



***Rhododendron setosum* D.Don –*Tsallu* the Bristly Dwarf of the Passes**

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Article History

Received: 29.09.2026

Revised: 03.10.2026

Accepted: 08.10.2026

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INTRODUCTION

Most visitors to Yumesamdong remember the yaks and the view. Botanists tend to remember what is under their boots. Between the rocks and the tussock grass sits a wiry, spreading shrub with leaves about a centimetre long, and on a sunny afternoon it gives off a smell so heavy that Sikkim's herders have long blamed it for the headaches of the high passes. They call it *Tsallu*. Botanists call it *Rhododendron setosum* D.Don, the bristly rhododendron.

Taxonomy and Morphology

David Don described the species in 1821 in the *Memoirs of the Wernerian Natural History Society* (Royal Botanic Gardens, Kew, n.d.). It was in cultivation in Britain by 1825 (Trees and Shrubs Online, n.d.). Its accepted native range runs from the central and eastern Himalaya to southern Tibet (Royal Botanic Gardens, Kew, n.d.). Bean's classic account calls it a dwarf, intricate shrublet up to 0.3 m tall. The young shoots are scaly and carry conspicuous stiff bristles, which explains the name *setosum*. The leaves are only 1-1.5 cm long, edged with fine hairs and dotted with brown scales beneath, and the flowers are purple or pinkish (Trees and Shrubs Online, n.d.). Botanists have never been fully comfortable with where it belongs. It has traditionally sat in the Lapponicum series, yet its deeply lobed corolla, large calyx and bristly stems do not fit that group well (Trees and Shrubs Online, n.d.).

In the field the quickest way to separate it from its better-known neighbour, *R. anthopogon*, is to look closely. *R. setosum* has smaller, more crowded leaves and bristles you can feel on the twigs. At Yumesamdong we find it on stony ground at around 4,000-4,500 m, usually in loose company with tussocks and other dwarf rhododendrons (Fig. 1). The published altitude range for the species is roughly 3,650-4,550 m, and Hooker recorded it up to about 16,000 feet (Trees and Shrubs Online, n.d.).



Fig. 1. *Rhododendron setosum* growing between rocks and tussock grass at Yumesamdong, North Sikkim, in October. Note the small, crowded leaves, terminal buds and a few reddened leaves.

Photo: P.C. Gyani.

Historical Accounts and Local Perception

Hooker was struck by how local people talked about it. The Bhotia and Tibetan travellers he met in Sikkim, he reported, blamed the strongly resinous odour of this shrub and *R. anthopogon* for the oppression and headaches felt while crossing the loftiest passes (Hooker, 1849). Low oxygen is the usual explanation for such headaches, and we know of no study that has tested whether the plant's scent adds to it. The belief is still worth taking seriously, because the chemistry behind the smell is unusual.

Essential Oil Chemistry

As far as we can tell, only one analysis of *R. setosum* essential oil has been published.

Pradhan et al. (2023) hydrodistilled leaves collected in September at 4,280 m between Lauribina and Gosainkunda in Nepal's Langtang region and described the results as a first report for the species. They found 20 compounds. The leading ones were an ester, *trans*-sabinyl acetate (24.1%), followed by the monoterpene sabinene (18.7%) and the sesquiterpene alcohol α -elemol (10.0%). Monoterpene hydrocarbons made up only about a third of the oil. In *R. anthopogon* from a lower site on the same mountain, the same team found about 54% (Table 1).

Table 1: Leading constituents (area %) of leaf essential oils of *R. setosum* and *R. anthopogon* from the Langtang region, Nepal. Data from Pradhan et al. (2023).

Rank / class	<i>R. setosum</i> (4,280 m)	<i>R. anthopogon</i> (3,964 m)
1	<i>trans</i> -Sabinyl acetate (24.1)	E-Caryophyllene (14.6)
2	Sabinene (18.7)	α -Pinene (14.3)
3	α -Elemol (10.0)	γ -Terpinene (12.2)
4	Germacrene D (7.7)	β -Pinene (7.4)
5	δ -Cadinene (7.5)	Z- β -Ocimene (7.3)
6	α -Thujene (6.6)	δ -Cadinene (6.7)
Monoterpene hydrocarbons, total	32.7	53.7

This contrast matters. Nepalese *R. anthopogon* oils have usually been led by α -pinene (Innocenti et al., 2010; Dosoky et al., 2016), a sharp, piney note. The oil of *R. setosum* is built differently, with more of the sabinene-sabinyl acetate group and more oxygenated sesquiterpenes. Anyone who has crushed both plants in the same hour will not be surprised that the smells differ. The authors themselves caution that oil composition shifts with collection time, locality, altitude, plant part and whether plants are wild or cultivated (Pradhan et al., 2023). One September sample from a single slope is therefore a starting point and should not be treated as a final description of the species.

We found no published tests of the biological activity of *R. setosum* oil. That is a real gap. For *R. anthopogon*, laboratory work has at least pointed to moderate effects on enzymes linked to brain function (Cornara et al., 2025). Nothing comparable exists for its bristly relative.

Ethnobotanical Records

The ethnobotany of this species is thinly documented. Most published records of Himalayan incense rhododendrons name *R. anthopogon*, which is burned in Tantric Buddhist households alongside juniper (Cornara et al., 2025). *R. setosum* usually appears in that literature as a companion, as it did for Hooker. Our own field notes from Yumesamdong suggest that local people gather it less often, because the smell is considered too heavy, and that it is associated more with protection than with remedies. These are informal observations, and they need proper documentation before anyone treats them as established.

Conservation and Management

The shrub is currently listed as of least concern (Trees and Shrubs Online, n.d.), but our concern is local. At Yumesamdong it grows in a snow-free window of only a few months. It flowers in June and July and sets seed by

October, and any shift in snowfall will change that timing. Trampling by visiting tourists and by yaks at the same sites is already visible. The experience with *R. anthopogon* is a useful warning. Harvest there has been moved to October so that pollination and seed set can finish, and cut branches have been carried to trekking camps (Cornara et al., 2025).

We would suggest three modest steps for Sikkim: marked trails across the flat stretches, grazing rules that keep yaks off the densest patches, and a few permanent plots to record flowering and seed-set each year. Chemical work across seasons, and the first tests of biological activity, would then give this overlooked shrub a proper scientific footing. Tsallu has been blamed for headaches for well over a century. It deserves some credit for something else: it shows how much of the high Himalaya is still unstudied.

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