

Fading sight of endemic *Zapornia bicolor* (Walden, 1872) in Eastern Himalayan Biodiversity Hotspot

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Abstract

A biosurvey was conducted in Samendu Lake and its surrounding wetlands of Eastern Himalayan Hill region of Mirik in Darjeeling in West Bengal, India. In the study, endemic and locally rare bird species *Zapornia bicolor* (Walden, 1872) was studied with point transect method regarding its population and habitat. Very low population (only 21 individuals) and habitat degradation (encroachment, pollution, invasive plant species) was observed at the study sites. Conservation measures for this species have been suggested.

Keywords: Bird, Conservation, Darjeeling, India, Mirik, Samendu Lake.

Introduction

Himalayan Biodiversity Hotspot harbors a wide variety of faunal bioresource, representing 980 species from the class Aves, 15 of which are endemic (CEPF). The present investigation deals with the endemic yet uncommon bird species *Zapornia bicolor* (Walden 1872) [syn. *Amaurornis bicolor* (Walden, 1872)] [Kingdom Animalia, Phylum Chordata, Class Aves, Order Gruiformes and Family Rallidae], whose first specimens were collected in Darjeeling by B.H. Hodgson between 1844 and 1858. The specimen was described from a BMNH submission taken at 880 amsl at Rungbee (=Rangbi/ Rambhi), in Darjeeling District during November, 1870 (Walden 1872). Meanwhile the species was also discovered from Sikkim, Lebong (Darjeeling), Shillong, Meghalaya (Godwin-Austen, 1874; Sharpe 1894). Yet, Inskipp and Round (1989) has mentioned that there is no report regarding this bird from Darjeeling from the past fifty years.

This species has a very large range, and it is known to occur in Bhutan; China; India; Lao People's Democratic Republic; Myanmar; Nepal; Thailand; Viet Nam having extent of Occurrence <20,000 km². Yet globally, the rate of population is decline is less than 30% decline over ten years or three generations. Though, the population size of the species has not

been quantified, considering above facts with supposed population size criterion of 10,000 or more mature individuals with a continuing decline estimated to be less than 10% in ten years or three generations, IUCN has evaluated *Z. bicolor* as Least Concern (BirdLife International, 2012).

In the light of declining or fluctuating range size, habitat extent/quality, or population size and fragmentation of habitats, biosurveys play important role to assess the conservation status and plan conservation action for endemic species. This study is a part of the Board's initiative on status survey of biodiversity of Samendu Lake and its surrounding wetlands. Present investigation focuses upon population and habitat of endemic bird *Zapornia bicolor* (Walden, 1872) in Samendu Lake and its surrounding wetlands and its related findings.

Materials and methods

Sampling

Study was conducted during 13th to 19th March, 2014, when local informants were first queried with non structured questionnaires, then 6 Point transects (Ralph, Sauer and Droegge, 1995) of 20 m band along the habitat periphery were studied for one week. Species were identified based upon morphological details provided by Inskipp and Round (1989), and Taylor (2010). Map was created with DIVA GIS and Google Earth (Map data: © 2015, Google, CNES/Astrium).

Study area

Mirik is a picturesque hill station nestled in the central-western part of Darjeeling district of West Bengal, India (Figure 1). This place has become a popular tourist destination for its climate, natural beauty and easy accessibility. It is important in terms of commercial aspects because of its proximity to Siliguri, Pashupati Nagar (Nepal), and due to activities related to adjoining tea gardens, orange orchards, cardamom plantations, floriculture (famous for Orchids) and olericulture as well. The urban hub (notified area) at Mirik is looked after by a Municipality with nine wards under its jurisdiction. The location of urban part of Mirik is at 26.8948° N, 88.1809° E, at an altitude of 1,495 m, having a population of 11,513, with literacy rate of 88.38%, covering 2,465 households (Census, 2011). The climate is pleasant all the year round with temperatures of a maximum of 30 °C in summer and a minimum of 1 °C in winter. It has a famous manmade *Samendu* Lake, which historically was a marshland with thick growth of sweet flag (*Acorus calamus*, locally called *Bojo*). A playground stood in the present garden area where the British officers used to play Polo (Mondal *et al.*, 2012). In

1969, the West Bengal Tourism Department began the process of acquiring 335 acres of land from the neighboring Thurbo tea estate for construction of the lake, while the work of developing this land into a tourist spot began in 1974 under the 'Mirik Tourist Project' (Mondal *et al.*, 2012). The Lake comprises of more than 65% of the share of total wetland faunal diversity of Darjeeling Hills. It has rich biodiversity, and is located on the migratory route of birds, having vast area of suitable habitats for multiple bird species (Biswas Roy *et al.*, 2012).

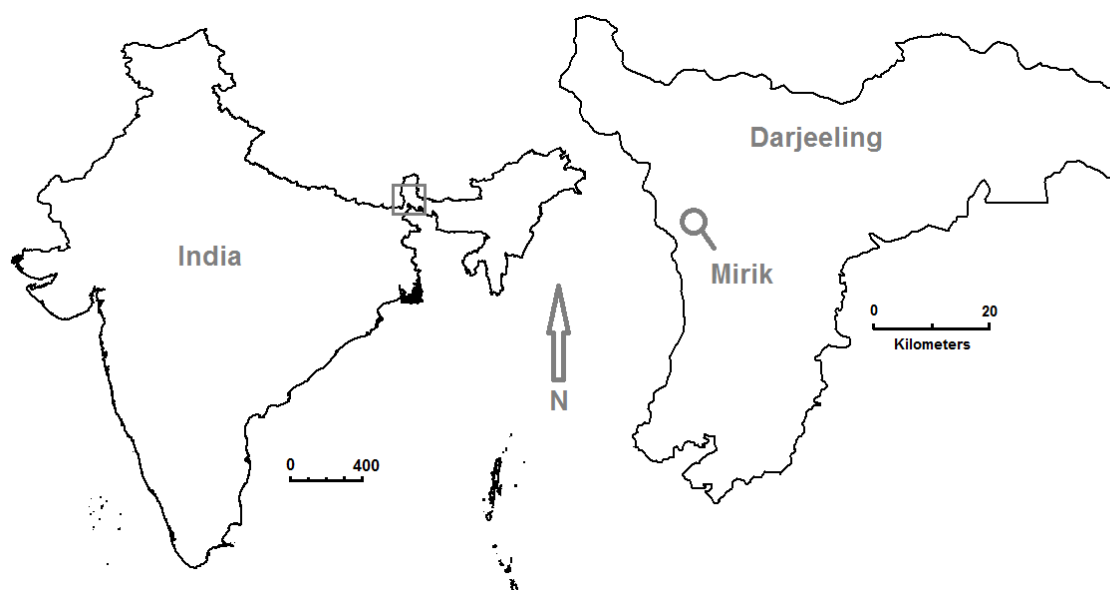


Figure 1: Location of study area (Mirik)

Results and Discussion

Primarily *Z. bicolor* could be identified in the field due to ash grey dead and neck, dull rufous-brown wings, pale bluish green or apple green beak and lobster red legs and feet, (Figure 2) (see Inskipp and Round [1989], for detailed morphology). As advised by locals and local NGO - Nature and Environment Protection Activists (NEPA), visits were made to the five sites of Bhanu Tol (Figure 3[3]), Social Forestry compound (Figure 3[6]), Devi Sthan compound (Figure 3[4]), Aquarium compound and School Dara (Figure 3[1-2]), 9th Mile (Thurbo), however during the survey the *Z. bicolor* (locally called *Sim Kukhra* in Nepali; etymologically *Sim* = wetland, *Kukhra* = Cock or Hen) were sighted only at Aquarium compound and School Dara (Site 1) (26.8890° N/ 88.1857°E) and Bhanu Tol (Site 2) (26.8090° N/88.1888° E). Further investigation led to the sighting of only 21 (including 8 juveniles) individuals in two locations, while reported census of NEPA in 2012 mentions of 50 - 60 individuals to be alive (in the above five mentioned sites). The other avian fauna sighted during the study, in the lake and surrounding wetlands include *Phalacrocorax carbo*

Linnaeus 1758, *Streptopelia orientalis* Latham, 1790 (Commonly called *Oriental Turtle Dove*; locally called *Dhukur*), *Acridotheres tristis* Linnaeus, 1766 (Commonly called *Bank Moyna*; Locally called *Ruppee*), *Motacilla alba alboides* Hodgson, 1836 (Commonly called *Pied Wagtail*), *Myophonus caeruleus* Scopoli, 1786 (Commonly called *Blue Whistling Thrush*; locally called *Kalchura*) etc.

Reportedly the population of *Z. bicolor* present at the study site is thought to be native to local wetlands and their existence could be recalled by the elders, prior to 1973 after which

intensive developmental activities took place in the area. The manmade loss of original habitat may be estimated to be more than 90% (80-90% was reported by NEPA in 2012) if species' current refuge (around 1.5 hectares; Site 1 + Site 2) and the total wetland area of the locality is to be considered. The remaining wetland habitat for *Z. bicolor* is also highly affected due to pollution, siltation, growth of invading *Eichhornia crassipes*, defunct reed beds (made for the purpose of purification of water) with growth of invading *Phragmites*, and reported encroachment. This might



Figure 2: *Zapornia bicolor* (Walden, 1872) in the study area

have already started to negatively affect survival and reproduction of the species. Conservation initiatives, especially by means of generating public awareness were undertaken by NEPA, however the species was unknowingly mentioned as *Scolopax*

rusticula. Yet till today, no conservation plan has been proposed from the public and private domain.

For proposing the conservation site, habitat options are also very limited. A large area of possible habitat in Rai Dhap (Figure 3[5]) has been concretized from the base and a large tank has been constructed with a hope to supply water to the Municipal residents. Devi Sthan



Figure 3: Aerial view of Samendu Lake and reported habitats of *Zapornia bicolor* in surrounding wetlands; 1-2=Aquarium compound and School Dara, 3=Bhanu Tol, 4=Devi Sthan compound, 5=Rai Dhap, 6=Social Forestry compound. (Map data: © 2015, Google, CNES/Astrium).

compound has now become a popular car washing hub (Figure 3[4]). One of the presently identified habitats (Site 1) is facing increasing siltation and threat of encroachment, it has a waste dumping bin, defunct reed bed full of *Phragmites*, increasing population of *Eichhornia crassipes* and decreasing population of *Acorus calamus*. However, this site is located adjacent to a perennial water source. Bhanu Tol (Site 2) is another site where conservation could be conducted. This area is also important as habitat of *Tylototriton verrucosus* Anderson, 1871 (Commonly called *Salamander* / *Himalayan Newt*; locally called *Gora*). Yet due to negligence, encroachment and water pollution levels are high in this site. It is felt necessary to remove patches of *Eichhornia crassipes* and *Phragmites* growth, whereby, *Acorus calamus* (preferential plant habitat for *Z. bicolor*) could be planted extensively. Desiltation, draining sewage water away through pipeline, possibly will help in augmentation of habitat quality for

Z. bicolor. Robust fencing needs to be built around the conserved sites and monitored, as well as adequate regeneration period needs to be provided to the species. Locally, multitude of factors are threatening the future of this freshwater marshland dwelling species, and detailed studies on this species, and prioritized action for immediate local conservation and habitat regeneration etc. needs to be conducted at the earliest.

Acknowledgements

The author would like to thank Mr. Gyalpo Lama, Headmaster, Soureni High School (especially for photography); Mr. Sachin Tamang, WBSSEDCL; Mr. Ramesh Gazmer (NEPA); Mr. Sumit Manna, WBBB and Mr. Soumen Basu, WBBB for support during the field investigation. Thanks are also due to the West Bengal Biodiversity Board regarding authorization for the survey.

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