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NILGIRI NATURAL
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For membership and other details contact :

NILGIRI NATURAL HISTORY SOCIETY,

PB-35, Groves Hill Road,
Kotagiri – 643217.
M: +91 94862 32724,
email: contact@nnhs.in



(*Swertia corymbosa*)
Photo Credit : Chandrasekar Das

EDITORIAL

A lot has happened in 2023. The Forest (Conservation) Amendment Bill was passed in August., the Govt of Tamil Nadu initiated tourism development activities around Ooty Lake., a conference for the Nilgiris, in the Nilgiris was conducted, with a horde of speakers from all over., building of environment centre at Longwood Shola is put on hold., and the Society initiated a study for steering a mid-course correction.

The Forest (Conservation) Amendment Bill 2023 received the President's assent in August 2023. Initial reviews were quite a rave in the circles of environmentalists and ecologists, but the mood changed very soon, when people read between the lines that the bill spelt doom, and not the other way round. Here in the Nilgiris, the mood has been quite beaten down on this aspect, since now the state Govt would have a free hand to remove forests for "developmental" activities, perceived to be more the need of the hour, than preservation of the environment. One of the biggest fears of this bill has been that it would erase the rights of the indigenous communities; also that without appropriate "assessment and mitigation plans," clearances provided for within the bill could threaten biodiversity and trigger extreme weather events.

Almost as if plans for "ecotourism" in the Nilgiris were afoot at the time of the passing of the bill, the administration went into full-drive to "develop" the surroundings of the Ooty Lake with tourism attractions. Local environmentalists went up in arms; eventually, it was the National Green Tribunal, which took suo moto cognisance of the happenings around the lake, and the district administration was asked to stop work with immediate effect. One does not want to completely do away with tourism, but it would probably have held the district administration in good stead to have conducted an environment impact study, and then moved the case for "development".

NNHS, along with Keystone Foundation, Krea University, Clean Coonoor, and a few others organised a conference titled "NilgiriScapes - A Land in Flux", aimed at the bio-culturally sustainable future of the Nilgiris, at Ooty. Spread over two-and-a-half days, the conference invited speakers who have been experts on the biosphere, and studied it for long periods of time. The conference was well received by the local population and invitees. Consequent to the resounding success, the conference is now planned to be an annual affair, and NNHS will be an active partner.

With about 15 years in existence, the Society's executive Committee took upon itself to undertake a study of the journey over the decade and a half, and a probable course-realignment for the future, to make member-participation and subscription by others a worthwhile affair. The study kicked off in late November, and hopefully we may have implemented some changes by the time of the next issue of the newsletter.

A new year is here, and with it, there is a hope that the world will gradually move towards the path to become better for future generations. It is a hope, and despite some members of the future generation who are still wayward on this aspect, the world will improve.....

Happy New Year!!

This issue of the newsletter focuses on Plants of the Nilgiris.

Ajay Ludra,
Secretary, NNHS

POTENTIAL WILD ORNAMENTAL TREE *MELIA DUBIA* CAV. IN NILGIRIS

By S. JEEVITH, M. PALANISWAMY, J. MANJUNATH



Foliage with fruit,

Since 1871, tree plantations of *Cinchona*, *Eucalyptus*, *Acacia*, *Cyprus*, and *Pinus* species have been established by McIvor and Sir William Denison, the former Governor of Madras, across the Nilgiris. *Melia dubia* Cav. (Malabar neem, malavembu, kadubevu) belongs to the family *Meliaceae* (neem), an indigenous tree with economically multipurpose values. The native range of this species is in the Indian Subcontinent to Peninsular Malaysia and it grows primarily in the seasonally dry tropical biome. The species is naturally distributed in India, Sri Lanka, Malaysia, Bhutan, Myanmar, Australia, and Africa. However, in India, it is mostly in Sikkim Himalaya, Assam, Meghalaya, Odisha, West Bengal, Deccan Plateau, and Southern India at elevations ranging from 600 to 1,800 meters above MSL.

In south India, *Melia dubia* is widely distributed in the Western Ghats, found in tropical moist and tropical dry deciduous forests comprising *Tectona grandis*. In Nilgiris, this tree is distributed in Gudalur, Theppakadu, Masinagudi, Moyar, Sriyur, Kotagiri eastern slopes, and Coonoor slopes. It's a large tree; the bark is smooth, greenish when young and turning dark brown when mature, and grows up to 20-25 m in height with a 120-150 cm girth. This is one of the species that has been identified as a fast-growing indigenous species. *Melia dubia* is mainly propagated through seeds and vegetative propagation. Germination starts after 30 days and

continues up to 100 days from sowing. Due to the hard endocarp, the seed treatment of organic materials with cow dung or panchakavaya is recommended for better germination. The seedlings of 6-12 months old are preferred for field planting.

The wood has multipurpose uses and is the most preferred timber species for the plywood industry. The soft material is used for commercial and derived products such as cardboard in packing industries, musical instruments, pencils, splints, and building materials. Various parts of the *Melia dubia* plant were used for various ailments and disorders by different ethnic communities of Nilgiris, mainly Irulas, Kurumbas, and Kattunayakas. The wood is used for many purposes, having medicinal value and also being used for fodder. Thus, the species has a ready and assured market value due to its multipurpose utilities as a good agroforestry tree species. The tree species with large commercial value are widely propagated using modern techniques in the nurseries by the forest department, research institutions, NGOs, and commercial nurseries across the country. This tree species is highly recommended for large-scale agroforestry and mixed plantation of afforestation



Bark

projects. Also, it can be often planted as avenue trees, botanical gardens, and arboreta for ex-situ conservation and to develop new insights into urban biodiversity.



Habit – *Melia dubia* Cav.,

S. JEEVITH

- Research Associate, The Wynter-Blyth Association, Coonoor, The Nilgiris.

M. PALANISWAMY

- Botanist, Mudumalai Tiger Reserve, The Nilgiris.

J. MANJUNATH

- Independent Researcher and Agriculturist, Nittle Thuneri, The Nilgiris.

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VERDANT SYMPHONY OF THE NILGIRI HERBS

By Shiny Mariam Rehel



Mock Strawberry, Indian strawberry

Fragaria indica (Rosaceae)

Habitat & Distribution: Found near riverbanks, and marshes at 2000m. It is native to India, China, Japan, and South Europe.

Description: Indian strawberry is a common wildflower characterized by a strawberry like fruit and yellow flowers. The fruits are edible but taste bland.



Nilgiri strawberry

Fragaria nilgerrensis (Rosaceae)

Habitat & Distribution: Found in shola-grassland, forest margins at 2000m. Native to Southern and Southeast Asia.

Description: Nilgiri strawberry is commonly characterized by a strawberry-like fruit with white to light pink color flowers. The fruits are edible with a bland taste.



Anaphalis neelgerryana

Anaphalis neelgerryana (Asteraceae)

Habitat & Distribution: Found on dry exposed slopes and rocky crops at 2000m. Endemic to Southern Western Ghats.

Description: A perennial shrub with white cottony tomentum (hairs).



Indian Pearly Everlasting

Anaphalis subdecurrens (Asteraceae)

Habitat & Distribution: Found in grassland above 2000m. India and Sri Lanka.

Description: An erect herb with stems densely conserved with white tomentum. Leaves spoon-shaped. Flowers pink



Shining Bellflowers

Asyneuma fulgens (Campanulaceae)

Habitat & Distribution: Found in grassland above 2000m. S. Tibet to the Indian Subcontinent and China.

Description: An erect slender herb with a single stem. Flowers lilac.



Malabar Chlorophytum

Chlorophytum malabaricum
(Asparagaceae)

Habitat & Distribution: Found in moist forests, exposed rocks, and shola forests. Endemic to Peninsular India. .

Description: A tuberous herb with white flowers.

Shiny is a Senior programme coordinator and botanist at the Keystone Foundation. She leads efforts on Ecological restoration, Apiculture and research on Pollinators.



LIVING PHARMACOPEIA: UNVEILING THE MEDICINAL SECRETS OF NILGIRI FORESTS

Dr. G. Divya Bharathi



Zehneria maysorensis Wight



Eugenia uniflora L.

India is a veritable emporium of medicinal and aromatic plants. Since ancient times, mankind has depended mainly on the plant kingdom to meet its need for medicine, fragrance and flavours. The Indian subcontinent is blessed with the most varied and diverse soil and climatic conditions that are suitable for the growth of most plant species. In India, many plants have been used in traditional systems of medicine. The relationship

between plants and people is studied in ethnobotany, a field focusing on the study of the indigenous knowledge on how plants are perceived, used and managed. Indigenous knowledge refers to the knowledge, rules, standards, skills and mental sets generated by and kept in custody of local people in a particular area. It is the result of many generations and long years of experience, careful observations and trial and error

experiments. The cultural and spiritual identity of indigenous peoples is often linked to intact primary forests with their rich biodiversity. Hence, plant resources possess and preserve cultural heritages, biological information, and indigenous knowledge on plant identity and utility.

Sholas in Nilgiris are forest patches interspersed with grasslands which play a major role in maintaining the hydrological underwater regime of the particular area. Grasslands capture rainwater and release it in streams, which are some of the main sources of drinking water to the villages and towns. Traditional knowledge related to the collection and usage of plants with therapeutic properties for medicinal purposes has been significantly useful in treating several diseases. Some medicinal plants are distributed in the forest areas where they are utilized by indigenous people and other residents and visitors who use herbal remedies made from these plants for a healthy life.



Berberis tinctoria Lesch.



Cayratia pedata (Lam.) Gagnep.



Garcinia gummi-gutta (L.) Roxb



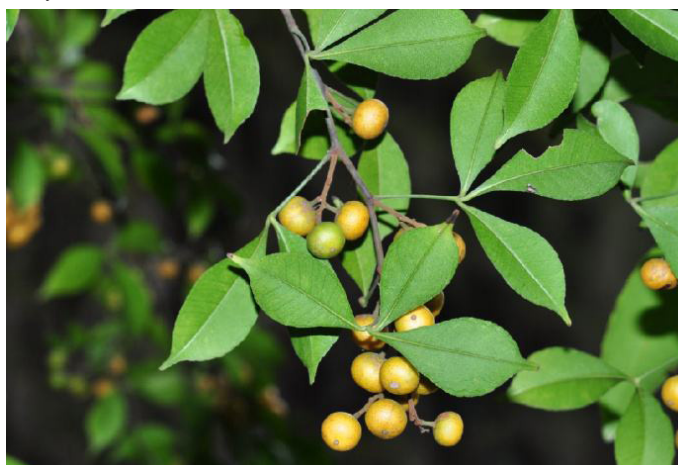
Magnolia nilagirica (Zenk.) Figlar



Passiflora mollissima (Kunth) L.H.Baile



Piper schmidtii Hook.f



Toddalia asiatica (L.) Lam.

Some medicinal plants distributed in the sholas are listed below.

S. NO	BINOMIAL NAME	FAMILY	VERNACULAR NAME	HABIT	USES
1	<i>Achyranthes aspera</i> L.	Amaranthaceae	Kattu elanthai	Small Tree/herb	Antidote, asthma
2	<i>Achyranthes bidentata</i> Blume	Amaranthaceae	Kodi elanthai	Small Tree/herb	Fever
3	<i>Acmella clava</i> (DC.) Hook	Asteraceae	Palvali poondu	Herb	Toothache
4	<i>Arisaema leschenaultii</i> Blume	Araceae	Sarpakilangu	Herb	Antidote
5	<i>Arisaema tortuosum</i> (Wall) Schot.	Araceae	Nagakilangu	Herb	Piles
6	<i>Asparagus racemosus</i> Gaertn.	Asparagaceae	Thaneervitan Kilangu	Climber	Stimulant
7	<i>Berberis tinctoria</i> Lesch.	Berberidaceae	Usi kela	Shrub	Toothache/ Edible
8	<i>Breynia retusa</i> (Dennst.) Alston	Euphorbiaceae	Peru niruri	Shrub	Skin inflammation
9	<i>Bridelia retusa</i> (L.) A. Juss.	Euphorbiaceae	Maravakai	Tree	hemiplegia
10	<i>Cardamine africana</i> L.	Brassicaceae	Kattu kadugu	Herb	Treat infections
11	<i>Carissa paucinervia</i> A.DC.	Apocynaceae	Kelaka	Shrub	Oedema
12	<i>Cayratia pedata</i> (Lam.) Gagnep.	Vitaceae	Kattu pirandai	Climber	Wound healing
13	<i>Centella asiatica</i> (L.) Urban.	Apiaceae	Vallarai	Herb	Nervous tonic
14	<i>Elaeagnus kologa</i> Schult.	Elaeagnaceae	Koragu palam	Liana	Edible
15	<i>Elaeocarpus munronii</i> (Wight) Mast	Elaeocarpaceae	Nari bikki	Large tree	Edible
16	<i>Elaeocarpus recurvatus</i> Corner	Elaeocarpaceae	Mala bikki	Tree	Immune booster
17	<i>Embelia adnata</i> Bedd. ex Clarke	Myrsinaceae	Vaivilangam	Liana	Skin infection
18	<i>Embelia ribes</i> Burm. F.	Myrsinaceae	Vitankam	Liana	Purgative
19	<i>Eugenia uniflora</i> L.	Myrtaceae	Mulaku nelli	Shrub	Edible
20	<i>Ficus amplocarpa</i> Govind. and Masil.	Moraceae	Kodi athi	Liana	Anemia
21	<i>Ficus guttata</i> (Wight) Kurz ex Hook.	Moraceae	Sevapu kodi athi	Liana	Haemorrhage
22	<i>Garcinia gummi-gutta</i> (L.) Roxb	Clusiaceae	Koduka puli	Tree	Gastrointestinal ailments
23	<i>Gaultheria fragrantissima</i> Wall.	Ericaceae	Thaila chedi	Shrub	Pain Oil
24	<i>Grewia hirsuta</i> Vahl	Tiliaceae	Tavadu	Shrub	Expel intestinal worms
25	<i>Justicia simplex</i>	Acanthaceae	Shrimp plant	Herb	Rheumatism
26	<i>Leucas aspera</i> (Willd.) Spreng.	Lamiaceae	Thumbai	Herb	One side headache
27	<i>Leucas biflora</i> (Vahl.) R. Br.	Lamiaceae	Velir thumbai	Herb	Sinus
28	<i>Maesa indica</i> (Roxb.)A.DC.	Primulaceae	Periya unni	Shrub	Edible
29	<i>Magnolia nilagirica</i> (Zenk.) Figlar	Magnoliaceae	Vellai chenbagam	Large tree	Anxiety
30	<i>Mahonia leschenaultii</i> Wall. ex Wight & Arn.	Berberidaceae	Anduvan	Small Tree	Diuretic
31	<i>Mimosa pudica</i> L.	Mimosaceae	Thotalsurungi	Herb	Kidney stone
32	<i>Passiflora carulea</i> L.	Passifloracea	Kar thatboot	Climber	Deworming
33	<i>Passiflora edulis</i> Sims	Passifloracea	Thatboot	Climber	Maintain Blood pressure
34	<i>Passiflora mollissima</i> (Kunth) L.H.Bailey	Passifloracea	Kova palam	Climber	Haemorrhoids
35	<i>Passiflora subpeltata</i> Ortega	Passifloracea	Vella thatboot	Climber	Remedy to burns
36	<i>Physalis minima</i> L.	Solanaceae	Thol thakkali	Herb	Ebible
37	<i>Physalis peruviana</i> L.	Solanaceae	Thopli palam	Herb	Edible
38	<i>Piper mullesua</i> Buch.-Ham. ex D. Don	Piperaceae	Mottu milagu	Liana	Respiratory issues
39	<i>Piper schmidtii</i> Hook.f.	Piperaceae	Kattu milagu	Liana	Cold
40	<i>Plantago asiatica</i> L.	Plantaginaceae	Ishappukol vitai	Herb	Burns
41	<i>Plectranthus malabaricus</i> Benth.	Lamiaceae	Kattu thulasi	Herb	Insect repellent
42	<i>Pogostemon wightii</i> Benth	Lamiaceae	Kulavi chedi	Herb	Treat nausea
43	<i>Polygonum chinensis</i> L.	Polygonaceae	Kaka karumbu	Climber	Antiulcer
44	<i>Polygonum glabrum</i> Willd.	Polygonaceae	Attalaree	Herb	Anthelmintic
45	<i>Rubia cordifolia</i> L.	Rubiaceae	Manchitti	Herb	Antidote
46	<i>Smilax aspera</i> L.	Smilacaceae	Kizhanna	Climber	Rheumatism
47	<i>Solanum sisymbriifolium</i> Lam.	Solanaceae	Mullu thakkali	Shrub	Epilepsy
48	<i>Toddalia asiatica</i> (L.)Lam	Rutaceae	Katti milagu	Climber	Cough
49	<i>Viola serpens</i> Wall.	Violaceae	Bili	Herb	Congestion
50	<i>Zehneria mysorensis</i> Arn.	Cucurbitaceae	Podi vellari	Climber	Wound healing



Cayratia pedata (Lam.) Gagnep.



Elaeagnus kologa Schult.



Elaeocarpus recurvatus Corner



Maesa indica (Roxb.) A. DC.



Gaultheria fragrantissima Wall.



Solanum sisymbriifolium Lam



Passiflora edulis Sims



Piper mullesua Buch. -Ham. ex D. Don



Physalis peruviana L.



Mahonia leschenaultii Wall. ex Wight & Arn.



Polygonum chinense L.

The Shola forests are special ranges that are seen along the folds of rolling downs at a height of 1600 m, where moisture content is very high. These forests are isolated compact evergreen patches composed of trees such as *Michelia nilagirica*, *Mahonia leschenaultii*, *Gardenia obtuse*, and *Vernonia arborea*, which are distributed in the forest ranges of Nilgiris. Shola forests in the Western Ghats are a highly threatened community today. The open meadows bordering the Shola forests hold various colorful herbs and shrubs like *Anemone rivularis*, *Ranunculus reniformis*, *Rhodomyrtus tomentosus*, and *Rhododendron arboretum*. The grasslands of Nilgiris, which are at an elevation of 1800m, function as the water repository and have a high vegetation of endemic plants like *Hypericum japonicum*, *Anaphalis aristata*, *Strobilanthes kunthianus*, *Lilium neilgherrense*, *Striga asiatica*, etc. The Western Ghats are known as the 'Emporium of Medicinal Plants' due to varied physiographic and physiognomic factors.

The Western Ghats are at the threshold of development with increased population pressure that has already led to the loss of prime forests and unique habitats. The whole area has already been listed as one of the world's 'hottest hotspot' areas. Studies have shown that the entry of one single invasive species has the ability to eliminate hundreds of local species in just a short period. Therefore, regular monitoring of the population of medicinal and endemic plants is more important for a fruitful future.

Dr. G. Divya Bharathi is an Assistant professor, Department of Botany at the Sri Sarada College for Women, Salem.

THE 'EXOTIC' CONUNDRUM IN THE NILGIRIS.

By Vaibhav Ramani

The Nilgiris has had a long and checkered history with plants and trees that we know today as 'exotic', some of them being even 'invasive' to the hills. The earliest of these were supposedly planted either by or at the behest of John Sullivan, an individual who has since become the poster boy of the modern Nilgiris. The oak that he planted near Stonehouse is possibly among the earliest of the very many 'non-natives' from the nineteenth century that the Nilgiris has played host to. These 'exotics' form a diverse category – some being patronized by foresters, others by planters, yet others by gardeners, and so on.

In the nineteenth century, *Acacia melanoxylon* and *Eucalyptus globulus* were the most popular options as forest trees that could be utilized for firewood and the other needs of the villages and towns of the Nilgiris. Ironic as it may well sound, these fast-growing trees from Australia were also meant as an alternative that was meant to protect the sholas from further denudation. The sholas had, by the second half of the nineteenth century, already come to occupy a place in the popular imagination of the elite as 'aesthetic' spaces that ought to be preserved for what they had to offer visually.

The introduction of Eucalypti and Acacias to tropical South Asia is considered a patently bad idea today. It was far from that in the mid-nineteenth century. The natural world was organized in hierarchies of usefulness, and the predominant binary of looking at plants and animals was in terms of usefulness (a useful species vs a less-useful species) as opposed to a binary of indigeneity (native species vs exotic/non-natives) that is the common parlance of today. The politics of the nineteenth century placed a certain importance on what was known as economic botany and several

acclimatization societies (associations meant specifically for the promotion of non-native, useful species of plants and animals) were already well established by then, across the British empire and beyond. The decision to bring Eucalypti and Acacias from the British provinces of Australia, to the Nilgiris therefore, was not exactly a politically outrageous choice for those times.

If one set of 'exotics' sailed to the Nilgiris from the provinces of Australia, yet another was secretly collected and brought from the Latin American Andes. A few species of cinchonas were brought by means of an expedition led by a person named Clements Markham in the year 1860. Markham, then an employee of the India Office in London, left with a small group of gardeners and assistants to the Peruvian cordilleras. The expedition was crucial at this point as the bark of the cinchona trees was the only known source of an alkaloid called quinine that, among other things, was the only known treatment to malaria, a disease that was fairly widespread and feared. Having firm control over access to the source for the treatment of the disease was something that provided the Empire with both strength and security. This experiment with cinchona cultivation did not however last very long and by the early decades of the twentieth century, Java, with its volcanic soils, had taken over from the Nilgiris and Ceylon as being the principal producer of cinchona bark. The cultivation of cinchona in the Nilgiri hills remained a largely state enterprise with private growers not taking as freely to it as they did with both coffee and tea. When the harvesting of cinchona bark was no longer profitable enough, lands at the three primary government owned sites – the Doddabetta site, the Naduvattam site and the Hooker Shola site, were

abandoned in parts, or converted to land for other plants.

Later in the twentieth century, the promotion of wattle – *Acacia dealbata* and *Acacia mearnsii* by the postcolonial government and its forest departments, and their subsequent takeover of vast swathes of Nilgiri real estate alongside shrubs like *Lantana camara* and *Cytisus scoparius* is a well-documented tale that I shall not add further to, at least for now. What unites the different cases of these 'exotics' is the fact that they were not stowaways that made their way to the Nilgiris. They were brought by conscious and deliberate choice. Each one of these plants has come to play a crucial and transformative role in the ecological but also the social landscapes and questions ought to be asked on who these transformations benefit and who in turn face the brunt of the consequences. The Nilgiris are not different from the rest of the subcontinent in terms of land use and dependence on land. A considerable majority of people depend on access to land in the form of forests, grass/pasture lands, farms and the likes. To be clear, forests, grasslands, wetlands, all lose out not just to exotics that eventually turn invasive. There are the other elephants in the room like the expansion of towns, plantation agriculture and so on also. It is crucial to ask what the denudation and sometimes even replacement of forests and grasslands by the spread of exotics has meant for pastoral communities, agricultural communities and other communities that depend on the forest in a multitude of ways. What do exotics mean to the agrarian economy of the Nilgiris? Furthermore, what do they mean to tourism? The exotics are intrinsically linked to the tourist economy of the hills. For the average tourist today, a trip to Ooty or Coonoor consists

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of visits to the Pine forests around the Sandy Nullah reservoir (or even around the ninth mile shooting point part of the Wenlock Downs); a trip to the botanical gardens or Sim's park (filled with some of the earliest and rather magnificent specimens of some of the non-natives); and a visit to the market to take back some Eucalyptus oil as souvenirs from their travels. Even for long term residents of the hills, it must be an arduous task, I presume, to find some photographs of the landscapes of the Nilgiris that do not have any non-native tree/plant within its frames. This perhaps gives a sense of the space exotics occupy in popular imagination as well. They undoubtedly evoke sentiments of nostalgia among other things for several residents as well as tourists.

In short, dealing with exotics is complicated. While there are livelihoods that have historically been affected by the state sponsored patronizing of exotics in the Nilgiris, there have been other livelihoods that have come to depend on what they have to offer as well.

Taking on exotic and invasive plants requires sensitivity and a keen understanding of local patterns of land use/dependence and of local economies. This may sound like an agenda ridden argument of a social scientist but it is more than just that. Social scientists need to take a more prominent role alongside biologists and others involved in landscape restoration. Serious conversations must be had, and beyond the confines of the English-speaking elite. The civil society of the Nilgiris also has a history of being involved in attempts to create political will for ecological and social change. Revisiting those histories might be a good place to start in addressing the 'exotic' conundrum.

Vaibhav Ramani, Ph.D., Researcher,
Department of History, Ashoka University.

BHANUMATI MANOHAR

For Bhanumathi Manohar, Nilgiris has been an integral part of this pristine region for two generations.

Born amid the serene beauty of the Nilgiris, Bhanumathi's affinity for nature was ingrained from an early age. Her family's roots in the region spanned two generations, creating a deep-seated love for the mountains and their ecological treasures. Despite briefly leaving the Nilgiris, her heart pulled her back, and for the past 40 years, she has been a custodian of the environment.

One of Bhanumathi's most remarkable contributions lies in her passion for gardening, particularly with native Bonsai trees and endangered and rare orchid species. Transforming her piece of land into a haven for these delicate plants, she not only ensures their survival. Her garden stands as an example of her dedication and love for the biodiversity of the Nilgiris.

While Bhanumathi comes from an arts background, her interests expanded beyond conventional artistic pursuits. She delved into the world of taxonomy, teaching herself the science of plant classification. Her work with locals in collecting and documenting various species has not only enriched her understanding but has also strengthened the bond between the community and the environment they share.

In addition to her botanical endeavors, Bhanumathi has been an observer of the wildlife surrounding her. She has maintained a comprehensive checklist of the bird and reptile species inhabiting her garden. This documentation serves as a valuable resource for the broader understanding and protection of the Nilgiris' unique ecosystem.

Beyond her role as a guardian of nature, Bhanumathi is an accomplished artist. Her watercolor and oil paintings beautifully capture the essence of the Nilgiris' natural landscape. Through her art, she not only showcases the breathtaking scenery but also raises awareness about





the fragile balance between human existence and the environment.

Bhanumathi Manohar's life is a harmonious blend of art and science, where her canvases and gardens serve as an ode to the Nilgiris' ecological splendor. Her journey from a background in the arts to becoming a self-taught botanist is a testament to the transformative power of passion and commitment. In her tireless efforts to protect and celebrate the natural wonders of the Nilgiris, Bhanumathi stands as an inspiration for future generations to embrace their roles as stewards of the Earth.





SYLVAN SYMPHONY

Dr. Vaithianathan Kannan

Photo: Moinudheen N

Cicadas are winged insects that produce a loud buzzing song that can be heard throughout the summer, and they live on every continent except Antarctica. Annual cicadas appear each year from late June through August. Periodical cicadas, found only in parts of North America, emerge from late April through early May in a cycle that spans 13 or 17 years, depending on the species. There are around 3,400 cicada species, of which seven are periodical cicadas (three 17-year cicada species and four 13-year cicada species). All cicadas have large, bulging eyes; these are usually black or green in annual cicadas and are typically bright red in periodical cicadas (but in rare cases, periodical cicada eyes can be white, blue, yellow, or even multicolored).

India has one of the world's most diverse populations of cicadas, but the only comprehensive checklist was published in the early 1900s. A lack of proper records of the bugs had become a matter of increasing concern for researchers

studying biodiversity. Cicadas' wings are veined and transparent, and darker veins near the tips of the branches in some species make the shape of a "W." They have no stingers and lack chewing mouthparts, so they can't bite. Adult females have a sharp ovipositor, a stylus-like organ for egg laying, and males have ribbed tymbals — exoskeleton structures of alternating stiff and flexible membranes — on the first abdominal segment. When males rapidly expand and contract their tymbals, the vibration produces the cicada's distinctive summer song.

As juveniles or nymphs, cicadas are white and resemble ants or termites. They grow underground by molting through several nymph stages called instars. During the last instar stage, larvae emerge from their burrows. This above-ground nymph stage is wingless with a light-brown exoskeleton and large front limbs to anchor itself to trees, plants, or tall grasses in preparation for the final molt — into its adult form. That loud

buzzing sound that cicadas produce is a mating call. Male cicadas sing together in choruses by vibrating their tymbals, and the song attracts both males and females who cluster together to mate.

After mating, the males die, and females begin to lay their eggs — approximately 20 at a time — which they insert into slits in tree branches with their ovipositors. The eggs hatch within six to 10 weeks, and the nymphs drop from the components to the ground, burrow into the soil, and suck nutrients from plant roots. Cicadas spend most of their lives underground as nymphs, followed by short adulthood — lasting about two to six weeks — above the ground, usually in trees near the locations where they emerge.

Cicadas are true bugs (in the order Hemiptera), meaning they have to suck using mouthparts shaped like sharp straws, and they use them for piercing plants and sucking up the liquid inside. Though cicadas are sometimes mistakenly called locusts, they are not part of the grasshopper order, and cicadas do

not eat agricultural plants as grasshoppers do. Choruses of male cicadas can reach 80 to 100 decibels in volume — as loud as a jackhammer. Cicada wings are waterproof and antimicrobial; when cicada nymphs leave their burrows, they'll sometimes build chimneys or turrets of mud over the exit.

In myth and beliefs, cicadas are known amongst some cultures to bring good luck, much like Chinese culture finds luck in crickets

Cicadas provide environmental benefits such as a valuable food source for birds and other predators; also, they are not dangerous. Their services in the ecosystem are marvelous as they aerate grassland and increase water filtration into the ground; they play a vital role in adding nutrients to the soil as they decompose. Cicadas have one of the longest insect lifespans, extending 13 to 17 years. However, they spend time above ground only a tiny fraction of their life, and the rest of their life is spent underground as a nymph feeding liquid sucked from plant roots and are known to be potential ecosystem indicators.

Dr. Vaithianathan Kannan is a scientist and ecologist. He works on policy, ecology & environment, environmental impact assessment, and conservation issues relating to Wildlife & Biodiversity.
Email: kannan.vaithianathan@gmail.com



Photo: Moinudheen N

THE BUZZ

NNHS DIARY



As the sun sets on another chapter in NNHS history, let's reflect on the impactful events that unfolded in the latter half of 2023. We slithered into July celebrating the World Snake Day. Collaborating with 2 schools in Kotagiri and the forest department, we engaged with over 300 students, enlightening them on the significance of snakes as ecosystem engineers. Our discussions extended to measures for fostering positive coexistence between snakes and humans.

August brought forth exciting collaborations through the NilgiriScapes conference. This gathering united enthusiasts with a deep love for the Blue Mountains, fostering a collective interest in studying the ecology and culture of India's first biosphere reserve. Themed 'A Landscape in Flux,' the two-day event featured expert talks, panel discussions, and a captivating photo exhibition, exploring the ever-changing landscape of the Nilgiris.



September marked the initiation of our Beyond Classrooms programs, designed to instill environmental responsibility in young minds through experiential learning. The program involves understanding the landscape through geography, biology, culture, and history. There is in-class learning through debates, movies, and presentations specifically designed to promote participation, healthy discussions, and learning. Field-based learning experiences include camera trapping, nursery management, and restoration projects,

providing students with practical skills and hands-on experience. Visiting value addition centers and learning about Non-Timber Forest Produce (NTFP) and how it plays an important role in bringing culture and conservation together is also an integral part of this program. We conduct birding trails and walks through Shola forests to understand ecology through sensory learning, which involves learning through listening, feeling, watching and walking through the forest.

Hosting 6 institutions from September to December, including The Good Earth School, Rishi Valley School, Azim Premji University, Srishti School of Arts and Design, Vruksha Montessori School, and The School - KFI, we impacted 122 students and staff.

In October, we extended our outreach to 5 schools in the Kotagiri and Kil Kotagiri region, connecting with over 500 students through interactive games that bridged the gap between theory and practice. These engaging activities provided a hands-on understanding of navigating encounters with wildlife, fostering a deep appreciation for the art of observing nature and building a sense of responsibility toward its protection.

Culminating the year in December, we proudly hosted the second edition of the All Living Things Film Festival in collaboration with ALTEFF. This two-day event, held in Coonoor and Kotagiri, showcased impactful movies and harnessed the power of cinema and audio-visual learning to shed light on climate change, human-wildlife interactions, conservation, and inspiring stories of individuals making a difference in these fields. The festival aimed to reach a diverse audience, spreading awareness and inspiring collective action. The film festival helped us reach over 50 participants both adults and children.

As the pages turn in the diary of NNHS, each entry narrates a story of environmental stewardship, education, and community engagement, leaving an indelible mark on the landscape of conservation in the Nilgiris.

Habeeba Fathima
NNHS Coordinator.



The newsletter of the Nilgiri Natural History Society (NNHS) aims to cover the many dimensions of natural history - conservation issues, lay observation, cultural representations and traditional knowledge. The newsletter will carry communications about research in Keystone Foundation in the areas of conservation, environmental governance, culture, livelihoods and enterprise. In keeping with the pan Nilgiri Biosphere Reserve (NBR) nature of the Society, space will be allocated for reporting of events/views from elsewhere within the country and from outside the country. Additionally a section will be devoted to research summaries by students who work in the region of the NBR. Guest editors will be invited for special editions. News items gleaned from printed sources about the NBR will be featured. Separate sections will carry information on NNHS and Bee Museum activities. The species focus will feature species of special conservation status, endemic to the Western Ghats and present in the NBR.

SUBMISSION OF ARTICLE

The NNHS newsletter articles are reviewed by the Chief Editors and a member of the editorial board. Articles are invited for the following section: i. Natural History News from India (400 words); ii. Natural History News from the World (400 words); iii. Research Initiatives in the NBR - student contributions (400 words); iv. Species focus (250 words). Articles should be submitted by email to: contact@nnhs.in

Authors should provide complete information including an email address and phone numbers. Articles need to be submitted in standard word processor formats only. Rich text content and other forms are not accepted. Figures and texts need to be sent in separately with adequate labelling and numbering in context to the articles sent. Pictures in the manuscript also need to be sent in separately in TIFF, JPEG or PNG formats with resolution not less than 250 dpi

Reference style:

Papers in Journals and other periodicals
Hanley, T.A. and Hanley, K.A. 1982. Food resources partitioning by sympatric ungulates on Great Basin rangeland. *Journal of Range Management* 35: 152-158. Papers in Edited Books, Symposia Proceedings, etc
Cole, D.W. and Rapp, M. 1981. Elemental cycling in forest ecosystems. pp. 341-409. In: D.E. Reichle (ed.) *Dynamic Properties of Forest Ecosystems*. Cambridge University Press, Cambridge.
Books
Lieth, H. and Whittaker, R.H. (eds.). 1976. *Primary Productivity of the Biosphere*. Springer-Verlag, Berlin.
Reports, Dissertations, etc
Sollins, P., Reichle, D.E. and Olson, J.S. 1973. *Organic Matter Budget and Model for a Southern Appalachian Liriodendron Forest*. Oak Ridge National Laboratory, Oak Ridge, U.S.A.



Impatiens campanulata *(Bellflower balsam)*

Photo credit: Chandrasekar Das

Impatiens annual, perennial, or woody herbs. They can grow on the ground or, in some cases, on other plants. The stems of these plants can be upright or lying down, and they may be woody, herbaceous, succulent, or have runners that root at the lower nodes.

The flowers of Impatiens are bisexual and asymmetrical. They are usually attached to the plant by a stalk. The arrangement of the flowers can be in clusters, racemes, or individually. The sepals, the outer

part of the flower, are usually three, occasionally five, and can be small and flat or petal-like. The most distinctive part of the flower is the large, petaloid posterior sepal, often shaped like a bag, a boat, or with a spur. The fruit is a capsule that does not split open on its own. It is often asymmetrical and swollen in the middle, releasing seeds elastically when it dehisces. The seeds can be flat or oval, smooth or bumpy, and may or may not have hairs. There is no food storage tissue in the seeds.