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ADDITIONS TO THE PLANT WEALTH OF NANDA DEVI BIOSPHERE RESERVE, WESTERN HIMALAYA

The Nanda Devi Biosphere Reserve (30°05'-31°02'N, 79°12'-80°19'E) is designated as world heritage site for its unique biodiversity. It is located in the state of Uttarakhand in Western Himalaya, which forms the northern boundary of India with China. Nanda Devi National Park and the Valley of Flowers National Park together constitute the core zones of NDBR. It comprises of parts of three districts i.e. Chamoli, Bageshwar and Pithoragarh of Uttarakhand state. NDBR covers 6407.0 km² area (core zone 712.1 km², buffer zone 5148.6 km² and transition zone 546.3 km²) with an altitudinal range

from 1800 to 7817m. A number of studies on floral wealth have been conducted in Nanda Devi Biosphere Reserve (Shah, 1974); Hajra and Jain, 1983; Naithani, 1984; Balodi, 1993; Samant, 1993 and Hajra and Balodi, 1995. Publication of the 'Plant wealth of Nanda Devi Biosphere Reserve' by Hajra and Balodi (1995) has provided an accurate and update compendium of the vascular plants (801 species viz; 600 dicots, 139 monocots, 11 Gymnosperms and 51 Pteridophytes). It has therefore, not only furnished an important baseline for the taxonomy, distribution and status of existing

Table 1 : Species recorded from Upper Dhauri Valley in NDBR.

Botanical name	Family	Habit	Habitat and Distribution	Fl. and Fr.	Elevation range (m)	Nativity
<i>Berberis pseudumbellata</i> Parkar	Berberidaceae	S	Dry temperate forests, Kail forests along the Dhauri Valley (beyond Malari)	May - September	2500-3500	Reg Himal
<i>Clinopodium umbrosum</i> Koch.	Lamiaceae	H	Shady places, alpine scrub amidst <i>Astragalus candolleanus</i> , near habitations and forested areas	July - September	1000-3600	Ind. or; Oriens
<i>Colquhounia coccinea</i> Wall.	Lamiaceae	H	Temperate forests, grassy thickets, frequently seen roadside, near habitations and forested areas	Aug - September	2000-3000	Reg Himal
<i>Elymus natans</i> Griseb.	Poaceae	H	Alpine scrub, riverside steep slopes, population seen on the way to Chopping and Geldung	Aug - September	2800-4500	Reg Himal
<i>Erysimum hieraciifolium</i> L.f.	Brassicaceae	H	Alpine scrub, commonly found on the way to Chopping (Malari), forested areas	June - September	2500-3500	Europe
<i>Fraxinus xanthoxyloides</i> (G.Don) Wall. ex A.DC.	Oleaceae	T	Riverside steep slopes, frequently seen riverside	June - September	3000-4000	Reg Himal
<i>Gentiana aprica</i> Dcne.	Gentianaceae	H	Mixed herbaceous meadows. Dhaman payar (Amrit Ganga Catchment), on the way to Chopping (Malari)	July - September	2500-3500	Reg Himal
<i>Gypsophila cerastioides</i> D. Don	Caryophyllaceae	H	Mixed herbaceous meadows, lateral moraines	July - September	2500-3800	Reg Himal
<i>Juniperus semiglobosa</i> Regel.	Cupressaceae	T	Hill slopes; morainal flats, stabilised debris	July - October	3000-4200	Reg Himal, Persia
<i>Lonicera myrtillus</i> Hook.	Caprifoliaceae	S	Alpine scrub, commonly found in Amrit Ganga, Satyagad catchment and forest fringes	June - October	2800-3800	Reg Himal
<i>Myricaria elegans</i> Royle	Tamaricaceae	S	Riverine tracts, dry ridges of riverside	June - August	2800-3800	Reg Himal
<i>Myricaria rosea</i> W. W. Smith	Tamaricaceae	S	Riverine tracts in high mountains, mountain slopes, frequently seen in riverine tracts	July - September	3000-4200	China (Yunnan)
<i>Saussurea piptathera</i> Edgew.	Asteraceae	H	Bouldary areas, steep slopes amidst grasses or grassy slopes, commonly seen in stabilised debris	July - September	2500-3500	Reg Himal
<i>Scrophularia edgeworthii</i> Benth.	Scrophulariaceae	H	Temperate forests and sub-alpine areas, forested areas	June - September	2500-3500	Reg Himal
<i>Turritis glabra</i> L.	Brassicaceae	H	Agricultural fields, temperate forests and <i>Astragalus</i> scrub, forested areas	July - September	2800-3500	Europe
<i>Waldheimia glabra</i> (Dcne.) Regel	Asteraceae	H	Lateral moraines, on the way to Sagar along Amritganga catchment	Aug - September	3000-4000	Tibet

*Berberis pseudumbellata**Clinopodium umbrosum**Colquhounia coccinea**Turritis glabra**Elymus natans**Erysimum hieraciifolium**Fraxinus xanthoxyloides**Gentiana aprica**Gypsophila cerastoides**Juniperus semiglobosa**Lonicera myrtilus**Waldheimia glabra**Myricaria elegans**Myricaria rosea**Saussurea piptathera**Scrophularia edgeworthii*

Plate 1 : Plant species recorded from Upper Dhaul Valley in NDBR.

native species, but for naturalized taxa as well. However, recent efforts and field work by the authors have yielded 16 new additions to the plant wealth of Nanda Devi Biosphere Reserve (Table 1). These species were recorded from the Upper Dhaul Valley (ca. 727.71 km²), which falls under the Trans-Himalayan region in Chamoli district of Uttarakhand from 3000 to >6000 m. Generally, the vegetation in the region comprises of dry temperate to dry alpine types. The earlier workers had

not considered this valley, because it was then not forming the part of the reserve. The plants were collected from different localities between 3000-4500 m amsl from May to October of 2011 and 2012. Two trees, 4 shrubs and 10 herbs were among the 16 reported plants (Plate 1). Most of the plants (63%) recorded from the study area are native to Himalayan region and their flowering and fruiting period is between June to September.

References

- Balodi, B. (1993). Expedition to Nanda Devi: Floristic Analysis. (IN) Scientific and Ecological Expedition to Nanda Devi. A report. Pp. 86-95.
- Hajra, P.K. and Balodi, B. (1995). *Plant Wealth of Nanda Devi Biosphere Reserve*. Botanical Survey of India, Calcutta.
- Hajra, P.K. and Jain, S.K. (1983). *A contribution to the botany of Nanda Devi National Park in Uttar Pradesh, India*. Botanical Survey of India, Howrah.
- Naithani, B.D. (1984). *Flora of Chamoli*. Vol. 1 and 2. Botanical survey of India. Dehradun.
- Samant, S.S. (1993). Diversity and status of plants in Nanda Devi Biosphere Reserve. In: "*Scientific and Ecological Expedition to Nanda Devi*". A report. Army Headquarters, New Delhi. pp. 54-85.
- Shah, N.C. (1974). *A botanical survey of Nanda Devi Sanctuary*. *Himalayan Journal*: 210-214.

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