

The exploitation of hardy plants in Nepal

Kamal Adhikari

In 2010–11, as part of my PhD dissertation research, supported by the Rufford Small Grant Foundation and an HPS travel grant, I conducted a socio-ecological study of *Bergenia ciliata* and *Dendrobium* orchid in the village of Deurali in the Makawanpur district of Nepal. The village of Deurali lies near the forest, at an altitude of 2200m, and is a Tamang¹ village whose people are still dependent on forest resources. Here I want to explain how the collection from the wild of these two hardy plants, sometimes offered to gardeners in the UK, is affecting both their survival and the biocultural diversity of the area.

Bergenia ciliata is an herbaceous perennial with creeping rootstock, fine hairs around its leaf margins, and a flower stalk which turns bright red in autumn. Its common name is rockfoil in English, pakhanved in Nepali and pasanvedak in Sanskrit, so this is an example of a botanical Latin name being invaluable. It grows in the Mahabharat regions of Nepal at 2100–3000m. The Nepal government has categorised herbal plants into roots, barks, leaves, flowers and fur, fruits and seeds, whole plant, gum and resin according to their use. *Bergenia* is listed in the roots category. The government has imposed a tax of 5 rupees² per kg for its sale. In 2001, the market price for 1 kg was 15 rupees in Nepalganj and 25 rupees in Kathmandu. The price in 2012 is the same as a

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Deurali village

¹The Tamangs are one of the important ethnic minorities and a major Tibeto-Burman speaking community of Nepal. They believe that they originally came from Tibet.

²Rupee is the Nepali currency; in May 2012 the exchange rate was £1= 137 rupees.

decade ago, although the prices of other products have risen sharply. The Tamang people used to collect bergenia for their own medical use, and also to sell, but they've stopped harvesting it as they can make little if any profit from its trade.

“Root of bergenia keeps tight the muscles of a woman who has given birth and it also helps to stop bleeding during menstruation”, says a local Tamang. However, according to Ayurvedic medicine, its roots are useful for fever, diarrhoea, dysentery, coughs, and heart disease. A report published by the WWF Nepal mentioned that the whole plant is used to treat urinary problems. The juice of its root is taken for haemorrhoids, asthma, coughs and colds; paste made from its rhizome is applied to boils and is also considered good for backache. It's also used to treat fever and colic, and to relieve earache.

Even when its price was much lower at 10–15 rupees per kg, Deurali people used to sell it. Most people did not have enough food to feed their families through the year; some found work in the nearby towns, and the rest used to collect forest resources including this bergenia. Now, they've begun to grow vegetables such as cauliflower, cabbage, potato, and radish in their fields, and as good money can be made this way they don't need to trade in wild plants. In any case, harvesting bergenia is relatively more difficult than other medicinal plants because it grows mostly on cliffs. As the prosperity of the area has increased, so the threat to bergenia has decreased.

Bergenia is not currently endangered as a result of overexploitation. Its status in the natural forest of the particular village of Deurali is very good. However, in 2007 WWF Nepal listed it as a commercially threatened species. “I could supply you with enough bergenia if you want to do business”, said a local herbal trader, but there is almost no demand for it. It is neither protected by the government of Nepal nor listed in the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

The trader also told me that there was demand for other herbal plants, such as love apple (satuwa, or *Paris polyphylla*), chiretta (chiraito, or *Swertia chirayita*) and wild asparagus (kurilo, or *Asparagus racemosus*), which ultimately has threatened their availability.

In contrast, dendrobium is an orchid from the genus *Dendrobium*, a genus with around 1200 species and belonging to the family *Orchidaceae*, one of the two largest families of flowering plants in the plant kingdom. The name



Bergenia ciliata growing in the forest



Dendrobium eriiflorum in the forest

dendrobium, given by Olof Swartz in 1799, is derived from the Greek words for ‘tree’ (dendron) and for ‘life’ (bios). Three species of this orchid, namely *D. eriiflorum*, *D. gambeli* and *D. longicornui*, are generally known as Sunakhari and are traded in Nepal. Nepal has listed all species of orchid in CITES appendix II³ as endangered species which can be traded only after obtaining a certificate from the authorities. The

government of Nepal completely banned the collection, use, sale, distribution, and export of one species of orchid, Himalayan marsh orchid (panch aunle, or *Dactylorhiza hatagirea*). A few orchid species were traded legally, but there’s as yet no policy on dendrobium.

These three species of dendrobium are much used in Chinese medicine, so they are prized by Chinese traders for their economic value. Local people in villages of the Makawanpur

district of central Nepal weren’t using it medicinally, and they were unaware of its economic potential until a few years ago, when a local trader asked villagers to collect it. From 2007 to early 2008, huge amounts of dendrobium were collected from the villages near to Deurali. The Chinese traders even came into the villages with their Nepali business partners. People all over Nepal understood the importance of

dendrobium when in 2008 two Chinese traders, their local business partners and three other Nepali helpers, were arrested by District Forest Office (DFO) staff in a small town on the north-south Tribhuvan highway to Kathmandu with two trip loads – more than 4 tonnes of it.

To sort out the bureaucratic confusion which arose from the arrest of the dendrobium smugglers, a high level commission was set up to identify any sustainable harvesting techniques for dendrobium, or indeed any orchids. Their report noted that 14 species of dendrobium were tradable, though they were not used in Ayurveda and had not been collected as herbal plants until



Another *Dendrobium* in the forest

³CITES appendix II refers to those species which are not yet threatened, but which could become endangered if trade is not controlled.

2006. They recommended procedures to be followed while harvesting it in a sustainable way. My field observations indicate that by late 2010 it had almost vanished from the forest in my research area. Closing the stable door after the horse had bolted, trade in dendrobium was completely banned in January 2011.

Dried dendrobium from the village of Deurali and from all over Nepal has been exported to China. However, some Tamang communities in Nepal are said to be using dendrobium flowers to make pickle, particularly from *Dendrobium longicornu*. The association made between particular plants and specific diseases is interesting, as some plants are considered important by certain communities but not by others. A popular Nepali saying *Jannelai shrikhanda, najannelai khurpa ko bid* (it is sandalwood for an expert, but the handle of a sickle for normal people) can be used to compare the local people of Deurali and the Chinese traders in terms of the exploitation of dendrobium. The local people didn't know how valuable it was and sold it for 70 rupees per kg, while the Chinese traders knew its worth – its price had reached 1400 rupees per kg by 2008 – exported it to China, and made a huge amount of money. However, although I have been able to record the perceptions of people at different levels inside Nepal, I have not found anything relevant on the Chinese side, specifically on its actual use in medicine and why Chinese people are ready to pay such a high price for it.

There is some evidence that dendrobium is one of the top 50 herbs in traditional Chinese medicine. My curiosity now is to know whether they just believe in general terms that this plant is an important source of medicine to improve fertility, to treat cancer, to improve eyesight and so on, or whether they have hard scientific evidence that its chemical constituents actually cure or control disease. It is an ingredient in several common Tibetan formulas. In *Creation of an industry for Tibetan medicine*, Marteen Saxer asserts that the demand for herbs has exploded in China. The heavy use of picrorhiza (kutki, or *Neopicrorhiza scrophulariiflora*) and chiretta in Tibetan medicine has made it more difficult for traders to find these plants in Central Tibet, so demand has risen over the past couple of years in Nepal, despite its trade being completely banned. In the absence of hard scientific evidence, the question of what has triggered such demand for dendrobium in China has not yet been answered – it could be that supplies from Yunnan or Burma have dried up.

I believe that the conservation and sustainable use of plants in



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A healer describing herbal plants

Nepal depends on the activities and attitudes of various authorities and officials. Government bodies such as the District Forest Office, the Forestry Campus, the Department of Plant Resources, and the Department of Forests have no special programmes for the sustainable use of dendrobium, nor do they have programmes for bergenia. Local traders collect only those herbal plants which they have been asked to collect. In the past, local villagers didn't collect dendrobium but they did harvest bergenia both for domestic medical practice and for sale. They now prefer to use the easily accessible conventional, allopathic medicines from the village pharmacy. Dendrobium is now in demand internationally, and so is heavily harvested for commercial purposes. It could rarely be found in its natural habitat before the

government imposed a complete ban on its collection and trade. I saw only a few plants, high up in tall trees where it was quite impossible to climb up and pick them.

These three species of dendrobium are categorised by the traders as class one, class two and class three, based on their selling prices. With the help of the reference book *Wild Orchids in Nepal* (White and Sharma, 2000), I have identified class one as *Dendrobium eriiflorum*, class two as *Dendrobium gambeli* and class



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Sunakhari (*Dendrobium eriiflorum*) on sale

three as *Dendrobium longicornu*. These extremely hardy species could be commercially cultivated for their beauty, and thereby conserved and saved from extinction as a result of over-exploitation.

The sustainable use of bergenia and dendrobium, local awareness, and the documentation of local knowledge would not only support biocultural diversity, but also help to make trade in hardy plants sustainable, to the mutual benefit of the UK and Nepal. 🌱

Kamal Adhikari is a trained botanist from Nepal. He completed an MSc in Botany at Tribhuvan University, Kathmandu, Nepal and worked in Nepal for a decade as a consultant botanist. In 2009 he completed an MSc in Himalayan Ethnobotany at the University of Aberdeen, and he is now completing his PhD in the sustainable use of plant resources in Nepal.

See the HPS website www.hardy-plant.org.uk for further information and references