

# Orchids of Bhutan

SUSANNE MASTERS outlines the species found in this small country in the Himalayas, the diversity of their habitats, and also discusses uses of orchids locally and their conservation



Dochula Pass is a gateway through the mountains when heading east from Butan's capital, Thimphu. 108 chortens on the pass commemorate Butanese soldiers killed fighting Indian rebels in 2003

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*Coelogyne nitida* was one of the orchids featured in Bhutan's set of orchid stamps issued in 1976

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Epiphytic *Dendrobium falconeri* can be seen growing on trees near Dochula Pass

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*Galearis spathulata*, previously *Aorchis spathulata*, grows on damp ground, in open spaces

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**B**HUTANESE ORCHIDS span the alphabet from *Acampe* to *Zeuxine*. In the capital city, Thimphu, it is easy and inexpensive to buy excellent, English language wildlife guides, written by Bhutanese people able to bring a wealth of local knowledge to their botanical explorations. In contrast to taxonomic tomes, local orchid guides that include photographs, such as *An Illustrated Guide to the Orchids of Bhutan* (Gurung 2006), are invaluable if asking a local person about orchids. In Bhutan, as in many parts of the world, flamboyant epiphytic and subtropical species are considered to be orchids, while the less eye-catching, terrestrial, temperate and alpine species are not known as plants of interest to orchid fans.

**Environmental protection**  
Economic exploitation of Bhutan's natural resources has been tempered by legislation that prioritizes preservation. In fact, the Constitution of the Kingdom of Bhutan states in Article 5.1 that 'Every Bhutanese is a trustee of the Kingdom's natural resources and environment for the benefit of the present and future generations, and it is the fundamental duty of every citizen to contribute to the protection of the natural environment, conservation of the rich biodiversity of Bhutan and prevention of all forms of ecological degradation'. This is why, when other Himalayan countries have had their landscapes transformed by rapid development, Bhutan has maintained relatively intact landscapes and conserved more of its biodiversity.

**A diversity of habitats**  
Bhutan is one of the smallest countries in Asia, occupying 384,394sq km. It is located in the eastern Himalayas, at the intersection of two biogeographic realms, the warm Indo-Malayan and the temperate Palearctic. Altitude ranges widely from 150m elevation in the subtropical lowlands of the south, to more than 7,500m in the snow-topped mountains of the north. This, combined with monsoon rains that fall predominantly in the south, creates a wide variety of habitats. There are three distinct eco-floristic zones in Bhutan: alpine, temperate and subtropical. The alpine zone, above 4,000m, has no tree cover but scrub vegetation and meadows, where orchids flower in summer. In the temperate zone, between 2,000m

and 4,000m, forests are home to orchid species that flower from spring through to autumn. In the subtropical zone, between 150m and 2,000m, there are tropical and subtropical forests, and grasslands, and orchid species can be found in flower all year.

**Bhutanese orchids**  
There is a concentration of biodiversity in Bhutan including more than 5,600 vascular plant species, of which nearly 8% are orchids. Pearce & Cribb (2002) recorded 369 species of orchid in Bhutan. They anticipated that more species would be found because they recorded 579 species in floristically-similar areas of India and Nepal. These areas fall under the same botanical country code as Bhutan, 'East Himalaya', according



Above and below *Pleione hookeriana* is considered difficult to cultivate, and is well worth seeing in the wild where it can grow in abundance, here it is growing along the Dochula Pass, where it flowers in May



*Bulbophyllum gamblei* grows as an epiphyte or a lithophyte in broad-leaved forests in Bhutan, and in other countries of the eastern Himalayas



*Cephalanthera longifolia* has a wide range and grows wild in Bhutan, and also in the UK where it has the common name narrow- or sword-leaved helleborine





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**Left** *Galearis spathulata*, previously *Aorchis spathulata*, is an Alpine species  
**Above** *Dendrobium fimbriatum* is often used as decoration on temple altars  
**Below** *Dendrobium nobile* grows in east Asia and is used in Chinese medicine



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to the International Working Group on Taxonomic Databases (TDWG). Gurung (2006) records 423 species in Bhutan and, despite having spent decades seeking orchids in Bhutan, notes that the east, west and south remain relatively under-explored, so more species may be native to Bhutan.

Numerous species have been recorded from single localities including *Bulbophyllum sterile*, *Calanthe yuksomensis*, *Didymoplexis pallens*, *Neottia microglottis* and *Panisea uniflora*. As orchid-orientated explorations of Bhutan continue, these species may be

found in more locations. Furthermore, orchid taxonomists may soon be able to contribute to Bhutanese orchid discoveries without travelling to Bhutan, as a project to digitize Bhutan's herbarium specimens is beginning. Once digitized, specimens that are not identified to species level will be circulated for identification online.

**Recorded orchid species**

The ongoing digitization work, and taxonomic changes since 2006, mean that a taxonomic update on Bhutan's orchids will soon be due. However,

that is beyond the scope of this article. Gurung (2006) states that 100 genera of orchids grow in Bhutan. However, since 2006, some genera listed below have been merged with others. The largest, in terms of number of species are: *Bulbophyllum* (31), *Dendrobium* (21), *Cymbidium* (16), *Eria* (16), *Coelogyne* (13), *Calanthe* (11), *Liparis* (11) and *Goodyera* (10) (Gurung 2006). Genera with more than one species occurring in Bhutan include: *Acampe* (3), *Aerides* (3), *Agrostophyllum* (2), *Anoctochilus* (2), *Cephalanthera* (2), *Cheirostylis* (4), *Chiloschista* (2), *Chusua* (2), *Cleisostoma*



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**Above left and right** *Cymbidium erythraeum* has fragrant flowers with red markings  
**Left and below** *Cymbidium erythraeum* in cultivation in Bhutan. The flowering stems are collected for use before the flowers fully open



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(4), *Cryptochilus* (2), *Cypripedium* (4), *Epigonium* (4), *Esmeralda* (2), *Eulophia* (2), *Gastrochilus* (5), *Habenaria* (7), *Herminium* (6), *Ione* (3), *Listera* (3), *Luisia* (2), *Malaxis* (6), *Neottia* (3), *Neottianthe* (2), *Nervilia* (3), *Oberonia* (7), *Odontochilus* (3), *Oreorchis* (2), *Otochilus* (2), *Panisea* (4), *Peristylus* (3), *Phaius* (4), *Pholidota* (4), *Platanthera* (8), *Pleione* (4), *Thrixspermum* (2), *Vanda* (5) and *Zeuxine* (5) (Gurung 2006).

The remaining 55 genera are represented by one species in Bhutan. These include subtropical species such as *Rhynchostylis retusa*, temperate

species, including *Epipactis helleborine*, and alpine species such as *Galearis spathulata* (Gurung 2006). However, collation of various sources adds taxa to some of these genera. For example Gurung (2006) includes only *Epipogium roseum*, but Pearce & Cribb (2002) reported *E. aphyllum*, and the Thunder Dragon Orchid Conservation Project also report *E. japonicum*.

**Species of orchid used as food**

Orchids are put to various socio-economic uses in Bhutan. Many are used as food, including flowering

shoots of *Cymbidium erythraeum*, *C. hookerianum*, *C. iridioides* and *C. elegans* var. *elegans*, which are found on markets as seasonal vegetables, referred to as 'ola-choto' or 'ola-tshae'. They are added to pork stew and provide a slightly bitter flavour, or they are cooked with chillies and yak cheese, two key ingredients in Bhutan. *Coelogyne cristata* flowers are also consumed and can be found on markets. *Esmeralda catbcartii* and *Dendrobium hookerianum* flowers have been observed on vegetable markets although their sale is less common.

Young stems and flowers of *Calanthe plantaginea* and *C. triplicata* are collected and used as food, but they are rarely available on markets. This may be because *Calanthe* flowers are easily damaged so not suitable for sale after having been transported.

**Orchids used in temples**

Species used as altar decoration include *Agrostophyllum callosum*, *Callostylis rigida*, *Dendrobium densiflorum*, *D. devonianum*, *D. fimbriatum*, *D. fugax* and *D. nobile*. Of these, *D. fimbriatum* is particularly suited to this purpose as it lasts up to six months in water in which it readily roots, and even flowers.

**Orchids used as medicine**

Various orchid species are used in traditional medicine, which is an important component of healthcare in remote areas. *Gymnadenia orchidis* is referred to as 'wangla' in Bhutan. *Dactylorhiza batagirea* is also called 'wangla' although it was not recorded in Bhutan by Pearce & Cribb (2002) or by Gurung (2006), but has been photographed by a member of staff from the National Institute of Traditional Medicine (Bhutan).

Unidentified *Coelogyne* pseudobulbs and *Dendrobium* stems are also used medicinally. Some of the orchids that grow in Bhutan, such as *Vanda testacea*,

have documented uses in traditional medicine systems used in the Himalayan region and it is likely that these orchids have similar uses in Bhutan, which have not yet been noted in scientific literature. Orchids known to be used medicinally in Bhutan include *Gymnadenia crassinervis* roots, *Coelogyne oculata* pseudobulbs and other *Dendrobium* species.

**Bhutanese orchid conservation**

Two specific projects tackle different aspects of the relationship between orchids and development: habitat loss and socio-economic use. Road construction is making Bhutan more

accessible and hydro-electric power projects are important components of economic development, but have a negative impact on orchids. Working in conjunction with the construction process, under the Rescue and Restoration of Rare Plant Species project, the National Biodiversity Centre collects orchids from affected areas and cultivates them *ex situ*. In the long term these plants will be reintroduced to the wild.

Another initiative aims to make socio-economic use of orchids sustainable, by protecting biodiversity and sustaining its role in income generation. *Cymbidium*

species are not only edible but also used as an active ingredient in a skin care product developed by a Swiss company. The first payment from sales of *Cymbidium* flowers was used to establish the Bhutan Access and Benefit Sharing Fund. This fund has supported community projects for orchid propagation to promote community income generation, and help build capacity in orchid propagation by farmers in order to discourage collection from the wild. This conservation project is also a significant step in putting into operation the principles of Access and Benefit Sharing – an element of the

Convention on Biological Diversity – in Bhutan by developing experience in how such initiatives work.

Bhutan's National Biodiversity Centre is seeking funding to support expansion of their orchid conservation initiatives. Orchids with socio-economic uses and those that may be vulnerable to climate change, such as alpine species, are of particular interest. Potential areas of focus could include further work on *Cymbidium* and the development of projects on genera such as *Cypripedium*. In both cases emphasis would be placed on growing projects from grassroots level to engage and support communities.



**Above** Workers collecting the flowering stems of a *Cymbidium* species growing on a sunny bank  
**Right** Planting *Cymbidium* spp on horizontal branches makes an attractive feature of these edible plants  
**Below** Workers wire *Cymbidium* spp onto branches packed with moss, in a lightly shaded area





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**Left** *Cymbidium* species can also be cultivated on vertical tree trunks  
**Above** *Cymbidium* plants are grown on under shade netting before being planted out as part of the community's orchid growing project

## Community orchid projects promote local income generation, boost propagation skills and discourage collection from the wild

### Where to see orchids in the wild

Degraded oak forest is reportedly the richest habitat for orchids in Bhutan, but different species grow across a range of habitats, including grassland and coniferous forest. While there are orchids in flower in some areas in winter and spring, peak flowering season is summer to early autumn. Hiking the Druk Path, a popular trek in the Paro and Thimphu districts, takes you to high altitudes in a short distance. It passes through a range of temperate and alpine habitats, such as marshy bogs and juniper forests that accommodate terrestrial orchids. Species flowering in June include *Galearis spatulata*, *Listera pinetorum* and *Androcorys josephi*. In September, orchids flowering in subtropical forest in the Ha district, include

*Antbogonium gracile*, *Bulbophyllum bisetum*, *B. cylindraceum*, *B. guttulatum*, *Coelogyne barbata*, *Cymbidium erythraeum*, *Dendrobium chrysanthum*, *D. bookerianum* and *Spathoglottis ixiooides*.

Dorji Rabten of Como Hotels, and their Activity & Excursion team, have several recommendations of places to see orchids. Hiking from Dochula to Thinley Gang in Punakha district is a one-day downhill hike, within easy reach of Thimphu. Although it is better known as a spring hike for rhododendrons, magnolias and primulas, more orchids are in flower between July and September. Royal Manas National Park is Bhutan's oldest, and fourth largest park, and connects three districts, Sarpang, Zhemgang and Pemagatshel. Within the 1,000sq km park there is a range

of orchid habitats from tropical grasslands, temperate forests and scrublands to alpine meadows worth taking several days to explore. Jigme Dorji National Park, located mostly in Gasa district, ranges from 1,400m to more than 7,000m, and covers 4,000sq km. It too spans Bhutan's three climatic zones and contains both warm and cool broadleaf forest, mixed coniferous forest and alpine meadows.

### Preparation before travelling

Travel in Bhutan on a tourist visa requires pre-booking and pre-payment of expenses, such as accommodation and a licensed Bhutanese tour guide, to a minimum value per person per night of US\$250 (c.£160), in peak tourism months (March–May, and September–November), and US\$200 (c.£130) in



Susanne Masters

**Left and right** *Androcorys josephi* is a geophytic orchid that forms tubers. It grows in temperate-tropical Asia, including Bhutan  
**Below** A trek pony grazing on the Druk path, surrounded by *Primula calderiana*  
**Bottom** *Neottia pinetorum* flowering under a juniper tree on the Druk Path in June



Susanne Masters



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off-peak months. It is possible to meet these visa requirements when organizing a trip independently, but easiest to do so via a tour company. With advance planning needed to organize expensive and complicated visa requirements and travel route permits, as well as in-country travel on mountain roads being slow, Bhutan can seem inaccessible. However it has retained much more of its natural habitats than other Himalayan countries, which makes Bhutan a unique country for orchid appreciators to explore, especially as there is much potential to add sightings to a relatively undocumented orchid distribution. ■

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Susanne Masters