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.

Gulania spathulata, previously Aorchis spathulata, grows on damp ground, in open spaces.

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

Dendrobium falconeri can be seen growing on trees near Dochula Pass.

Delepsyne nidra was one of the orchids featured in Bhutan’s set of orchid stamps issued in 1976.
Bhutanese 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...
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 (23), Cymbidium (16), Eriz (16), Caleanthe (13), Calanthe (11), Liparis (11) and Goodyra (10) (Gurung 2006). Genera with more than one species occurring in Bhutan include: Acanth (5), Acrisit (5), Agrostophyllum (5), Anoectochilus (5), Neottia (5), Neottianthe (2), Habenaria (7), Harum (6), Lome (3), Listera (3), Lusia (2), Malaxis (6), Neottia (5), Neottianthe (2), Nervilia (3), Orobionia (7), Odontochilus (5), Oreochis (2), Otochilus (2), Panicea (4) Peristylus (3), Phaius (2), Pholidota (4), Platambrora (8), Pleione (4), Triticum (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 Epipactis bellorin, temperate species, including Epipactis bellorin, and alpine species such as Garbaris 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. apophyllum, 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. iredioides 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 stews 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 cathartii 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 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 hatagirea* 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 *Coelogne* 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 crocata* roots, *Coelogne 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 Plants 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.
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 distance. It passes through a range of habitats, including grassland, temperate and alpine habitats, such as marshy bogs and juniper forests. Where to see orchids in the wild

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 (£160), in peak tourism months (March–May, and September –November), and US$200 (£130) in

References

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