

Updated status of Nepal's wetland birds

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Wetland birds in Nepal comprise significant portion of avian fauna of Nepal. However, they are also highly threatened because of several factors. A thorough study on wetland bird communities is lacking which is hampering conservation of wetlands and bird communities dependent on them. Proper management of the wetland beyond the protected areas is essential to conserve wetland birds in Nepal.

Key words: Wetlands, birds, threatened, management

Wetland birds comprise a group of birds which have been studied for a long time. North America and the European countries have led the research in this field significantly. Wildfowl and Wetland Trust and its pioneering work through Sir Peter Scott on the *Cygnus* spp. are well known long term studies done on waterfowls. In the early 60s, number of wetland birds declined in the Americas and European countries. The loss of wetland habitat, globally, is of prime concern and is the major driving force for developing a conservation strategy (Denny 1994). As a result efforts by private, public and non profit organizations have helped to restore their numbers significantly in these countries.

A total of 863 species of birds has been reliably recorded in Nepal (BCN 2008). Of these nearly 200 species of birds are considered to be heavily dependent on wetland habitats (Grimmett *et al.*, 2000). Bhandari and Shrestha (1994), Sah (1997), Bhandari (1998) made some pioneering studies on the wetlands of Nepal. Bhandari *et al.* (1994), Karki (2002), Bhandari (2005) and Bhandari and Gea (2007), Karki *et al.* (2008). Wetland bird communities have been studied at Chitwan (Halliday, 1982).

Many previous studies have looked on overall wetland biodiversity (BPP, 1995a, Shrestha, 1993, Bhandari, 1998, Sah, 1997) and few studies particularly on wetland birds (Baral 1998, 2004, Gyawali, 2003, Hungden and Clarkson, 2003, Tamang, 2003). So far the studies of wetland birds seem to have concentrated into a specific area or region but no study of all the status, distribution and their habitat requirements in the country.

This paper aims to update status of wetland birds in Nepal with facts based on recent observation.

Study Area

This paper touches all types of wetland birds in Nepal. The main study areas include the various wetlands in lowland Nepal including four Ramsar Sites. References have been taken from published literature on different high altitude lakes of Nepal.

Methods

Every year in the month of January, midwinter water bird counting has been done in Nepal since 1987. While the site coverage and number of participants have varied over the years, there are some consistent patterns deciphered from a careful analysis of these data. These data compared with other records sent by visiting birders in the lowland wetlands at different times of years and recent Bird Conservation Nepal led projects are the main sources of our interpretation.

Population estimates are derived from maximum counts recorded on the above data sets multiplied by suitable wetlands. Data on threatened wetland birds are derived from Baral and Inskipp (2004).

Results

Nearly 200 species of birds in the country are found heavily dependent on wetland habitats. Of these almost all except seven species are found in the lowland Nepal (Bhandari, 1998).

Many of the wetland birds found in Nepal are migratory in nature (Inskipp and Inskipp, 1991). Although Nepal receives 35 varieties of ducks, only five are known to breed in the country (Table 1).

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Table 1: List of breeding ducks in Nepal with their estimated population and region

Species	Estimated no.	Region
Lesser Whistling-duck <i>Dendrocygna javanica</i>	<10000 pairs	Terai wetlands
Ruddy Shelduck <i>Tadorna ferruginea</i>	<100 pairs	High Altitude lakes
Comb Duck <i>Sarkidiornis melanotos</i>	<50 pairs	Terai wetlands
Mallard <i>Anas platyrhynchos</i>	<5 pairs	Titi Lake, Mustang, Midbills
Cotton Pygmy-goose <i>Nettapus coromandelianus</i>	<1000 pairs	Terai wetlands

Water birds, both migratory and non-migratory, are important components of the biodiversity of wetland throughout the world (Davidson and Delany, 2000). The reduction of usable vegetative area reduces the food availability and the suitable breeding areas to birds (Francl and Schnell 2002). Consequently, two species of possibly resident wetland birds have become extinct from the country as early as late 1800 (Inskipp and Inskipp, 1991, Baral and Inskipp 2004). These are Pink-headed Duck *Rhodonessa caryophyllacea* and Imperial Heron *Ardea imperialis*. The Pink-headed Duck is critically endangered and was once locally distributed in the wetlands of the Nepal, India, Bangladesh and Myanmar (Birdlife International 2001).

Nearly a dozen wetland species that are recorded in Nepal have been listed as globally threatened (BirdLife International, 2008). At a national level, as many as 44 wetland species have been considered threatened because of habitat loss and damage, water pollution, fish poisoning, hunting and trapping, food shortages due to overfishing, and disturbance and destruction of nesting and feeding sites (Baral and Inskipp, 2004). About two thirds of wetland birds at risk on national level are either critically threatened or endangered. These high threat categories are of big conservation concern for wetland birds. A revised list of nationally threatened species is given below (Table 2).

Table 2: List of nationally threatened wetland birds with their status (adapted from Baral and Inskipp, 2004)

Critically Endangered Species	Remarks
Comb Duck <i>Sarkidiornis melanotos</i>	Resident
Blyth's Kingfisher <i>Alcedo Hercules</i>	Resident
Ruddy Kingfisher <i>Halcyon coromanda</i>	Summer visitor; possibly resident
Great Thick-knee <i>Esacus recurvirostris</i>	Resident
* Indian Skimmer <i>Rynchops albicollis</i>	Irregular visitor, has possibly bred
Gull-billed Tern <i>Gelocbelidon nilotica</i>	Winter visitor and passage migrant
Caspian Tern <i>Sterna caspia</i>	Winter visitor and passage migrant
River Tern <i>Sterna aurantia</i>	Resident and partial migrant
Black-bellied Tern <i>Sterna acuticauda</i>	Resident partial summer visitor
Brahminy Kite <i>Haliaeetus Indus</i>	Resident
Lesser Fish Eagle <i>Ichthyophaga humilis</i>	Resident
Great Bittern <i>Botaurus stellaris</i>	Winter visitor and passage migrant
Black-necked Stork <i>Ephippiorhynchus asiaticus</i>	Resident
* Greater Adjutant <i>Leptoptilos dubius</i>	Non-breeding visitor
Black-tailed Crane <i>Porzana bicolor</i>	Resident
Endangered Species	
*Swamp Francolin <i>Francolinus gularis</i>	Resident
Blue-eared Kingfisher <i>Alcedo meninting</i>	Resident
*Sarus Crane <i>Grus antigone</i>	Resident
Indian Courser <i>Cursorius coromandelicus</i>	Resident
* Pallas's Fish Eagle <i>Haliaeetus leucorhynchus</i>	Winter visitor and passage migrant
White-tailed Eagle <i>Haliaeetus albicilla</i>	Winter visitor and passage migrant
Grey-headed Fish Eagle <i>Ichthyophaga ichthyaetus</i>	Resident
Spot-billed Pelican <i>Pelecanus philippensis</i>	Non-breeding visitor
* Lesser Adjutant <i>Leptoptilos javanicus</i>	Resident
Vulnerable Species	
Falcated Duck <i>Anas falcate</i>	Winter visitor

* Baer's Pochard <i>Aythya baeri</i>	Winter visitor and passage migrant
Water Rail <i>Rallus aquaticus</i>	Winter visitor and passage migrant
Baillon's Crake <i>Porzana pusilla</i>	Winter visitor, passage migrant
Watercock <i>Gallicrex cinerea</i>	Monsoon visitor
* Wood Snipe <i>Gallinago nemoricola</i>	Breeding resident
Eurasian Curlew <i>Numenius arquata</i>	Winter visitor and passage migrant
Ibisbill <i>Ibidorhyncha struthersii</i>	Breeding resident
Long-billed Plover <i>Charadrius placidus</i>	Winter visitor and passage migrant
Yellow-wattled Lapwing <i>Vanellus malarbaricus</i>	Winter visitor
Grey-headed Lapwing <i>Hoplopterus (=Vanellus) cinereus</i>	Winter visitor
Darter <i>Anhinga melanogaster</i>	Breeding resident
Black-headed Ibis <i>Threskiornis melanocephalus</i>	Resident
Eurasian Spoonbill <i>Platalea leucorodia</i>	Passage migrant and winter visitor
Painted Stork <i>Mycteria leucocephala</i>	Non-breeding visitor
Asian Openbill <i>Anastomas oscitans</i>	Resident and summer visitor
Black Stork <i>Ciconia nigra</i>	Winter visitor

Conservation issues

Wetlands biodiversity in Nepal and wetland birds face a wide range of threats in Nepal (IUCN Nepal 2004). As well as habitat loss and damage, many species are suffering from food shortages due to over-fishing, fish poisoning, water pollution, invasive weeds, hunting and trapping, and disturbance and destruction of feeding and nesting sites. As a result the large percentage (64%) of wetland birds at risk (29 species) are considered critically threatened or endangered. Some wetland species have shown precipitous declines over recent years, for example Brahminy Kite *Haliastur indus*, Caspian Tern *Sterna caspia*, Black-bellied Tern, *S. acuticauda* and River Tern *S. aurantia*.

The annual midwinter waterbird counts have highlighted the sharp drop in waterfowl numbers at the internationally important wetland at Koshi Tappu Wildlife Reserve and Koshi Barrage. This site is by far the most important wetland staging post for migrating waders and waterbirds in Nepal (Inskipp and Inskipp, 1991) and one of the most important in Asia (Scott, 1989). Bird richness and populations have declined in both Ghodaghodi Lake Complex and Bees Hazaari Tal in the recent years. Jagdishpur Reservoir, considered to be in the best form and with great diversity of birds only a year ago (Baral, 2008), is now seriously threatened because of anthropogenic activities. Bird monitoring data from the Reservoir indicates a rapid decline in both richness and populations of wetland birds. Wetland habitats at Koshi are threatened by the large population of subsistence farmers and fishermen living in close proximity to the area. Furthermore wetlands birds

are heavily affected by the profound coverage of invasive weeds particularly by water hyacinth *Eichhornia crassipes*, water lettuce *Pistia stratiotes* and *Ipomoea carnea* subspecies *fistulosa* in and around Koshi Tappu Ramsar Site (Dahal, 2007). These invasive weeds pose serious threats to the wetlands birds since they cover the water surface of pools and lakes reducing the feeding areas for ducks and other wetland birds (Baral *et al* 2004). In Bees Hazaari Tal and Ghodaghodi Lake Complex, wrong management prescriptions have resulted further decline of wetland birds. Drainage for conversion to agriculture; disturbance and poisoning that not only kills fish, but also birds that feed on fish and aquatic insects are all causing wetland losses and damage (Baral and Inskipp, 2004). Moreover increased incidence of hunting and changes in agriculture practice has also decimated the wetland bird populations all over Nepal. Increased and indiscriminate use of agrochemicals, direct disposal of industrial effluents to wetland system are also silently killing our wetland dependent birds.

Sharp decreases in wetland birds have also been recorded in the rivers, streams, lakes and ponds of Chitwan National Park, another important area for wintering, breeding and passage migrant wetland birds. For example, figures available over a ten year period from 1989 to 1999 for three wetlands in Chitwan National Park revealed a decline in wetland dependent birds (Baral, 1999). Tyabji (2002) detailed the disappearance of bird species and the steep drop in their numbers in Chitwan's rivers and streams over the past 15 years. Water pollution from the untreated effluent from the towns of Bharatpur and

Narayanghat and the Bhrikuti paper and pulp mill; river poisoning to obtain fish; the increased use of pesticides, particularly on the rice crop; human disturbance, and the spread of water hyacinth on lakes and ponds, all threaten the habitat of Chitwan's water birds (Dahal, 1999, Subedi, 2001, Roberts *et al.*, 2002, Tyabji, 2002).

Wetlands in the Pokhara valley which are unprotected are even more at risk: from drainage, diversion, obstruction, siltation, encroachment, infrastructure development, land use changes, pollution and poison to kill fish (Karki *et al.* 1997, Karki and Thapa 1999, Subedi 2003) resulting in a marked reduction in bird numbers and species diversity since the 1970s (Carol Inskipp pers. obs.). The haphazard building construction and invasive alien species eg Water Hyacinth *Eichhornia crassipes* are also major threats to lakes like Phewa Tal in Pokhara.

One important factor that is not touched by many is the effect of climate change to wetland habitat and the birds that depend on it. As many lakes and rivers are drying up, it is almost natural that many species of birds that depend on such habitats will be affected badly. There is much to study on the impact of climate change to birds in our country (Baral, 2002).

All these factors show a grave scenario for the existence of biologically rich wetlands and birds dependent on them.

Conclusion

Nepal has been a world leader in conservation often bringing some innovative, implementable and sustainable programmes and ideas. These include community forestry programme and participatory management of Annapurna Conservation Area and Kanchenjungha Conservation Area. Nepal government has also shown commitments to conserve its exceptionally rich biological diversity by setting aside nearly 18% of the country's land under protected or semi-protected status (Karki *et al.*, 2008).

In current years, most innovative minds have taken into insurgency; some remaining brains have been drained outside. A world conservation leader before, now Nepal is not even a good follower of its own invention. The capacity to look at problems with critical review do not seem to be occurring. Because of lack of adaptation to a changing scenario especially during the insurgency, a great deal of Nepal's wildlife

has been exterminated. The huge sum that was invested for nearly four decades to nature conservation dwindled in the last 10 years.

This also surely has affected wetland fauna of Nepal, birds are no exception. The birds and biodiversity of Koshi Tappu wetlands, Ghodaghodi Lake complex, Jagdishpur Reservoir and Bees Hazaari Tal are thought to be limited within the boundaries. At Koshi Tappu, major waterfowls habitat in upstream and down stream of Koshi river are not protected which poses a severe threats to birdlife within the Reserve. This is where the biggest mistake has been created and so far not realized by authorities. As birds know no boundaries, they are dependent on the agricultural fields, smaller wetlands and human habitation as much as they do to these larger wetlands. They often move from one wetland to another wetland in search of food, mate and shelter. And if we just start thinking saving one wetland is going to protect all the birds there, then we are doing a failed attempt! A small island without any connectivity is always a threat for a viable population of wildlife (Ausden 2004). So the lesson is to conserve the landscape and invest resources in education, awareness and livelihoods of local people that live in these landscapes.

The other important issue is so called conservationists' perception on how to manage the wetlands. With the increasing concern of global biodiversity values of the wetland habitat, Nepal government developed and approved the National Biodiversity Strategy (HMG/N 2002) and Nepal's National Wetland Policy (HMG/N 2003) for the future conservation of wetlands. However there are no guidelines available yet to properly implement the policy. Best wetland management may be done following the traditional knowledge and in some case promoting their management style. Management of wetland habitat can be case specific and a good manager requires a detailed study of the sites involved.

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