

Brainstorming on the future of the highly threatened medicinal plants of the Western Himalaya, India*

The Himalayan ecosystems are a hotspot of biodiversity; they also regulate climate and provide livelihood to over a billion people. These ecosystems are stressed owing to urbanization, over-exploitation of forest resources including rampant removal of medicinal and aromatic plants, and rapid threat from illegal trade in wildlife and poaching¹. Cumulative effects of these have resulted in enhanced species extinction and high hazard frequency². In order to address these threats and conservation issues, the Government of India (GoI) in 2017 initiated the project SECURE Himalaya 'Securing livelihoods, conservation, sustainable use and restoration of high range Himalayan ecosystems' – a landscape-based approach towards the holistic conservation of biodiversity and sustainable utilization of wild resource base. This project is a collaboration between the United Nations Development Program (UNDP), Ministry of Environment, Forest and Climate Change (MoEFCC), GoI and Global Environment Facility (GEF). It focuses on the Greater and Trans-Himalayan landscapes of India encompassing the states of Jammu and Kashmir, Himachal Pradesh (HP), Uttarakhand and Sikkim. It is well known that these landscapes are the habitat of snow leopard, wild prey species and their associated habitats as well as various remote agro-pastoral communities.

Among the 24 technical agencies working in the 4 focal states, Wildlife Institute of India (WII), Dehradun is undertaking implementation of the project in all states. In HP, particularly in Lahaul and Pangri landscape (hereafter referred as LPL), the project focuses on four components. (i) Identifying, delineating and mapping areas with high conservation values (HCVs) and developing management recommendations or plans in the landscape. (ii) Assessment of capacities and training needs of key stakehold-

ers. (iii) Assessment of medicinal and aromatic plant (MAP) species, including their collection, usage, demand, market, price trend and life cycle. (iv) Development of an interactive and dynamic web portal. Proceedings of component (iii), i.e. MAP species in LPL are summarized here based on two State-Level Technical Committee (SLTC) meetings, one National Project Steering Committee (NPSC) meeting and three stakeholder consultation workshops.

LPL is a repository to wild species of several commercially important MAP species, collection of which forms an important source of sustenance and profit-generation to the local inhabitants. The collectors in the region have been categorized as professional, opportunistic and users³. Unfortunately the relentless, unorganized, premature and illegal collection of MAPs has resulted in tremendous population decline from the wild. To address these issues and find possible remedies, several interactive meetings and consultation workshops were conducted with stakeholders, namely the indigenous people, including members of the Biodiversity Management Committee (BMC) and Mahila Mandal Samhiti, local amchis or traditional healers, MAP traders, scientific community, forest officials covering frontline forest staff to the Principle Chief Conservator of Forest (PCCF) and Chief Wildlife Warden (CWLW) and non-governmental organizations by the implementation agencies time and again, proceedings of the same are discussed below.

The first SLTC was organized by UNDP on 23 January 2019 in Shimla, HP. It served as a common platform for disseminating the rationale of SECURE Himalaya project amongst the various stakeholders, and to exchange ideas and experiences of the attendees. It was noted that several MAPs are heavily traded, delivering higher profits to the intermediaries as one moves up in the market value chain. Hence, creating awareness in this landscape on the rapid decline of MAPs from the wild is the need of the hour. Whereas, in order to secure livelihoods of the agro-pastoral

communities, reduce their dependency on natural resources and for sustainable utilization of resources, it is crucial to identify and strengthen the alternative sources of income-generation of locals. It requires identifying and building the capacities of stakeholders and training of trainers. Other predominant social, environmental and economic issues that were addressed included human-wildlife conflicts, illegal wildlife trade and overgrazing to name a few. The SLTC emphasized on addressing the drivers that are enabling relentless collection of MAPs, and to find possible solutions. Therefore, it was suggested to perform an in-depth study of few highly threatened species in LPL.

Carrying forward the study, a stakeholder consultation workshop was organized by WII, Dehradun on 12 March 2019 at Himalayan Forest Research Institute (HFRI), Shimla. The objective of the workshop was to identify the MAPs that require immediate attention in terms of their usage and dwindling wild populations. The possible criteria for selection of MAPs were pressed upon to study their uses and market trends with the objective of optimizing the benefits to the local communities. The discussions included adopting a village model on access and benefit sharing (ABS), thereby securing livelihoods of the agro-pastoral communities and reducing their dependency on the limited natural resources, strengthening of BMC and delineation of medicinal plants conservation areas (MPCAs) for *in-situ* conservation.

Further, to understand the progress and as a follow-up of the ongoing project activities, a second SLTC was organized by the Himachal Pradesh Forest Department on 16 April 2019 at the office of the PCCF and CWLW, Shimla. After an intensive discussion on ecological and economical aspects of MAPs amongst the stakeholders, SLTC endorsed the idea of selecting ten species for an in-depth study based on two criteria, viz. high threat perception and high quantum of collection of MAPs. Therefore, 10 MAPs, namely *Aconitum heterophyllum*

*A report on the proceedings of the National and State level meetings on the status of Medicinal and Aromatic plants in Lahaul and Pangri landscape, HP, as a part of the project SECURE Himalaya.

Wall. ex Royle (Kaur), *Bunium persicum* (Boiss.) B.Fedtsch (Kala zeera), *Dactyloporhiza hatagirea* (D.Don) Soó (Hathjari), *Fritillaria cirrhosa* D.Don (Jangli lehsun), *Picrorhiza kurroa* Royle ex Benth (Kutki, Kadu), *Podophyllum hexandrum* Royle (Bankakri), *Polygonatum verticillatum* (L.) All. (Salam mishri), *Rheum australe* D.Don (Chukri), *Rheum spiciforme* Royle (Spiked rhubarb) and *Rheum webbianum* Royle (Chukri) were selected for a detailed study.

Subsequently, a brainstorming NPSC meeting was organized on 3 June 2019 by MoEFCC, GoI to review the proceedings of the ongoing project activities, including field data collection. The review committee emphasized on the abundance of the selected MAPs and ABS village model in the focal landscape.

The current communication highlights the high demand and supply of MAPs in LPL apart from local consumption for medicinal and culinary practices. Most of the focal species are wild having a short growing period of about 4–5 months. Hence, their premature collection results in non-availability of any perennating structures for the next growing season. Owing to the high medicinal properties, these plants have developed high market demands; for instance, *F. cirrhosa* (locally known as Jangli lehsun) fetches as much as Rs 10,000 kg⁻¹ in the market. Unfortunately, use of Jangli lehsun is still not known to the locals in LPL. During the maturity of MAPs, there develops a sense of competition amongst the collectors for gathering maximum raw materials from the wild, subsequently resulting in frequent feuds.

As a part of WII's ongoing MAP component under the SECURE Himalaya, two landscape-level stakeholder consultation workshops were organized on 27 and 28 September and 11 October in 2019 at the headquarters of Pangi and Lahaul, i.e. Killar and Keylong respectively. The workshops were conducted in the landscape so as to make the stakeholder participation more inclusive and to discuss the project findings and address conservation issues at the grass-root level. The intensive individual interactions and group discussions with various stakeholders revealed seasonal decline in demand of MAPs and unavailability of the state-of-the-art technologies for storage of perishable plant parts; thus the raw materials were sold at less than half the original price. Subsequently, it brought to focus that the lack of knowledge on harvesting methods had resulted in an unorganized and destructive collection of MAPs leaving no perennating structure for the next growing seasons. These workshops helped in identifying the stakeholders such as officials of the forest department, school teachers and local traders for their capacity building.

Based on the national and state-level meetings (six), it can be concluded that in order to optimize the benefits to the local communities, and adopt the concepts of sustainable harvesting and benefit-sharing, it is important to assess the availability, market trends and methods for collection of MAPs, including gathering information on population of selected MAPs. This will help in identifying high conservation value areas and delineating the MPCAs for *in-situ* conservation in

the landscape. The identification of industries that accrue their raw materials from Lahaul and Pangi will strengthen the implementation of the ABS model on a pilot basis. Hence, the identification of hidden markets at local, town and city level; price trends and value addition of MAPs along with strengthening of BMCS will help in sustainable management of MAPs in the landscape. Furthermore, WII is all set to contribute its efforts to fulfill the expected outcomes to ensure the conservation of highly threatened MAPs of the Western Himalaya.

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ACKNOWLEDGEMENTS. We would like to thank the Director and Dean, Wildlife Institute of India, Dehradun for institutional support. We also would like to acknowledge United Nations Development Programme and Global Environment Facility for funding, Ministry of Environment Forest & Climate Change, GoI, Himachal Pradesh Forest Department and Drs S. Sathyakumar, G. S. Goraya and A. K. Gupta for constant support, guidance and encouragements.

Manisha Mathela, Himanshu Bargali, Monika Sharma, Rupali Sharma and Amit Kumar*, Wildlife Institute of India, Dehradun 248 002, India.

*e-mail: amit@wii.gov.in