



On Occurrence of Three Parasitic Angiosperms within Neora Valley National Park

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Abstract

Balanophora polyandra Griff., *Monotropa uniflora* L. and *Rhopalocnemis phalloides* Junghuhn are reported within the Neora Valley National Park. The parasitic angiosperms were growing in dense, shaded and moist places within the National Park and have potential threat both within the National Park due to climatic changes and outside due to habitat destruction. Both intensive and extensive exploration and studies within the National Park from October 2019 to March 2021 revealed only single populations of *M. uniflora* and *R. phalloides* indicating the rare occurrence of both the taxon within the National Park.

Keywords: *Balanophora polyandra*; *Monotropa uniflora*; Neora Valley National Park; *Rhopalocnemis phalloides*; West Bengal

Introduction

Bordering Sikkim in the North and Bhutan in the Northeast, the Neora Valley National Park is considered as one of the oldest protected areas in India ranging from 180 to 3,200 m. Nestled in the Eastern Himalaya and located in the strategic tri-junction bordering Sikkim and Bhutan, the National Park is considered as one of the life lines of the rich diversities harboring in the region.

The intension to declare the area as National Park was notified in 1986 and the final notification towards the Wildlife (Protection) act 1972 declaring Neora Valley National Park came on 2nd December 1992 with a total area was 8799.82 Ha (88 sq. Km. approx). In 2017, a total of 7189.35 Ha (71 sq. Km. approx) area of

land under possession of Kalimpong Division of West Bengal Forest Development Corporation Ltd. was notified to be a part of Neora Valley National Park. Presently, the total area of 15989.17 Ha (160 sq. Km. approx) forest land was declared to be known as Neora Valley National Park. Neora Valley National Park was transferred to Wild Life Division-I, Darjeeling in 1992 and it is presently under the jurisdiction of Gorumara Wild Life Division, Jalpaiguri since November 1995.

Neora Valley National Park was unexplored till December 1982, when the Himalayan Club, along with Zoological Survey of India Department of Botany, Calcutta University,

West Bengal Forest Development Corporation and Indian army jointly organized the first expedition to the virgin forests of Neora Valley from Lava. The significance of Neora Valley National Park was recognized in May 2009 and has been included in the tentative list of World Heritage sites (UNESCO World Heritage Centre, 2009).

The experts from various fields and from various institutes were invited to a common platform to carry out the survey and assessment work for a common cause. The primary objective of the assessment was to access the species richness within the National Park. According to the mandate mentioned in the Draft National Forest Policy 2018 and progressive thinking authorities, Annual Biodiversity Survey came into existence keeping in mind at least five extensive and intensive Survey camps in different seasons in different terrains of the National Park to accumulate extensive data of species richness regarding various multidisciplinary research and documentation within the National Park. The meditation of 'Annual Biodiversity Camp' was first inducted in West Bengal which is considered as a stepping stone for all authorities, policy makers and even the biodiversity enthusiast to follow similar footsteps for a better cause.



Figure A. 1. *Balanophora polyandra* Griff. male plants growing on the forest floor. 2. Both male and female plants on the forest floor. 3. Enlarged male flowers showing synandarium.

4. *Monotropa uniflora* L. plants growing on the forest floor. 5. Mature plants. 6. *Rhopalocnemis phalloides* Junghuhn growing on the forest floor. (All photographs taken from the Neora Valley National Park)

Discussion

Parasitic angiosperms are often regarded as curious plants in the Plant Kingdom. The biology of those plants is very interesting. The purpose of the publication is to highlight the treasure of the parasitic angiosperms within the National Park. A series of intensive and extensive floristic surveys was undertaken to assess the plant diversity treasure within the Neora Valley National Park from October 2019 to March 2021.

Among different groups of plants we came across three curious plants two belonging to a root holoparasitic family, Balanophoraceae (*Balanophora polyandra* Griff. and *Rhopalocnemis phalloides* Junghuhn) and a mycoheterotrophic plant of the subfamily Monotropoideae, Ericaceae (*Monotropa uniflora* L.). Several populations of *B. polyandra* were encountered in Bhotaykharka, Thusum Khola, Thusum peak and Tempola considering the taxon as "Least Concern" within the National Park (see also Rai et al., 2020). Single population of *R. phalloides* was encountered on the way towards Thosum Peak from Bhotaykharka (27°04'348" N, 88°45'803"E) at an altitude of 2,170 m and *M. uniflora* near PHE camp (27°09'736" N, 88°72'502" E) at an altitude of 2,158 m were observed within the National Park which clearly indicates the rare occurrence of both the taxa which are considered as threatened for their habitat destruction. Earlier, Rai and Das (2013) reported *R. phalloides* for the first time from West Bengal from Neora Valley National Park. Later, Krishna et al. (2016) and Rai et al. (2020) again reported it from Neora Valley National Park. Rai et al. (2020) also reported the abundance of *B. polyandra* within the

National Park. Pradhan (2015) has worked extensively on the *M. uniflora* suggesting the taxon thrives well in Oak dominated region. Keeping conservation strategies in mind no representative specimens were collected from the National Park. GPS location and habitat details were noted and the specimens were photographed.

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