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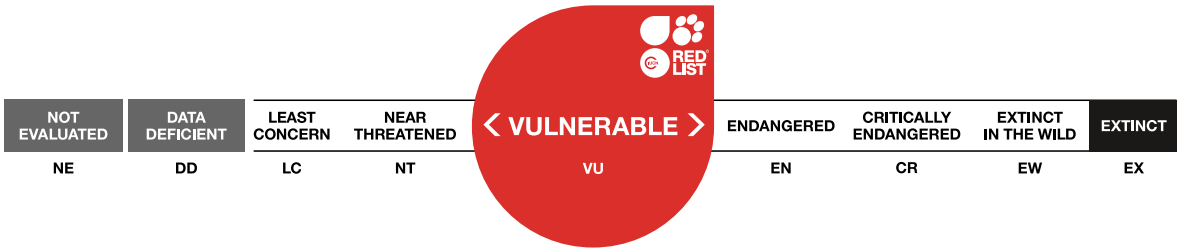
Strobilanthes kunthiana, Neelakurinji

Assessment by: Amitha Bachan, K.H. & Devika, M.A.



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Taxonomy

Kingdom	Phylum	Class	Order	Family
Plantae	Tracheophyta	Magnoliopsida	Lamiales	Acanthaceae

Scientific Name: *Strobilanthes kunthiana* (Nees) T.Anderson ex Benth.

Synonym(s):

- *Phlebophyllum kunthianum* Nees

Common Name(s):

- Malayalam: Neelakurinji

Taxonomic Source(s):

POWO. 2023. Plants of the World Online. Facilitated by the Royal Botanic Gardens, Kew. Available at: http://powo.science.kew.org/. (Accessed: 2023).

Identification Information:

A semelparous bushy shrub 1- 3 m heigh with blooming cycle of 12 years; branches, reddish green, glabrous. Leaves to 6 x 3 cm, elliptic, glabrous above, coriaceous. The dense white farinose indumentum on the abaxial surface of the leaves distinguish the species from other similar species of the genus. Inflorescence a broad spike, 3-5 cm long, cylindric, 2-5, on axillary peduncles. Flowers many; calyx 10 mm long, lobes acuminate; corolla 25 mm long, blue, hairy. Fruit narrowly elliptic capsule.

Assessment Information

Red List Category & Criteria: Vulnerable A2c ver 3.1

Year Published: 2024

Date Assessed: January 31, 2024

Justification:

em style="background-color: rgb(255, 255, 255); font-family: "Times New Roman";">Strobilanthes kunthiana is an endemic shrub to 3 m high, seen only in the high-altitude montane grasslands of the shola grassland ecosystems of five mountain landscapes of southwest India at 1,340–2,600 m elevations. They are known for their massive blooming, imparting purplish blue colours to the mountain grasslands and popularly known as Neelakurinji (Blue Strobilanthes) blooms. They are semelparous with showy synchronous blooming and fruiting at every 12 years at the end of the life cycle, which was reported since 1832 and up to 2022. The area of occupancy (AOO) is 220 km^2 and extent of occurrence (EOO) is 25,510 km^2. The species has 34 subpopulations within 14 ecoregions of the high-altitude mountain ranges of southwest India, represented by 93 records. There are 33 subpopulations in the Western Ghats and one in the Eastern Ghats (Yercaud, Shevaroy Hills). Most subpopulations are in the Nilgiris of Tamil Nadu, followed by Munnar-Idukki, Kerala, Palani-Kodaikanal, and Anamalai mountains. *Strobilanthes kunthiana* grassland habitats were impacted by tea and softwood plantations, afforestation programs, infrastructure development, roads, and transportation. The invasion of the Black Wattle from adjacent plantations are major concerns for the species, along

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with tourism management and infrastructure development. There has been a suspected 40% reduction in the population and AOO over the last three generations, with declines ongoing. Hence, the species is assessed here as Vulnerable A2c.

Geographic Range

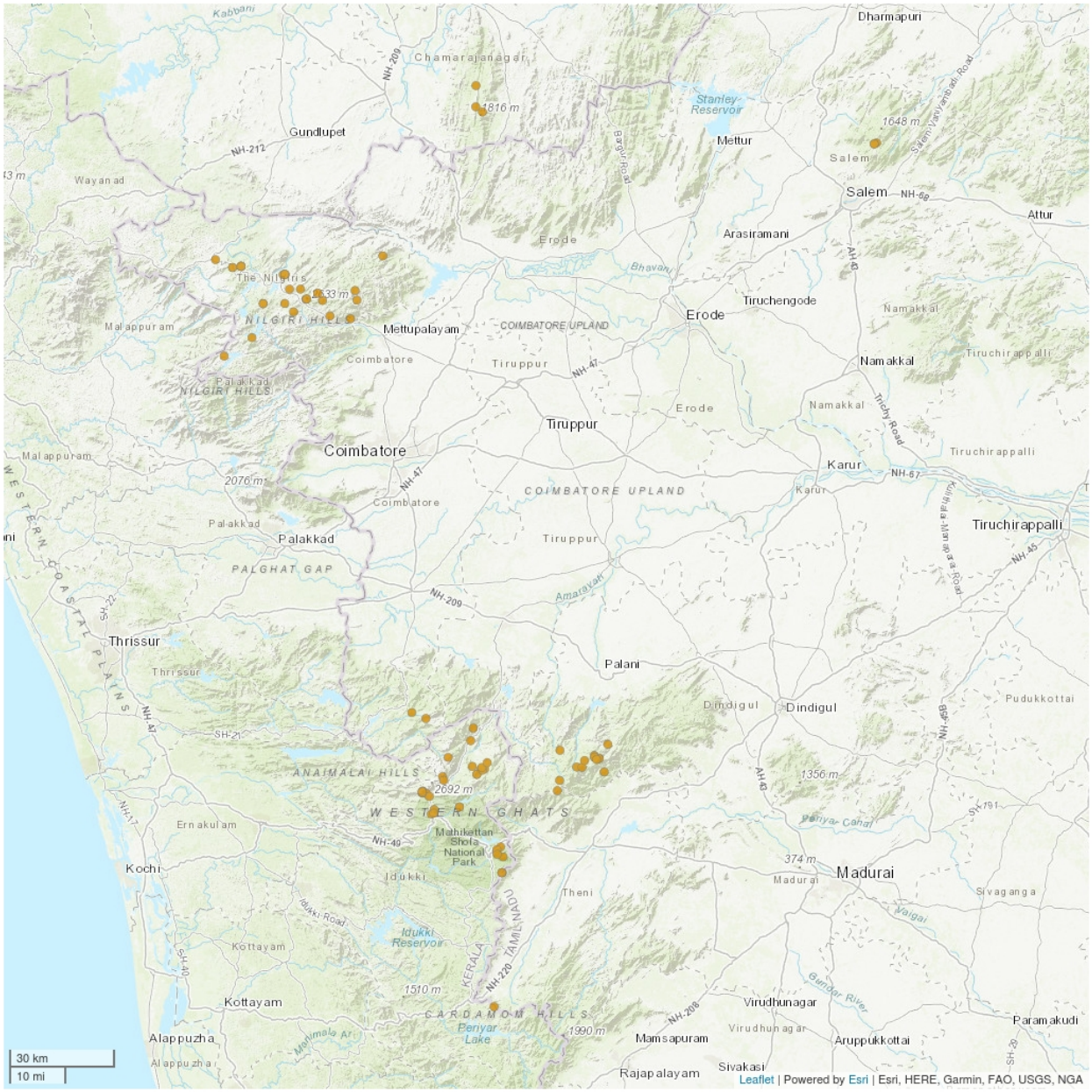
Range Description:

Strobilanthes kunthiana is endemic to southwest India.

Country Occurrence:

Native, Extant (resident): India (Karnataka, Kerala, Tamil Nadu)

Distribution Map



Legend

EXTANT (RESIDENT)

Compiled by:

Amitha Bachan KH & Devika M.A. 2024

The boundaries and names shown and the designations used on this map do not imply any official endorsement, acceptance or opinion by IUCN.

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Population

Strobilanthes kunthiana is a shrub to 3 m high, seen only in the high-altitude montane grasslands of the shola grassland ecosystems of southwest India at 1,340–2,600 m elevations. They are semelparous, showing synchronous blooming and fruiting 12 years at the end of the life cycle, rarely one year before or after (Matthew 1971). The species was reported with 24 collection records from 14 subpopulations (Carine *et al*. 2004). The present estimate brought out 93 collection records from the 34 subpopulations within 14 ecoregions of the high-altitude mountain ranges of southwest India. The 33 subpopulations are in the Western Ghats and one in the Yercaud of the Shevaroy Hills of the Eastern Ghats. Most subpopulations are recorded in the Nilgiris of Tamil Nadu, followed by Munnar-Idukki, Kerala, the Palani-Kodaikanal hills, and the Anamalai hills in Tamil Nadu. There has been a suspected 40% reduction in the population and AOO chiefly over the past three generations due to conversion for tea and high altitude softwood (*Eucalyptus*, Black Wattle) plantations (Saju 2012, Amitha Bachan and Devika 2021, Sasmitha *et al*. 2021).

Current Population Trend: Decreasing

Habitat and Ecology **(see Appendix for additional information)**

Strobilanthes kunthiana is an endemic shrub species seen only in the natural high-altitude montane grasslands of southwest India, with an altitude ranging from 1,340 to 2,600 m. The species is seen in subpopulations with a large number of individuals intermingled with other native characteristic grasses and sedges of the montane grasslands. The species is semelparous with a blooming cycle of 12 years, which was reported from 1832 up to 2023 from 34 localities in 14 ecoregions within the five landscapes, such as Nilgiri hills, Palani-Kodaikanal hills, and Anamalai hills in the Tamil Nadu part of the Western Ghats, Munnar-Idukki landscape in Kerala, and Yercaud-Shevaroys hills in the Eastern Ghats. The species is associated with endemic grasses such as *Chrysopogon zeylanicus, Eulalia phaeothrix, Dicanthium polyptychum, Arundinella purpurea* sedges such as *Juncus effusus*, terrestrial orchids like *Habenaria heyneana, Satyrium nepalense*, other herbs *Peristylus aristatus, Eriocaulon dalziel Brachycorythis splendids, Swertia corymbosa, Drosera peltata*, and shrubs such as *Hypericum mysorense, Osbeckia leschenaultiana*, etc.

Systems: Terrestrial

Use and Trade **(see Appendix for additional information)**

There is no use and trade information. The blooming of flowers attracts a lot of tourists and is considered as a festival in the high altitude mountains.

Threats **(see Appendix for additional information)**

The conversion of grassland habitats of *Strobilanthes kunthiana* for tea and softwood, such as *Eucalyptus* plantations, was the reason for the decline in habitats during the colonial period. The afforestation programmes with exotic tree species such as *Eucalyptus* and Black Wattle (*Acacia mearnsii*) by the forest department in the grassland continued the conversion during the 1960s and 1990s (Augustine 2018). These were equally predominant in all five landscapes of the species. Increased infrastructure development, roads, and transportation continue to be the major reasons for the conversion of habitat. The traditional seasonal fire practice by the indigenous community, once

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considered a threat but later identified as vital for management of the grasslands, was taken as one of the management practices of the grasslands by the forest department (Saju 2012). The frequency of controlled fire sets for managing the grasslands, prioritizing the Nilgiri Tahr (the threatened and endemic mountain goat of the habitat), needs to be studied based on the ecology of *Strobilanthes kunthiana* species and grassland and Shola forest dynamics. The invasion of the Black Wattle *Acacia mearnsii* from the adjacent plantations to the grasslands is the major current concern for the species, apart from the management of tourists and tourism-based infrastructure development.

Conservation Actions **(see Appendix for additional information)**

There are habitat management activities for the protected areas such as Kurinjimala Sanctuary and Eravikulam National Park in Kerala (Saju 2012). Species specific conservation plans are not made. Sixty percent of the population is within protected areas.

Credits

Assessor(s): Amitha Bachan, K.H. & Devika, M.A.

Reviewer(s): Watve, A.

Acknowledgements

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External Resources

For Supplementary Material, and for Images and External Links to Additional Information, please see the Red List website.

Appendix

Habitats
(http://www.iucnredlist.org/technical-documents/classification-schemes)

Habitat	Season	Suitability	Major Importance?
4. Grassland -> 4.7. Grassland - Subtropical/Tropical High Altitude	Resident	Suitable	Yes

Plant and Fungal growth forms
(http://www.iucnredlist.org/technical-documents/classification-schemes)

Plant and Fungal growth forms
SL. Shrub - large

Threats
(http://www.iucnredlist.org/technical-documents/classification-schemes)

Threat	Timing	Scope	Severity
2. Agriculture & aquaculture -> 2.1. Annual & perennial non-timber crops -> 2.1.3. Agro-industry farming	Ongoing	Minority (<50%)	Slow, significant declines
2. Agriculture & aquaculture -> 2.2. Wood & pulp plantations -> 2.2.2. Agro-industry plantations	Ongoing	Minority (<50%)	Slow, significant declines
2. Agriculture & aquaculture -> 2.2. Wood & pulp plantations -> 2.2.3. Scale Unknown/Unrecorded	Ongoing	Minority (<50%)	Slow, significant declines
7. Natural system modifications -> 7.1. Fire & fire suppression -> 7.1.2. Supression in fire frequency/intensity	Ongoing	Minority (<50%)	Negligible declines

Conservation Actions in Place
(http://www.iucnredlist.org/technical-documents/classification-schemes)

Conservation Action in Place
In-place land/water protection
Percentage of population protected by PAs: 51-60
Area based regional management plan: Yes
Occurs in at least one protected area: Yes
Invasive species control or prevention: Yes

Conservation Actions Needed

(http://www.iucnredlist.org/technical-documents/classification-schemes)

Conservation Action Needed	Notes
1. Land/water protection -> 1.1. Site/area protection	-
2. Land/water management -> 2.1. Site/area management	-
2. Land/water management -> 2.2. Invasive/problematic species control	-
2. Land/water management -> 2.3. Habitat & natural process restoration	-
4. Education & awareness -> 4.3. Awareness & communications	-

Research Needed

(http://www.iucnredlist.org/technical-documents/classification-schemes)

Research Needed	Notes
1. Research -> 1.2. Population size, distribution & trends	-
1. Research -> 1.3. Life history & ecology	-
1. Research -> 1.5. Threats	-
2. Conservation Planning -> 2.2. Area-based Management Plan	-
3. Monitoring -> 3.1. Population trends	-
3. Monitoring -> 3.4. Habitat trends	-

Additional Data Fields

Distribution
Estimated area of occupancy (AOO) (km^2): 220
Continuing decline in area of occupancy (AOO): Yes
Estimated extent of occurrence (EOO) (km^2): 25510
Continuing decline in extent of occurrence (EOO): No
Number of Locations: 34
Continuing decline in number of locations: Unknown
Lower elevation limit (m): 1,340
Upper elevation limit (m): 2,600
Population
Number of mature individuals: 5,400,000

Habitats and Ecology
Continuing decline in area, extent and/or quality of habitat: Yes
Generation Length (years): 12
Movement patterns: Not a Migrant

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