

# Orchids of Bhutan



THE ORCHID GENUS *CHAMAEGASTRODIA* was established in the *Botanical Magazine (Tokyo)* by the Japanese botanists Fumio Maekawa and Tomitaro Makino (1935). The genus is based on a collection made in August 1889 by S. Matsuda, from the Kawachi Province on the Shikoku island of Japan. A plant without flowers had also been found by Makino prior to the Matsuda collection, which was described in the *Botanical Magazine (Tokyo)* as *Gastrodia shikokiana* Makino (1892). When a floral analysis was made of the Matsuda collection, however, the authors realized that this orchid resembled some member of Gastrodiinae in habit but “seems better to transfer to subtribe Physurinae in having the branched (not tuberous) rhizome, galeate perianth, and capsules resemble much to *Goodyera*” (Maekawa and Makino 1935), hence becoming *Chamaegastrodia shikokiana* (Makino) Makino & F. Maekawa. This orchid is what traditionally is known as a saprophyte (living on dead material), lacking chlorophyll altogether and depending on a fungus partner for survival. It was long believed that saprophytic plants existed in a symbiotic relationship with a fungus

partner where both the plant and the fungus benefited. Today, we are not so certain about this definition, and it appears that the orchid is the sole benefactor of this arrangement. In other words, the term “mycotrophy” (living in partnership with a fungus) is not really accurate and the term “mycoparasitic,” which better describes what actually happens, has been used by Ormerod (2005).

Despite being a small group of plants, there is a complex and confusing taxonomic history behind these enigmatic orchids. We are not going to deal with that issue here however, but it can be studied in other articles (e.g. Seidenfaden 1978, 1994). Currently, the two Bhutanese species of this complex that we are looking at here are placed as mycoparasitic members of *Odontochilus* (Ormerod 2002, 2005). We suspect that the last word has not been said about this placement and future revisions may tell a different story.

In September 2011 a group of dedicated botanists and staff members from the National Biodiversity Centre (NBC) in Serbithang, together with equally enthusiastic forest rangers from the Department of Forest and Park Services, participated in

[1] The lush forests of Haa are steaming with humidity during the monsoon season (June–September).

[2] During the rainy season the leech populations have a busy time, causing hikers to frequently remove leeches.

[3] *Odontochilus poilanei*, the first plant of the second species in this genus ever found in Bhutan, growing among pine needles in forests of chir pine (*Pinus roxburghii*).

a survey of the orchid flora of the Toorsa Strict Nature Reserve, in the district of Haa. This is located in the extreme western part of Bhutan and the projected area of interest was the luscious forests around the small village of Shebji. This isolated settlement can only be reached by a meandering trail down a steep mountainside when approaching from the east (or from anywhere, for that matter). A small farm road is currently being constructed, but is likely to take some time yet to finish due to seasonal torrential rain, geographic challenges and lack of funds. But what takes a toll in physical strength is compensated by the scenic and botanical rewards along the way.

## II. To Be or Not To Be a Chamaegastrodia

TEXT AND PHOTOGRAPHS BY STIG DALSTRÖM, NGAWANG GYELTSHEN, CHOKI GYELTSHEN, THOMAS HÖIJER AND JANGCHU WANGDI



During the planning of this trip, some experienced Bhutanese rangers described the hike as “quite a climb,” and this proved true in many ways. Not only did the annual monsoon linger with daily showers of cold rain, which turned the steep trails into muddy and slippery creeks, it also provided excellent opportunities for the local leech population to feast on foreign blood. To make matters worse, a 7.0 (on the Richter scale) earthquake hit the area in the early evening when we, after eight hours of trudging, slipping and sliding, finally had the distant lights of Shebji in sight, glimmering across a deep ravine. Due to some miraculous blessings from the local deities no member of the expedition was hurt in the calamity that followed. It left a reminder, however, of how vulnerable we are when Mother Nature decides to shake off the fleas from her green blanket. Later reports of thousands of casualties from the nearby Sikkim area of India and devastation of houses in the district of Haa were a grim reminder of what could have happened to us.

The area surrounding Shebji can be described as “Subtropical broad-leaved hill forest mainly composed of broad-leaved largely evergreen high forest” (Champion and Seth 1968). *Rhododendron*, oaks and bamboo thickets dominate some areas, mixed with a diversity of many other trees, shrubs and herbs, and lots of orchids.

Some of the most common orchid species in bloom were *Bulbophyllum cylindraceum*, *Bulbophyllum guttulatum*, *Coelogyne barbata*, *Cymbidium erythraeum*, *Dendrobium chrysanthum* and *Dendrobium hookerianum*. We also saw an occasional *Anthogonium gracile*, *Bulbophyllum biseutum* and *Spathoglottis ixioides* along one of the local trails, together with many other orchids without flowers that we brought back to the Royal Botanical Garden in Serbithang for cultivation and identification. The preserved orchid specimens with flowers were deposited in the National Herbarium (NBC).

At one point when the group was exploring a steep slope in the daily drizzle a snake appeared in front of our feet. Not knowing what it was but curious to learn, some of us began chasing it through the shrubbery. There are several species of venomous elapids reported from Bhutan, such as cobras, kraits and coral snakes, so some caution was required. Eventually, Choki was able to pin it down with his umbrella and we could take a closer look at the reptile and get some photographs. It turned out to be a harmless cobra mimic. While some of us guys entertained ourselves with this little

drama, the ladies in the group, Tshering and Wangmo, discovered something else that caught their attention. It looked like an orchid, but not like any orchid we had seen before. This plant had a delicate inflorescence emerging directly from the leaf mold on the ground, but with no leaves visible. After some consultation with the *Orchids of Bhutan* treatment by Pearce and Cribb (2002), we concluded that it had to be an *Odontochilus* (formerly *Chamaegastrodia*) *asraoa*, a rare species recorded only once before in Bhutan.

In May 2012, another NBC orchid expedition set out for the Sakteng Wildlife Sanctuary (SWS) in the Tashigang District of the far eastern part of Bhutan. This region includes the remote villages of Merak and Sakteng where the inhabitants are known as Brokpas, nomadic people who herd yaks and generate income through the sale of dairy products. In an effort to preserve and protect this unique culture, the government of Bhutan initially tried to prevent all contact between Brokpas and the outside world. This did not work because younger people had a grasp on what was going on outside their borders and wanted to leave the area. Since then the government has changed its policy completely and a limited eco-friendly tourism is now under way. This is organized in collaboration with the local people, who now have greatly appreciated additional sources of income from managing camp grounds, leading tours and working as guides and porters in the rugged terrain.

Our local host for this trip was Jangchu Wangdi, a park range officer with a passion for orchids. Jangchu is working on an illustrated field guide to the local orchid flora and a collaboration with the NBC was immediately agreed on. (The physically demanding hike through the SWS will be covered in a separate article, including some appetizing samples of the rich orchid flora.) Some 50 species had been recorded by Jangchu prior to our hike. We added at least 15 more by just walking through and observing, and an additional five to 10 species have since been found by Jangchu.

In September 2012, a second mycoparasitic *Odontochilus* species was discovered by Jangchu in the Sakteng Wildlife Sanctuary. This time it was found growing among pine needles in forests of chir pine (*Pinus roxburghii*) near the Joenkar village at an elevation of 6,070 feet (1,850 m), and amid leaf litter of *Castanopsis hystrix* in close proximity of the orchid house at the SWS Head Office in Phongmay. This is the first record of *Odontochilus* (formerly *Chamaegastrodia*) *poilanei* for Bhutan.

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- [4] *Dendrobium chrysanthum* in its glorious splendor.
- [5] With a little help from friends, exploring for orchids is both easy and fun.
- [6] *Odontochilus asraoa*, a mycoparasitic species growing in leaf mold near Shebji, at an elevation of 5,250 feet (1,600 m).
- [7] *Coelogyne barbata*, locally common but tricky to reach.

