

Neelakurinji: A spectacular flower of Western ghats

The Neelakurinji, scientifically known as *Strobilanthes* spp. is a purplish flowering shrub, which blooms once in 12 years in the hills of the Western Ghats and Himalayan hills. The entire hill range looks blue once the blooming starts and retains for nearly three months. This unique lifecycle of the plant makes the hills a must-visit destination for travellers, botanists and nature enthusiasts. We must consider the Neelakurunji blooms as one of the wonders of the world and the heritage of our own Western Ghats. This article throws light on the significance, habitat, distribution and conservation status of Neelakurunji of Western Ghats.

NEELAKURINJI or Kurunji or Kurinji, botanically belongs to the genus *Strobilanthes* spp. well known for its hues of purplish blue flowers. It belongs to a family of Acanthaceae. These shrubs produce flowers gregariously that are predominately found in the valley of Western Ghats and Nilgiri Hills of South India (Karnataka, Kerala and Tamil Nadu). The flowering cycle of this unique rare plant ranges from one to 16 years. Neelakurunji is the most prominent flower and when it blooms, the entire hill looks like a beautiful carpet of purplish blue colour making the place an attractive tourist spot. The Nilgiris, which literally means the Blue Mountains got its name from the purplish blue flowers of Neelakurinji that flower once in 12 years.

History

The flowers of *Strobilanthes* spp. are mentioned as early as the 1st century in poems of the Tamil Sangam literature. Its flowering is a landmark in the lives of the Muthuvan and Paliyan tribes of Tamil Nadu who used to calculate their age. The flowering of Neelakurunji is their biological calendar. In 1936, Robinson M. E. published an article titled "Flowering of *Strobilanthes* in 1934" in the Journal of Bombay Natural History. In his paper, he mentioned that the first European settlers in Nilgiris recorded the flowering of the *Strobilanthes kunthianus* over the hill ranges of Nilgiris in

the year 1826. The gregarious flowering of *Strobilanthes kunthianus* in Nilgiris was found once every 12 years and in full bloom in 1838, 1850, 1862, 1874, 1886, 1898, 1910, 1922 and 1934. The Neelakurunji flowers are associated to religious sentiments among Hindus.

Habitat and distribution

The genus name *Strobilanthes* is derived from two Latin words 'Strobilos' meaning cone and 'anthos' meaning flower. It is the second largest genus of the family Acanthaceae. It was identified in India during 19th century by Christian Gottfried Daniel Nees von Esenbeck who described as the plant belonging to the genus *Strobilanthes*. The genus *Strobilanthes* has about 450

species. Out of that, around more than 160 species are found in India, of which 72 species are endemic to the Western Ghats. India stands first in the diversity of the genus *Strobilanthes* about 40% of the total diversity. It is also considered one of the most interesting genera, for its medicinal properties and gregarious and infrequent flowering. Most of the species are perennial and plietesials nature, flowering cycle varies from 3 to 16 years depending on the species.

The genus *Strobilanthes* is distributed in the tropical and subtropical parts of the Indian subcontinent and South-East Asia. Apart from the Shola forests of Western



Ghats, it is distributed in Shevroys in the Eastern Ghats and peninsular plains. The Western Ghats are considered hotspot for this genus. The species of *Strobilanthes* are adapted to the grassy lands of the Western Ghats and grow from 100 to 2500 m above mean sea level, grows profusely in the Shola forest of Western Ghats.

Plant biology

The species belonging to genus *Strobilanthes* are small shrubs reaching a height of 0.5–3.0 m. Some of the Cholakurinjis like *Strobilanthes homotropus*, *S. gracilis* and *S. luridus* grow up to 8 m. The species of Neelakurunji have varied habit from short perennial herbs to densely branched erect shrubs. Flowers are sessile or pedicellate in open panicles with bracteate heads or spikes. Leaves are opposite, petiolate or sessile; leaf blade adaxial usually with prominent linear cystoliths and sometimes also abaxial, margin variously dentate, serrate, crenate, undulate, or entire. Many species are cultivated for their two lipped, hooded flowers in varied shades of blue, pink, white and purple. These plants grow for several years before flowering, setting seed and dying.



Neelakurunji flowers (*Strobilanthes sessilis*)

Medicinal uses

Apart from its ornamental beauty, Neelakurunji, an underutilized plant, can also be used for its medicinal properties. Plants are an abundant source of unique active components which shows anticancer, anti-

Taxonomical hierarchy of Neelakurunji

Kingdom	Plantae
Sub-kingdom	Phanerogamia
Division	Angiospermia
Class	Eudicots
Sub-class	Asterids
Order	Lamiales
Family	Acanthaceae
Genus	<i>Strobilanthes</i>
Vernacular names	Hindi -Kurinji Kannada: Kurunji, Harle, Gurige, Gurgi Tamil and Malayalam -Neelakurinji

inflammatory, antiosteoarthritic, analgesic properties and antioxidant activity. Kurinjithen, a rare honey is derived from the mass flowering of Neelakurinji flowers. According to local people, this rare honey is known for its medicinal properties which has ability to cure heart blockages. Extract of some species of *Strobilanthes* has been commonly used to cure viral infections by hepatitis B virus, mumps virus, influenza viruses. These are also used to treat snake bites, spider poisoning, cerebrospinal meningitis and viral pneumonia, etc. Some species of *Strobilanthes* (e.g. *Strobilanthes cusia*) are used in traditional Chinese medicine.

Mechanism of flowering

The flowering period of *Strobilanthes* spp. varied across the genus particularly known for its gregarious flowering over vast area at particular flowering cycle. Most of the species blooms in September to December, while *S. lupulina* and *S. hamiltoniana* flowers bloom throughout the year. Karinkurinji, i.e. *Strobilanthes ciliate* is one of the species which flowers every year. Flowering cycle pattern varies with 4-5, 8-9 and 10 years. *Strobilanthes* is remarkable for its diversity in pollen and plietesial pattern of flowering of many species. Plants that flower at long intervals are known as plietesials and grow for a number of years, produce flowers synchronously, set seeds and then die. The length of the cycle may vary between 8 and 16 years. *Strobilanthes* produce blooms as 'synchronized flowering'. Masting or mast seeding, production of huge seeds within a particular time in an area also seen in Neelakurunji. There is no proper scientific evidence to explain gregarious blooming of Neelakurunji over a large area with same periodic cycle.

Recent blooms of Neelakurunji

One of the major tourist destinations that received the major tourist foot fall for its mesmerizing scenery and the once-in-twelve years blooming of Neelakurinji (*Strobilanthes kunthiana* (Nees) T. Anders.) unique to Munnar ranges which is known as 'The Kashmir of Southern India'. In 2018, Kerala witnessed magnificent panorama seen from Kovilur, Kadavari and Eravikulam National Parks in Munnar in the Western Ghats mountain ranges. Munnar ranges are regarded as the 'Queen of Kurunji flowers'. Eravikulam National Parks in Munnar

Table 1. Recent blooms of Neelakurinji in India

Blooming year	Scientific name	Habitat
2017	<i>Strobilanthes callosa</i>	Sandur Hills in Bellary, Karnataka.
2018	<i>Strobilanthes kunthiana</i>	Eravikulam National Park in Munnar, Kerala
2019	<i>Strobilanthes kunthiana</i>	Garhwal region in Uttarkashi, Uttarakhand
2021	<i>Strobilanthes sessilis</i> var. <i>sessiloides</i>	Mandalpatti Hills in Kodagu, Karnataka
2022	<i>Strobilanthes sessilis</i>	Mullayanagiri, Seethalayanagiri in Chikkamagaluru, Karnataka

has recorded an arrival of 4.44 lakh domestic and 1.08 lakh foreign tourists for the visual treat of Neelakurinji bloom. The largest species diversity of *Strobilanthes* spp. is in the Southern Western Ghats ranges, especially in the Kerala section.

Karnataka is undoubtedly one of the rich biodiversity hot spot in the country, and the appearance of Neelakurinji flowers has contributed to its beauty. In 2018, Kurunji flowers have abundantly grown in Mandalpatti hills of Kodagu district in Karnataka after a gap of 12 years, adding a magnificent charm to this place. The flowering were first spotted around early August, 2018 which continued till end of September, 2018.

In the month of September and October, 2022, there has been a significant increase in number of trekkers and visitors who are rushing towards Chikkamagaluru to enjoy the beauty of this unique flower. The carpet of blue flowers in Mullayanagiri, Kote Betta and Kumara Parvatha also attracted many travellers, nature lovers and botanists.

Conservation status

The Shola grasslands of Western Ghats were known to enjoy the wealthy diversity of *Strobilanthes* species. The discoveries of recent species like *Strobilanthes kannani*, *Strobilanthes jomyi*, *Strobilanthes sainthomiana*, *Strobilanthes malabarica*, *Strobilanthes agasthyamalana* adding to the list year by year indicate the actual diversity of Kurunji in Western Ghats is far beyond our assumptions.

However, due to increasing anthropogenic activities, these have been transformed into Tea and Coffee plantations. Exotic species such as eucalyptus, acacia, pines and wattle in these plantations are continuously encroaching on the original habitat of this endemic plant species. The Neelakurinji is further threatened by increasing tourism, land encroachment for plantation, tourism as well as road network and disposal of plastic garbage in these sites resulting in reduced occurrence of mass blooming of Neelakurinji. According to earlier reports, mass blooming of Neelakurinji attracted a large number of in habitats of Western Ghats, jungle fowl to feed on the large quantity of seeds produced. Some species of *Strobilanthes* are



already being lost due to combination of various factors and 22 *Strobilanthes* species are under threatened according to the Red List of 2012.

To prevent such a phenomenal paradise from becoming extinct in near future, an impactful step has been taken to conserve Neelakurinji shrubs by the Government of Kerala by establishing Kurinjimala Sanctuary in 2006, which spreads across 32 km. It is situated in the Vattavada and Kottakamboor villages near Munnar. They also run campaigns and events to raise awareness about Neelakurinji conservation. “A single flower doesn’t matter, but taken together, in a wide area, it’s a romantic scene,” says G. Rajkumar, a founder of the Save Kurinji Campaign Council. The last blooming



View of flowering of Neelakurinji (*Strobilanthes sessilis*) in Mullayangiri in Western Ghats of Karnataka



Mass blooming of Neelakurinji in Western Ghats

of *Strobilanthes kunthianus* (Neelakurinji) in Kerala is considered an item for revenue and it is estimated that it had generated a huge revenue within three months. Sadly, very little of this money is ploughed back for the effective conservation and management of Neelakurinji. Therefore, further monitoring and conservation of its population is highly recommended. In 2018, Jomy Augustine published a book named “*Strobilanthes* in the Western Ghats, India. The Magnificent Role of Nature in Speciation”. In his book, he broadly sketches the geographical reach of the 64 species of *Strobilanthes* in Peninsular India.

As per environmentalists, over-tourism through high footfall in this region might spoil the bloom. Therefore, environmentalists urge respective forest departments to restrict entry to a few visitors. The local authorities and administration is taking measures to preserve the bloom and not let it get spoiled by excess tourists. As an individual citizen, people need to conserve the threatened biodiversity by acting responsibly they visit the site as a tourist. Further, necessary conservatory measures should be enacted by the forest department and conservatory boards to conserve such unique diversity of ‘Neelakurinji’.

Future prospects

- **Ecotourism:** The blooming of Neelakurinji flowers attracts a large number of tourists and nature enthusiasts. As awareness about the flower spreads, it is expected that ecotourism in the areas where Neelakurinji grows will increase. This can create opportunities for local communities to benefit from tourism-related activities such as accommodation,

transportation, guided tours, and souvenir sales.

- **Conservation and research:** The unique flowering pattern of Neelakurinji makes it an interesting subject for scientific research. The flower’s ability to bloom periodically after long intervals has fascinated botanists and ecologists. Further research and conservation efforts can help in understanding the ecological significance of this species and implementing measures for its protection.

- **Horticulture and cultivation:** Given the popularity of Neelakurinji flowers, there may be attempts to cultivate them in controlled environments or gardens. This could involve studying the plant’s growth requirements, optimizing blooming conditions, and exploring techniques for propagation. Successful cultivation may lead to a more predictable

availability of Neelakurinji blooms and contribute to the floral industry.

- **Biodiversity conservation:** Neelakurinji is an indicator species for the Western Ghats, a UNESCO World Heritage Site known for its rich biodiversity. The conservation of Neelakurinji habitats will benefit other plant and animal species that are dependent on the same ecosystem. Efforts to protect the Neelakurinji flower can contribute to the overall conservation of the Western Ghats and its unique biodiversity.
- **Cultural significance:** Neelakurinji holds cultural significance for indigenous communities residing in the Western Ghats region. The flower is often associated with local traditions, festivals, and folklore. Preserving the Neelakurinji flower and its natural habitat can help safeguard these cultural practices and maintain the cultural heritage of the communities living in the region.

It’s important to note that the future prospects of the Neelakurinji flower depend on various factors, including environmental conservation, sustainable tourism practices, and scientific research. Responsible management and conservation efforts will play a crucial role in ensuring the long-term survival and prosperity of this unique flowering plant.

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