

NEWSLETTER of the NILGIRI NATURAL HISTORY SOCIETY

For private circulation only
ISSUE 7.2 - December 2018



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Nilgiri Laughing Thrush (*Trochalopteron cachinnans*) Raliah Dam, Nilgiris

Nilgiri/Black Chinned Laughing Thrush is a resident of high elevation areas in Nilgiris. Though, the bird was easily distinguished from its unusual loud calls (series of nasal mocking notes) but photographing it, was a challenge. The bird would pop out of the branch for a few seconds and then hide away in a patch of dense vegetation. Being omnivorous, it feeds on a range of insects and berries. Unlike few species of laughing thrushes (for example, white throated laughing thrush), black chinned laughing thrush can hardly be seen foraging on ground in open areas and near human settlements in Nilgiris. They are usually found in dense shola forests. Due to restricted habitat range and fragmentation of shola forests, the future of this species is in danger. It is evaluated as "Endangered" on the IUCN red list.

Photo & text: Sneha Shekhawat, Coonoor

EDITORIAL

Dear Readers

Greetings!

For several reasons beyond our control it was difficult to bring out the newsletter for the past several issues. We are rebooting, restarting and hope to keep going uninterrupted for the years to come.

This edition of the newsletter has several bits and pieces of natural history news from the Nilgiri Biosphere. We start with a photo essay from Shiny Rehel Keystone about medicinal plants used by the Irula people of Pillur valley. We are grateful to people who seek us out and send in articles to get published. Mr Moinudheen et al report on the burrowing spider and Mr Samson Arockianathan writes about the sighting of the Black Stork in Mudumalai. Prof Neema Kudva Cornell University, USA has been associated with for many years now and writes about the water and waste issues of the Nilgiris with a case study of the 'Happy Valley' in Kotagiri.

The botany of music is something we don't stop to think about - all the plants that are shaped into instruments that have given the world the gift of music. K. R Abhishek writes in great detail about the musical instruments of the Irula musicians of the Pillur valley. The forest is such a big part of every aspect of tribal lifestyles.

Over the years we have always wanted to share the stories of ordinary people who by their commitment to nature and its education have done something extraordinary that will be passed on through generations as a conservation practise. One such person is Janaki amma, who has been part of our journeys for more than 20 years now.

Natural history notes this time brings to you the 'masting' phenomenon in plants - something we see many times. Every second or third year the mango and Jamun trees will do this too - flower spectacularly and produce an abundance of fruit. But why do trees do this and spend so much energy on this event? Read on to find out more..

We want to invite foresters who have stories to tell and memories to recollect about their experiences at work inside the deepest forests. We are happy that Conservator of Forests Thiru S. Ramasubramanian, IFS shared one of his experiences with us which we are happy to publish here. The article is about his experience in Sathyamangalam reserved forests in 2010 and about the friendship he shared with a great tribal leader the late Mr Jedayan of Geddesal village.

The NNHS diary brings to you a glimpse of a year in the life of NNHS - it was not one of the most packed years and we are working on changing that soon.

Best wishes

Anita Varghese

Chief Editor

PHOTO FEATURE MEDICINAL PLANTS

Shiny Mariam Rehel



Gaultheria fragrantissima Wall Ericaceae

Local name : Kolakkai (Ta)

Distribution : Indo-Malesia

Habit : Shrub

Habitat : Shrub

Medicinal use : Leaves added to boiling water and take bath to relieve body pain.



***Rubia cordifolia* Linn. Rubiaceae**

Local name : Paccha muruli (Ta)
 Distribution : Asia, Africa and Europe
 Habit : Scabrous climber
 Habitat : Shola forest
 Medicinal use : Leaf paste applied externally on skin to cure fungal infection. Root mixed with milk and taken orally to cure dysentery.



***Elaeagnus kolonga* D.F.K. Schldl. Elaeagnaceae**

Local name : Kologa (Ta)
 Distribution : Peninsular India
 Habit : Small Tree
 Habitat : Shola border
 Medicinal use : Roots used to cure fevers and breathing disorders.



***Leucas aspera* (Willd.) Link Lamiaceae**

Local Name : Thumbai (Ta)
 Distribution : Indian subcontinent
 Habit : An erect herb
 Habitat : Fallow lands, wayside etc.
 Medicinal use : leaves paste applied to cure soriasis and to heal the scar caused by chicken pox, wounds.



***Centella asiatica* L. Apiaceae**

Local name : Vallarai (Ta)
 Distribution : Tropical Asia and Africa
 Habit : Prostrate herb
 Habitat : Grasslands and marshy places
 Medicinal use : Decoction of leaves to cure heartburn.

***Curcilio orchoides* Gaertner Hypoxidaceae**

Local name : Nilapannai(Ta)

Distribution : Asia

Habit : A stemless herb

Habitat : Forest floor

Medicinal use : Tubers along with leaves of *Cyclea* sp. to cure headache for elders.



***Syzygium cumini* L. Myrtaceae**

Local name : Naval (Ta)

Distribution : Western Ghats and Sri Lanka

Habit : A large tree

Habitat : Shola border

Medicinal use : Bark is used for medicinal preparation.
Honey from the flowers are good for diabetes.



***Berberis tinctoria* L. Berberidaceae**

Local name : Oosipalam (Ta)

Distribution : India, Afghanistan and Bhutan

Habit : Shrub

Habitat : Shola border

Medicinal use : Toda people use to cure gastric problems.



***Toddalia asiatica* (L.) Lam var gracilis Rutaceae**

Local name : Kattu milagu (Ta)

Distribution : Indo-Malesia and Africa

Habit : Straggler

Habitat : Shola forest

Medicinal use : Root is used for medicinal preparation.



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SIGHTING OF NILGIRI LARGE BURROWING SPIDER

N.Moinudheen et.al



Sighting of 'Nilgiri Large Burrowing Spider' (*Haploclastus nilgirinus*, Pocock 1899) from Nilgiris, Western Ghats.

Key Words: Nilgiri, Western Ghats, Biodiversity Hotspot, spider, *Haploclastus nilgirinus*, 'Nilgiri Large Burrowing Spider', bite, Mygalomorph

Introduction: Spiders are an important group of generalised predators in the world. They are the largest order of Arachnids and rank seventh in the total species diversity among all the other groups of organisms (Sebastin P.A, & Peter K.V 2009). As many as 43678 spider species are known in the world (Platnick, 2012), and in India, 1685 spider species from 438 genera have been reported till date (Keswani et al., 2012). The present knowledge on the spiders of Western Ghats remains confined to the works of Pocock (1900), Hirst (1909), Gravely (1935), Sherriff's W.R. (1927) and Sinha (1951). Recently Smith (2004), Sugumaran et al., (2005), and Wankhade et al., (2012) tried to document the diversity of

spider fauna in and around Western Ghats. Due to the high species endemism, Western Ghats are listed in the 34 'Biodiversity Hotspots' of the world (Mittermeier et al., 2005). In this present note is discussed the poorly known 'Nilgiri Large Burrowing Spider' (*Haploclastus nilgirinus*, Pocock 1899) from Nilgiris, Western Ghats.

On 28th May 2017 4:30 pm we found the 'Nilgiri Large Burrowing Spider' (*Haploclastus nilgirinus*) from Coonoor, The Nilgiris, Western Ghats, location: Lat: 11° 21,124N Long: 76° 47,183E. It was identified as belonging to the genus *Haploclastus* of the family Theraphosidae based on the presence of a distinct maxillary heel, the apical segments of the PLS being digitiform, the presence of claw tufts and absence of a rastellum (Dippenaar-Schoeman 2002). Family: Theraphosidae is characterized by medium sized to very large mygalomorph spiders. Sub Family: Thrigmopoeinae has inner surface of maxilla furnished with simple scattered needle like bristles, and lives

in burrows in the tree grounds. Genus: *Haploclastus* is endemic to India and is represented by six species, namely *Haploclastus cervinus* Simon, 1892, *H. Kayi* Gravely, 1915, *H. Nilgirinus* Pocock, 1899, *H. Satyanus* Barman, 1978, *H. Tenebrosus* Gravely, 1935 and *H. Validus* Pocock, 1899, and recently (M. T. Prasanth & K. Sunil Jose 2014) describe a new species namely *Haploclastus devamatha* the raphosid spiders from Kulathupuzha reserve forest of Western Ghats. The Nilgiris is the connective junction for Eastern Ghats and Western Ghats, with high endemism. The spider diversity is poorly studied in the Nilgiri region, recently Jayaraman Dharmaraj et al (2017) reported that a total of 40 species of spiders belonging to 36 genera and 11 families are found in the Nilgiris. In this study there is no information about the *Haploclastus nilgirinus*. Type locality of *Haploclastus nilgirinus* is Nilgiri Hills and also found in Savarimullay, Vandiperiyar, Travancore, Kerala in India. Habitat alteration, global warming, and pet trading are the possible causes for

poor sighting of this species. The present observation reflects that more scientific study is needed for this species in future.

Species Description: The spider shows sexual dimorphism, the males are much smaller than the females. Colour: carapace black, clothed like the limbs and abdomen, with brownish-yellow, Fig: 3 hairs: sternum, coxae, and arid lower side of femora at least of 1st and 2nd legs velvety black. Fig: 3. (Pocock, 1899) Body length: 6 cm. Eye: eight small eyes grouped in a cluster. Fig: 2. The stridulating organ consists of a small cluster of hair-like and spatulate bristles adjoining the basal part of the scopula of the chelicerae, and of bristles scattered over the anterior face of the coxa of the palp which are hair-like distally and ventrally but more spiniform basally and dorsally. A similar differentiation is present in the two preceding species but is less marked as the bristles are less strong. (F.H. Gravely 1935). One of the pedipalpi is damaged for this species. Length of carapace is almost equal to patella and tibia of 1st leg, slightly greater than those of 2nd and of 4th and longer also than protarsus and tarsus of 4th. Patella and tibia of 2nd legs slightly longer than of 4th Fig: 1. (Pocock, 1899).

Species Distribution: India: Nilgiri hills (Pocock 1899; Pocock 1900); Savarimullai in Vandiperiyar, Travancore (Gravely F.H 1935)

Mygalomorph spiders are popularly regarded as poisonous, but authentic records of their bites seem to be rare, as well as the effects of bites of the species *Haploclastus nilgirinus*. The Madras Museum contains a single somewhat damaged specimen of this immense species collected by Mr. S. Ananda Rao from Savarimullai, Vandiperiyar, Travancore, where it had bitten a coolie. (Gravely F.H 1935)

Regarding the *H. nilgirinus* bites Mr. Ananda Rao writes: The bite on the coolie was quite a severe one and was inflicted on the fore-finger. When he was brought to me, which was almost immediately after the bite, I noticed

that the bitten spot was bleeding and the finger, as also the palm, had swollen. He was also complaining of severe twitching pain extending, up to the shoulder. The wound was treated in the usual way, i.e., washing with a lotion of potassium permanganate, an application of tincture of iodine and dressing. The pain and swelling persisted for three days, after which they subsided. But, curiously enough, even now after a lapse of nearly six months since the occurrence, he states that he has no proper sensation in that finger and that it gets very easily benumbed when the hand is wet. (Gravely F.H 1935). Venom

is probably strong. Depending on location of the bite and the amount of venom released it might be a painful experience.

Acknowledgment: The Authors are thankful to M.C Ravikumar, Kishore Kumar, Kiran Kumar and Devi, Ex-Councillor in Wellington Bazaar. Also wish to thank Younis for their help during study.

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OCCURRENCE OF **BLACK STORK** IN MUDUMALAI TIGER RESERVE

Samson A & Ramakrishnan B



The black stork (*Ciconia nigra*) is a large bird in the stork family Ciconiidae. It mainly has black plumage, with white underparts, long red legs and a long pointed red beak (Cramp and Simmons 1977). A widespread, but uncommon species, it breeds in scattered locations across Europe and Asia to the Pacific Ocean. It is a long-distance migrant with European populations wintering in tropical Sub-Saharan Africa and Asian populations in the Indian subcontinent.

On 11th March 2018 10:30 AM we sighted 16 woolly-necked storks foraging on the river bed of Jagalikadavu, the nesting habitat of white-rumped vulture in Mudumalai Tiger Reserve, Tamil Nadu, Southern India. Among the 16 individuals one was different from the group, completely black in plumage, with white underparts, long red legs and a long pointed red beak. Finally the bird was identified as black stork (*Ciconia nigra*) (Grimmett et al. 2001) (Figure). A few sporadic records of black storks have been reported in Tamil Nadu region. Perennou and Santharam (1990) recorded the black stork in Pondicherry and Relton (1998) recorded in Karaivetti Bird Sanctuary, Tiruchirappalli. Previous literature revealed that a total of four genus of storks were reported in the Mudumalai tiger reserve namely painted stork (*Mycteria leucocephala*) Asian openbill (*Anastomus oscitans*) woolly-necked stork (*Ciconia episcopus*) white stork (*Ciconia ciconia*) black-necked stork

(*Ephippiorhynchus asiaticus*) and lesser adjutant (*Leptoptilos javanicus*) (Gokula and Vijayan 1996). The present record of black stork is an addition to the migrating storks in Mudumalai Tiger Reserve which shows evidence of being the preferred habitat for migrating storks in southern India.

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WATER & WASTE IN THE NILGIRIS

Neema Kudva

This article is in two parts. This first part summarizes the work being done on water and waste at the Nilgiris Field Learning Center (NFLC), a collaborative project of the Keystone Foundation and Cornell University. The work at NFLC builds on and expands Keystone's water work over the past 12 years. The second part, to be published in a subsequent issue of the NNHS Newsletter, will describe a decade long eco-restoration project in Happy Valley in the Mission Compound area of Kotagiri. This project provides an example of how a small intervention, in this case aimed at re-foresting a three-quarter acre patch with native species, can have multiple beneficial consequences for the community and the environment.

Water is life, and with life and living comes waste. The two are intimately connected, and flows of water everywhere provide the channels that carry away the waste that people, animals, and plants produce. The streams of the Nilgiris aren't just getting strangled with dumped garbage and pollutants as tourism and agriculture expand and consumption patterns change. They are also not regenerating as before as the hydrological patterns of the entire region shift with climate change, and we see monsoons failing or bringing much less rain than the people, forests and land have come to expect.

It is in this context that the Keystone Foundation, best known for their work with honey hunters and indigenous communities in the Nilgiris, began their work. They sought to help communities ensure steady access to both a safe supply of drinking water and water to grow crops—all while reviving community water management systems that had broken down for various reasons.

Understanding the relationship of water to livelihoods that are tied to the land and the forest drove Keystone's initial work. Through practice, a five-part model evolved: first, trace the history and use of water in a community, then analyze the reasons for the breakdown of community-based water management systems and through this arrive at a water resources audit. Once the audit was complete, work with community members and leaders to design an intervention to ensure sustainable water supply and management. The idea was that a series of such village level plans could help build a people's regional water management plan (61 villages were surveyed by 2002). Even as this difficult work continues, Keystone staff started to geotag and map water sources, and to create digitized water resources inventories that included, as best as they were able, perennial and seasonal streams, wells, tanks, lakes and spring sources. They also started

to collect data on water quality and to bring together a range of experts and urban stakeholders around the issue of the status of the Coonoor river and conditions in its catchment area. The Coonoor river is one of 26 streams that flow into the Bhavani, which with the Moyar feeds the Lower Bhavani Reservoir before flowing into the Cauvery. This pathway is one example of how water sources in the Western Ghats help sustain life in the fields, villages, towns and cities of the Deccan plateau and why their conservation is so crucial. As far back as 1908, Francis Buchanan wrote of the streams of the Nilgiri Plateau "... their conservation is thus of interest to the owners of the Tanjore paddy-fields and projects are now on foot to form irrigation reservoirs high up the Bhavani valley ..." (1908: 7).

Back to our story, now in the early 2000s, a full century after Buchanan's writing. The critical role of springs and wetlands in the Nilgiris had been recognized, though there was little systematic work being done. Keystone completed a springs survey, and a survey and status report on 38 wetlands. In the process, a wetland was saved from becoming a landfill, and the central role of wetlands in the intricate hydrology of the Nilgiris began to be mapped, even as the role of wetlands in traditional indigenous community livelihoods began to be better articulated (the Kotas used the

mud for pottery, the Todas grazed their buffaloes in the wetlands and the mud poultices helped prevent diseases like foot and mouth disease that afflicted buffaloes). Spring ecologies and the challenges of restoration too began to be better understood.

By summer 2013, as Coonoor was facing major water shortages, Keystone staff completed a computer simulation that demonstrated the combined impact of land use changes--due to the expansion of domestic tourism and agriculture, as well as poor sanitation--on the quantity and quality of water available in the region. The simulation powerfully communicated the importance of conserving water resources through effective land use and waste management practices. It also made clear that there was still a lot of work to do to understand the linkages between water and waste at a fine-grained local level.

These linkages became the focus of the Water and Waste project at the Nilgiris Field Learning Center. In the first two years (2015, 2016) we focused on understanding the relationships

between water and waste at the household and community level in 7 non-tribal settlements in a valley on the outskirts of Coonoor. Each year, a research team of a tribal community student along with their Cornell student partner mentored by Keystone Staff and Cornell faculty carefully mapped water resources, use patterns, and management practices by households and communities. The teams also mapped waste production (from bodily waste to garbage) as well as waste collection and disposal by local governments, private contractors and recyclers. This included tracing recycling networks that took materials out of the waste stream from the villages and towns of the Nilgiris to aggregators and plants in the cities of the Kongu Nadu region, and further.

Meanwhile, Keystone staff expanded systematic testing of water quality in pre- and post-monsoon seasons in the places where the NFLC was working, and completed a study on the economics of water in Hubbathalai panchayat. In 2017, the third year of NFLC work, we worked with residents in 2 tribal settlements along

the Coonoor river, while updating our information on the original 7 settlements as government programs like Swachh Bharat and Namma Toilet had started to be implemented. We also conducted small pilot studies on water use and sanitation practices in 4 tribal and non-tribal households with children under the age of three and completed health surveys across a large number of tribal and non-tribal households to start tracing the linkages between poor sanitation and residents' health.

What have we learned from combining Keystone's long-standing water work with the deliberate NFLC method of mapping resources, use practices, and management of water and waste along the Coonoor river? First, and always: the issues of water and waste are intertwined.

We know that water shortages in the Nilgiris are linked to a changing climate but are exacerbated by changing land use practices. We know that water quality is seriously compromised due to dumping of pesticides and chemicals from agriculture, waste from tourists and residents, and poor sanitation where toilets may be built, but soak pits are often not constructed properly or are located close to drinking water sources, which then get contaminated.

We learned that just building toilets is not enough. Communicating the importance of other practices like thorough hand washing after defecation or cleaning up children is critical. We learned that toilet use poses different challenges to the aged and the very young, and those who are ill, as well as girls and women at different life stages. We also understood why people prefer to continue to use the beautiful outdoors instead of the badly designed, ill-ventilated, and poorly constructed concrete toilets that various schemes provide. The location of toilets matters a great deal and is a good predictor of whether the toilet will be abandoned or not. In the communities we worked with, government engineers had placed



Title: A map drawn for a community presentation by student researchers, Meena and Emma Eaton, to show the location of NFLC water and waste work between 2015-2017.



toilets next to kitchens, built garbage pits next to sacred groves and drinking water wells, and neglected to ensure that bacteria from soak pits would not seep into the sub-soil. We learned of traditional practices related to waste removal and defecation, just as we came to understand community descriptions of still versus moving water as related to what was fit to use and not. These are important matters to keep in mind as we work to translate current understandings of pollution and disease into everyday practices. Health matters, as does equity, dignity, and respect for customs that animate community life.

Our work at NFLC and at Keystone aims to build knowledge in the service of effective interventions. To this end, an important learning was that the scale at which each issue was generated and the points at which problems could be resolved, varied greatly. What does this mean? Recycling materials - which takes significant amounts of solid waste out of landfills for reuse in

other forms and provides important livelihood options for many people-needs materials to be aggregated in hundreds of tons. In order to do this efficiently and in an environmentally responsible manner using currently available technologies, we need to aggregate recyclables from across several districts even if collection starts at the level of the household. In contrast, garbage from organic materials seems to be best composted close to communities or at land-fills - but both these require technological and other fixes to deal with the problem of increasing human-animal conflict (with monkeys for instance in the Nilgiris) and the leaching of pollutants into the ground. The most complex scale issues are with water. The regeneration of water sources is hard as it needs to be done at various scales, considering different short and long-term time horizons, and through many different interventions. These range from the protection of wetland ecosystems and the replanting of native species in forests, to changing agricultural practices and implementing garbage collection

mechanisms to avoid turning streams into drainage channels.

The Happy Valley Project in Kotagiri is one example of a native habitat restoration project that involved paying attention to waste issues as well. One result has been spring restoration and we will describe the challenges involved in such a restoration project in more detail in Part 2 of this article. Watch for it in the next NNHS newsletter.

Acknowledgements. While I am the author of this article and remain responsible for all errors, the work that went into it was done by a team of people who include T. Balachander, Shanmitha Raghu and Gokul Halan of the Keystone Foundation, and four teams of NFLC students: Meghan Fulton and L. Eswari in spring 2015, Jacqueline Sepulveda and M. Banti in spring 2016, Deepa Saharia, R. Gowtham, Emma Eaton and Meena in spring 2017.

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WIND, FOREST, MUSIC

A MUSICAL JOURNEY INTO THE PILLUR LANDSCAPE

Abhishek K R

Driving through the dusty pot hole filled road to Pillur Dam, looking at the lush evergreen forests that extend as far as the eye can see, the Nilgiri Mountains looming in the backdrop, I could almost hear lilting tunes from the *Kogel* travelling through the air, while I head to meet Nanjappan, a flute player of the Irula Community. Home to Irulas and Kurumbas, the Pillur Valley is a cultural-ecological dreamscape, with beautiful forests and amazing people situated through the valley. Indigenous communities have co-existed with their natural environments for many centuries inside the Nilgiri Biosphere Reserve. These communities, over time, have developed many cultural connections with their natural environment. Folklore, music, dances and other forms of knowledge are some mediums through which their environment and occurring natural phenomena are represented. Each medium is able to engage with different strands of narratives, and captures different dimensions of

interactions between communities and their environment.

Some Irula Musicians describe a strong affinity between the forests they live around and the music they make. Drawing inspiration from bird's songs and forest whispers, a journey through a narrative of music is a really fascinating experience. Music not only serves as a medium of keeping alive observation skills, but also as a mode of survival for very specific narratives, some regarding utility and others regarding understanding and interpretation of natural phenomena; but also a medium which gives them sense of identity.

Historically, all instruments (wind and percussion) were crafted from materials procured from the forests around them. A variety of grasses along with bark, timber and different skins were some of the main materials that were required for the construction of instruments. Procurement and use of instruments made of foreign materials were not in use at all, inextricably linking



their musical passions and skill with their knowledge of the forest. "One of the main sources of inspiration for our music comes from listening to bird calls and natural sounds. I try to reproduce those sounds and rhythms while I play the flute," says Nanjappan during our conversation about musical systems and musical values. He continues, "traditionally, the flute has always been considered an instrument which connects one with the soul of people, especially those who have passed or those who are ill. The percussion is used as a gateway to the souls of people. From clearing the path for the soul of one who has passed, to aid in healing, the flute remains the focal instrument of the Irula community. Anyone can learn to play percussion, but very few people have it in them to learn how to make a flute, and fewer who can play it with finesse. Irulas in different regions around the Nilgiris might have slightly differing traditions, but mostly they are the same."

Wind instruments are complex instruments to build. Depending on the instrument, the number of materials needed could also greatly vary. There are two main kinds of wind instruments, *Bugiri/Mangai* and *Kogel/Kol*. The *Mangai*, for instance, is a simple single piece cross flute made from bamboo (*Bambusa arundinaceae*), commonly used by beginners and almost never played at performances. Nanjappan says, it is only by mastering the *Mangai*, can

one learn to play the *Kogel*. A *Mangai* features 6 holes carefully made on the side of the flute, and a breathing hole and an exit hole on both sides of the bamboo piece. This instrument seasons with time, and the tonality gets warmer with sustained use and care. The *Kogel*, on the other hand is a three piece construction, a breathing reed component, the main body, and the *kodai*. The breathing reed component is a slender cylindrical pipe, which used to be crafted from feathers of birds they find scattered in the forest, but more recently they have also begun to use fabricated metal cylinders, permanently fusing it with the main body. The reed component also features two more components, a twirl of the bark of *Kanthari Chilli* and *Pinasi* grass. The bark of the *chilli* while still available aplenty, *Pinasi* Grass has become very hard to find. Musicians have always found the grass in riparian habitats around *Pillur*, but of late, they claim they have to venture further towards the Southern parts of the forest (towards Kerala) to be able to find this grass. With *Pinasi* grass the story remains similar in other parts of NBR as well. Musicians from the *Aracode* region, concur with observations made by their counterparts from the *Pillur* region. The *Kodai*, which is a newer addition to the construction is usually made from *Wrightia* sp. Shaped like a loudspeaker, this part plays the role of amplifying the sound and also increasing the reach and

tonality of the instrument. Although, the construction of the *Kodai* can vary from place to place and also on available materials. The main body of the *Kogel* is made using *Gulada maram* (*Gmelina arborea*), and also features 6 holes for producing a variety of tones as well as a breathing hole and an exit hole, and grooves to fit the *kodai* and breathing piece.

Percussion instruments on the other hand, were conventionally made using wood which was cut and lying around, but in recent times, they transitioned to using plastic frames, and commercially available skin coverings to create drums. It is not just the knowledge of what materials are needed for the construction, but also of how to treat them, when and where to find them, and also how to harvest them.

As Nanjappan concludes in his interview, these instruments in isolation do not really do much, but when all played together, they can talk to your soul. Similarly, he says his knowledge of the forest cannot be broken down to individual characteristics, but has to be considered a holistic whole, their lives are not independent of music, their lives are not independent of forests, syllogistically it would be possible to say, their music is dependent on their forests.

Abhishek is Additional Programme Coordinator at Keystone Foundation (abhishek@keystone-foundation.org)



'JANAKI AMMA'

THE EPITOME OF DYNAMISM

Shiny Mariam Rehel

She was a vibrant young woman in her thirties, back when her association with Keystone Foundation began. Today she is fondly known as 'Amma' (Mother) or Patti (Grand-mother). At fifty-six, she still carries out her work with more enthusiasm and passion than ever. Age has become irrelevant to her. A Kurumba born and raised in Vellericombai, Janaki Amma has emerged as a leader in her community.

Her journey with Keystone Foundation dates back to the late nineties when the organisation was gradually establishing itself in the Nilgiris. Her brother Halan, a traditional Kurumba honey hunter used to sell his honey to the organisation, which was back then a rented space 'Cintra' situated in the Groves Hill Road in Kotagiri. Janaki Amma fell ill and was admitted to Kotagiri Medical Fellowship hospital

(KMF), a hospital that began in 1937 to cater to the needs of the local and Indigenous people. She was in dire need of blood due to her illness, when a member of Keystone had offered to donate blood. She came to know that someone from Keystone had donated the blood but still not aware of who the person was. From then onwards she made up her mind to spend her days working and contributing to the welfare of the organisation as a gesture of gratitude. She involved herself in the activities that were taking place at Keystone.

She was the spearhead in setting up nurseries of native Non-Timber Forest Species at her village. Leadership was innate in her. She took up various responsibilities shuffling and coordinating Keystone's work in Vellericombai. As she was a person with energy and confidence, members of the organisation recognised her dedication and were willing to help her hone her skills. She was sent to Pondicherry as one of the resource people for Ecological Monitoring Workshop and until now she has visited several other parts of the country and attended workshops and meetings, the recent being the 'Indigenous Terra Madre' that was held in Meghalaya in 2015.

This gave her exposure to various indigenous communities, people, their traditions and knowledge, which shaped her to be a confident woman, no matter what the barrier was. She is one of the Directors on the board of Aadhimalai Pazhangudiyinar Producer Company Ltd, a spin-off of Keystone, wholly owned by indigenous people of the Nilgiris. She also works with the



team at Keystone on Conservation Education programmes and is a part of the Village Elders Programme, imparting traditional knowledge to young children and the youth in and around the village. She has assisted in documenting 28 sacred groves along the community and enabled protection of eight critical ones. Her knowledge on traditional medicinal plants, phenology of native plants and the landscapes in villages around the Nilgiris is invaluable. She played a major role in the mobilisation of her community in regard to the Forest Rights claims. She has helped in building young leadership amongst her people, working hard to promote traditional systems of governance and revive important events in the community to keep their pride and identity alive.

Her tales of being a maverick are numerous. She still strives to work for the welfare of the organisation and her community. She always looks at herself as a facilitator to solve issues and is willing to take up authority to keep the community well connected. The sun might turn off, but she will always shine and will never be stopped.

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NEELA KURINJI

ON THE HIGH HILLS

SATHYAMANGALAM FORESTS

S Ramasubramanian, IFS

The forests of Sathyamangalam are resplendent with flowering plants especially in the grasslands of the higher hills. The sight of balsams, wild orchids, and other special monsoon flowers soothe the heart making one forget the steep uphill climb. The dry forest is no less in comparison and one's senses are rejuvenated when a 'Flame of the Forest' tree bursting with crimson flowers or 'Indian Laburnum' in full golden bloom is spotted. These flowers are the jewels on the crown of these beautiful forests.

The Neela Kurinji is famous for its gregarious flowering and some of them flower in 12 year cycles, making it a sight to look forward to. I happened to witness the last flowering in Eravikulam National Park in 2014 and was amazed that 1,50,000 people had visited the park – this can be termed as a success story for conservation since one event inspired so much public appreciation for Nature's wonders.

An incident that is still etched in my memory was the trek that I made in the Sathyamangalam hills to a place called Jodigere (which lies in Karnataka). The name suggests a pair of wetlands or ponds, which must have been present in the area. The place is the meeting place of Tamil Nadu and Karnataka borders in the forest and I was accompanied by my field staff and a remarkable tribal leader, Jedayan (sadly he passed away in 2013 in a tragic road accident). Jedayan was instrumental for a lot of development activities for the tribal people of the region. He was a man of extraordinary courage, confidence and wisdom. He had a lot of respect for the forest department and would always say "we must welcome anybody who is coming forward to do good work".



Photo: Jenner Prince Iyyadurai

The trek to Jodigere was cold, windy, steep and long; all along we witnessed the rolling grasslands interspersed with short stunted trees forming the upper montane forests or 'Sholas'. The sight was most memorable, of streams, moss, lichens, and evergreen trees of the Minchikully forests. The notorious forest bandit Veerappan is said to have taken refuge in these forests for six months with his group and family. At Jodigere the Karnataka forest department has a watchtower and we were welcomed by the anti-poaching team that was on duty there. The sweet black tea that we got was the tastiest drink I have ever tasted, especially after the long walk in the cold rain.

I remember that day very clearly since after the tea and a light lunch we moved towards the forests of Tamil Nadu and had to trek through thick evergreen forests. As we turned around a hillock the sight that lay ahead was breathtaking – a carpet of purple-blue – Neela Kurinji was flowering in the forests of Sathyamangalam. This had not been reported or recorded before and we were truly amazed to see the

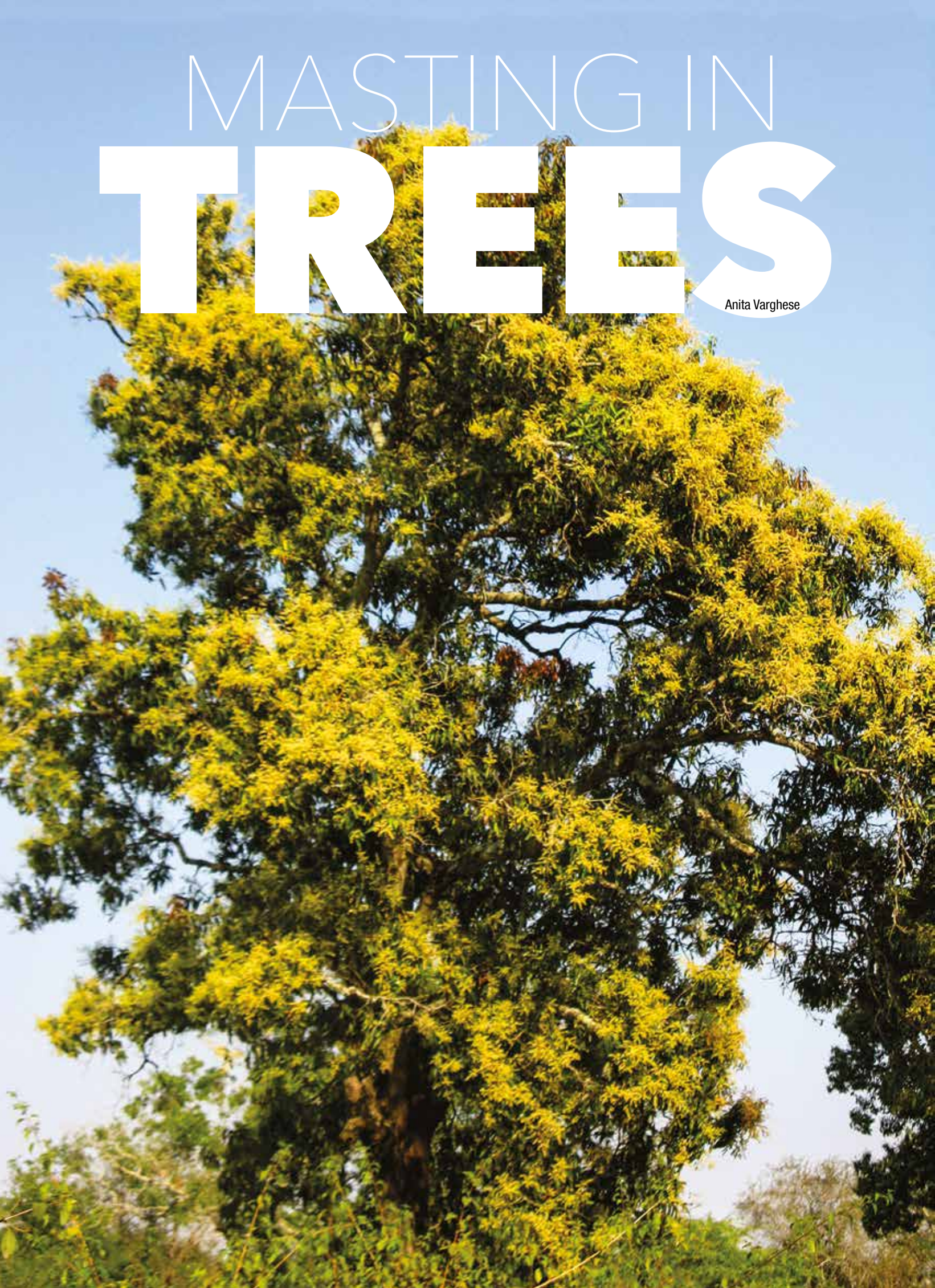
full bloom. We stopped for a while to take in the sight and to capture them in our cameras. The photos can only reveal a small part of our experience, not the full magic of that moment. As we moved on further in the grasslands we saw a herd of elephants quietly feeding in the distance – no forest trek in Sathyamangalam is complete without a tryst with these gentle giants.

Any person who has experienced the inspiration of a hike, trek or even a simple walk through a forest will remember the thrill of being one with Nature. Indeed the enigmatic forests of Sathyamangalam hold to us a mirror reflecting the richness of Nature which continues to survive in small islands and which we must strive to protect, conserve, appreciate and respect. When I witnessed the Neela Kurinji bloom on those hills with Jedayan, little did either of us know that Jedayan would not be around to see the kurinji bloom again! A reminder that the woods are lovely, dark and deep and we have promises to keep...

Thiru S. Ramasubramanian, IFS is currently the Conservator of Forests, Thanjavur Circle

MASTING IN **TREES**

Anita Varghese



Every year the Jamun trees flower in profuse bunches, offering wild bees a feast of nectar and pollen. A month later the fruits have ripened and then again it is a feast for the bears! The year 2017 turned out to be something of a spectacular year as far as the Jamun trees of Kotagiri were concerned. We watched at the Keystone office as jeeploads of fruit were brought in by the Adivasi people for sale. Every road in Kotagiri had a patch of deep blue, stained almost purple from fruit that had fallen. It was indeed the blue to purple mountains this year. What happened to the Jamun trees – why did they produce so much fruit?

All plants are known to display various strategies to allow them to reproduce, persist and survive not just as an individual but as a population. These strategies are in response to the environment whether it is to allocate energy or resources for reproduction, growth or maintenance. Among the range of strategies for reproduction that plants display, mast fruiting/seeding is one that has been of much interest to plant scientists. Mast seeding, also known as masting, is the production of many seeds by a plant every two or more years in regional synchrony with other plants of the same species or in other words within a population of plants. Masting is often seen in long lived plants which are not affected if they do not reproduce in some years.

Several hypotheses have been developed to explain masting in plants. Many plants depend on wind to carry their pollen and their seeds. These plants also exhibit mast seeding. In the Nilgiris one of the common plants that are wind dispersed and display masting is the Bamboo which flowers in a synchronised manner and in cycles of 12-60 years. Another hypothesis regarding masting is the predator satiation theory. By producing an abundance of seed, plants provide enough food for the seed predators to be satiated and thereafter leaving many seeds intact for regeneration. Another theory that has also gained ground is that plants can predict a



favourable year or in other words they are responding to a year that is favourable in terms of rain and temperature which will help the seeds germinate and establish well. There are several other theories as well, and one more that deserves mention is the production of large number of flowers or fruits will attract more pollinators or seed dispersers which will again help the plant establish itself better.

These theories are not exclusive since some plants may depend on wind pollination and seed dispersal but may also be dependent on seed dispersers. The bamboo is an example of this once again. And

further if a plant is responding to the environment, how is it that in the same environment some plants do not respond in a similar manner - why does the Jamun mast fruit while other trees growing alongside do not use this as a strategy for survival? There are several theories to this question too and evolutionary strategies differ in species and populations of plants.

Finally, mast is the botanical term for seeds and they are of two main types, hard and soft. The hard mast refers to hard nuts and seeds while the soft mast refers to berries and drupes and winged seeds.

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THE BUZZ

NNHS DIARY

NNHS Diary January 2017 June 2017-08-26

1. We had 36 students along with 4 teachers from The School, KFI Chennai as part of a Nature education program at Kotagiri from January 10th to the 14th. After a two day introductory session around Keystone campus, Longwood Shola and Kotagiri town the students went out in three groups. While one group worked on the upper plateau landscape – learning about Todas and removal of exotic species, the second group moved between the water project and the millet landscapes of Aracode and Irula tribe and the third group went to Hasanur area to understand Irula people and their agriculture and forest dependence. The students came back to Kotagiri and presented their experiences and learning. A very enthusiastic group and we look forward to working with The School again.



Photo: Anandhi Chandran

2. In February 2017 NNHS members took part in the Great Backyard Bird Count. It was a special time when a young photographer was also able to get a video of the Kashmiri flycatcher which have now made the Keystone campus a part of their routine annual stopover.

3. Mr Andre Lieu, President of IFOAM was visiting the Keystone campus and readily agreed to meet with citizen groups and interact with the children of Blue Mountain School, Ooty to talk about organic agricultural practises and seed savers. The talk in Coonoor was organised at 'De Rock' resorts and attended by more than 40 people.



Photo: Anandhi Chandran

4. Blue Mountain School- We continue our program at the school and meet with students every Friday during the term.

5. Promoting ecotourism at Kodithen mund- NNHS has organised several student group visits to Kodithen mund these past six months too. We also took the NFLC 2017 batch to visit and understand the eco tourism model of the village.

6. OMCAR Foundation – NNHS is starting to build ties with OMCAR Foundation and Dr Balaji who spearheads some inspiring ocean conservation efforts along the Palk Bay. We took 8 students of the NFLC for a weeklong program to volunteer for their sea grass restoration work.



Photo: Anandhi Chandran



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.

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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.

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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.

Yellow-browed bulbul
Photo: Sneha Shekhawat



Photo: Jenner Prince Iyyadurai

Strobilanthes kunthianus (Wall. ex Nees) T. Anders. ex Benth. Acanthaceae

Flowering every once in 12 years the Neelakurinji or Kurinji flowers bloomed across the Nilgiris from August to December 2018. Kurinji grows at an altitude of 1300 to 2400 metres. The plant is usually 30 to 60 cm high. The Kurinji plant belongs to the genus *Strobilanthes* which was first scientifically described by Christian Gottfried Daniel Nees von Esenbeck in the 19th century. The genus has around 250 species, of which at least 46 are found in India. Most of these species show an unusual flowering behavior, varying from annual to 16-year blooming cycles.



The Kurinji plant is distributed across Western and parts of Eastern Ghats. The species name 'kunthiana' is derived from the river Kunthi which flows through the Silent Valley National Park.

Source: https://en.wikipedia.org/wiki/Strobilanthes_kunthianus