

resulted in excessive harvest and therefore generated concern about overexploitation³. The present flowering phenomenon of the species may be an opportunity in disguise to study the gregarious flowering of the species in relation to biotic interferences. Further study is essential after die-off event to evaluate how the rural people convene their alternate requirements that otherwise are dependent on the species for their rural subsistence. It is also important at this stage to strengthen research to determine the effect of die-off event on the vegetational structure and functional aspect of the forest. It would also be interesting to explore the response of herbs, shrubs and tree seedlings to formation of exposed patches subsequent to the gregarious flowering of the species. Moreover, factors affecting recovery of original population size required detailed study. Certain management considerations like

seed collection, protection of natural regeneration, and creation of seed and seedling bank are also required.

1. Banik, R. L., *Silviculture and Field-guide to Priority Bamboos of Bangladesh and South Asia*, Bangladesh Forest Research Institute, Chittagong, 2000.
2. Rao, K. S., Ramakrishnan, P. S. and Saxena, K. G., *Bamboo J.*, 1990, **8**, 92–99.
3. Nath, A. J., Das, G. and Das, A. K., *J. Am. Bamboo Soc.*, 2007, **20**, 15–20.
4. Singh, S. P., *Curr. Sci.*, 2002, **82**, 1331–1335.
5. McClure, F. A., *Bamboos – A Fresh Perspective*, Harvard University Press, Cambridge, 1966.
6. Soderstrom, T. R. and Calderon, C. E., *Biotropica*, 1979, **11**, 161–172.
7. Janzen, D. H., *Annu. Rev. Ecol. Syst.*, 1976, **7**, 347–391.
8. Koshy, K. C. and Mathew, P. J., *Curr. Sci.*, 2009, **96**, 769–770.

9. Nath, G. M., *Indian For.*, 1962, **88**, 523.
10. Gamble, J. S., *The Bambuseae of British India*, Bengal Secretariat Press, Calcutta, 1896.
11. Trevor, C. G., *Indian For.*, 1927, **53**, 718.
12. Hasan, S. M., *Bano Biggyan Patrika*, 1973, **5**, 21–36.
13. Banik, R. L., *Bangladesh J. For. Sci.*, 1999, **28**, 69–74.
14. Gupta, K. K., *Indian For.*, 1972, **98**, 83–85.

ARUN JYOTI NATH
ASHESH KUMAR DAS*

*Department of Ecology and
Environmental Science,
Assam University,
Silchar 788 011, India*

*e-mail: asheshdas@sancharnet.in

Western Arunachal Pradesh offering prime home to the endangered red panda

Arunachal Pradesh, an abode of biodiversity and one among the 200 globally important ecoregions in the world, is fortunately situated in the north-eastern part of India. With the Eastern Himalaya extending into its western part, the state harbours an elegant range of endangered and endemic flora and fauna together with the most striking creature of the north-eastern forests, i.e. the red panda (*Ailurus fulgens*). Posing a taxonomic dilemma since a long time, the red or lesser panda has been placed in the order Carnivora and is the monotypic member of the family Ailuridae and the only representative species of the genus *Ailurus* (Eisenberg 1981). Adapted to a bamboo diet despite being a carnivore, the animal occupies a highly specialized niche and is protected under Schedule I of the Indian Wildlife (Protection) Act, 1972 and listed in Appendix I of Convention on International Trade in Endangered Species (CITES) and as 'endangered' by the International Union for Conservation of Nature (IUCN). The geographical range of the red panda extends from Nepal in the west to a few

provinces of China in the east with its distribution in India along the Eastern Himalaya including Arunachal Pradesh, Sikkim and Darjeeling. However, according to IUCN, more than 90% of its approximate total habitat in the country is contributed by Arunachal Pradesh.

However, the population remained undocumented until the WWF-India in western Arunachal Pradesh initiated a baseline survey on the population status and distribution of red panda along with the threats faced by the species in the area. Intensive field and questionnaire surveys have been conducted at the Pangchen valley and the Mandla area occupying remote locations in the state and falling under the Tawang and West Kameng districts respectively. Both the sites have been declared as IBAs under the Important Bird Area Programme by Birdlife International, United States being the Zemithang–Nelya IBA and Mandla–Phudung IBA in the Pangchen valley and Mandla respectively. Furthermore, the sites exhibit prolific habitats mostly decked with temperate conifer and temperate broadleaf forests

inhabiting some of the most fascinating wild flora and fauna.

During the field surveys in these conferred sites, the red panda presence has been confirmed through various direct (sightings, kills and carcasses) and indirect (scats, pug mark, scratch mark, pelts and secondary information from the local communities) evidences. Scats and a number of skins of the animal have been found in Mandla. However, the presence of the elusive red panda from the Pangchen valley has been revealed through a number of direct animal sightings mostly in November together with an appreciable number of scats found at an average elevation of 3200 m in different parts of the valley. Since a long time, frequent red panda sightings were reported on the *Sorbus* sp. (Laju) tree by the local communities, which have now been confirmed by more than 85% of the evidences. However, the *Sorbus* sp. and the most commonly known food of the animal almost all over its distribution range, i.e. the *Thamnocalamus* sp. (Bamboo) have been found to be the most preferred among the available plant species. In

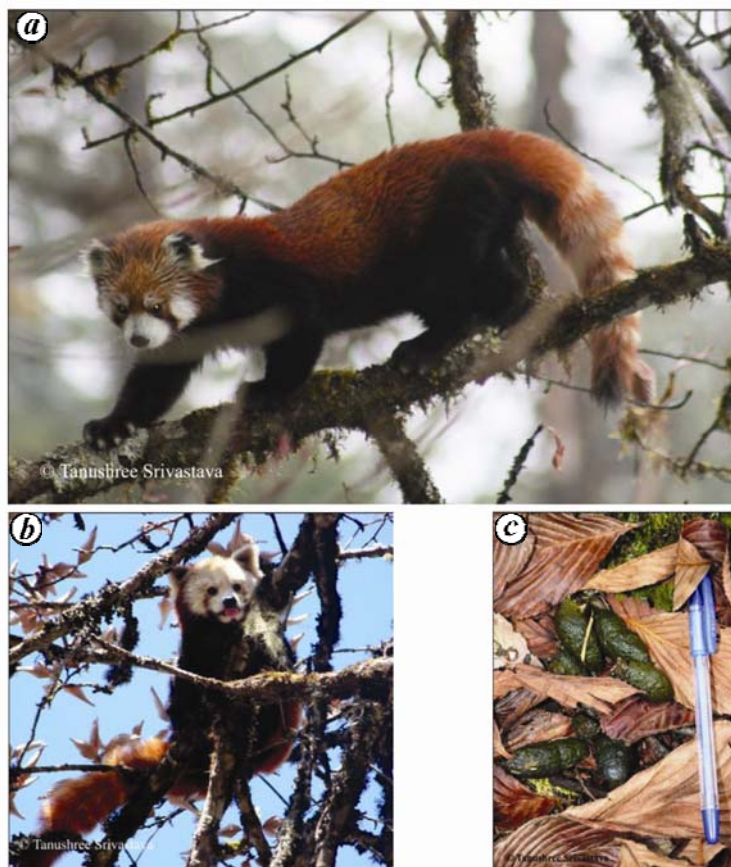


Figure 1. a, b, Red panda in Pangchen valley; c, Red panda scat on *Sorbus* sp. (Laju) leaves.

addition, three more tree species have been recorded, the pulpy fruits of which are eaten by the red panda during fruiting season, i.e. between September and November. Therefore, the *Sorbus* sp. (Laju) certainly being on the top is followed by *Elaea umbelata* (Jolong), *Holboellia latifolia* (Zelumpa) and *Schizandria grandiflora* (Rumin).

Though both the areas have been recognized as quality red panda habitats, the Pangchen valley seems to support a

healthier population compared to the Mandla area, offering a much safer home to the endangered species as the tribes inhabiting the area, i.e. the Monpas have framed stringent rules against hunting and the same is utterly prohibited in the entire area. The local communities inhabiting the Pangchen valley are devoted towards the importance and conservation of their surrounding environment. Conversely, the red panda population in the Mandla area seems to be experiencing

serious threats and is under pressure particularly due to the Border Roads Organization (BRO) workers residing in the area, both in terms of habitat destruction and hunting of the animals for their pelts, etc. which is supplemented by the hasty attitude of the tribes dwelling in the area. The threats to the panda population have been further confirmed through a number of animal skins found in the local households of the Mandla area.

The WWF–India Western Arunachal Pradesh team is now seeking to focus further conservation efforts, exclusively in the Pangchen valley owing to its high number of rare and elusive species together with the defensive and cooperative attitude of the local communities towards the conservation of red panda and the wildlife of the area as a whole. It is likely that more prolific results can be expected in conservation of the endangered red panda in a shorter time span in this region. The same will be done through intensive field surveys to understand various ecological aspects of the species and organizing a number of awareness programmes among the local communities helping them better comprehend their priceless surroundings along with acquiring explicit ideas of the basic requirements and beliefs prevalent within the communities which would further ensure the effectiveness of the conservation efforts by placing the communities and their environment on a common platform.

TANUSHREE SRIVASTAVA*
PIJUSH KUMAR DUTTA

WWF-India,
Western Arunachal Landscape,
Arunachal Pradesh, India
*e-mail: tanushrees@ncbs.res.in