# Conservation status of the endemic orchid, *Peristylus kumaonensis* Renz. (Orchidaceae) of Western Himalaya, India

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**ABSTRACT**

***Peristylus kumaonensis*** Renz is an endemic taxon of Western Himalayas. It is found in the outer fringe of the Kumaun Himalayas 5 km away from Nainital towards Ratighat. The orchid species appears to be restricted to this area according to past and the present surveys. Major threats to the existence of this species are due to habitat fragmentation, forest fire and might be the invasion of a fern species *Phytopteris oxyloba*. This species is of conservation concern because of the low numbers of individuals and restricted distribution in the western Himalayas. [Report and Opinion. 2009;1(3):36-40]. (ISSN: 1553-9873).

**Keywords: Kumaun Himalayas, endemic, *P. kumaonensis* Renz, Western Himalayas.**

## INTRODUCTION

Peristylus is an Indo-Malaysian genus of about 60-70 species of terrestrial orchids. The genus is distributed in the tropical and sub-tropical parts of Asia, New Guinea, Australia and some Pacific Islands. The generic name is derived from Greek peri= around and stylus=column, referring to the shape of the column. The genus *Peristylus* have convex stigmas that are entirely united to the base of the labellum and to the auricles of the column. All species are multi-flowered, dull coloured, small and held close to the short-lived flower stem. All the species are deciduous terrestrials with fleshy, subterranean tubers and closely related to *Habenaria*. *Peristylus* is represented in India by 28 species of which eight species are found in Western Himalayas. Kumaun Himalaya occupies the central sector of Indian Himalaya and lies between 28°44'- 30° 49' N Lat. and 78° 45'- 81° and 01' E long. Broadly the area consists of three parallel mountain ranges. The outermost range rises steeply above the plains to more than 2000 m above msl, reaching 2600 m in some peaks near Nainital. Rainfall is heaviest on the southern slopes of this range and can vary between 1981 cm and 3048 cm annually. This area receives the major part of its annual precipitation during the southwest monsoon from June to September. Altogether 192 species of orchids under 61 genera were recorded so far from Kumaun Himalaya (Pangtey et. al., 1991). ***Peristylus kumaonensis*** Renz was reported for the first time by Dr. J. Renz in 1983 from the locality 5 km from Nainital, towards North on the way of Ratighat at an altitude of 2178 m and it is restricted to this area in the whole of Western Himalayas (**Fig. 1 & 2**). During that period almost 130 individuals were counted at this particular locality (Pangtey, personal communication). On our orchid study tours in Kumaun region since 2002 we have been continuously observing the population of this species. Now the scenario of the whole area has been changed due to habitat changes and anthropogenic pressures. The population has drastically decreased and only 30 individuals were observed in this locality in a recent count. The species generally grows on rocks covered by thick mats of moss. The mossy bed basically holds moisture and soil which is sufficient for the growth of the species. During our survey we tried to locate other areas where this might also occur, but we could not find this species in other parts of Kumaun Himalayas. It is therefore very important to conserve this interesting endemic orchid species and its habitat.

**SPECIES DESCRIPTION**

***Peristylus kumaonensis*** Renz., J. Orchid Soc. India 1: 23. fig. 1. A-H (1987); Pangtey et. al., Orchids Kumaun Him. 77 (1991); Jalal, Sys. Phyt. Hab. Eco. Orch. Utt.: 149 (2005).

Erect, terrestrial herbs bearing 2 unequal basal leaves, that are somewhat clasping. Leaves erect and unequal in size and shape. Lower leaves longer, narrowly oblong, acute, 9 x 1.5 cm. Upper leaves lanceolate to linear-lanceolate, reduced in size. Inflorescence very narrow, rather laxly sub-secund. Bracts lanceolate, acuminate, as long as the ovary or little shorter or longer. Flowers minute, greenish and glabrous. Sepals converging; dorsal sepal elliptic, obtuse, upto 1.7 mm long; lateral sepals obliquely ovate-elliptical, acute, slightly longer than the dorsal. Petals obliquely rhomboid-elliptical, upto 1.5 mm long. Lip as long as the petals, trilobed near the middle, with small triangular side-lobes and a longer, obovate to oblong mid-lobe. Spur much shorter than the ovary (**Fig. 2**).

**Flowering:** This taxon flowers from late July through August.

**Geographical Distribution:** It is only known from specimens seen on the way to Ratighat near Nainital, Western Himalaya.

**Specimen Examined**: Wildlife Institute of India herbarium (WII) - *J.S.Jalal 13993*.

**Habitat:** *Peristylus kumaonensis* has been found at elevations of 2178 m (7145 ft) on the moist rocky surface covered by thick mossy patches. This particular habitat is a transition zone of Banj-oak (*Quercus leucotrichophora*) forest and Chir-pine (*Pinus roxburghii*) forest. Apart for this a fern species *Phytopteris oxyloba* is the main associate species.

**THREATS**

This species is threatened as the result of its low numbers and restricted distribution in Kumaun Himalayas. The plants are small and fragile and cannot tolerate the direct impacts of anthropogenic pressures, canopy exposure and forest fire. Chir-pine forest is also is prone to fire. This forest also changes the hydrology of the area and soil chemistry which impacts many rare herbs including orchids. The soil becomes more acidic under chir-pine forest which can have negative effect on the germination of orchid seeds. Another major threat is the road side location. This particular species is found growing on the roadside verges on the main Nainital-Ratighat road and frequently used by local community for their daily needs. During rainy season, that is also the peak flowering season of *Peristylus kumaonensis* Renz, the local villagers clean the tall herbs and bushes on the roadside and because of this activity most of the time the *Peristylus kumaonensis* Renz species is also damaged. In past few years it was observed that *Phytopteris oxyloba*, a lithophytic fern is also overtaking the habitat. For conservation of this endemic orchid further survey is required to relocate this species and establish its vulnerability to the threatening processes in the area. Recovery actions such as monitoring the habitat during the flowering time, raising the seeds artificially and replenishing the habitat artificially and fire management may need to be implemented. It is also recommended that this interesting species be included in the list of national threatened species of orchids.

**Figure 1: Showing location of *Peristylus kumaonensis*** Renz **in Western Himalaya**

**Figure 2: Habitat of *Peristylus kumaonensis* Renz.**

**Figure 3: *Peristylus kumaonensis* Renz: 1. Plant in habit; 2. Closeup of Inflorescence.**

**Figure 4: Close-up of Inflorescence**

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**REFERENCES**

Pangtey YPS, Samant, SS, GS Rawat. Orchids of Kumaun Himalaya.Bishen Singh Mahendra Pal Singh, Dehradun, India: 1991.

Jalal JS. Systematics, Phytogeography and Habitat Ecology of Orchids in Uttaranchal. Ph.D. thesis, Kumaun University, Nainital: 2005.

Renz J. *Peristylus kumaonensis* Renz., Journal of The Orchid Society of India, 1987; 1 (23) fig. 1. A-H.

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