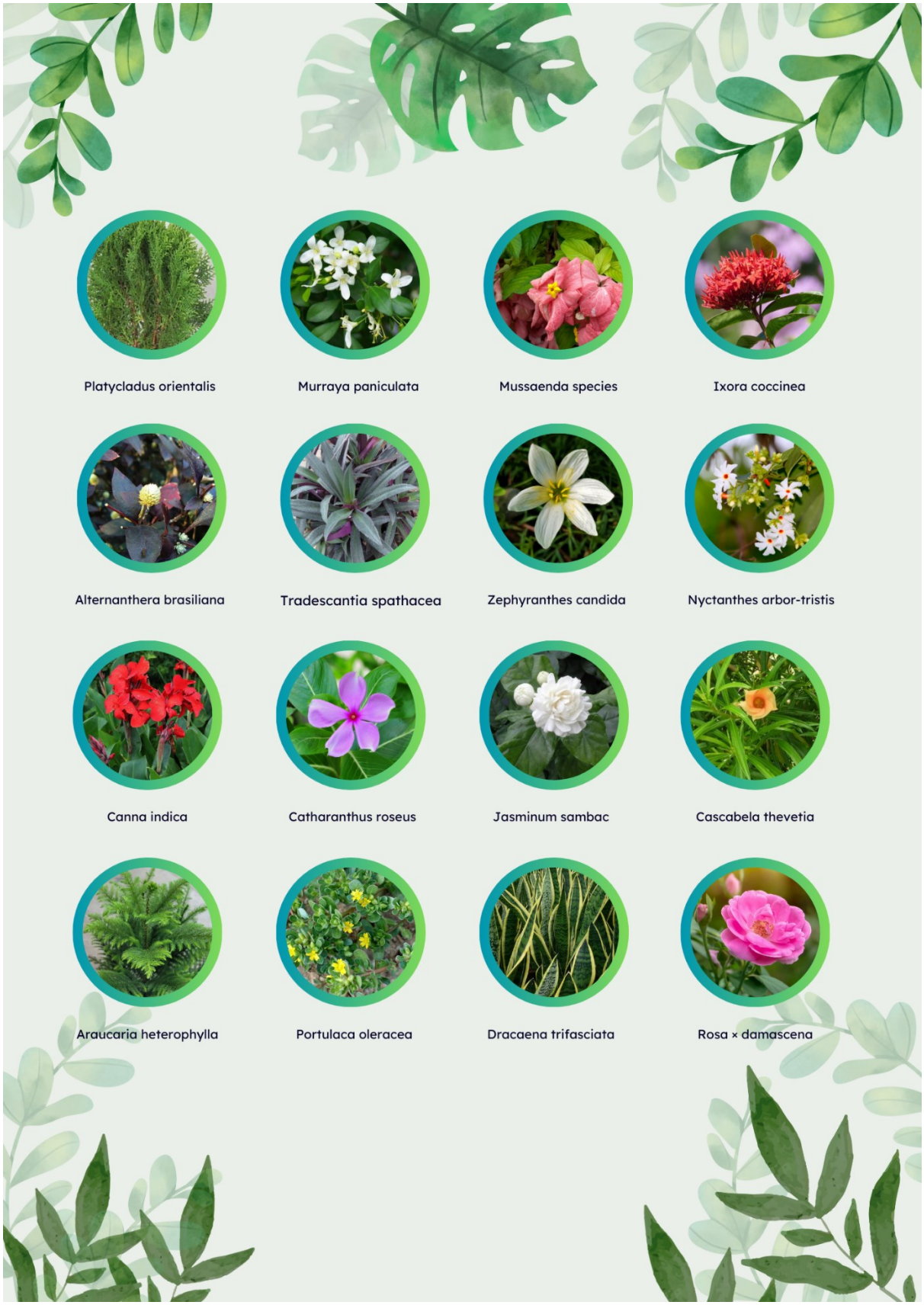


Figure 3A: Trees and plants for beautifying the ASTU campus.

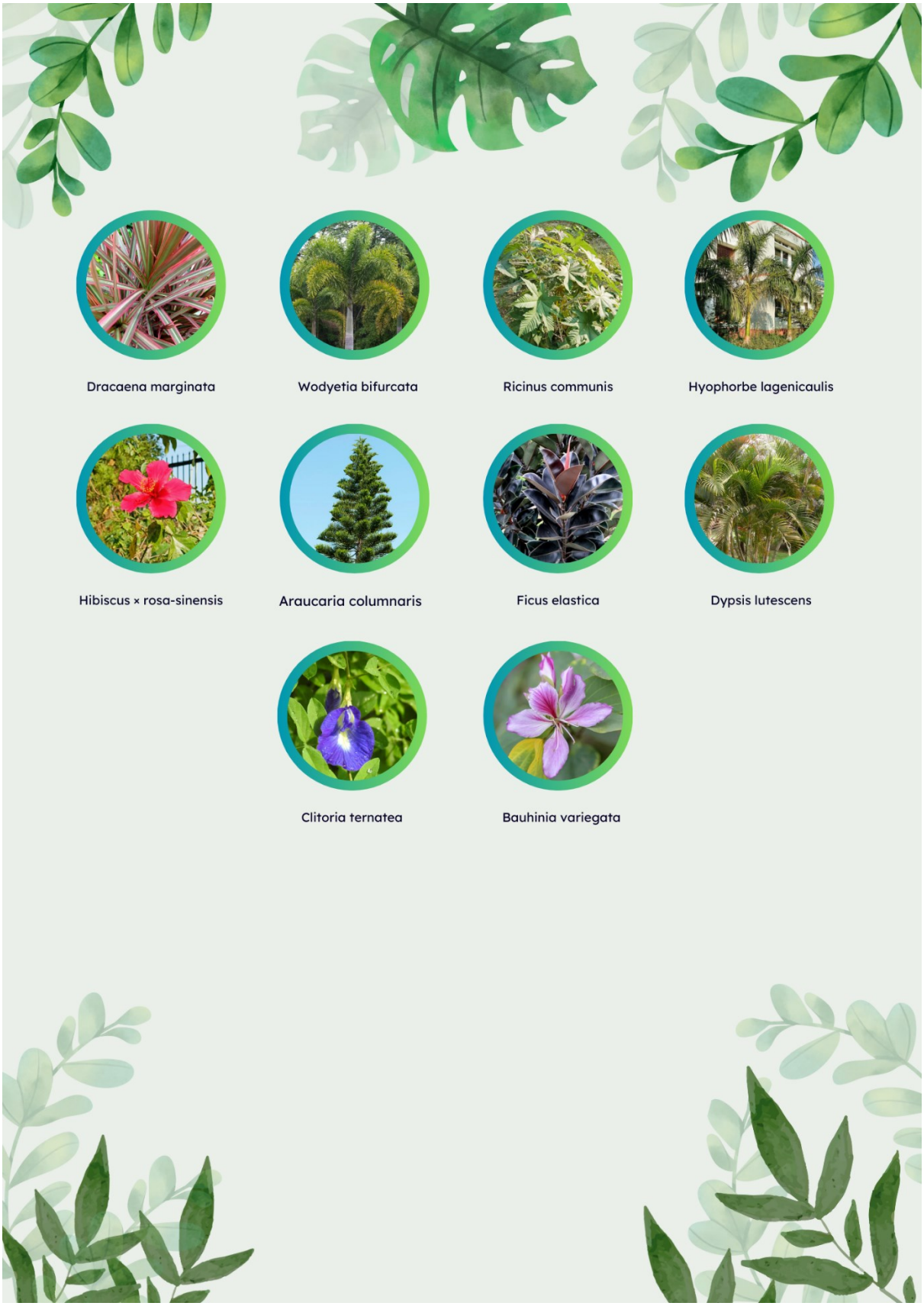


Figure 3B: Trees and plants for beautifying the ASTU campus.

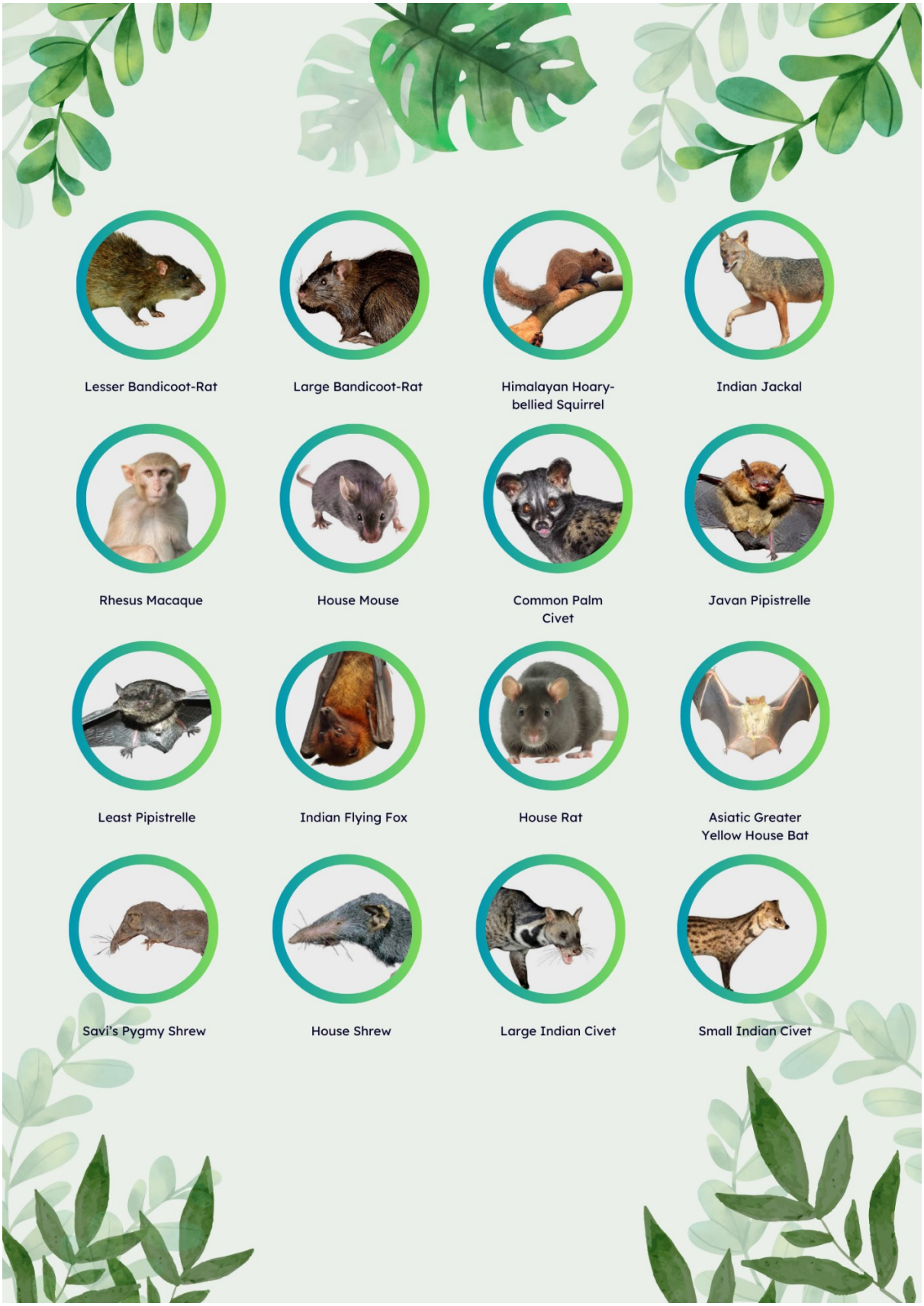


Figure 4: Mammalian species of the ASTU Campus.

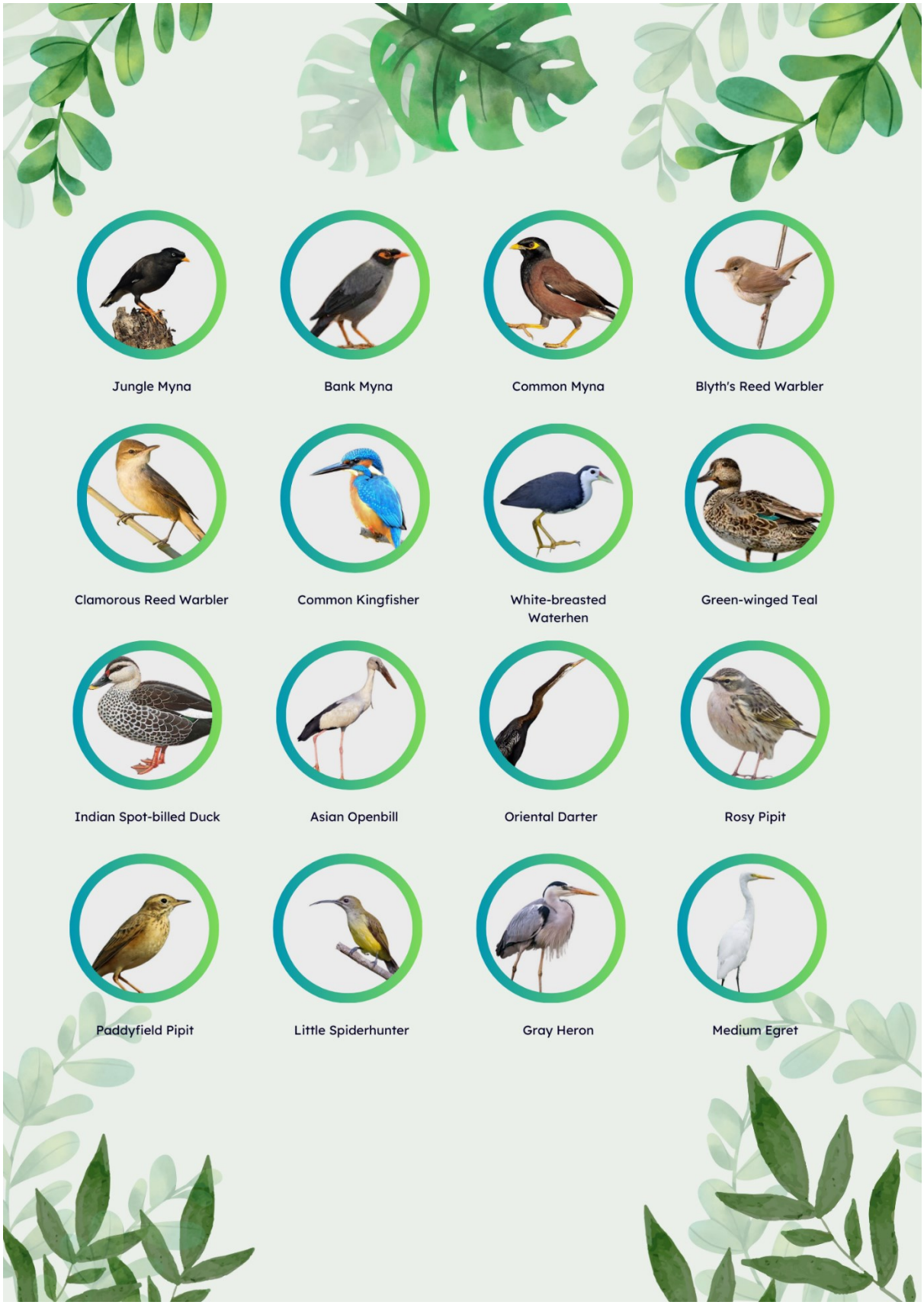


Figure 5A: Bird species of ASTU Campus.

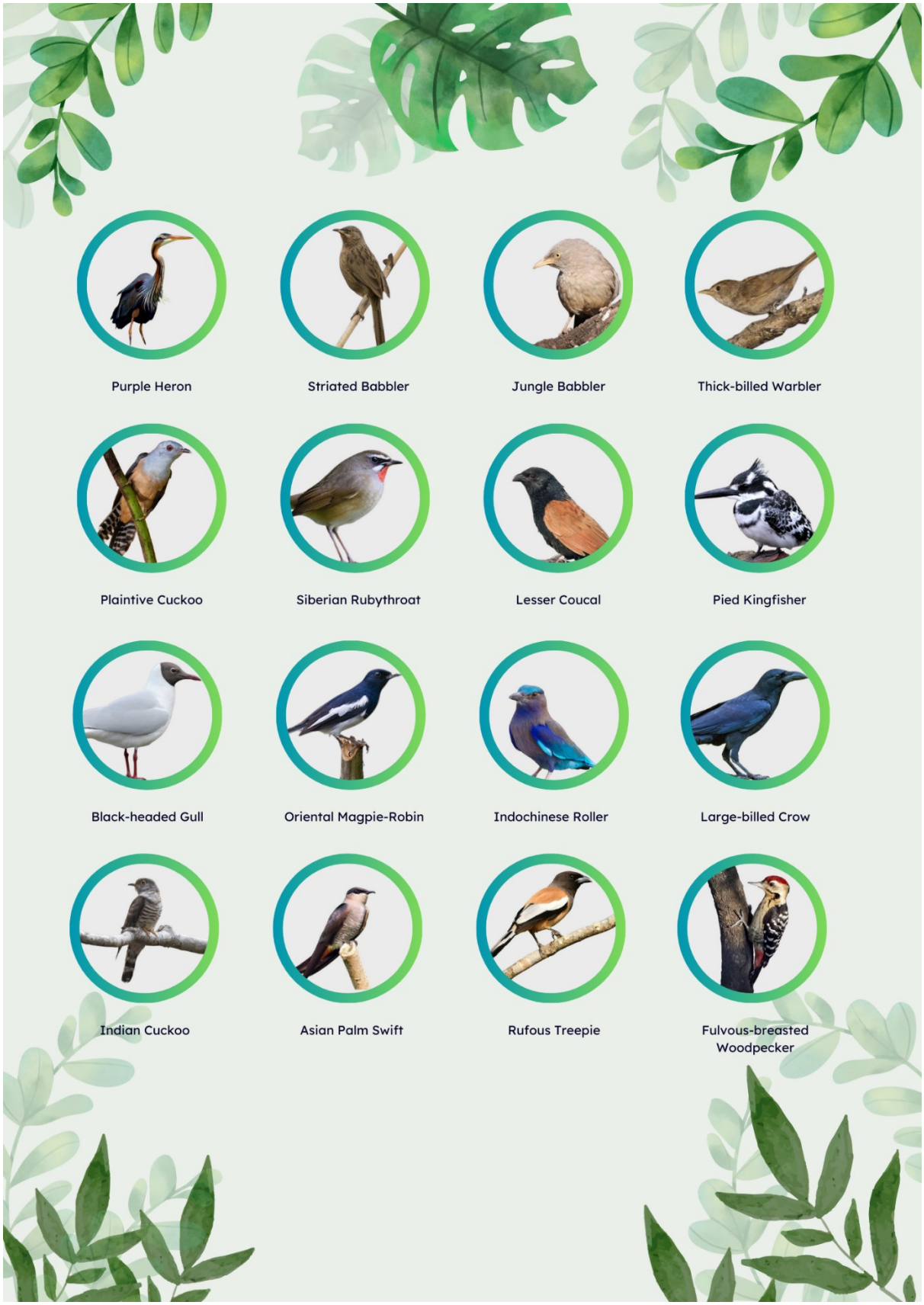


Figure 5B: Bird species of ASTU Campus.

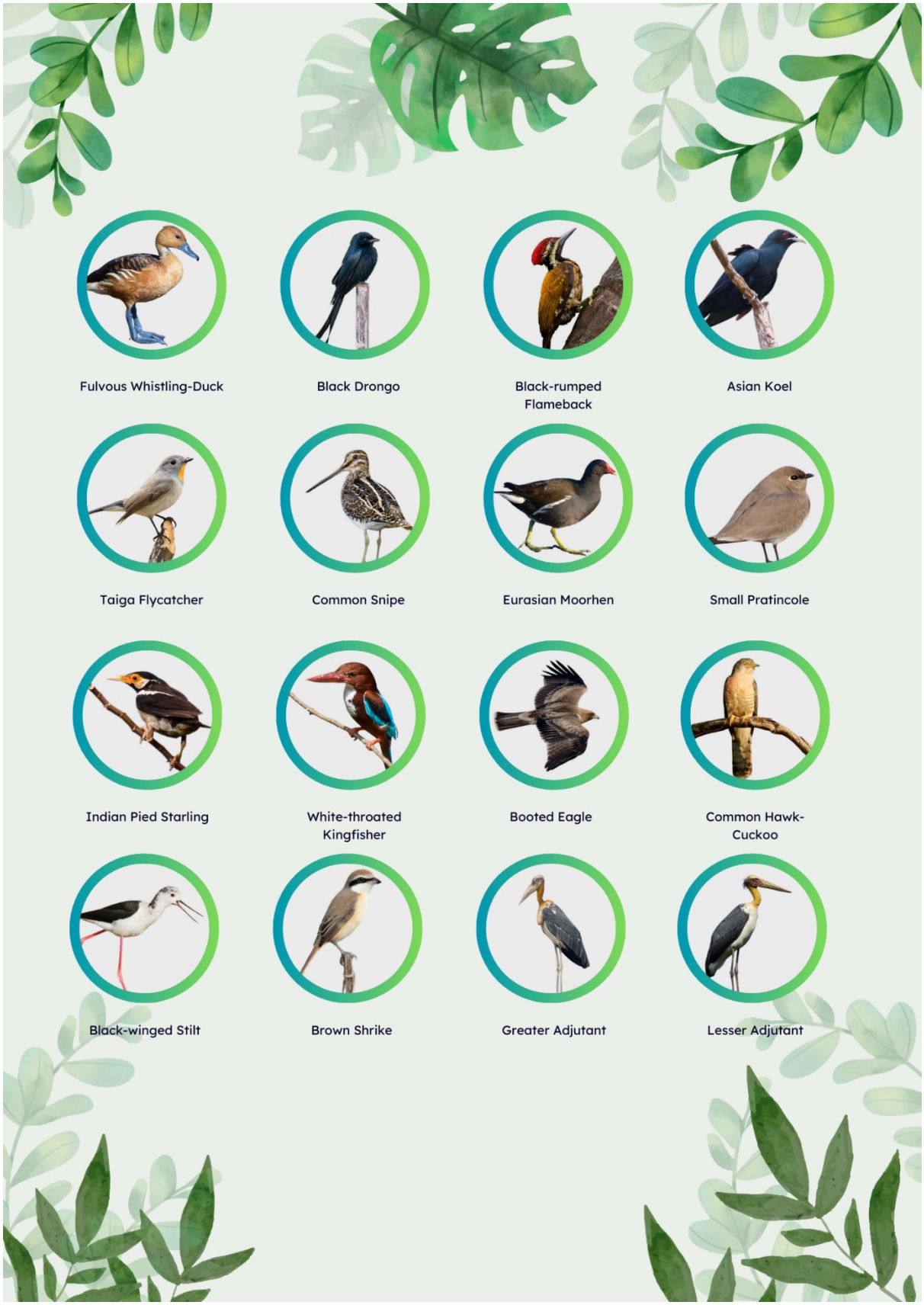


Figure 5C: Bird species of ASTU Campus.

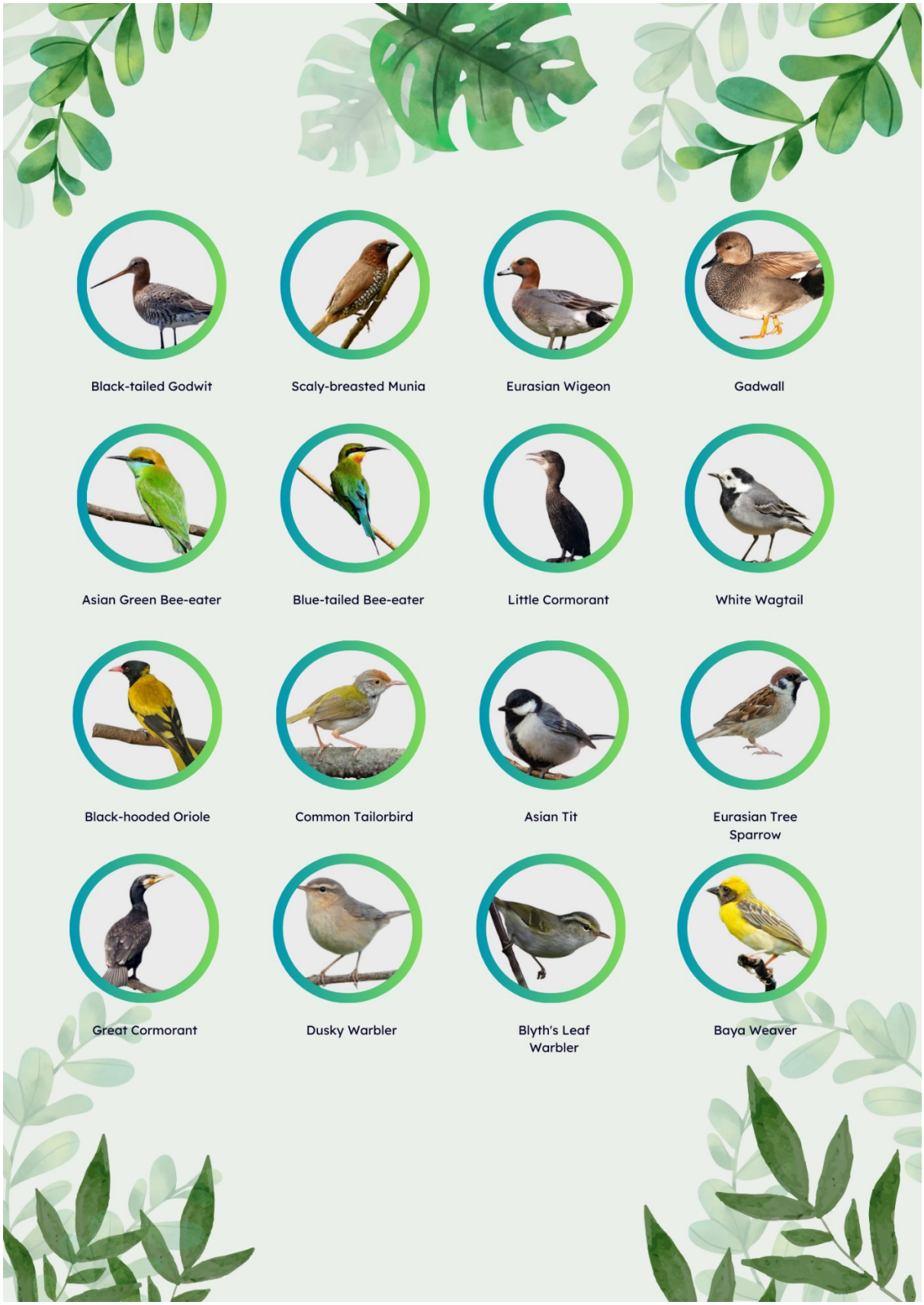


Figure 5D: Bird species of ASTU Campus.

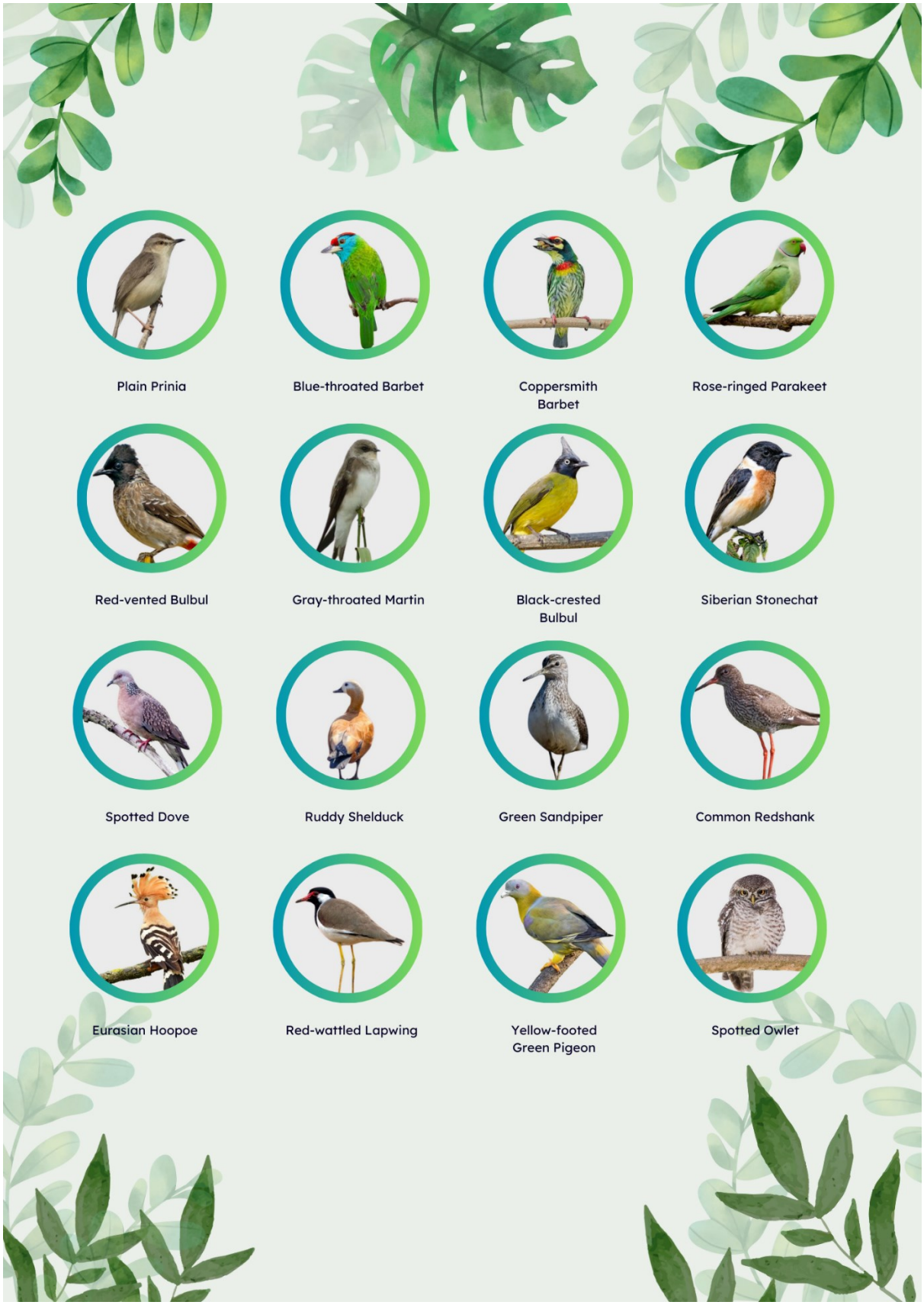


Figure 5E: Bird species of ASTU Campus.

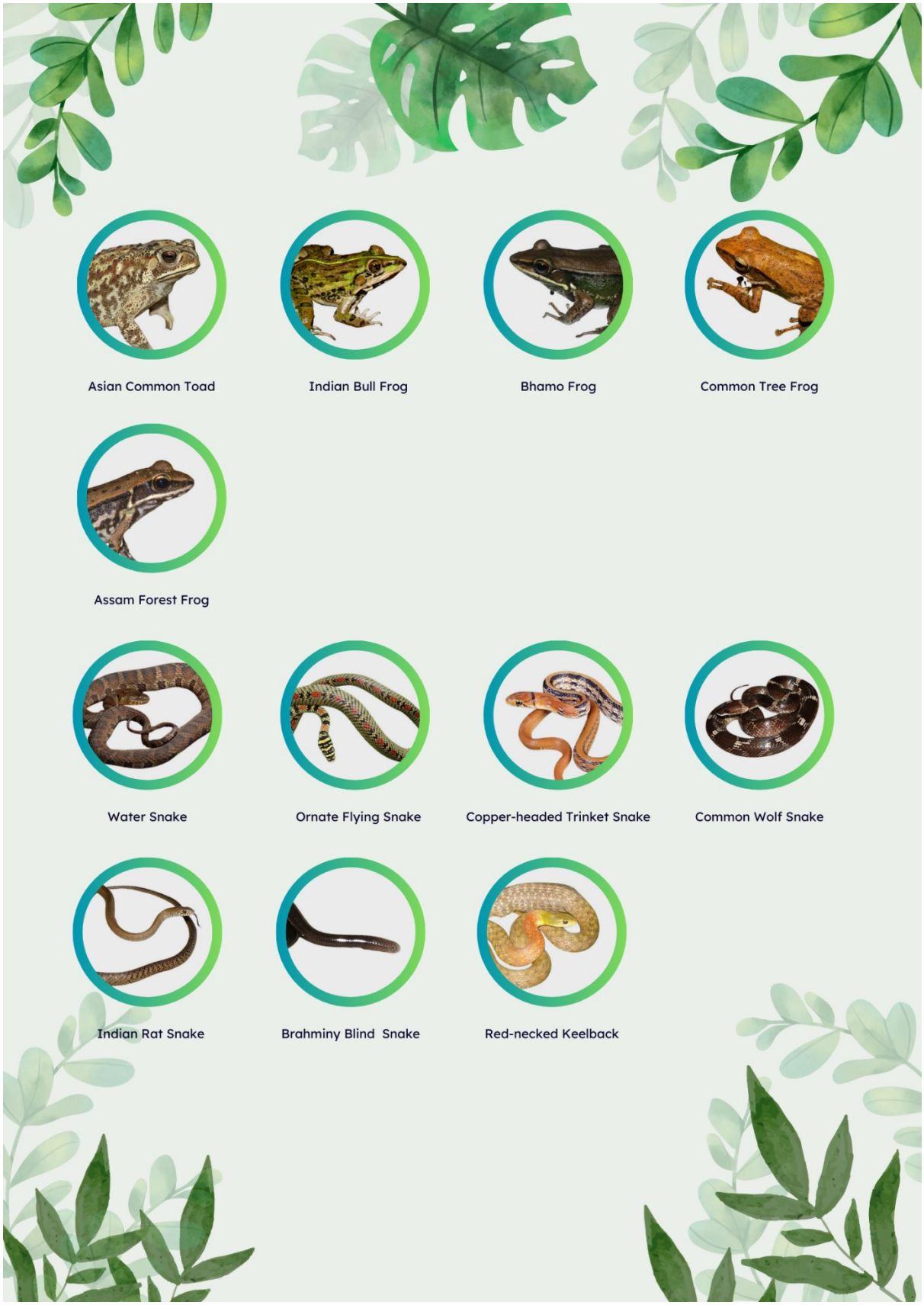


Figure 6: Amphibian and Snake species of ASTU Campus.

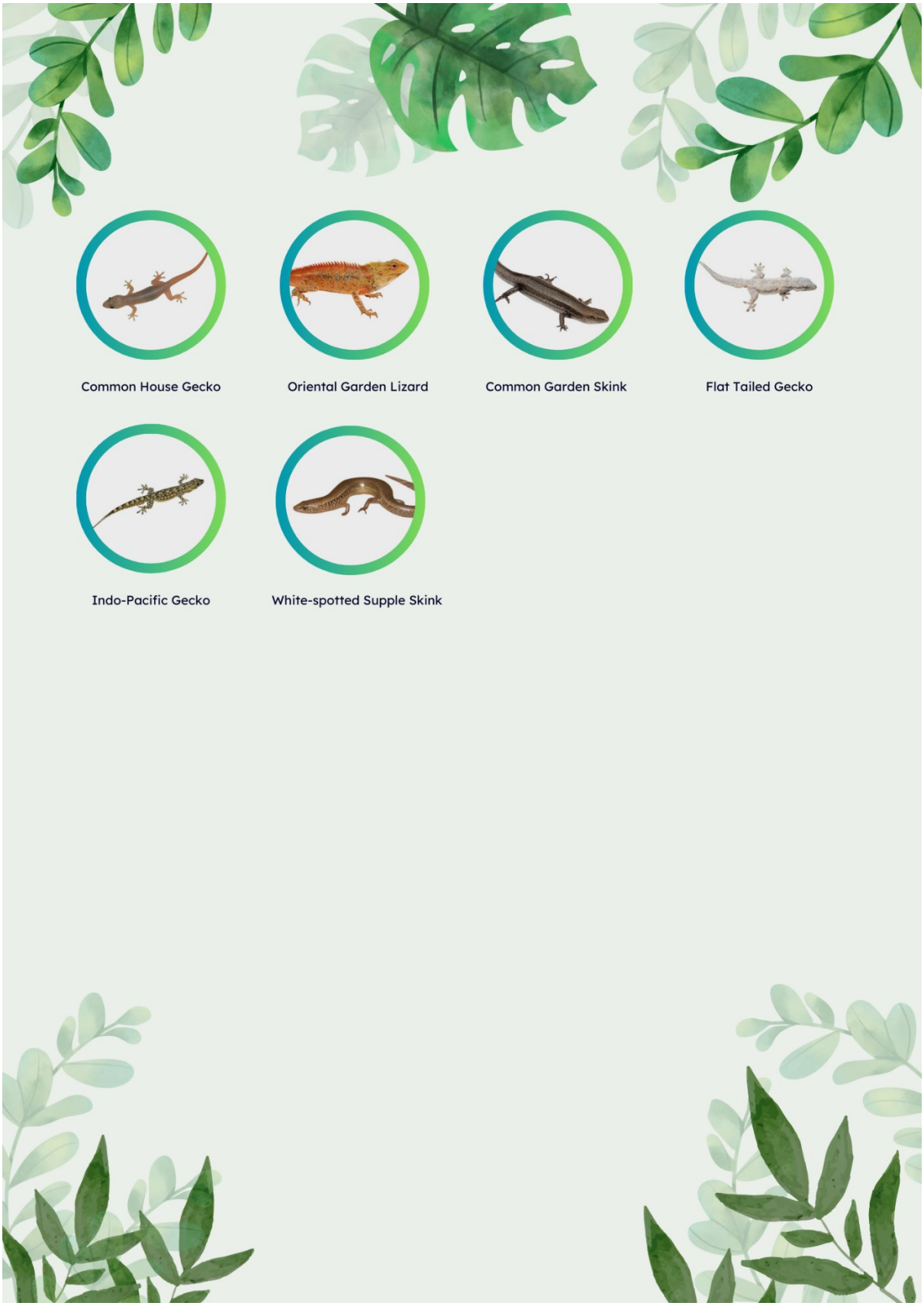


Figure 7: Lizard species of ASTU Campus.

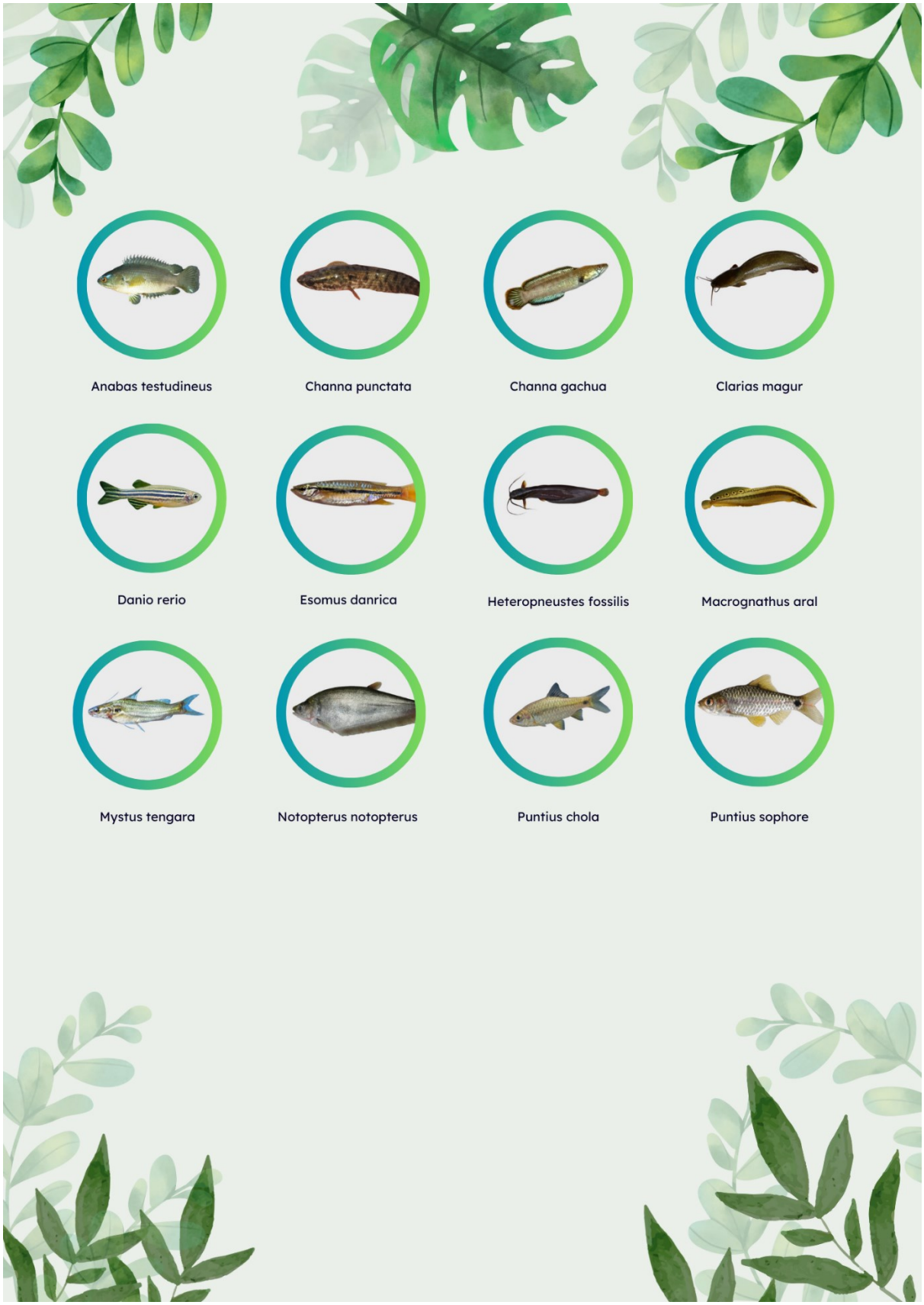


Figure 8: Fish species of ASTU Campus.

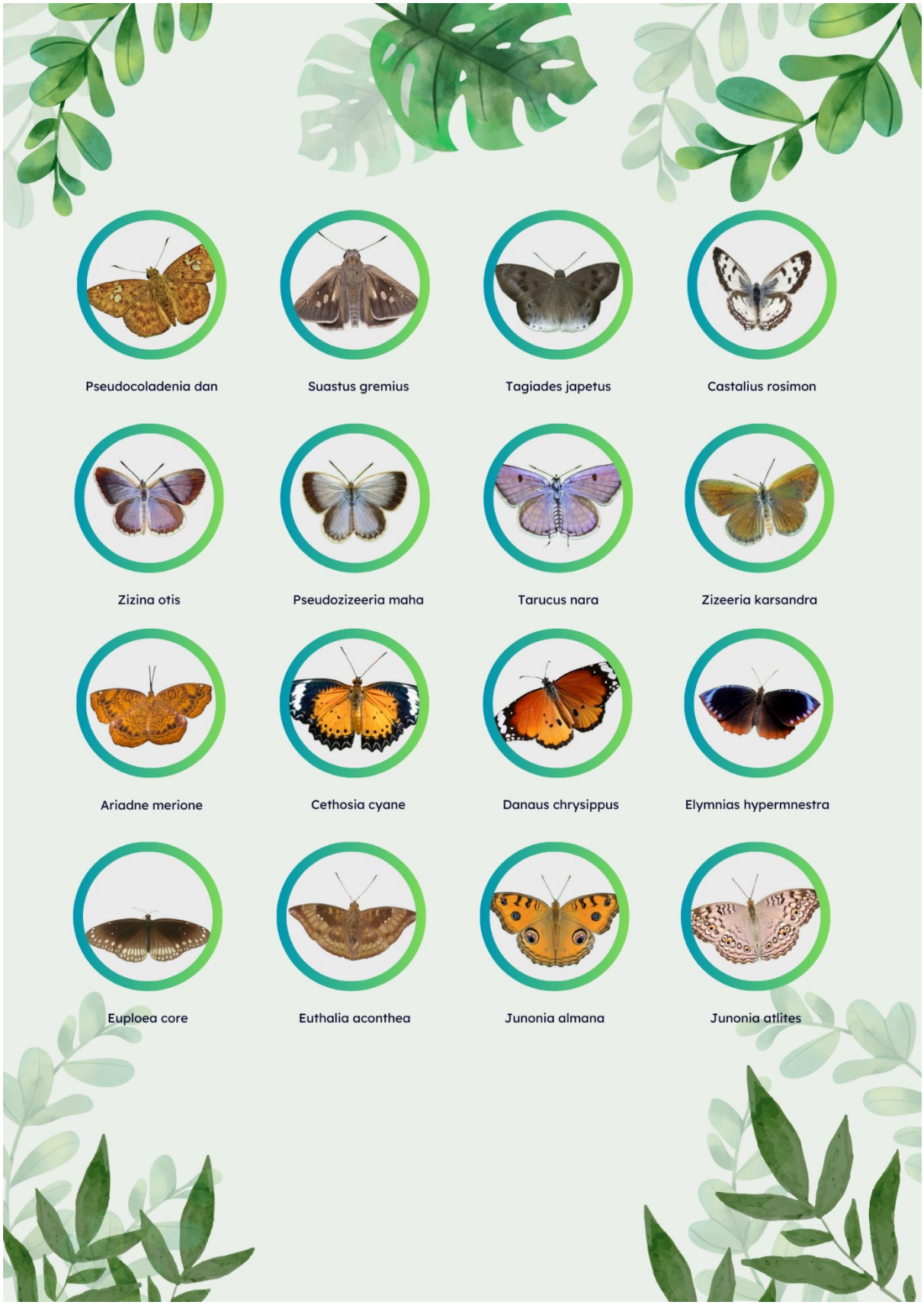


Figure 9A: Butterfly species of ASTU Campus.

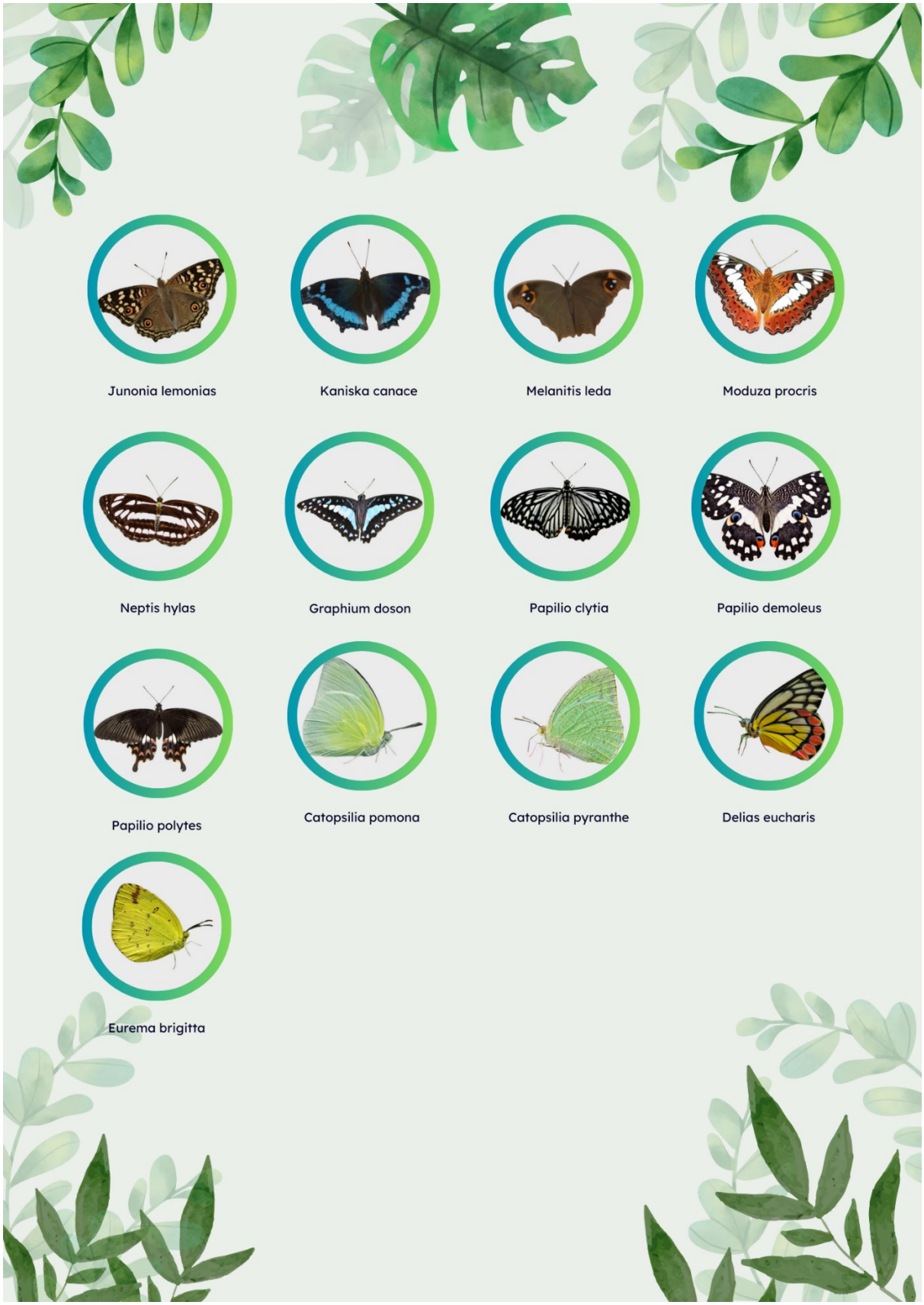


Figure 9B: Butterfly species of ASTU Campus.

GREEN POLICY 2024

(Adopted by Assam Science and Technology University)

Assam Science and Technology University (ASTU) is committed to fostering a sustainable and environmentally conscious campus through the adoption and implementation of a comprehensive Green Policy. This policy serves as a guideline for promoting environmental sustainability in all aspects of the university's operations, academics, and community engagement.

Key Objectives

Resource Optimization: Minimize the consumption of natural resources such as water, energy, and raw materials.
Biodiversity Conservation: Protect and enhance the campus green cover and natural habitats.
Waste Management: Implement effective waste reduction, recycling, and disposal systems.
Energy Efficiency: Transition to renewable energy sources and energy-efficient technologies.
Sustainability in Education: Integrate environmental education into academic programs and research initiatives.
Awareness and Engagement: Foster environmental awareness and sustainable practices among students, staff, and the surrounding community.

Core Principles of ASTU's Green Policy

1. Sustainable Infrastructure Development

- Encourage the use of eco-friendly construction materials.
- Design energy-efficient academic and administrative buildings.
- Maintain and expand green spaces, including gardens and tree plantations.

2. Water Conservation

- Implement rainwater harvesting systems across the campus.
- Promote water recycling and reuse in campus operations.
- Minimize water wastage through awareness programs and efficient plumbing systems.

3. Energy Management

- Promote the use of renewable energy, such as solar power.
- Gradually replace conventional lighting with energy-efficient LED fixtures.
- Monitor and optimize energy consumption across campus facilities.

4. Waste Management

- Segregate waste at source into biodegradable, recyclable, and non-recyclable categories.
- Set up composting units for organic waste.
- Collaborate with certified agencies for safe disposal of e-waste and hazardous materials.

5. Biodiversity Conservation

- Protect existing flora and fauna on campus.
- Increase tree plantation drives to enhance the green cover.
- Establish dedicated zones for biodiversity, such as butterfly gardens or herbal plantations.

6. Transportation Policy

- Promote eco-friendly transportation, including bicycles and electric vehicles.
- Restrict the use of private vehicles on campus to reduce carbon emissions.
- Introduce shuttle services or carpooling for staff and students.

7. Awareness and Education

- Conduct workshops, seminars, and campaigns on environmental sustainability.
- Integrate sustainability topics into the curriculum and encourage green research initiatives.
- Celebrate environmental days like Earth Day and World Environment Day with active participation from the university community.

8. Monitoring and Compliance

- Establish a Green Campus Committee to oversee the implementation and monitoring of the Green Policy.
- Conduct periodic Green Audits to evaluate and improve the campus's environmental performance.
- Ensure compliance with environmental regulations and standards.

Expected Outcomes

- A significant reduction in the university's ecological footprint.
- Enhanced awareness and adoption of sustainable practices among students and staff.
- Improved energy and resource efficiency across campus operations.
- Recognition as a model green campus in the region.

Through this Green Policy, ASTU aims to lead by example in fostering sustainability and environmental stewardship, inspiring not just the university community but also the broader society to contribute to a greener future.