

RESEARCH ARTICLE

# Extended distribution of two orchids in Himachal Pradesh, Western Himalaya, India

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## Abstract

Here we present extended distribution of two orchid species in Himachal Pradesh. In India, *Calanthe trulliformis* King & Pantl. was previously restricted to the eastern Himalayan region, is now documented for the first time in the western Himalayas. Additionally, *Neottia longicaulis* (King & Pantl.) Szlach., earlier recorded from Uttarakhand and Sikkim, is now reported from Himachal Pradesh based on collections from Dhauladhar Wildlife Sanctuary, Kangra. Our findings include a detailed description, a photoplate, a locality map and comprehensive notes on these species' habitat, phenology, and distribution.

## Keywords

*Calanthe*; Dhauladhar Wildlife Sanctuary; Orchidaceae; *Neottia*; new records

## Introduction

Orchidaceae is a highly diverse and advanced family of monocotyledons. Globally, it encompasses approximately 28,000 species distributed across 736 genera (1). In India alone, the richness of orchid diversity is notable, with nearly 1256 species documented (2). Among these, 239 taxa spanning 72 genera are found in the Western Himalayas, including 13 species endemic to this region (3). Notably, Himachal Pradesh contributes significantly, with 84 taxa across 44 genera reported (4).

During a field exploration of the Andralli Mallah region of Dhauladhar Wildlife Sanctuary (DWLS), Kangra district, Himachal Pradesh, India, in July 2024, we collected two interesting taxa of orchids. After critically examining specimens and reviewing relevant literature (5-9), these were identified as *Calanthe trulliformis* King & Pantl. and *Neottia longicaulis* (King & Pantl.) Szlach., the species hitherto not reported from Himachal Pradesh (10-15). *Neottia longicaulis*, previously known only from Uttarakhand in the western Himalayas, now represents a new distributional record for Himachal Pradesh. Similarly, *Calanthe trulliformis*, an IUCN-threatened species earlier reported from the Eastern Himalayas, marks a novel distributional record for the Western Himalayas.

## Materials and Methods

These specimens were collected from Andralli Mallah region, an eco-sensitive zone, DWLS, Himachal Pradesh. Photographs were captured using

a Nikon D7500 digital camera, and geo-coordinates were recorded using a Garmin eTrex 32x GPS device. Floral parts were dissected and examined using Olympus stereomicroscope SZ-61TR. The specimens were identified after consulting the relevant literature (5-9,13). The identity of both species was reconfirmed after examination of the specimens housed at various herbaria (BR, CAL, E, GH, K, L, P). Standard herbarium procedures were followed, and voucher specimens were deposited at the CSIR-IHBT, Palampur (PLP) herbarium. The acronym of cited herbaria was provided following Index Herbariorum (16-17).

## Taxonomic Treatment

### 1. *Calanthe trulliformis*

King & Pantl., J. Asiatic. Soc. Bengal, Nat. Hist. 64, 2: 337. 1895. Fig. 1.

Plants 25–65 cm tall. Leaves 3–4, dark green; lamina narrowly elliptic to linear-lanceolate, 15–32 × 1.2–3 cm, acute at apex, margin entire, base sessile. Inflorescence 25–50 cm long, puberulous, 5–15-flowered. Inflorescence 30–38 cm long, puberulous, 6–18-flowered. Floral bracts linear-lanceolate, equal to or exceeding the stalked ovary, 1.8–2.8 cm, apex acuminate, green. Flowers are laxly arranged and spurred, sepals and petals are greenish yellow with brown markings inside, and the lip is white, with red-pink near the base, yellowing at the apex. Pedicel and ovary 1.5–2.5 cm long, puberulous. Dorsal sepal ovate-lanceolate, 1.4–1.8 × 0.3–0.5 cm, weakly pubescent, acuminate, 3-veined; lateral sepals similar to dorsal sepals, lanceolate, falcate, 3-veined. Petals linear-lanceolate, 1.0–1.5 × 0.2–0.4 cm, acute at apex. Lip adnate to the column, trowel-shaped, 1.0–1.2 × 0.4–0.6 cm, margins irregularly crenate-dentate at sides, acuminate at the apex with 2 converging lamellae spreading from the base to the apex of midway; spur much shorter than the pedicel and ovary, cylindric, greenish-yellow—Pollinia 8, unequal, in a group of 4.

**Flowering:** June-July

**Fruiting:** July-August

**Habitat:** Found at an elevation of ca 1350 m in association with *Rhododendron arboreum* Sm., *Quercus* sp., *Calanthe plantaginea* Lindl., *Ophiopogon* sp.

**Distribution:** India, Arunachal Pradesh, Sikkim, West Bengal, Himachal Pradesh (present report); Bhutan, Myanmar, Nepal.

**Note:** *Calanthe trulliformis* is an IUCN listed ‘vulnerable’ species (9). Originally, the species was described by King and Pantling in 1895 based on collections of R. Pantling from Mahaldaram, Sikkim (now in West Bengal).

**Economic importance:** Green elliptic to narrowly lanceolate leaves and an elegant inflorescence, making it a promising candidate for ornamental cultivation.

**Specimen examined:** India, Himachal Pradesh, Dhauladhar Wildlife Sanctuary, Andralli Mallah, 1900 m, 17 July 2024, K. Thakur, R. Kumar and V. Kumar 23835 (PLP00004431); Himachal Pradesh, Dhauladhar Wildlife Sanctuary, Andralli Mallah, 1900 m, 17 July 2024, K.

Thakur, R. Kumar and V. Kumar 23870 (PLP00004433).

### 2. *Neottia longicaulis*

(King & Pantl.) Szlach., Fragm. Florist. Geobot. Supp. 3: 117. 1995. *Listera longicaulis* King & Pantl., J. Asiatic. Soc. Bengal, Nat. Hist. 65, 2: 126. 1895. Fig. 2

Plant 15–30 cm tall. Stem glabrous light green, with 1–2 light brown basal sheaths. Leaves 2, borne well above the ground, opposite, orbicular-ovate to reniform, subacute, at apex of stem. 2.5–3.5 × 2.5–3.5 cm, green, veined. Inflorescence 8–10 cm long, puberulous, 8–15 laxly arranged flowers, green. Floral bracts lanceolate, 5–7 × 1–2 mm, acuminate. Flowers 8–10 cm across, olive-green. Pedicel and ovary 7–9 mm long, glabrous. Dorsal sepal ovate-lanceolate, erect, 3.5 × 2.5 mm, 1-veined; lateral sepals falcate, ovate-lanceolate, ca 3.5 × 2 mm, reflexed, 1-veined. Petals ovate-lanceolate, erect, ca 3.5 × 1.2 mm long, reflexed, 1-veined. Lip elliptic-ovate, ca 11 × 8 mm long, broadest at the middle, margin entire, apex bifid, ca 2.5 mm deep sinus, margin ciliate, upper surface of nerve pubescent. Column ca 3 mm long, curved, green. Pollinia 2, sectile.

**Flowering:** July

**Fruiting:** Not seen.

**Habitat:** Found at an elevation of ca 1500 m in association with *Rhododendron arboreum* Sm. *Quercus* sp., *Polygonatum cirrhifolium* (Wall.) Royle, *Ophiopogon* sp.

**Distribution:** India, Himachal Pradesh (Present Report); Sikkim, Uttarakhand; Bhutan, Myanmar.

**Note:** *Neottia longicaulis* was described initially as *Listera longicaulis* by King and Pantling in 1895 based on collections from R. Pantling from Lachen Valley, Sikkim. Later, it was transferred to the genus *Neottia* by D.L. Szlachetko in 1995. Later, it was also reported by Uttarakhand (13). It is one of the lesser-known orchids, and in Uttarakhand, the distribution of this species is sporadic (13).

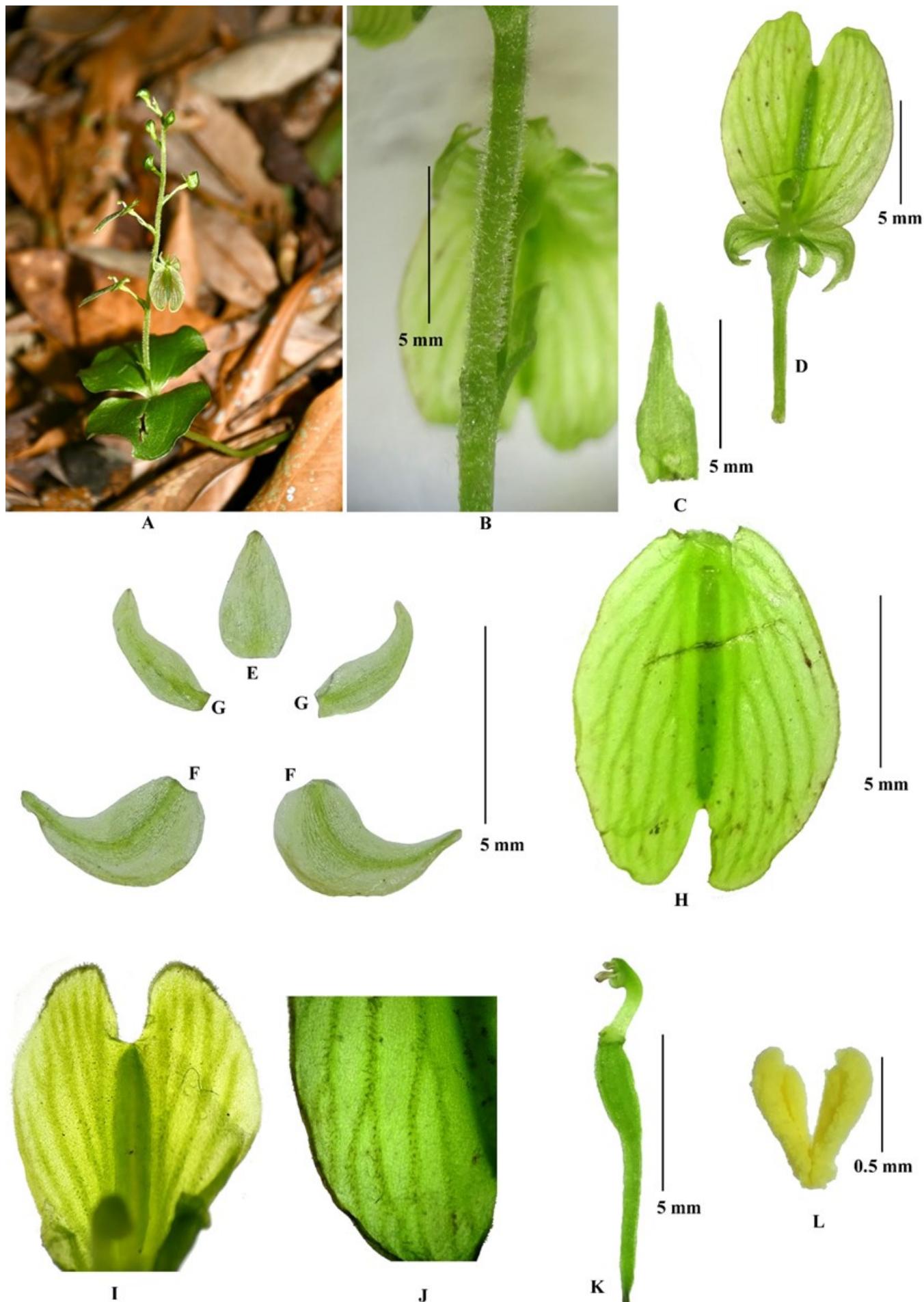
**Specimen examined:** India, Himachal Pradesh, Dhauladhar Wildlife Sanctuary, Andralli Mallah, 1990 m, 17 July 2024, K. Thakur, R. Kumar and V. Kumar 23885 (PLP00004430).

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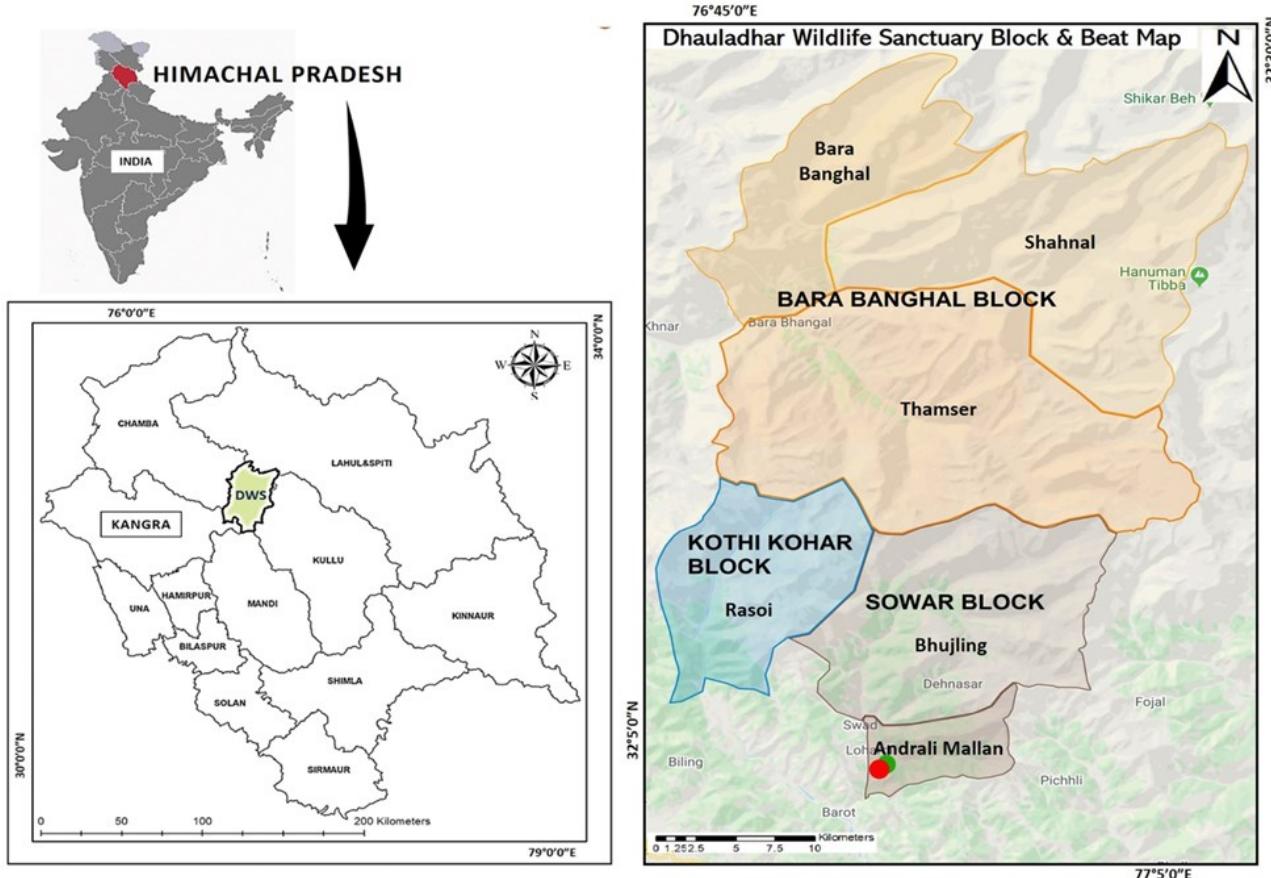
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**Fig. 1.** *Calanthe trulliformis* King & Pantl.: A&B. habit, C. part of inflorescence, D. flower, E. fruits, F. floral bracts, G. column with pedicel and ovary, H. dorsal sepal, I. lateral sepals, J. petals, K. lip, L. lip enlarged view, M. anther cap, N. pollinia.



**Fig. 2.** *Neottia longicaulis* (King & Pantl.) Szlach.: A. habit, B. stem showing hairs, C. floral bracts, D. flower, E. dorsal sepal, F. lateral sepals, G. petals, H. lip, I & J. Lip showing hairs on margin and veins, K. column with pedicel and ovary, L. pollinia.



**Fig. 3.** Locality map of *Calanthe trulliformis* King & Pantl. (red dot) and *Neottia longicaulis* (King & Pantl.) Szlach., (green dot) in Himachal Pradesh [Source- Lyngdoh et al.(18)].

## Author Contributions

KT & RK conducted fieldwork and collected plant specimens. KT & VK were involved in identification, and manuscript preparation. VK involved in illustration preparation, manuscript review and editing, and overall supervision. All authors read and approved the final manuscript.

## Compliance with ethical standards

**Conflict of interest:** Authors do not have any conflict of interest to declare.

**Ethical issues:** None

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