



HAJEE KARUTHA ROWTHER HOWDIA COLLEGE

(An Autonomous Institution Affiliated to Madurai Kamaraj University)

(Reaccredited with A++ Grade by NAAC)

Uthamapalayam - 625533, Theni District



**Miyawaki Biodiversity Forest –
An Environmental Impact Assessment (EIA) Report**
“A Biodiversity-Based Post-Implementation Assessment”

January 2026

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An Environmental Impact Assessment (EIA) Report**
“A Biodiversity-Based Post-Implementation Assessment”

(An Institutional Environmental Impact Assessment Report)



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“A Biodiversity-Based Post-Implementation Assessment”

Abstract

The Miyawaki Biodiversity Forest established at Hajee Karutha Rowther Howdia College, Uthamapalayam, represents a campus-based ecological restoration initiative aimed at enhancing biodiversity, improving environmental quality, and promoting sustainable practices in a semi-urban landscape. Implemented using the Miyawaki afforestation method, the initiative focuses on restoring native vegetation structure and facilitating the development of a self-sustaining forest ecosystem on previously degraded land within the college campus.

This Environmental Impact Assessment (EIA) report presents a systematic evaluation of faunal diversity associated with the Miyawaki forest based on field surveys and checklist-based observations carried out between July 2025 and December 2025. The study documented a total of 226 faunal species, predominantly insect fauna, indicating rapid habitat formation and early stages of ecosystem stabilisation. The presence of diverse functional groups reflects the establishment of ecological interactions essential for a stable forest ecosystem.

The initiative aligns with the institutional vision and sustainability goals of Hajee Karutha Rowther Howdia College, emphasising environmental stewardship, social responsibility, and experiential learning. In addition to biodiversity enhancement, the Miyawaki forest contributes to ecosystem services such as microclimate regulation, soil enrichment, and environmental awareness. The findings highlight the potential of campus-based Miyawaki forests as effective models for ecological restoration and institutional best practices under NAAC Metric 7.

Keywords: *Miyawaki forest; Biodiversity assessment; Ecological restoration; Habitat conservation; Environmental sustainability; Institutional green initiatives.*

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1. Introduction

Hajee Karutha Rowther Howdia College, an autonomous institution affiliated to Madurai Kamaraj University and re-accredited with **A++ Grade by NAAC (3rd Cycle)**, has consistently upheld a value-based approach to higher education that integrates academic excellence with social responsibility and environmental consciousness. Since its establishment in 1956 as the first rural college in the erstwhile Madurai district, the institution has played a pivotal role in extending quality education to students from rural, agrarian, minority, and economically disadvantaged backgrounds.

The college campus, spread across **25 acres in a semi-urban location at Uthamapalayam in the Cumbum Valley**, is situated in an ecologically and agriculturally sensitive region. The livelihood of the local community is closely linked with environmental stability, availability of natural resources, and sustainable land use. In recent years, increasing anthropogenic pressures such as reduction in green cover, habitat alteration, and climatic variability have underscored the need for institutional interventions that promote environmental sustainability and ecological resilience.

In alignment with national priorities on sustainable development and environmental protection, the college has adopted a proactive approach to campus ecology through structured green initiatives. Environmental sustainability at Hajee Karutha Rowther Howdia College is not treated as a peripheral activity but as an integral component of institutional planning, governance, and best practices. The institution recognises that higher education institutions have a critical role in modelling environmentally responsible behaviour, fostering awareness among students, and contributing meaningfully to local ecological well-being.

Within this framework, the establishment of a **Miyawaki Biodiversity Forest inside the college campus** represents a significant institutional initiative under **Institutional Values and Best Practices (NAAC Metric 7)**. The initiative reflects a conscious shift from conventional plantation programmes towards a scientifically informed ecological restoration model. By allocating campus land and facilitating the development of a dense, native-species-based forest system, the college has demonstrated its commitment to sustainable campus development and long-term environmental stewardship.

The Miyawaki Biodiversity Forest initiative also reinforces the institution's **Vision and Mission**, which emphasise social responsibility, service orientation, and holistic development of students. The campus forest serves as a platform for experiential learning, environmental awareness, and value education, enabling students to engage directly with sustainability practices within their own learning environment. Such initiatives contribute to the cultivation of environmentally responsible citizens, in line with the broader goals of higher education.

This commitment to environmental stewardship is deeply rooted in the **visionary ideals of the Founder, Hajee Karutha Rowther**, whose philosophy centred on service to humanity and inclusive progress through education. His belief that education should contribute to societal betterment continues to guide the institution's policies and practices. The extension of this service ethos towards environmental conservation reflects the evolving interpretation of the Founder's vision in the context of contemporary sustainability challenges. This Environmental Impact Assessment focuses on post-implementation biodiversity outcomes, using faunal diversity as an indicator of ecological restoration and environmental impact.

The present documentation of the Miyawaki Biodiversity Forest forms part of the institution's effort to systematically record, evaluate, and showcase its environmental initiatives under NAAC's quality framework. By embedding ecological restoration within campus planning and academic engagement, Hajee Karutha Rowther Howdia College exemplifies best practices in institutional responsibility towards environmental sustainability. The subsequent sections of this report present the scientific assessment and ecological observations associated with this initiative, thereby demonstrating outcome-based implementation of institutional values.

“The foresight of the Founder, Hajee Karutha Rowther—who believed that service to humanity and progress through education were inseparable—continues to guide the institution in extending this service to nature itself.”

2. Background and Rationale

The Miyawaki method is a scientifically established afforestation technique that promotes dense, mixed plantations of native species, thereby replicating the structural and functional complexity of natural forest ecosystems. By encouraging rapid vegetation growth and multilayered forest formation, the method has been widely recognised for its effectiveness in restoring degraded or barren land within relatively short time frames. Such restoration approaches are particularly relevant in human-modified landscapes, where space constraints necessitate efficient and ecologically sound interventions.

Hajee Karutha Rowther Howdia College is located within an intensive agricultural zone of the Cumbum Valley, where ecological stability plays a crucial role in sustaining agricultural productivity and environmental health. Maintaining local ecological balance and strengthening carbon sinks are therefore essential not only from an environmental perspective but also for supporting sustainable agricultural systems in the surrounding region. Recognising this interdependence between ecological integrity and human livelihoods, the institution envisaged the creation of a self-sustaining forest ecosystem within its campus.

Accordingly, on 2 November 2022, the Department of Economics, in collaboration with Nansei Arakkattalai (NGO), Uthamapalayam, formally established the Miyawaki Initiative (Biodiversity Forest) inside the college campus. The Management allocated two acres of land, supported by a drip irrigation system, to facilitate the development of a multilayered forest ecosystem. A total of 1,100 saplings representing 75 native plant species were planted as part of this initiative, with the intention of fostering natural ecological processes and supporting long-term environmental sustainability within the campus landscape.

3. Methodology

3.1 Study Design and Approach

A scientific biodiversity assessment was undertaken to evaluate faunal colonisation and ecosystem development within the Miyawaki forest.

- The study was conducted by **Ms. M. Nameera (Reg. No.: 24PZY04), II M.Sc. Zoology**
Under the guidance of **Dr. M. Ashiq Ur Rahman, Assistant Professor of Zoology & Approved Ph.D. Research Guide, Madurai Kamaraj University**
- Study Period: July 2025 – December 2025
- Study Area: Miyawaki forest patch within the college campus
- Methods Employed:
 - Systematic field surveys
 - Periodic direct observations
 - Checklist method for faunal documentation

Observations were carried out across different times of the day and seasons to record maximum species presence, with emphasis on naturally colonising fauna rather than introduced organisms.

4. Biodiversity Overview

Systematic faunal surveys conducted within the Miyawaki Biodiversity Forest recorded a total of 226 faunal species, with insects constituting the predominant group. The documented diversity reflects the successful utilisation of the restored area by a wide range of organisms and indicates the emergence of a biologically active habitat within the campus landscape.

The faunal assemblage comprises species occupying different spatial niches, including ground-level, shrub-associated, and canopy-linked forms, suggesting structural heterogeneity within the forest. Such diversity in spatial use points to the availability of varied habitat features that accommodate species with differing ecological requirements.

The presence of both widely distributed and habitat-associated taxa suggests a transitional phase in biodiversity development, where newly established habitats support early colonisers while progressively becoming suitable for more specialised species. From a biodiversity assessment perspective, this pattern is indicative of a developing ecological system rather than a static plantation.

Overall, the recorded faunal diversity provides a baseline reference for future ecological monitoring and comparative studies. The findings establish the Miyawaki Biodiversity Forest as an emerging biodiversity unit within a semi-urban campus environment, capable of supporting continued faunal colonisation over time.

5. Key Findings: Biodiversity Establishment

A total of **226 faunal species** were documented from the Miyawaki Biodiversity Forest during the study period. The recorded fauna comprised **136 insect species, 56 species of moths and butterflies, 26 bird species, 6 reptile species, and 2 rodent species**, reflecting the early establishment of diverse faunal guilds across multiple trophic levels within the restored habitat.

5.1 Faunal Groups Documented (Table 1)

Insects (pollinators, decomposers, and herbivores), birds (foraging, perching, and nesting visitors), reptiles (microhabitat users), and small mammals (opportunistic habitat users, where observed) were documented during the study. The predominance and diversity of insect fauna reflect early faunal colonisation and favourable microhabitat conditions. The presence of avian species further confirms the availability of food resources and structural shelter, collectively indicating progressive development of a functionally supportive habitat.

Table 1: Faunal Diversity Recorded in the Miyawaki Biodiversity Forest of Hajee Karutha Rowther Howdia College, Uthamapalayam (July–December 2025)

S.NO.	PHYLA / GROUP	COMMON NAME	SCIENTIFIC NAME	IUCN
1	Platyhelminthes	Hammerhead worm	<i>Bipalium kewense</i>	NE
2	Millipedes (Arthropoda)	Yellow spotted millipede	<i>Harpaphe haydeniana</i>	NL
3		Yellow banded millipede	<i>Anadenobolus monilicornis</i>	NE
4		Portuguese millipede	<i>Ommatoiulus moreletii</i>	N/A
5		Green marsh hawk	<i>Orthetrum sabina</i>	LC
6	Insects (Arthropoda)	Scarlet dragonfly	<i>Crocothemis erythraea</i>	LC
7		Crimson tailed marsh hawk	<i>Orthetrum pruinosum</i>	LC
8		Chalky percher	<i>Diplacodes trivialis</i>	LC
9		Coromandel marsh dart	<i>Ceriagrion coromandelianum</i>	LC
10		Tropical bluetail Damselfly	<i>Ischnura senegalensis</i>	LC
11		Short - horned gaudy grasshopper	<i>Neorthacris simulans</i>	N/A
12		Grouse locust	<i>Tettigidea lateralis</i>	N/A
13		Blue winged grasshopper	<i>Oedipoda caeruleascens</i>	LC
14		Little clown grasshopper	<i>Pirithoicus ophthalmicus</i>	DD
15		Boll's grasshopper	<i>Spharagemon bolli</i>	NL
16		Carolina grasshopper	<i>Dissosteira carolina</i>	LC
17		Gray bird grasshopper	<i>Schistocerca nitens</i>	NE
18		Grass hopper	<i>Brachystola magna</i>	NE
19		Egyptian grasshopper	<i>Anacridium aegyptium</i>	LC
20		Grass hopper	<i>Oedaleus infernalis</i>	NE
21		Pallid winged grasshopper	<i>Trimerotropis pallidipennis</i>	N/A
22		Band winged grasshopper	<i>Chortophaga viridifasciata</i>	N/A

S.NO.	PHYLA / GROUP	COMMON NAME	SCIENTIFIC NAME	IUCN
23	Insects (Arthropoda)	Cattail toothpick grasshopper	<i>Leptysma marginicollis</i>	LC
24		Oriental longheaded grasshopper	<i>Acrida cinerea</i>	NE
25		Grass hopper	<i>Patanga japonica</i>	NE
26		Southern sickle bush cricket	<i>Phaneroptera nana</i>	LC
27		Bush cricket	<i>Sathrophyllia rugosa</i>	NE
28		Common trig cricket	<i>Trigonidium cicindeloides</i>	NT
29		Stick insect	<i>Carausius morosus</i>	NL
30		Cuban cockroach	<i>Panchlora nivea</i>	NE
31		Amber wood cockroach	<i>Ectobius vittiventris</i>	N/A
32		Praying mantis	<i>Odontomantis planiceps</i>	NE
33		Madagascan marbled mantis	<i>Polyspilota aeruginosa</i>	N/A
34		Rose leafhopper	<i>Edwardsiana rosae</i>	NE
35		Rice ear bug	<i>Leptocorisa oratorius</i>	NL
36		Brown marmorated stink bug	<i>Halyomorpha halys</i>	NL
37		Green stink bug	<i>Chinavia hilaris</i>	N/A
38		Southern green stink bug	<i>Nezara viridula</i>	N/A
39		Red cotton stainer bug	<i>Dysdercus cingulatus</i>	NL
40		Box bug	<i>Gonocerus acuteanglatus</i>	NE
41		Eggplant horned planthopper	<i>Leptocentrus taurus</i>	NE
42		Leafhopper	<i>Empoasca onukii</i>	NE
43		Planthopper	<i>Nilaparvata lugens</i>	N/A
44		Assassin bug	<i>Zelus luridus</i>	N/A
45		Kissing bug	<i>Triatoma infestans</i>	N/A
46		North American wheel bug	<i>Arilus cristatus</i>	NL
47		Mealybug	<i>Planococcus citri</i>	N/A
48		Green jewel beetle	<i>Chrysocoris stolli</i>	N/A
49		Thorn bug	<i>Umbonia crassicornis</i>	NE
50		Brown water scorpion	<i>Ranatra fusca</i>	NE
51		Antlion	<i>Distoleon tetragrammicus</i>	N/A
52		Red pumpkin beetle	<i>Aulacophora foveicollis</i>	NL
53		Mexican beetle	<i>Zygogramma bicolorata</i>	NL
54		Blue mint beetle	<i>Chrysolina coerulans</i>	N/A
55		Netwinged beetle	<i>Calopteron terminale</i>	NL
56		Cereal leaf beetle	<i>Oulema melanopus</i>	NL
57		Weevil	<i>Calomycterus setarius</i>	NE
58		Ash weevil	<i>Myloccerus dorsatus</i>	N/A
59		Blisters beetle	<i>Hycleus polymorphus</i>	NE
60		Emerald ash borer	<i>Agrilus planipennis</i>	EN

S.NO.	PHYLA / GROUP	COMMON NAME	SCIENTIFIC NAME	IUCN
61	Insects (Arthropoda)	Longhorn beetle	<i>Coptops aedificator</i>	N/A
62		Bronze birch borer	<i>Agrilus anxius</i>	NE
63		Ten spotted ladybird larva	<i>Adalia decempunctata</i>	NE
64		Elder berry borer	<i>Desmocerus palliatus</i>	N/A
65		Long horn beetle	<i>Purpuricenus sanguinolentus</i>	NE
66		Japanese beetle	<i>Popillia japonica</i>	N/A
67		Flower chafer beetle	<i>Protaetia alboguttata</i>	NE
68		Click beetle	<i>Alaus oculatus</i>	N/A
69		Common red soldier beetle	<i>Rhagonycha fulva</i>	N/A
70		Mosquito	<i>Culex quinquefasciatus</i>	NL
71		Mosquito	<i>Aedes aegypti</i>	NL
72		Twin spot centurion	<i>Sargus bipunctatus</i>	NE
73		Black soldier fly	<i>Hermetia illucens</i>	NE
74		White barred soldier fly	<i>Oxycera morrisii</i>	LC
75		Flesh fly	<i>Sarcophaga carnaria</i>	NL
76		Stripe eyed flower fly	<i>Eristalinus taeniops</i>	LC
77		Big headed lagoon fly	<i>Eristalinus megacephalus</i>	NL
78		Oriental blue fly	<i>Chrysomya megacephala</i>	NL
79		Love bug	<i>Plecia nearctica</i>	NL
80		Dark edged bee fly	<i>Bombylius major</i>	N/A
81		Eye gnats	<i>Liohippелates pusio</i>	NL
82		Common house fly	<i>Musca domestica</i>	NE
83		Robber fly	<i>Promachus leoninus</i>	NE
84		Crane fly	<i>Limonia duplicata</i>	NL
85		Long legged fly	<i>Condylostylus siphon</i>	NL
86		Cabbage root fly	<i>Delia radicum</i>	NE
87		Tachinid fly	<i>Mintho rufiventris</i>	N/A
88		Tachinid fly	<i>Cylindromyia auriceps</i>	N/A
89		Banana stalk fly	<i>Nerius obscurus</i>	NE
90		Marsh fly	<i>Sepedon spinipes</i>	N/A
91	Moths (Arthropoda: Lepidoptera)	Hubner's wasp moth	<i>Amata huebneri</i>	NE
92		Male spongy moth	<i>Lymantria dispar</i>	EN
93		Castor moth	<i>Olepa ricini</i>	N/A
94		Passenger moth	<i>Dysgonia algira</i>	N/A
95		Giant Leopard moth caterpillar	<i>Hypercompe scribonia</i>	LC
96		Tiger moth caterpillar	<i>Pyrrharctia isabella</i>	NL
97		Sandalwood defoliator caterpillar	<i>Amata passalis</i>	NE
98		Garden webworm moth	<i>Achyra rantalis</i>	NL

S.NO.	PHYLA / GROUP	COMMON NAME	SCIENTIFIC NAME	IUCN
99	Moths (Arthropoda: Lepidoptera)	Beet webworm moth	<i>Spoladea recurvalis</i>	NE
100		Yellow stem borer	<i>Scirpophaga incertulas</i>	NL
101		Ruddy marsh skimmer	<i>Crocothemis servilia</i>	LC
102		Molly monkey moth	<i>Eupterote mollifera</i>	N/A
103		Dot lined angle moth	<i>Macaria abydata</i>	NE
104		Tobacco cutworm moth	<i>Spodoptera litura</i>	N/A
105		Small bird dropping moth	<i>Ponometia erastrioides</i>	NE
106		Impatiens hawkmoth caterpillar	<i>Theretra oldenlandiae</i>	NE
107	Butterflies (Arthropoda: Lepidoptera)	Common Grass yellow	<i>Eurema hecabe</i>	LC
108		Mottled emigrant	<i>Catopsilia pyranthe</i>	LC
109		Lemon emigrant butterfly	<i>Catopsilia pomona</i>	LC
110		Common gull butterfly	<i>Cepora nerissa</i>	LC
111		Large orange sulphur butterfly	<i>Phoebis agarithe</i>	NE
112		Four ring butterfly	<i>Ypthima huebneri</i>	LC
113		Common castor butterfly	<i>Ariadne merione</i>	NE
114		Lemon pansy butterfly	<i>Junonia lemonias</i>	LC
115		Chocolate pansy butterfly	<i>Junonia iphita</i>	NE
116		Yellow pansy butterfly	<i>Junonia hierta</i>	LC
117		Plain tiger butterfly	<i>Danaus chrysippus</i>	LC
118		Common crow butterfly	<i>Euploea core</i>	LC
119		Common evening brown butterfly	<i>Melanitis leda</i>	LC
120		Bush brown butterfly	<i>Mycalesis perseus</i>	NE
121		Common baron butterfly	<i>Euthalia aconthea</i>	LC
122		Tawny coster butterfly	<i>Acraea terpsicore</i>	VU
123		Danaid eggfly butterfly	<i>Hypolimnas misippus</i>	LC
124		Great eggfly butterfly	<i>Hypolimnas bolina</i>	NE
125		Blue tiger butterfly	<i>Tirumala limniace</i>	LC
126		Bamboo tree brown butterfly	<i>Lethe europa</i>	NL
127		Common mormon butterfly	<i>Papilio polytes</i>	VU
128		Swallow tail butterfly caterpillar	<i>Papilio cresphontes</i>	LC
129		Blue mormon butterfly	<i>Papilio polymnestor</i>	NE
130		Chinese banded swallowtail butterfly	<i>Papilio noblei</i>	N/A
131		Common rose butterfly	<i>Pachilopta aristolochiae</i>	LC
132		Common bluebottle butterfly	<i>Graphium sarpedon</i>	LC
133		Green spotted triangle butterfly	<i>Graphium agamemnon</i>	NE
134		Crimson rose butterfly	<i>Pachliopta hector</i>	LC
135		Tiny grass blue butterfly	<i>Zizula hylax</i>	LC
136		Common cerulean	<i>Jamides celeno</i>	LC

S.NO.	PHYLA / GROUP	COMMON NAME	SCIENTIFIC NAME	IUCN
137	Butterflies (Arthropoda: Lepidoptera)	Common guava blue butterfly	<i>Virachola isocrates</i>	NE
138		Powdered oakblue butterfly	<i>Arhopala bazalus</i>	N/A
139		Common pierrot butterfly	<i>Castalius rosimon</i>	LC
140		Red pierrot butterfly	<i>Talicerca nyseus</i>	NL
141		Lesser grass blue butterfly	<i>Zizina otis</i>	LC
142		Apefly	<i>Spalgis epius</i>	N/A
143		Asian grizzled skipper	<i>Spialia galba</i>	NE
144		African mallow skipper	<i>Gomalia elma</i>	LC
145		Rice swift	<i>Borbo cinnara</i>	LC
146		Common banded awl	<i>Hasora chromus</i>	NE
147		Fiery skipper	<i>Hylephila phyleus</i>	N/A
148		Ants, Bees and Wasps (Arthropoda: Hymenoptera)	Carpenter ant (Indian black ant)	<i>Camponotus compressus</i>
149	Bullet ant		<i>Paraponera clavata</i>	N/A
150	Weaver ant		<i>Oecophylla smaragdina</i>	NL
151	Colorado plume wasp		<i>Stenoptilia coloradensis</i>	NE
152	Blue spider wasp		<i>Auplopus comparatus</i>	NL
153	Orange spider wasp		<i>Cryptocheilus bicolor</i>	N/A
154	Rusty spider wasp		<i>Tachypompilus ferrugineus</i>	N/A
155	Red paper wasp		<i>Polistes canadensis</i>	NE
156	European hornet		<i>Vespa crabro</i>	N/A
157	Great potter wasp		<i>Delta unguiculatum</i>	LC
158	Blue mud dauber wasp		<i>Chalybion californicum</i>	NL
159	Smooth headed mummy wasp		<i>Aleiodes politiceps</i>	NE
160	Two spotted scoliid wasp		<i>Scolia dubia</i>	NL
161	Emerald Cockroach wasp		<i>Ampulex compressa</i>	NE
162	Blue banded bee		<i>Amegilla cingulata</i>	NL
163	Cuckoo bee		<i>Thyreus caeruleopunctatus</i>	N/A
164	Little bee		<i>Apis florea</i>	DD
165	Rock bee		<i>Apis dorsata</i>	NE
166	Indian bee		<i>Apis indica</i>	NT
167	Weevil wasp		<i>Cerceris nigrescens</i>	NE
168	Alkali bee		<i>Nomia melanderi</i>	NE
169	Tiphiid wasp		<i>Tiphia femorata</i>	NE
170	Scoliid wasp		<i>Liacos erythrosoma</i>	NE
171	Hairy flower wasp		<i>Halictus confusus</i>	NE
172	Ichneumon wasp		<i>Schizopyga circulator</i>	N/A
173	Great black wasp		<i>Sphex pensylvanicus</i>	LC
174	Great golden digger wasp		<i>Sphex ichneumoneus</i>	N/A

S.NO.	PHYLA / GROUP	COMMON NAME	SCIENTIFIC NAME	IUCN
175	Arachnida (Arthropoda)	Harvestman spider	<i>Phalangium opilio</i>	LC
176		Jumping ant spider	<i>Myrmarachne formicaria</i>	NE
177		Grey wall jumping spider	<i>Menemerus bivittatus</i>	LC
178		Two striped jumper spider	<i>Telamonia dimidiata</i>	NL
179		Flower jumping spider	<i>Attulus floricola</i>	NL
180		Jumping spider	<i>Carrhotus viduus</i>	NL
181		Brilliant jumping spider	<i>Phidippus clarus</i>	N/A
182		White banded jumping spider	<i>Hyllus semicupreus</i>	NE
183		Striped Lynx spider	<i>Oxyopes salticus</i>	NE
184		Green lynx spider	<i>Peucetia viridana</i>	NE
185		Fishing spider	<i>Dolomedes tenebrossus</i>	N/A
186		Signature spider	<i>Argiope anasuja</i>	N/A
187		spiny orb weaver	<i>Gasteracantha cancriformis</i>	DD
188		Mollusca	Tropical Leatherleaf slug	<i>Laevicaulis alte</i>
189	White garden snail		<i>Theba pisana</i>	NE
190	Lined Tree snail		<i>Drymaeus multilineatus</i>	NE
191	New Zealand mudsnail		<i>Potamopyrgus antipodarum</i>	LC
192	Pointed land snail		<i>Cochlicella barbara</i>	NE
193	Reptiles	Chameleon	<i>Chamaeleo chamaeleon</i>	LC
194		Garden skink	<i>Lampropholis delicata</i>	LC
195		Bronze grass skink	<i>Eutropis macularia</i>	LC
196		Oriental garden lizard	<i>Calotes versicolor</i>	LC
197		Indian rat snake	<i>Ptyas mucosa</i>	LC
198		Common cobra	<i>Naja naja</i>	LC
199	Birds	Common raven	<i>Agelaius phoeniceus</i>	LC
200		Myna	<i>Acridotheres tristis</i>	LC
201		Crow	<i>Corvus splendens</i>	LC
202		Jungle babbler	<i>Turdoides striata</i>	LC
203		Ashy Prinia	<i>Prinia socialis</i>	LC
204		Black drongo	<i>Dicrurus macrocercus</i>	LC
205		House sparrow	<i>Passer domesticus</i>	LC
206		Purple rumped sunbirds	<i>Leptocoma zeylonica</i>	LC
207		Large grey babbler	<i>Argya malcolmi</i>	LC
208		Yellow billed babbler	<i>Argya affinis</i>	LC
209		Pale billed flowerpecker	<i>Dicaeum erythrorhynchos</i>	LC
210		Red vented bulbul	<i>Pycnonotus cafer</i>	LC
211		Rufous treepie	<i>Dendrocitta vagabunda</i>	LC
212		Indian ring neck parrot	<i>Psittacula krameri</i>	LC

S.NO.	PHYLA / GROUP	COMMON NAME	SCIENTIFIC NAME	IUCN	
213	Birds	Great coucal	<i>Centropus sinensis</i>	LC	
214		Blue faced malkoha	<i>Phaenicophaeus viridirostris</i>	LC	
215		Common cuckoo	<i>Cuculus canorus</i>	LC	
216		Asian koel	<i>Eudynamys scolopaceus</i>	LC	
217		Indian roller	<i>Coracias benghalensis</i>	NT	
218		European bee eater	<i>Merops apiaster</i>	LC	
219		Blue tailed bee eater	<i>Merops philippinus</i>	LC	
220		Green bee eater	<i>Merops orientalis</i>	LC	
221		Common pigeon	<i>Columba livia</i>	LC	
222		Laughing dove	<i>Streptopelia senegalensis</i>	LC	
223		Grey francolin	<i>Francolinus pondicerianus</i>	LC	
224		Black winged kite	<i>Elanus caeruleus</i>	LC	
225		Mammals	Indian palm squirrel	<i>Funambulus palmarum</i>	LC
226			Indian hare	<i>Lepus nigricollis</i>	LC

IUCN Abbreviations: LC – Least Concern; NT – Near Threatened; VU – Vulnerable; EN – Endangered; DD – Data Deficient; NE – Not Evaluated; NL – Not Listed; N/A – Not Assessed.

Note: The checklist includes both native and widely distributed species recorded during field observations, reflecting natural faunal occurrence rather than intentional introduction.

6. Ecological Significance of Miyawaki Forests

- Miyawaki forests are ecologically significant due to their capacity to accelerate secondary ecological succession, enabling degraded or modified landscapes to transition towards structurally complex forest systems within a relatively short period.
- The use of dense, mixed plantations of native species representing multiple forest layers closely mimics natural forest stratification, enhancing both vertical and horizontal habitat complexity.
- Such structural complexity promotes the formation of diverse microhabitats, including shaded understory zones, leaf-litter-rich ground layers, and variable light environments within the canopy, which are essential for supporting ecological diversity.
- Unlike conventional monoculture plantations, Miyawaki forests encourage natural competitive and cooperative interactions among plant species, leading to self-regulation, natural thinning, and adaptive structural development over time.
- The rapid establishment of vegetation complexity facilitates the early development of ecological interactions across multiple trophic levels, contributing to internal system regulation and ecological balance.
- Miyawaki forests exhibit increased ecosystem stability and resilience, enabling them to withstand environmental fluctuations and disturbances with minimal external intervention.
- Even when established on limited land areas, Miyawaki forests function as ecological nuclei within semi-urban and fragmented landscapes, supporting biological continuity and enhancing overall landscape-level ecological integrity.
- Overall, the ecological significance of Miyawaki forests lies in their ability to replicate key attributes of natural forests, making them an effective and scientifically grounded approach to ecological restoration in space-constrained environments.

7. Indicator Species and Habitat Health

- Indicator species are organisms whose presence, absence, or relative abundance provides insights into the ecological condition and quality of a habitat, making them valuable tools in environmental assessment and monitoring.
- The occurrence of butterflies and moths within the Miyawaki Biodiversity Forest indicates the availability of suitable host plants and nectar resources, reflecting adequate vegetation diversity and habitat suitability.
- Ant species serve as important indicators of soil condition and habitat structure, as their nesting and foraging activities are closely linked to soil stability, organic matter availability, and microhabitat complexity.
- Spiders function as key predatory indicators within terrestrial ecosystems, and their presence suggests the availability of prey species and the establishment of balanced predator–prey interactions within the habitat.
- Decomposer-associated fauna reflect the development of organic matter accumulation and the initiation of biological decomposition processes essential for sustaining terrestrial ecosystems.
- The dominance of species classified under the Least Concern (LC) category indicates that the habitat is capable of supporting species that are sensitive to environmental disturbance, thereby suggesting a relatively stable and non-stressed ecological condition.
- The combined presence of pollinators, predators, and decomposer-associated organisms demonstrates the functional completeness of the habitat, where multiple ecological roles are represented.
- Overall, the indicator species recorded from the Miyawaki Biodiversity Forest provide biological evidence of improving habitat health and form a reliable basis for long-term ecological monitoring and assessment.

8. Ecological Impact and Ecosystem Services

The Miyawaki forest has demonstrably progressed from plantation to functioning ecosystem, providing multiple ecological services:

8.1. Biodiversity Conservation

- Creation of a habitat centre for flora and fauna
- Attraction of native and beneficial species
- Enhancement of local species richness

8.2. Climate Regulation

- Increased carbon sequestration potential due to dense planting
- Microclimate moderation within the campus
- Contribution to climate change mitigation efforts

8.3. Soil and Hydrological Benefits

- Improvement in soil structure and organic matter
- Reduced erosion and improved moisture retention
- Enhanced groundwater recharge potential

8.4. Educational and Research Value

- Living laboratory for students and researchers
- Field-based learning in ecology, zoology, and environmental science
- Long-term monitoring opportunities
- Supports NAAC Metric 7 documentation

9. Institutional Alignment and Sustainability Vision

The initiative aligns seamlessly with the institution's Vision and Mission, which emphasise social responsibility, service, and inclusive development. By integrating ecological restoration into its campus development, the college reinforces its role as a responsible educational institution serving rural and under-privileged communities.

This biodiversity forest also strengthens the institution's **Corporate Social Responsibility (CSR), Environmental, Social, Governance (ESG)**, and sustainability commitments, demonstrating how academic institutions can actively contribute to environmental restoration while fostering scientific research and awareness.

This initiative is aligned with Criterion VII (Institutional Values and Best Practices), particularly Clause 7.1 on environmental sustainability and biodiversity conservation, as outlined in the NAAC Manuals for Autonomous Colleges.

10. CSR / Sustainability Angle

The Miyawaki initiative represents the institution's commitment to **environmental responsibility beyond academics**. By restoring ecosystems, promoting biodiversity, and integrating sustainability into education, the college actively contributes to regional ecological well-being and climate action—reflecting responsible citizenship in higher education.

11. Conclusion and Future Outlook

- The Miyawaki Biodiversity Forest established at Hajee Karutha Rowther Howdia College represents a successful example of campus-based ecological restoration, demonstrating how degraded or underutilised land can be transformed into a biologically active natural space through informed intervention.
- The outcomes documented in this assessment highlight the effectiveness of the Miyawaki approach in facilitating habitat development within a limited spatial and temporal framework, reinforcing its suitability for institutional and semi-urban environments.
- Continued and periodic biodiversity monitoring is essential to track long-term ecological trends, species turnover, and habitat maturation, thereby strengthening the scientific value of the initiative.
- The forest is envisioned to evolve into a permanent biodiversity reservoir within the campus, contributing to ecological continuity and supporting faunal persistence over time.
- From an academic perspective, the Miyawaki forest offers sustained opportunities for research, field-based learning, and student projects, fostering interdisciplinary engagement in ecological and environmental studies.
- The initiative is expected to play an important role in environmental awareness and value education, encouraging students to develop a deeper understanding of ecological responsibility and sustainability.
- In the long term, the Miyawaki Biodiversity Forest may serve as a demonstration model for similar institutions seeking to integrate ecological restoration into campus planning and sustainability initiatives.
- Overall, the project reflects the institution's enduring commitment to environmental stewardship and provides a foundation for future conservation-oriented actions aligned with sustainable development goals.

12. Summary

The Miyawaki Biodiversity Forest established at Hajee Karutha Rowther Howdia College, Uthamapalayam, represents a purposeful institutional initiative aimed at integrating ecological restoration into campus development. Established in 2022, the forest has transformed previously degraded campus land into a native vegetation system through the application of the Miyawaki afforestation method. Developed across an area of approximately two acres with the planting of over 1,100 native saplings, the initiative reflects a structured and scientifically informed approach to enhancing green cover within a semi-urban educational setting.

Beyond landscape enhancement, the Miyawaki Biodiversity Forest functions as an evolving natural space that supports biodiversity development and contributes to environmental resilience within the campus. The initiative provides a platform for academic engagement, facilitating field-based learning, ecological observation, and research activities for students and faculty. By embedding sustainability practices within its physical and academic environment, the college demonstrates its commitment to environmental stewardship and responsible institutional governance. Overall, the Miyawaki Biodiversity Forest stands as a sustainable campus initiative that combines ecological restoration, education, and long-term environmental responsibility.

13. Acknowledgement

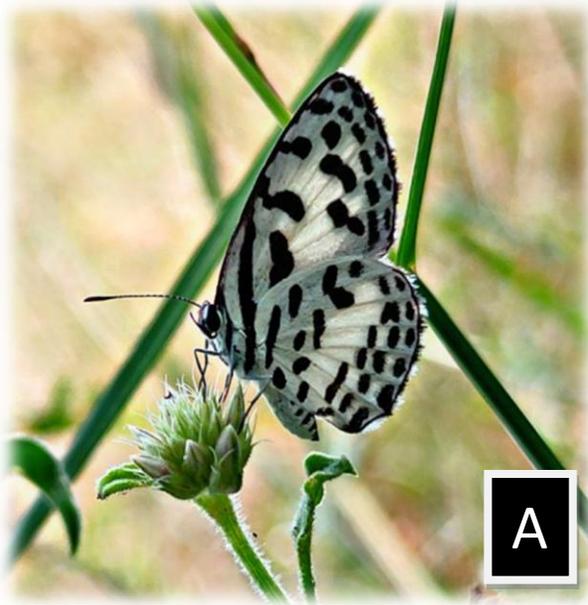
The author gratefully acknowledges the Management of Hajee Karutha Rowther Howdia College, Uthamapalayam, for providing institutional support and infrastructure for the establishment of the Miyawaki Biodiversity Forest. The author sincerely thanks the Principal of the college for providing the opportunity and encouragement to undertake this biodiversity-based environmental assessment. The guidance and facilitation extended by the IQAC Coordinator and Assistant IQAC Coordinators in aligning the initiative with institutional quality frameworks are duly recognised. The contributions of Ms. M. Nameera, II M.Sc., Zoology student, in conducting field surveys and documenting faunal observations are appreciatively acknowledged. The collaboration and support extended by the Department of Economics and Nansei Arakkattalai (NGO), Uthamapalayam, in implementing the Miyawaki initiative are also gratefully acknowledged.

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Annexure I

The following photographs provide visual documentation of selected faunal species recorded during the biodiversity assessment of the Miyawaki Biodiversity Forest.



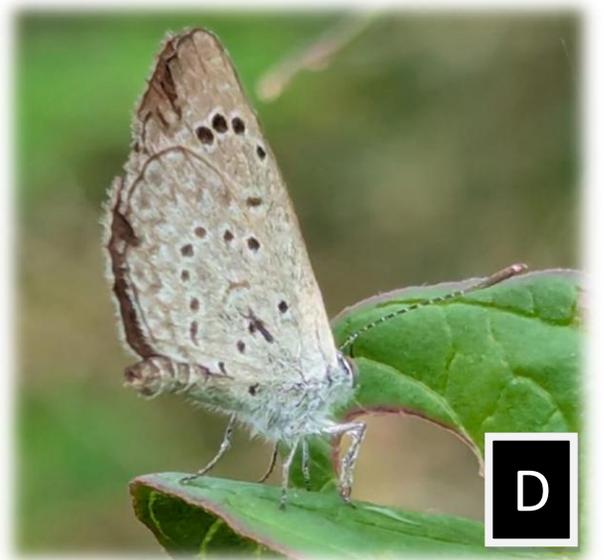
A. Common pierrot butterfly - *Castalius rosimon*



B. Plain tiger butterfly - *Danaus chrysippus*



C. Lesser Grass blue butterfly - *Zizina otis*



D. Tiny grass blue butterfly - *Zizula hylax*



E. Four ring butterfly - *Ypthima huebneri*



F. Common Cerulean - *Jamides celeno*



G. Red pierrot butterfly - *Talicada nyseus*



H. Common crow Butterfly - *Euploea core*



I. Red paper wasp - *Polistes canadensis*



J. Little bee - *Apis florea*



K. Rock bee - *Apis dorsata*



L. Tobacco cutworm moth - *Spodoptera litura*



M. Blister beetle - *Hycleus polymorphus*



N. Signature spider - *Argiope anasuja*



**O. Oriental garden lizard -
*Calotes versicolor***



**P. Yellow billed babbler –
*Argya affinis***