

CONSIDERATION OF PROPOSALS FOR AMENDMENT OF APPENDICES I AND II

Other proposals

A. PROPOSAL : Appendix II

B. PROPONENT: CITES Authority, Ministry of Environment & Forests,
India.

C. SUPPORTING STATEMENT :

1. TAXONOMY:

1.1. Class : Dicotyledoneae

1.2. Order : Valerianales

1.3. Family : Valerianaceae

1.4. Scientific name : *Nardostachys grandiflora* DC.,

Prodr. 4: 624. 1830.

1.5. Scientific synonyms : *Valeriana jatamansi* sensu D.

Don in Lambert, Ill.

Cinchona 180, t. 1821.

Wall., Cat no. 431.

1829. *Patrinia*

jatamansi D. Don, Prodr.

Fl. Nepal. 159. 1825.

quoad (with) descr..

excl. basionym et

synonym Vahl. *Fedia*

grandiflora Wall., Cat.

no. 1187. 1829. nom.

nud. *Nardostachys*

jatamansi DC., Prodr. 4:

624. 1830. quoad descr.
tantum, excl. basionym et
synonym Vahl: C.B. Clarke
in Hook. f., Fl. Brit.
India 3: 211. 1881. *N.*
gracilis Kitamura in Acta
Phytotax. Geobot. 15:
134. 1954.

1.6. Common names:

Eng. : Indian Nard, Spikenard

Beng. : Jatamansi

Bhutanese: Jatamansi, Pampe, Paumpe

Bomb. : Balacharea, sumbul

Dec. : Jhata-mansi

Garhwal: Masi

Guj. : Jatamansi, Kalichhad

Hindi : Balu-char, Bal-chhar, Bal-chir, Jatamansi

Kan. : Jatamansi

Kashmir: Bhutijatt, kukil-i-pot

Mal. : Jatamansi

Mar. : Jatamansi

Nepal : Haswa, Jatamansi, Naswa

Sans. : Jatamansi

Tel. : Jatamamshi

Arab. : Sumbulu'l-hind, Sumbuluttiba-hind,

Sumbulul-aasafter

Malaya : Jeta-manchi

Pers. : Sunbuluttib

Sing. : Jatamansi

1.7. Code number: Not known.

2. BIOLOGICAL PARAMETERS :

2.1. Population status: The species had been recorded

in alpine Himalayas over a wide range from Himachal Pradesh to Nepal, Sikkim and Bhutan and further extended north-eastward to the mountains of W. China. Since the rhizomes of the species are highly medicinal and used for various ailments and diseases in India and abroad, the collection increased manifold in recent years resulting a quick decline of population in the wild. As reported by Gaur & Senwal (1983) their population suddenly dropped to about 30-40 plants per 100 sq. metre. But now the threat is more severe. A recent study survey reveals that they are totally wiped out from some previously recorded localities comparatively at lower

altitude, while their distribution in the inaccessible terrain have been dissected and shrunk. However, the decline of population is also caused by habitat loss and fragile ecosystem, as the species prefers an undisturbed cold and dry habitat in the inaccessible terrain of Himalayas (Watt, 1891).

2.2. Population trend : Vulnerable. The decline of

population in the wild is abrupt and is more than 60% as a whole during the last 10 years or so. The previous recorded more or less continuous distribution in higher Himalayan range is now fragmented, and the populations are localised with few individuals in comparatively inaccessible areas only. This is mostly due to indiscriminate collection of rhizomes even before the fruit setting and thus providing least or no scope for its natural regeneration through seeds.

2.3. Distribution : Himalayas, from Himachal Pradesh to

Nepal, Sikkim, Bhutan and further extended to north-eastward to Tibet and W. China.

2.4. Habitat availability : The species grow in well drained, moist, undisturbed slopes of alpine Himalayas at altitude 3000-5000 m.

2.5. Geographic trend : The species is very habitat specific and so far not recorded beyond its distribution range as recorded in item 2.3.

2.6. Threat : The main threat of the species is over-exploitation for its valuable rhizomes used for the treatment of a wide range of diseases nationally and internationally. To meet the high demand in the international market, sometimes they are indiscriminately collected by various export agencies and hoarders alongwith the young individuals causing drastic threat to the wild population.

3. UTILIZATION AND TRADE :

3.1. National utilization : The rhizomes of the species are under national trade since centuries back because of their use for the preparation of various indigenous medicines. A past report

(1966) said that about 18,650 kg. of the drug had been brought to Punjab market annually. However, with the advancement of biotechnology, increased belief on herbal medicines and development of pharmaceutical industry, its demand enhanced manifold and to meet the high demand, large quantities of rhizomes are collected from wild sources and marketed. Shah (1983) reported that more than 1200 quintals of this drug is annually obtained from Nepal, apart from country's own sources to meet the demand of the country and for re-export. A recent survey in West and South Sikkim by the scientist of Botanical Survey of India reveals that large quantity of rhizomes are marketed locally @ Rs. 1500-2000 per mund (ca. 37 kg), whereas the export value is much higher and is governed by the demand and supply.

3.2. Legal international trade : A recent trade record

analysis reveals that large quantities of *Nardostachys grandiflora* DC. rhizomes are regularly exported from India to different countries particularly U.S.A. As per information available from the Forest

Department, Govt. of Sikkim, 900 mund "jatamansi" (ca. 34,000 kg) have been exported from the state within a period of two years w.e.f. 1.4.1993 to 30.4.1995. However, looking into the drastic decline in the wild population, it is presumed that the total amount of export from India is much higher than what the report from a single source figured.

3.3. Illegal trade: Considering its high export-

oriented demand, it is supposed that a large quantity is covered by illegal trade both in smuggle form or in disguise of another species taking advantage of similarity in appearance. The distribution and field study say that *Nardostachys grandiflora* DC. and *Valeriana officinalis* L. occur at higher altitude of 3000-5000 m and 2400-2700 m respectively and are comparatively scarce, whereas, *Valeriana jatamansi* Jones (*V. wallichii* DC.) occurs at comparatively lower altitude of 1500-1800 m in abundance and as such are easily available.

The critical study of different literature and herbarium reveal that the

rhizomes of *Nardostachys grandiflora* DC. (Jatamansi), *Valeriana jatamansi* Jones (*V. wallichii* DC., the Indian valerian) and *Valeriana officinalis* L. (Valerian) possess more or less similar drug properties (in different concentration). The rhizomes of these three species are superficially look more or less alike, and if not critically examined, there is enough scope that one species gateway in the name of other. It is also reported that the rhizomes of these three species are used as adulterants and substitute for one or the other.

3.4. Actual and potential trade impact: The rhizomes are used medicinally for the preparation of tonic, stimulant, laxative, diuretic, spasmodic and stomachic. The pale yellow essential oil known as "Spikenard oil" has got antiarrhythmic activity and is also reported to promote growth of hair and to impart black colour. The rhizomes are also used in perfumery. Local inhabitants use it like incense.

3.5. Captive breeding or artificial propagation (outside country of origin): Not known.

4.1. Legal status:

4.1.1. National: After study of population the species has been treated under the "vulnerable" category in Red Data Book of Indian Plants by Botanical Survey of India. Considering its threat in the wild due to over-exploitation in trade, the species has also been included in the Negative list of export.

4.2. Species management:

4.2.1. Population monitoring: Being undertaken by the scientists of Botanical Survey of India.

4.2.2. Habitat conservation: Its original habitat fall under the Nanda Devi Biosphere Reserve and "Valley of Flowers National Park" in U.P. Himalayas where they are automatically protected.

4.2.3. Management measures: The species has been reintroduced in the areas of its original

habitat faced severe degradation due to over-exploitation. The species is included in the "Negative list of Export" by Govt. of India and as such, the collection from the wild is banned. As because habitat disturbance is another threat to the wild population, Environmental Impact Assessment are regularly carried out by Botanical Survey of India in certain proposed developmental sites and appropriate strategies are being planned for its protection and conservation before the project takes shape. However, the species is cultivated in smaller scale by local people and side by side attempts are on, for its artificial propagation and cultivation for commercial exploitation through rotational harvest and quota system.

4.3. Control measure:

4.3.1. International trade: The species should be immediately included in Appendix II of CITES, because strict regulation of

international trade is the only way at present to protect the species from severe threat. It is also proposed that only rhizome of the species which is easily distinguished may be included in Appendix II excluding the derivatives because it is difficult to distinguish the derivative from allied forms.

4.3.2. Domestic measure: Appropriate strategies

are being taken to protect and conserve the species *in situ*. Side by side attempts are being made for reintroduction in its original habitat, artificial propagation and cultivation for commercial exploitation. Forest Dept., Govt. of Uttar Pradesh has already banned the collection of this plant from Ukhimath area. The species is included in the Negative List of export of the Export and Import Policy (Public Notice No. 47(PN)/92-97, dt. 30.3.1994.

5. INFORMATION ON SIMILAR SPECIES:

5.1. Similarity in appearance: The roots rhizomes of

Valeriana jatamansi Jones (*V. wallichii* DC.),
Valeriana officinalis L. and the roots of
Selinum vaginatum Clarke, are sometimes
mistaken with the rhizomes of *Nardostachys*
grandiflora DC. (*N. Jatamansi* DC.), but the
rhizomes of the latter can be easily
distinguished/recognised by its erect and
stout nature, usually thicker than those of
subtending stems, densely covered with fibrous
roots throughout the length and withered
leaves or leaf bases at apices. Sometimes they
look like the tails of ermines or resembling
spikes of the green wheat both in form and
colour. The peculiar appearance of a spike is
really because of the unfolded radical leaves
remain pressed to the rhizomes.

5.2. Nature of specimen in trade: Roots/rhizomes in
market are usually intact, erect, separate or
in bunch of 3-6, and rarely in smaller pieces.

5.3. Appendix listing:

6. OTHER COMMENTS:

6.1. Range states: Bhutan, Nepal and China.

6.2. Intergovernmental organisation: CITES Management

Authority of India, in correspondence with the Management Authority of Nepal and China. During the last Plant Committee meeting the ~~Management~~ ^{Scientific} Authority of India had a discussion with the Management & Scientific Authority of China and Nepal regarding the proposal of inclusion in Appendix II of CITES and they principally agreed to it. However, the matter is under correspondence.

7. ADDITIONAL REMARKS:

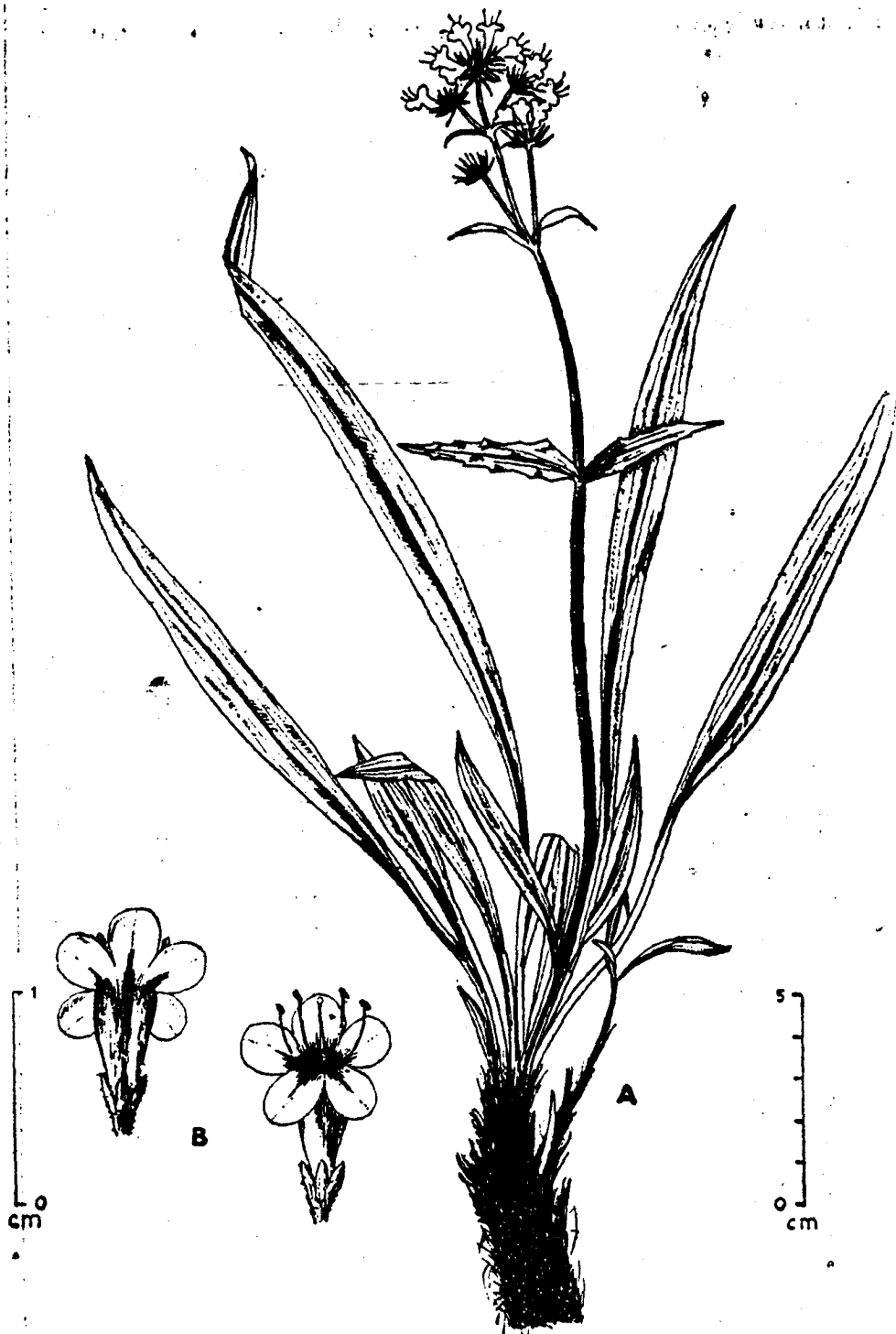
Description: Erect, perennial herbs, 10-60 cm high.

stems generally pubescent above. Rootstock/rhizomes horizontal, stout, densely covered with fibrous roots throughout its length. Radical leaves elongate, spatulate, distinctly petioled, cauline leaves subsessile, oblong to narrowly subobovate, entire. Flowers in dense cymose heads, rosy, pale pink or blue. Fruits white hairy.

The CITES control should be limited to the roots and readily recognisable parts thereof (derivatives may not be included).

8. REFERENCE:

1. Anonymous 1966. **The Wealth of India**. CSIR, New Delhi. Vol. 7:3-4.
2. Chowdhery, H.J.1988. *Nardostachys grandiflora* DC. in Nayar, M.P. & Sastry, A.R.K. eds. **Red Data Book of Indian Plants**. BSI, Howrah. Vol. 2:245.
3. Gaur, R.D. & Senwal, J.K. 1983. Exploitation and Threat to Survival of some High Altitude Plants in Garhwal Himalayas in Jain, S.K. & Rao, R.R. eds. **An Assessment of Threatened Plants of India**. pp. 37-39.
4. Shah, N.C. 1983. Endangered Medicinal & Aromatic taxa of U.P. Himalaya in Jain, S.K. & Rao, R.R. eds. **An Assessment of Threatened Plants of India**. p.p. 40-49.
5. Watt, J. 1891. **A dictionary of the Economic Products of India**. Vol. 5:338-341.



Nardostachys grandiflora DC. A. Habit. B. Flower.

Status: Vulnerable, and much depleted due to over-exploitation of rhizomes for medicinal properties, and also due to habitat degradation and other biotic interferences in its distribution range.

Distribution: Himalayas. Himachal Pradesh to Bhutan; also extending into Tibet and W. China.

Habitat and Ecology: Dwarf hairy herbs with a long tap root, inhabiting alpine Himalayas at an altitude of 3000 to 5000 m.

Conservation Measures Taken: None.

Conservation Measures Proposed: Collection of this plant should be banned. Attempts should be made to cultivate this plant for its commercial exploitation. Some of its habitats should be conserved.

Biology and Potential Value: The plant is propagated by cuttings of rhizomes which are used in medicine and perfumery. Rhizomes are also used as tonic, stimulant, laxative, diuretic, spasmodic, stomachic, etc. Medicinal oils prepared from rhizomes are reported to promote the growth of hairs and also to impart black colour.

Cultivation: Not known in cultivation.

Description: Root-stock thick, long, covered with fibres from the petioles of withered leaves. Stem 10-60 cm, generally pubescent upward, glabrate below, subscapose. Radical leaves 15-20 x 2.5 cm, longitudinally nerved, glabrous or slightly pubescent, narrowed into the petiole; cauline 1-2 pairs, 2.5-7.5 cm long, sessile, oblong or subovate. Flower-heads usually 1, or upto 5; bracts 4-6 mm long, pubescent. Corolla tube 6 mm long, somewhat hairy within. Fruit 4 mm long, covered with ascending white hair, crowned by the ovate, acute, often dentate calyx-teeth.

References:

1. Anon. (1966). *The Wealth of India: Raw materials* 7 : 3.
2. Basu, B. D. (1918). *Indian Medicinal Plants*, Part. II. Plate 509 B.

The material for this sheet was supplied by H. J. Chowdhery, Botanical Survey of India, Dehra Dun.

Jardostachys grandiflora DC. A. Habit. B. Flower.