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## Breeding of *Anas strepera* (Linnaeus, 1758) (Anatidae: Anseriformes) from Chandertal Wetland (an Internationally Known Ramsar Site in Trans Himalayan Ecosystem) - A New Record

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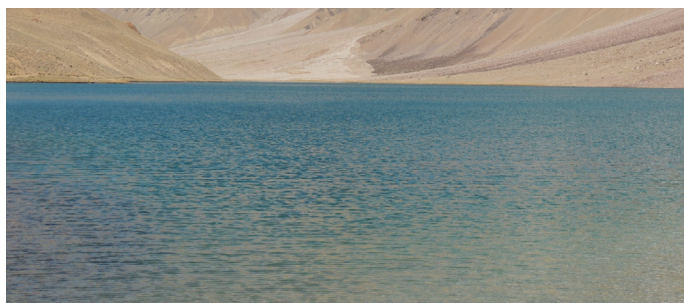
### ABSTRACT

*Breeding of Anas strepera* (Linnaeus, 1758) (Anatidae: Anseriformes) known as Gadwall has been recorded in Chandertal, an internationally known Ramsar wetland in cold desert of North West Himalayan ecosystem. It is the first breeding record of Gadwall from Chandertal wetland. Gadwall had been reported from Pong dam, Ramsar site at a very low altitude of 390-423 meter above mean sea level in District Kangra of Himachal Pradesh. But the population dynamics and breeding status have been recorded for the first time from this high altitude wetland in Trans-Himalayas. This unprecedented breeding record and population dynamics are valuable information in the context of global warming and climate change as these changes are affecting the breeding grounds and migratory habits and habitats of many birds especially water-birds.

**Keywords:** breeding, Chandertal wetland, Gadwall, North-West Himalayas, new record

### INTRODUCTION

Chandertal Wetland (32° 29' N latitude and 77° 36' E longitudes) is one of the high altitude glacial wetland located at an altitude of 4420 m above mean sea level in the district Lahaul & Spiti of Himachal Pradesh (Figure 1).

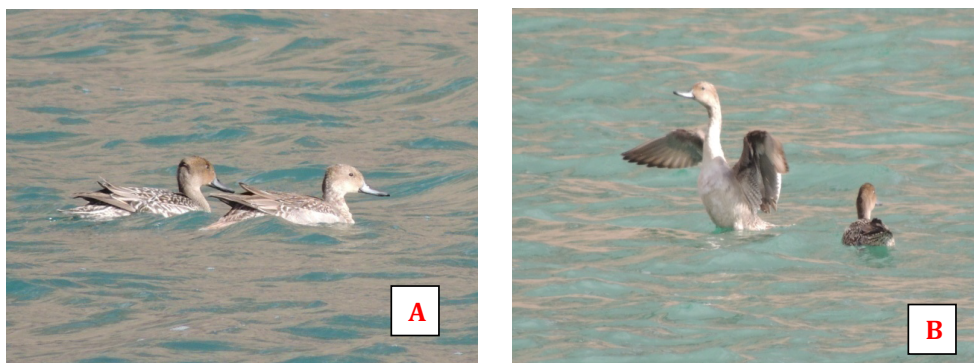


**Figure 1:** A view of Chandertal wetland in Trans Himalayas of Himachal Pradesh.

In this era of climate change and global warming when naturalists are discussing endangered species and extinction rates, it is somewhat refreshing to report on a species that has extended its breeding range and increase in numbers. Such is the case of Gadwall, *Anas strepera* noticed for the first time from North-Western Himalayas of Himachal Pradesh. This paper documents and discusses the range expansion of the Gadwall breeding site in addition to its population size from this high altitude wetland. Each type of habitat has its own species specific niche and type of birdlife and India is a wonderful place for wetland birds with variety of aquatic habitats. Population of many species has drastically decreased in Southeast Asia and Southern China, leaving India and neighboring countries as their main strongholds. These play a significant role in human lives culturally, socially, scientifically and as a food resource, besides being ideal indicators of environment in general and health of wetlands in particular.

Avian behaviors, such as habitat choice, feeding and breeding are strongly correlated with available food [1]. After melting of snow and the onset of summers, the plenty of vegetation grow around the Chandertal wetland. The huge flowering of the surrounding vegetation invites the large number of insect pollinators. This lively and enriched bed

of floral and faunal diversity may provide a congenial environment for breeding and progeny production of Gadwall. Single pair of a duck with one duckling was recorded from Chandertal wetland in month of October, 2016 (Figures 2A and 2B). There are a very few reference in literature so far its breeding is concerned from different wetlands except Chandertal.



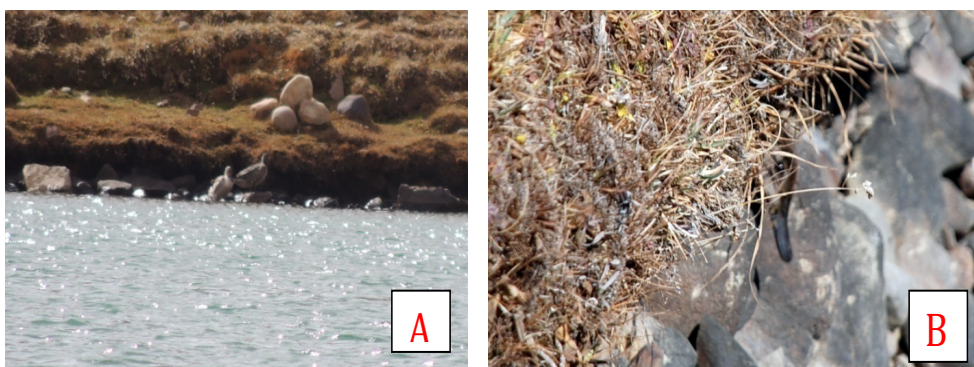
**Figure 2:** A couple of Gadwall adults in Chandertal wetland (A) and a female with a duckling (B).

### MATERIAL AND METHODS

The ducks were noticed with 10 × 50 super Zenith field binocular and 1000 mm tele-lens and physical appearance of the birds was observed and documented in detail in the field book for identification. Photography of the birds in field was carried out with Nikon D-80 fitted with zoom telephoto lenses. Field guides [2,3] were consulted for comparison and finally the identification of the ducks. Field observations were based exclusively on morphological features, physical appearance and behaviour and not even a single duck was captured, harmed or killed during this work. These observations were made consequently for four months with effect from July to October, 2016.

### RESULTS AND DISCUSSION

A pair of Gadwall with a single duckling was recorded in the water-body of Chandertal wetland in October, 2016. The Gadwall adults were having two ducklings but unfortunately one ill-fated duckling was preyed upon by some predators on the North bank of the wetland. It is a very significant finding in the context of global warming and climate change and the breeding range expansion of the Gadwall, as it is a new record of its breeding from North-West Himalayas (Figure 3).



**Figure 3:** Gadwall adults during courtship (A) and a duckling hidden in a crevice on the bank of Chandertal wetland (B).

Number of studies has been carried by ornithologists showing that birds started migrating to breeding grounds early due to rise in temperature and global warming [4-8]. The best biological responses and indicators to rise in the average global temperature is changes in bird migration patterns and timing of migration [9,10]. Migrating responses in this era of climate change vary in accordance to ecological conditions thus breeding sites migratory routes are affected severely [5-7,11-13]. The migration of birds depends upon number of external and internal factors which are obviously getting affected with the rise in global temperature. Pioneer information unveils the presence of *Ardeola grayii* (Indian pond-heron) from Spiti river basin near Lossar and Kunzam Pass at an elevation of 14,553 ft [14]. Similarly the presence of *Anas quequedula* (Garganey) has been registered from the Chandertal and marshy meadows of Spiti river near Lossar village in Spiti [15]. Due to the rapid climatic shifts, it becomes a matter of

concern that many of the long distance migrating species are facing acute population declines [16,17], may suffer more due to disruption in photoperiodic stimuli disproportionately related to temperature which in turn control the birds annual cycle of migration and breeding habits [18,19]. Recently it has been noticed that rise in temperature has pushed further the life cycle patterns of birds or altered their distributions [17,20-22]. Over the last century, the earth has experienced a general increase in mean surface air temperatures by about 0.5°C [23] and many ecological processes have changed, in response to this warming [24]. Variable responses consistent with warming trends are being exhibited by many birds therefore, they are turning early breeders [5,18,25-31], with disrupted range extensions and mistimed life history events [32,33].

Literature reveals that some ducks have contracted or expanded their breeding sites for several decades in northern areas [34-38]. Elucidations include disruptions brought in draught hit southern breeding ranges [38] and stoppage of hunting practices allowing more birds to breed [37]. Kistchinski [38] observed severe destruction of anatid migration grounds in Sakhalin Island in 1969 (Russian island, North Pacific Ocean) and at the same time hunting was banned in the Amur region (Russian Far East). *Aythya fuligula* (Tufted Duck) has expanded its northern range which is seen as an aftermath of rise in average global temperature, during this glacial period [39]. Thus it is estimated that many of these factors may be responsible for Gadwall to choose Chandertal wetland as its new breeding ground.

The exploration of new breeding habitat by Gadwall in high altitude glacial lake in Trans Himalaya is indicating the habitat expansion of the birds in the context of global warming. This new breeding record presents a new scope for avian studies from Trans-Himalayan ecosystem and these wetlands need to be explored regularly in the challenging era of global climate change. More exhaustive research studies with regular inculcation of data are essential to study these new breeding sites to generate more information on expansion of the breeding grounds in the era of global climate change.

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#### REFERENCES

- [1] Zhao, YL., et al., *Chinese Journal of Applied Ecology*, **2007**. 18(5): 1086-1090.
- [2] Ali, S. and Ripley SD., *Bombay Natural History Society and Oxford University Press, New Delhi, India*, **1983**. 177.
- [3] Grimmett, R., Inskipp, C. and Inskipp, T., *Christopher Helm, Australia, USA*, **1988**. 52.
- [4] Cotton, PA., *Proceedings of the National Academy of Sciences, USA*, **2003**. 100: 12219-12222.
- [5] Huppopp, O. and Huppopp, K., *Proceedings of the Royal Society of London, Series B*, **2003**. 270: 233-240.
- [6] Marra, PP., et al., *Oecologia*, **2005**. 142: 307-315.
- [7] Mills, AM., *Ibis*, **2005**. 147: 259-269.
- [8] Sparks, TH., Bairlein, F. and Bojarinova, JG., *Global Change Biology*, **2005**. 11: 22-30.
- [9] Root, T.L., et al., *Nature*, **2003**. 421: 57-60.
- [10] Parmesan, C., *Global Change Biology*, **2007**. 13: 1860-1872.
- [11] Forchhammer, MC., Post, E. and Stenseth, NC., *Journal of Animal Ecology*, **2002**. 71: 1002-1014.
- [12] Murphy-Klassen, HM., et al., *Auk*, **2005**. 122: 1130-1148.
- [13] Tryjanowski, P., Kuzniak, S. and Sparks, TH., *Journal of Ornithology*, **2005**. 146: 200-205.
- [14] Thakur, DR. and Mehta, A., *Asian Journal of Advanced and Basic Sciences*, **2014**. 3: 102-105.
- [15] Thakur, DR. and Mehta, A., *Asian Journal of Scientific Research*, **2015**. 8(3): 436-441.
- [16] Robbins, CS., et al., *Proceedings of the National Academies of Science, USA*, **1989**. 86: 7658-7662.
- [17] Berthold, P., *Rundsch*, **1988**. 51: 337-346.
- [18] Bradley, N.L., et al., *Proceedings of the National Academy of Sciences, USA*, **1999**. 96: 9701-9704.

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- [19] Both, C. and Visser, ME., *Nature*, **2001**. 411: 296-298.
  - [20] Berthold, P., *Proc. Int. Orn. Congr*, **1991**. 20: 780-786.
  - [21] Hughes, L., *Tree*, **2000**. 15: 56-61.
  - [22] Ottersen, G., et al., *Oecologia*, **2001**. 128: 1-14.
  - [23] Houghton, JT., et al., *Cambridge University Press, Cambridge*, **1995**.
  - [24] Walther, GR., et al., *Nature*, **2002**. 416: 389-395.
  - [25] Crick, HQ., et al., *Nature*, **1997**. 388: 526.
  - [26] Ivanauskas, F., Nedzinskas, V. and Zalakevicius, M., *Acta Zool Ornithol*, **1997**.6: 31-36.
  - [27] McCleery, RH. and Perrins, CM., *Nature*, **1998**. 391: 30-31.
  - [28] Crick, HQP. and Sparks, TH., *Nature*, **1999**. 399: 423-424.
  - [29] Dunn, PO. and Winkler, DW., *Proc. R. Soc. Lond. B*, **1999**. 266: 2487-2490.
  - [30] Brown, JL., Li, SH. and Bhagabati, N., *Proceedings of the National Academy of Sciences, USA*, **1999**. 96: 5565-5569.
  - [31] Inouye, D.W., et al., *Proceedings of the National Academy of Sciences, USA*, **2002**. 97: 1630-1633.
  - [32] Visser, M.E., et al., *Proc. R. Soc. Lond. B*, **1998**. 265: 1867-1870.
  - [33] Thomas, C.D., et al., *Science*, **2001**. 291: 2598-2600.
  - [34] Voous, K.H., *Atlas of European Birds. Nelson, London*, **1960**.
  - [35] Dement'ev, G.P., et al., *Birds of the Soviet Union. Vol. 4, Israel Program for Scientific Translations, Washington, DC*, **1967**. 683.
  - [36] Bauer, KM. and Glutz von Blotzheim, UN., *Frankfurt am Main, Germany*, **1968**.
  - [37] Parslow, J., *Historical Survey. T. and A.D. Poyser Ltd., Berkhamsted, U.K*, **1973**. 272.
  - [38] Kistchinski, AA., *Wildfowl*, **1973**. 24: 88-102.
  - [39] Palmer, RS., *Handbook of North American Birds, Yale University Press, New Haven*, **1976**. 2(3).