



Research Article



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Current Status and Conservation Strategies of the Endangered Species *Catamixis baccharoides* Thomson in the Totaghati and Haridwar Shivaliks of the Garhwal Himalaya

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Abstract

Catamixis baccharoides Thomson (Asteraceae), an undershrub endemic to Saharanpur Siwalik, is a highly endangered species of the Garhwal Himalaya. An extensive survey was carried out to know the present status of the species and the causes of its disappearance. In nature, due to habitat destruction, forest fires, new road constructions in hilly areas, low viability of species in some specific habitats, and low germination percentage of seeds, the number of individuals in its habitat is decreasing drastically. Therefore, conservation measures are immediately needed for its conservation in nature.

Keywords: *Catamixis baccharoides*, Highly Endangered, Garhwal Himalaya, Habitat Destruction, Road Constructions.

1. Introduction

Catamixis baccharoides Thomson is a critically endangered, endemic shrub found in the Lower Shivalik belt of Uttarakhand, India, at elevations between 450 and 900 meters. It thrives on steep, dry, calcareous or sandy rocky cliffs, with notable populations in Mansa Devi (Rajaji National Park, Haridwar) and the Tota Ghati (Biyasi regions) of Tehri Garhwal. This species is restricted to the Saharanpur Shivalik region and grows as an erect undershrub. Historically common on rocky slopes such as Ranipur, Mohand Pass, and Timli Pass, it has become rare over time, leading to its designation as endangered by Nair and Shastry¹.

Belonging to a monotypic genus (containing only one species) in the Asteraceae family, within the tribe Pertyeae and subfamily Pertyoideae, *Catamixis baccharoides* is endemic to the Western Himalayas, particularly in Uttarakhand and Nepal. Known locally as Vishpatri or Vishpatra, it is a chasmophyte (rock-dwelling plant) with spoon-shaped, leathery leaves that have rounded teeth and alternate along shyly branching stems. Its flower heads are about 1 cm long, consisting of a few creamy white florets sometimes tinged with violet, arranged in corymbs at the branch tips. The flowering and fruiting season spans from March to May.

The Herbal Research and Development Institute (HRDI) in Mandal-Gopeshwar is conducting important research on medicinal plants native to Uttarakhand, focusing particularly on various endangered species like *Rauvolfia serpentina*, *Picrorhiza kurrooa*, *Aconitum heterophyllum*, *Podophyllum hexandrum*, *Dactylorhiza hatageria*, and *Nardostachys jatamansi* etc.



Among these, *Catamixis baccharoides*, Thomson, is notably a highly endangered species endemic to the Western Himalaya, especially the Shivalik region. It has recently been recorded as a new record in Sher Jung National Park (formerly Simbalbara National Park) in Sirmour district, Himachal Pradesh².

The Chinese Journal of Evidence-Based Medicine emphasizes the significant medicinal value of *Catamixis baccharoides*. Traditionally, it is used to treat pain, particularly joint and muscle pain, and is believed to support digestive health by soothing the gastrointestinal tract. It is also employed to reduce fever symptoms. Due to its antibacterial and anti-inflammatory properties, the plant is applied topically to aid wound healing and treat ulcers. These traditional uses are supported by scientific research, highlighting the economic and therapeutic importance of *Catamixis baccharoides*³. Recent studies have reported population declines linked to road development projects near Byasi, Tehri Garhwal, Mansa Devi, Mohand Pass, and Timli Pass in the Haridwar Siwalik region. However, some locations, notably Mansa Devi and Mohand Pass, still maintain relatively stable, though small, populations due to the continued preservation of their natural habitats. This paper emphasizes the habitat destruction of the plant species, with particular focus on the Vyasi region, where no plant population remains due to increasing biotic pressure.

2. Materials and Methods

The survey conducted from 2016 to 2026 comprehensively evaluated the habitat and population status of *Catmixis baccharoides* across several sites, including Mohand Pass, Mansa Devi Hills, Timli Bypass in Haridwar and Dehradun districts, and Vyasi Hills in Tehri district.

Special focus was placed on its longstanding habitat at Gaibdhar, Totaghati near Vyasi—located 11 km from Vyasi towards Sirnagar—where a small population had previously been recorded. Over the past decade, continuous monitoring documented habitat degradation and a gradual decline in the species' population was recorded.

3. Habitat Survey and Observations

Catamixis baccharoides Thomson, a narrowly endemic species of the monotypic genus *Catamixis* Thomson (Asteraceae: Pertyoideae: Pertyeae), found in India and Nepal, has been lectotypified. However, detailed morpho-taxonomic characterization and an updated distribution range, including a new locality record for this critically endangered species, were provided for the first time by Srivastava and Pusalkar⁴ and Srivastava *et al.*². In India, the species is restricted to habitats in the Western Himalaya, where several studies on its status have been conducted⁵. The author has conducted habitat surveys from 2016 to 2026 with continuous monitoring over the past ten years in Western Himalaya, in addition to earlier visits between 1997 and 1999 to observe population status. The key habitats were surveyed along with their observations and comparative data, are as follows:

3.1 Mohand Pass Dehradun: - Mohand Pass, located within Rajaji National Park about 20 km from Dehradun along Saharanpur Road near Mohand town, features a vertical sandy cliff approximately 25 to 35 meters high. The cliff has sparse vegetation, primarily scattered grasses and bushes of *Catamixis baccharoides* growing in crevices. In April 2026, a total of 9 *Catamixis* plants were recorded there, with only 3 healthy bushes flowering. Compared to 1998, when 17 bushes were recorded⁶, the population has declined by roughly 50% by 2026 (Fig. 1).



Figure 1. Mohand Pass habitat of *Catamixis baccharoides* in April 2026.

3.2 Timli bypass Dehradun

Timli Bypass is located 35 km from Dehradun via Herbertpur to Saharanpur Road in the Shivalik region, this site was once a suitable habitat for the plant. The altitude of mountain of sandy cliff is low but recent surveys show the population *Catamixis baccharoides* has completely disappeared from the known locations due to habitat destruction. Nonetheless, the plant may still be found in other areas around Timli Bypass, where suitable sandy rocky habitats exist. Although, it was earlier reported that about 07 healthy bushes were present between Shiv Mandir to Badshahi Bagh and ± 600 seedling were also raised in this habitat under *in-situ* conservation research project in 1998⁶. However, the current survey recorded no plants at this location, indicating a 100 percent decline in the population.

3.3 Mansa Devi hills, Haridwar

This habitat, located near the Mansa Devi Temple in Haridwar within Rajaji National Park, was surveyed in April 2026. The survey recorded 30 to 35 healthy plants growing on sandy rocks surrounding the temple. These dry rocky areas where plant is available extend approximately 2 kilometers around the temple and rise to elevations between 500 and 700 meters. It was observed that healthy bushes situated more than 3 meters above ground level were in bloom (Fig. 2). The site continues to support enough plants for seed collection and conservation activities. Flowering was noted in April 2026, with seed production anticipated in May 2026. Earlier a total of 61 *Catamixis* plants were reported from this habitat⁶. Currently, the number has declined to between 30 and 35, indicating a population decrease of approximately 50 percent.



Figure 2. Mansa Devi hills, Haridwar habitat of *Catamixis baccharoides* in flowering, April 2026.

3.4 Gaibdhar, Vyasi hills, Tehri

The Gaibdhar area in Vyasi Hills, Tehri district, offers a distinctive habitat for a particular plant species in the higher Himalayas. Unlike its typical growth on special sandy rocks of the Shivalik

Hills, this plant was found growing on hard limestone rock at an altitude of 1700-1800 meters. In 1998, the population at this location was estimated to be around ± 36 bushes and germination of the plant seeds recorded only 2

percent in sand mixed soil⁶. However, by 2019, the population had declined to between 10 and 15 plants. Unfortunately, due to intense biotic pressure from the nearby National Highway 58, the population in this known area has now

completely disappeared due to new road construction (Fig. 3). The authorities have built a cemented wall at this Gaibdhar (Vyasi) habitat, rendering the area plant-free



Figure 3. Showing comparative situation of Gaibdhar, Totaghati of Vyasi hills, site a to c showing existing plant population up to 2019 and d to f showing present situation in 2026

4. Cause of Disappearance

During the field visits, the cases of disappearance of this endangered species were studied in detail. Although the species is generally safe from cattle and wild animals, as they do not prefer feeding on it, it was observed in some areas that goats do feed on its leaves. Most of the *Catamixis* habitat is in rugged terrain where goats and other domestic animals cannot easily reach. The main causes of its disappearance from its habitat are noticed to be: -

4.1 Habitat highly prone to soil erosion

The plant typically grows on sandy cliffs that are highly susceptible to soil erosion, especially during rains. This erosion leads to significant habitat destruction, resulting in a rapid decline in the plant population.

4.2 New Road Construction and Widening of Roads

Many habitats of this endangered species are located near roads. New road construction and the widening of existing roads have caused major habitat loss. For example, populations in Timli

Bypass in Dehradun and Gaibdhar, Vyasi in Tehri have vanished due to road widening activities⁷.

4.3 Low Seed Germination Percentage

The seeds of *Catamixis baccharoides* are very small and exhibit a very low germination rate, only about 1 to 2 percent even under controlled nursery conditions⁶. In natural conditions, this percentage is likely even lower, which, combined with habitat destruction and soil erosion, leads to a drastic decrease in the species' population.

5. Conservation and Future Strategies

It is recorded in the field survey that the plant population is gradually decreasing from its natural habitat. Data shows that approximately 50 % decrease of individuals recorded in last three decades. Therefore, there is urgent need to protect this plant in its natural habitat and conservation measure should be taken through *in-situ* and *ex-situ* conservation by sapling production in nursery.

It is aimed to collect seeds from its natural habitat in May 2026 and grow it in departmental

nurseries of HRDI. Next year it is proposed to plant sapling from nursery to its natural habitat (*in-situ*) and some other sandy cliffs of Shivaliks (*ex-situ*) in 2027. A target of 1000 sapling production is proposed in nursery in 2026.

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Author Contributions

DSB: Conceptualization; Methodology; Investigation; Data curation; Formal analysis, Writing original draft., **AT:** Visualization; Supervision, Guidance.

Data Availability

This article contains data that supports the study.

Conflicts of Interest

Authors state no conflict of interest.

Ethical Approval

Ethical approval was not required for this study.

References

1. Nayar MP, Sastry ARK. Red Data Book of Indian Plants. Vol 1. Calcutta, India: Botanical Survey of India. 1987. pp. 1-396.
2. Srivastava A, Debta MR, Srivastava SK, Dangwal LR. *Catamixis baccharoides* Thomson (Asteraceae), a new record for Himachal Pradesh. *Indian J For.* 2016;39(4):363-366.
3. Anonymous. An extensive analysis of *Catamixis baccharoides*: A critically endangered, endemic plant of the Shiwalik regions of Western Himalayas. *Chinese Journal of Evidence-Based Medicine.* 2026;26(1).
4. Srivastava SK, Pusalkar PK. Lectotypification and new locality report for monotypic and critically endangered genus *Catamixis* (Asteraceae: Pertyoideae: Pertyeae). *Nelumbo.* 2015; 57:11-18. <https://doi.org/10.20324/nelumbo/v57/2015/87083>
5. Dhiman R, Thakur A, Yadav S, Verma PK. Status of *Catamixis baccharoides* Thomson (a critically endangered plant) in Western Himalayas. *J Environ Biol.* 2022;43(6):826-833. <https://doi.org/10.22438/jeb/43/6/MRN-4035>
6. Pundir YPS, Basera H. Conservation of endangered species of Saharanpur Shivaliks, Doon Valley and lower Mussoorie Hills (Western Himalaya)-III, *Catamixis baccharoides* Thomson. *World Weeds.* 1998; 5:207-213.
7. Kanjilal UN. Forest Flora of the Chakrata, Dehradun and Saharanpur Forest Division, Uttar Pradesh. 3rd ed. Delhi, India: Manager of

Publications; year not available. Digital Library of India Item 2015.271123.