

## Wildlife Watch in the Indian Himalayan Region

The Indian Himalayan Region (IHR) is one of the rich biodiversity regions of the world with over 10,000 plants, 300 mammals, 977 birds, 281 herpetofauna, 269 fishes, several species of invertebrates and microorganisms, many of which have global conservation significance<sup>1</sup>. Despite significant ecological, hydrological and biological values, the fragile mountain ecosystems in the IHR are seriously threatened due to increasing anthropogenic pressures, mainly development. In the IHR, wildlife species are threatened due to poaching for meat, illegal wildlife trade, negative human-wildlife interactions (conflicts), habitat loss, habitat fragmentation and degradation due to developmental activities and natural resource use by humans. These have led to a decline in wildlife population, reduction in distribution range and in some cases local extinction of species<sup>2</sup>.

The effects of climate change are pronounced in places such as the Himalaya where the network of snow-clad mountains, ice-peaks, high-intensity drainage and precipitation characterizes the bio-social landscape<sup>2,3</sup>. Evidence suggests that responses of species to impacts of climate change are *inter alia* manifested in changes in phenology, earlier onset of spring, migration, changes in behaviour or activity patterns, and lengthening of growing seasons<sup>4</sup>. Therefore, it is appropriate that scientific studies are carried out to assess impacts of climate change on wildlife species and their habitats in order to formulate and apply directed management strategies for long-term conservation in the IHR.

Realizing the need for developing science-based action plans to address both the existing as well as emerging threats of climate change in IHR, the National Mission for Sustaining the Himalayan Ecosystem (NMSHE) was conceived and launched by the Government of India (GoI) in 2010 (ref. 5). The Wildlife Institute of India (WII), Dehradun an autonomous institution under the Ministry of Environment, Forest & Climate Change (MoEFCC), GoI, in the field of wildlife conservation has been identified as a nodal institute under NMSHE by the

Department of Science and Technology (DST), New Delhi for coordination of the Task Force on Micro-flora and Fauna (DST Grant Number: DST/SPLICE/CCP/NMSHE/TF-2/WII/2014[G] dated 26.08.2014). The goal of this Task Force is to develop strategies to mitigate climate change effects on micro flora and fauna in the IHR. The assessments under this Task Force include: (a) animal species/communities diversity, distribution and abundance; (b) wildlife habitats, ecosystems, and ecosystem services; (c) anthropogenic and climate change impacts on wildlife and ecosystems through scenario building and visualization; (d) vulnerability of species/habitats to climate change and (e) prioritization of species/taxa and sites for monitoring.

In order to sensitize all stakeholders on the importance of monitoring selected endangered or indicator wildlife species in the IHR, 'Wildlife Watch in the Indian Himalayan Region' – a citizens' science programme has been recently initiated. A user guide for monitoring wildlife species in the IHR has been conceptualized and developed. The selection of species for 'Wildlife Watch' is based on evaluation and scoring of criteria such as: (a) the status (endangered/threatened) based on IUCN and Indian Wildlife (Protection) Act; (b) functional role (apex predator/keystone species); (c) values (charismatic, cultural, umbrella/flagship species); (d) detectability in the wild, and (e) sensitivity to climate change or climate variability. Using the above criteria, we have selected 13 species for Series I; two species each representing mammals, birds, herpetofauna, fishes, invertebrates and three species for flora.

For every species, we have presented information on their taxonomic status, local/vernacular names, physical attributes, elevation range, habitats, some key field identification features, probable distribution map in the IHR, photographs, and illustrations of tracks/signs which will benefit the user. The key references used for compiling information for the species are presented at the end of the user guide which can be used by all stakeholders, both amateur as well as trained. from which we envisage report-

ing more information according to the data format provided at the end of the user guide. The PDF of this publication along with reporting format is available at [http://wii.gov.in/nmshe\\_publication\\_wildlife\\_watch\\_2014\\_15](http://wii.gov.in/nmshe_publication_wildlife_watch_2014_15).

In order to facilitate easy reporting back to WII, a simple format has been provided in this publication which could be done on-line, through mobile (+91-9410915297) as well as e-mail (wlw.nmshe@wii.gov.in). All the information will be reviewed and stored in a database at WII along with credits to the contributor, and this would be used for future monitoring. This publication will also be modified as bilingual posters (English and Hindi or relevant major vernacular languages spoken in the IHR) and also hosted on our website. We believe that substantial interest could be generated on Wildlife Watch in the IHR through this publication, and it would be of great use for monitoring of species by different stakeholders. WII is planning to bring out a series of 12–15 species under Wildlife Watch in the IHR programme every year.

1. Conservation International 2016, accessed on 22 September 2016.
2. Anon., Himalayas Climate Change portal: Task Force 4: Micro Flora and Fauna and Wildlife and Animal Population, 2015; <http://knowledgeportal-nmshe.in/> (accessed on 11 May 2016).
3. Sathyakumar, S. and Bashir, T., In *Mountain Ecosystem and Man* (eds Arora, S. et al.), Soil Conservation Society of India, New Delhi, 2010, pp. 324–345.
4. Matthew, R. A., In *Strategic Asia-11: Asia's Rising Power and America's Continued Purpose* (eds Tellis, A. J., Marble, A. and Tanner, T.), The National Bureau of Asian Research, Seattle, Washington, 2010.
5. Anon., National Mission for Sustaining the Himalayan Eco-System under National Action Plan on Climate Change. Mission document, Department of Science and Technology, Government of India, 2010.

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