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Status Survey of Black-necked Crane *Grus nigricollis* Przhevalsky, 1876 in Ladakh, India

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Abstract

Black-necked Crane is a grayish-white coloured, medium-sized crane found in Asia that usually breeds on the Tibetan Plateau and winters in some remote, high altitude localities in Himalaya. To enumerate the present population of this species, field surveys were conducted in Ladakh region, in 2014-15 and 2015-16. Surveys revealed the occurrence of small groups comprised of 2 to 4 individuals, present only in eight localities. Total 23 individuals were sighted directly. While, interview-based estimated population were 51 individuals. There may be 10 to 15 more individuals in the wetlands that could not be counted in the present study. Unorganized development activities, fencing around wetlands and increasing population of feral dogs are the major threats. Apart from this, 71 bird species belonging to 30 families in 13 orders were also recorded during the surveys.

Keywords: Black-necked Crane, Conservation, Ladakh, Population

Introduction

The Black-necked Crane *Grus nigricollis* Przhevalsky, 1876 belongs to the order Gruiformes and family Gruidae. It is a medium-sized bird distributed in Asia and mostly breeds on the Tibetan Plateau (including some wetlands located in Eastern Ladakh) and winters mainly in remote localities of Himalaya/ Trans-Himalaya region in India (Ludlow, 1920; Chandan *et al*., 2014). This bird is about 139 cm in height with a 235 cm wingspan and weight about 5.5 kg having mostly grey colour plumes with a black head and neck (Harris & Mirande, 2013). It has a black coloured upper neck and legs, red crown patch, and white patch behind the eyes. The black tail makes it easy to distinguish from a distance. Both sexes of Black-necked Crane are similar (Chandan *et al*., 2005). The estimated global population of this crane is somewhere between 8800 and 11000 individuals. The species is protected in China, India and Bhutan. It is listed in Schedule-I of Wildlife Protection Act of India, and 'Vulnerable' under the IUCN Red List. Modification of habitat, drying of lakes and expanding agriculture activities are possible threats to the populations of this crane (Dehao *et al*., 1991; Bishop *et al*., 2012; Farrington and Zhang, 2013).

The Black-necked Crane is known to spend summer season mainly in the high altitude areas of Tibet (China). It breeds in alpine meadows, marshes and river valleys (Farrington & Zhang, 2013). They winter in sheltered valleys or lower altitudes (Chacko, 1993). The rich populations are in China with smaller numbers extending into Vietnam, Bhutan and Ladakh in India (Bishop, 1996; Chacko, 1992). Small flocks have been reported from northern Sikkim and Arunachal Pradesh (Singh, 2000; Choudhury, 2002). Black-necked cranes are known to forage on the ground in small flocks. During winter, the individuals visit the foraging sites in small groups and defend small feeding territories. They spend most of the day time in foraging with peak feeding rates in the morning hours and during late afternoon. They usually forage on the plant roots, tubers of sedges, earthworms, ground insects and other invertebrates, frogs including other small vertebrates. They often feed on fallen grains of oats, barley and buckwheat. Their loud vocalizations are produced in similar way to other crane species (Islam & Rahmani, 2004; Chandan *et al*., 2014).

Review of literature revealed that Changthang area of Eastern Ladakh encompasses some remarkable

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marshlands, known for breeding of Black-necked Crane in India (Narayan *et al.*, 1986). It falls under the Trans-Himalaya of the Tibetan Plateau. The region has many brackish and freshwater marshes (Pfister, 2005) support a wide range of floral and faunal elements. Most of these wetlands are originated from glaciers and remain frozen during winter season (December to March). About a decade ago, a detailed study on the status and distribution of this species was undertaken by Chandan *et al.* (2006). About 22 wetlands were covered in a survey, undertaken by Chandan *et al.* (2006) from 2000 to 2003. Total of 60 individuals were reported from Ladakh (Chandan *et al.,* 2006). Studies on the BNC in Ladakh dates back to 1919, when Ludlow (1920) reported the sightings of 3 individuals at two wetlands. After that the area was surveyed in 1924, 1927 and several times during seventies, eighties and nineties (Hussain, 1985; Chandan *et al.,* 2006). Later on a few short trips were also made by ZSI, and reported the occurrence of 53 individuals from 12 wetlands (Sharma & Sidhu, 2011).

Material and Methods

Field surveys were conducted in Ladakh region, in 2014-15 and 2015-16. I covered Tso Kar wetlands, Puga wetland, Tso Moriri, Pangong Tso, Chushul Marsh, Loma Bridge area, Hanley and adjacent areas and some little known localities in the area.

Vegetation in the study area: The region exhibits standard climatic characteristics of cold deserts. Rawat

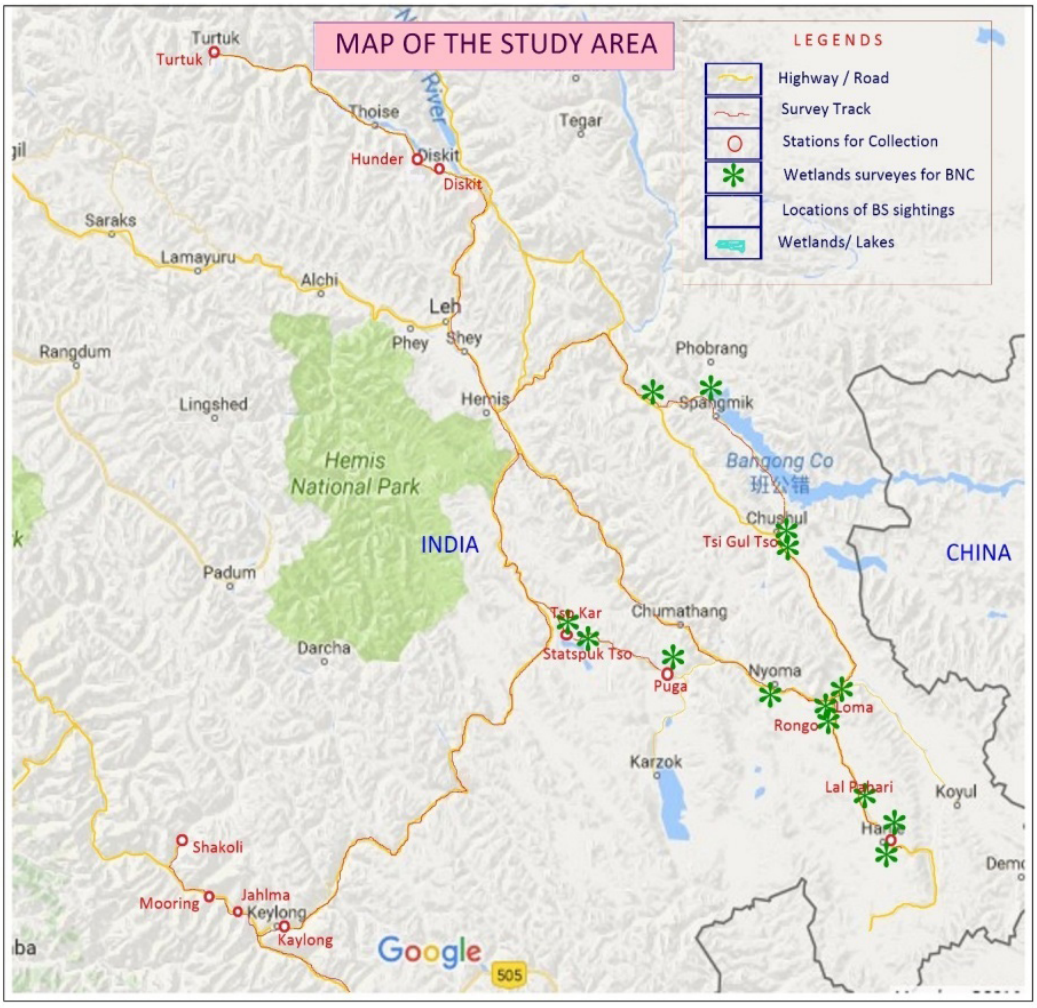

Figure 1. Map of the study area is showing the locations surveyed and occurrence of Black-necked Cranes in different wetland of Eastern Ladakh.

(2008) documented the vegetation of this area. The region is divided into two distinct areas *i.e.* Ladakh Mountains (comprised of rock mountains and valleys) and Eastern Plateau (undulating and uneven land) (Rodgers & Panwar, 1988). The area mostly dominated with damp meadows (encompasses plant species *i.e. Oryzopsis munroi, Festuca kashmeriana*, and *Melica persica*), swamp pastures (can be seen in Changthang plateau and characterized by sedges such as *Blysmus*, *Kobresia, Carex*, and *Eleocharis*, grass species such as *Calamogrostis holciformis*, *Poa* spp., *Puccinellia* spp., and aquatic plants namely *Myriophyllum verticillatum, Potamogeton pectinatus*, *Ranunculus natans, Hippuris vulgaris* and *R. trichophyllus*), and some rocky cliffs, riverine scrubs (characterized by *Hippophae* spp.) and steppe slops possess the *Cargagana versicolor* (Rawat, 2008).

Field observations: During the surveys, field work was conducted mostly between 8.00 am and 6.30 pm. Target species was surveyed throughout its distribution ranges in eastern Ladakh. After sighting, detailed observations were made on their number, gender (if possible), age (juveniles and adults) and behavior such as foraging, escape, alert, resting and group interactions. Observations were made on other avian species also. In case of inadequate observations, I tried to identify the taxa up to genus or family level. Birds were observed every day mostly during 6.00 am to 4.00 pm (with few exceptions), using prismatic field binoculars (10x50) and identification of birds was carried out with the aid of field guide of 'Birds of India' by Kazmierczak & Perlo (2000) and a pocket guide to the birds of the Indian Subcontinent by Grimmett *et al.* (2003). The taxonomic order and nomenclature followed Clements 6th edition, updated in 2014 (Clements *et al*., 2014). IOC World Bird List (Gill & Donsker, 2014) and 'Birds of South Asia: The Ripley Guide' (Rasmussen & Anderton, 2005) were also considered.

Study areas: Present study was aimed to high altitude areas of Ladakh. Field surveys were undertaken in different localities of this region. It is the highest plateau of Indian trans-Himalayan region with over 3,000 m elevation at most localities. The highland in this region was formed over 45 million years owing to the movement of the Indian plate in the relatively stabilised Eurasian Plate. The mountains in the Ladakh region are mostly ranged 5,000-5,500 m ASL and altitude increases toward southeast. The Suru and Zanskar valleys enclosed by the Himalayan and the Zanskar ranges. The Indus River is the lifeline of Ladakh. Most of the historical and existing towns such as Leh, Shey, Basgo and Tingmosgang are adjacent to the Indus River. The average height of Ladakh Range is more or less than 6,000 m without major peaks. The Pangong Range is parallel to the Ladakh Range. It spread for about 100 km to northwest from Chushul, along the southern coast of the Pangong Lake. The highest peak (about 6,700 m) is heavily glaciated on the northern slopes. Nubra Valley, comprised of the valleys of the Shayok and Nubra rivers, is known for panoramic views and sand dunes.

Ladakh is a high altitude cold desert owing to rain shadows of the Himalaya. High altitude Himalayan ranges mostly restrict the entry to monsoon in Ladakh. Winter snowfall on the mountains is the main source of water in the region. Flooding during recent years in the region has been connected to abnormal rains, retreating glaciers and global climate change. During winters (December to April), the region experience thick snowfall and remain cut off from the rest of the country. Summers are short, but enough bright for successful cultivation of crops. The summer season is mostly dry and pleasant owing to bright sunlight. Summer temperature ranges 3 to 35° C while, during winters it ranges between -20 to -35° C.

Tso Kar wetland: Climate of this area is extremely varied. During winters, temperature reaches up to -40°C, while in summer season the temperature rises above 30°C, with extreme fluctuations during the day time. The basin of the Tso Kar and the adjoining More Plains constitute one of the most important habitats of the Kiang, Tibetan gazelles, Tibetan wolves and foxes. There are two lakes (namely Tso Kar and Startsapuk Tso) having an area about 9 km^2, and connected to each other by an inlet stream. Adjoining More plains area is dominated by the peaks of two mountains, namely Thugje (6050 m) and Gursan (6370 m). The nomadic settlement of Thugje is located 3 km in the north. Tso Kar is a saline lake, while adjoining Startsapuk Tso is a fresh water lake.

Puga wetland: It is a small sized (about 1.2 km^2) marshy area, mainly comprised of a small snow fed stream and some patches of water-logged areas surrounded by salt puddles. It is located in a high altitude area and surrounded by scrub vegetation, isolated small agriculture fields (near village Puga) and barren fields. Alpine grasslands also spread in this area.

Tso Moriri area: The area is located in Changthang Plateau, known for the existence of a large sized

Table 1. Details of survey localities

S. No	Locality	Dist.	Date	Habitat	Grid No	Latitude	Longitude	Altitude
1.	Tso Kar wetland	Leh	08.8.15 09.8.1521.9.16	Marshy area surrounded by scrub vegetation	52K3	33° 21' 33.82" N	78° 01' 09.30" E	4557 m
2.	Startsapuk Tso	Leh	08.8.15 09.8.1521.9.16	Marshy area surrounded by scrub vegetation	52K3	33° 15' 21.15" N	78° 03' 02.39" E	4538 m
3.	Puga wetland	Leh	08.8.15 09.8.1521.9.16	Scrub, rocky barren & marshy	52K8	33° 13' 33.11" N	78° 18' 57.70" E	4415 m
4.	Tso Moriri	Leh	08.8.15 09.8.15	Saline water lake surrounded by scrub vegetation	52L5	32° 58' 02.12" N	78° 16' 15.79" E	4531 m
5.	Muglib Marsh	Leh	24.9.16	Marshy scrub vegetation	52J8	34° 02' 05.01" N	78° 16' 01.42" E	4097 m
6.	Lukung	Leh	24.9.16	Marshy area	52K5	34° 02' 05.01" N	78° 16' 01.42" E	4097 m
7.	Pangong Tso	Leh	02.8.15	Lake side marshy area	52K5	33° 54' 34.05" N	78° 27' 37.39" E	4259 m
8.	Marshy areas near eastern most part of Pangong Tso	Leh	24.9.16	Marshy area	52K10	33° 42' 30.87" N	78° 40' 34.19" E	4246 m
9.	Tso Gul Tso	Leh	25.9.16	Marshy area	52K10	33° 35' 28.08" N	78° 39' 23.38" E	4320 m
10.	Chushul Marsh	Leh	25.9.16	Marshy area	52K10	33° 37' 27.04" N	78° 40' 11.20" E	4321 m
11.	Loma Bridge	Leh	25.9.16	Sindhu river catchment	52K16	33° 09' 18.16" N	78° 50' 01.49" E	4148 m
12.	Rongo Village	Leh	25.9.16 27.9.16	Marshy area	52K16	33° 08' 58.13" N	78° 50' 14.14" E	4150 m
13.	Lal Pahari	Leh	25.9.16 27.9.16	River side marshy area	52L13	32° 57' 26.87" N	78° 53' 59.67" E	4198 m
14.	Astrophysics Observatory	Leh	25.9.16 27.9.16	Huge Marshy areas	52L13	32° 47' 29.24" N	78° 57' 28.93" E	4274 m
15.	Hanley and adjacent areas	Leh	26.9.16 27.9.16	Huge Marshy areas	52L13	32° 46' 15.86" N	78° 59' 05.94" E	4264 m
16.	Nyoma	Leh	27.9.16	Marshy area	52K5	33° 11' 51.68" N	78°37' 55.99" E	4140 m

oligotrophic lake (having alkaline water), at an altitude of 4,522 m. It is the largest (135 km^2) of the high altitude lakes exclusively within Indian Territory and entirely within Trans-Himalayan biogeographic region of Ladakh. The lake is recharged by springs and melted water from accumulated snow from neighbouring mountains. Large proportion of thewater enters in the lake from two major streams, entering the lake from the north, and from the southwest. Extensive marshes present on the confluence ofthese streamsand the lake.

Hanley and adjacent area: It is the settlement of the 17th century, known as Hanle Monastery (gompa). The area is the residence of about a thousand people, with about 300 people dwelling in Hanley village, mostly settled along the marshy/ water logged areas. Vegetation is thin and comprised of some patches of willow and xerophytic dwarf bushes. Area is known to support the small breeding population of Black-necked Crane. During winter the area freezes completely. The marshy areas act as an important breeding ground for a number of avian species including migratory birds. During summer, the Bar-headed Goose and Brahminy Ducks are commonly seen here. The region supports a number of interesting species of wildlife such as Pallas's Cat, Kiang and the marmots.

Pangong Tso area: It is an important area having a magnificent endorheic lake (covers 604 km^2) and scanty and scattered patch of dwarf vegetation, at a height of about 4,350 m. The lake is 134 km long and extends from India to Tibet. Approximately 60% of the length of the lake lies in Tibet. The width of lake is about 5 km at its broadest point. Despite of salinity, the lake completely freezes during winter season. The brackish water of the lake contains very low micro-vegetation. The lake acts as an important breeding site for a number of avian species including migratory birds. During summer, the Bar-headed Goose, Brown-headed Gull, Common Tern and Ruddy Shelduck are frequently observed here. The adjoining localities around the lake support a number of species of wildlife including the kiangs, mountain ungulates and the marmots.

Nubra Valley: Diskit is the main town located in Nubra Valley of Ladakh. It is one of the preferred destinations for visitors. It is about 118 km from Leh and 7 km from another nearby beautiful location known as Hunder. Both towns situated on the banks of Shyok River. Nubra River is a supporting branch of the Shyok River, which is known to flows parallel to the well-known Indus River. Ladakh Range is located to the south to Nubra Valley. This valley has a mild climate owing to lower elevation. The valley is called as "Orchard of Ladakh" owing to its climatic conditions and lush green vegetation.. In past, the valley was integral part of the caravan route between Tibet and China. Village Turtuk is located in the end of valley towards border, on the banks of the Shyok River, about 205 km from the Leh town. Turtuk was under Pakistan's control until 1971, after that India achieved control over it owing to its strategic significance. It is largely a Muslim village, and people speak languages including Balti, Ladakhi and Urdu. Turtuk is the last settlement in India after that the Pakistan-controlled Gilgit-Baltistan region begins. Turtuk is known one of the gateways to the mighty Siachen Glacier. Village Hundar is about 8 km. from Diskit and having similar topography to Diskit, except existence of large sand dunes. The valley is also known for the occurrence of the peculiar flora and fauna like Bactrian Camels, Yaks and Cape hare, and wild flowers and horticulture/ agricultural patches and apple orchards.

Results and Discussion

Total two surveys were undertaken in July-August 2015 and September-October 2016. During first survey Tso Kar, Puga and Tso Moriri areas were covered (Table 2). The potential areas located in eastern most part could not be visited due to flood and road blockages. During this survey, first Black-necked Crane was sighted on Tso Kar wetlands on 08.08.2015. There was a single adult crane resting on the ground. Later on started foraging and when approached, flew towards the main wetland. On the same day, a pair foraging at Puga wetland was observed. On 09.08.2015, when the author was returning after visiting Tso Kar area, the pair had left the area. However, on the same day, on reaching Tso Kar, the author saw one pair foraging in marshy shores of the wetland. It was suspected that the same pair, which was sighted at Puga, yesterday. At Tso Moriri, the author could not see any crane. When inquired the locals, it was revealed that one pair occasionally visits western most area of Tso Moriri Lake. It seems that around five to eight individuals exist in this area and visit the cluster of wetlands/lakes located in this area.

During the second survey, the author was able to cover most of the localities/ marshy areas, which could not be visited in 2015. A total of 16 wetlands/ marshy areas were surveyed for the enumeration of Black-necked

Table 2. Details of Black-necked Crane individuals recorded in 2015 in Leh district

S.No.	Locality	Sub-locality	Survey based Perception	Direct sightings	Remarks
1.	Ladakh Region	Pangong Tso area	1-3 individuals	Nil	Would have gone in nearby marshes
2.	,,	Tsokar area	1-4 individuals	3	One pair and one single individual were seen.
3.	,,	Puga area	1-3 individuals	2	A pair was seen.
4.	,,	Tsomoriri	1-4 individuals	Nil	Not seen in recent months.
		Total	**4-14**	**5**	

Table 3. Details of Black-necked Crane individuals recorded in 2016 in Leh district

S. No.	Locality	Sub-locality	No. of cranes as per Interview based Perception	Direct sightings	Remarks
1.	Ladakh Region	Tso Kar wetland	6	4	Two were juveniles
2.	,,	Startsapuk Tso	2	2	They were seen in the middle area of Startsapuk and Tso Kar
3.	,,	Puga area	2	Nil	Rarely seen in this area. Most probably, the individuals from Tso Kar wetland visit.
4.	,,	Muglib marsh	2	Nil	Occasionally, visited for foraging.
5.	,,	Lukung	2	Nil	Occasionally, visited for foraging.
6.	,,	Marshy areas near eastern most part of Pangong Tso	2	Nil	Occasionally, visited for foraging.
7.	,,	Tso Gul marsh	2	2	Both were adults.
8.	,,	Chushul marsh	7	Nil	In Chushul area, about 7-8 individuals exist.
9.	,,	Loma Bridge (Site A)	2	Nil	6-8 individuals were present in this area. The area is the cluster of several marshy patches.
10.	,,	Loma Bridge (Site B)	6	5	
11.	,,	Rongo Village	2	2	
12.	,,	Lal Pahari	2	2	One pair was observed.
13.	,,	Hanley	2	Nil	The Hanley and adjacent area supports the existence of 6-8 individuals.
14.	,,	Astrophysics Observatory	6	4	
15.	,,	Hanley Monastery	2	2	
16.	,,	Nyoma	4	Nil	It seems that individuals from Loma area visit this area.
		Total:	**51**	**23**	

Table 4. Historical records of Black-necked Cranes in Ladakh (Chandan *et al.,* 2014)

S. No.	Month(s) and Year	Number/ sightings of BNC	Breeding pairs	Wetlands surveyed	Reference
1.	June 1919	3	1	2	Ludlow (1920)
2.	June 1924	11	4	7	Osmaston (1925)
3.	May-June 1926	10	5	8	Meinertzhagen (1927)
4.	June 1976	5	2	4	Hussain (1976)
5.	July 1978	12	1	10	Gole (1981)
6.	May-June 1980	14	3	10	Gole (1983)
7.	June 1982	13	3	9	Nurbu (1983)
8.	June 1983	7	2	6	Hussain (1985)
9.	Aug-Oct 1986	16	2	8	Narayan *et al.,* (1987)
10.	July-Nov 1987	9	1	5	Akhtar (1989)
11.	Sep-Oct 1992	17	4	14	Chacko (1992)
12.	May-Sep 1995	22	5	18	Chacko (1995)
13.	May-Aug 1996	25	12	18	Chacko (1996)
14.	June-Sep 1997	38	12	18	Pfister (1998)
15.	July-August 2008	53	12	13	Sharma & Sidhu (2011)
16.	Mar-Oct 2014	112	17	22	Chandan *et al.,* (2014)

Cranes (Table 3&4). Data revealed the occurrence of small groups each having 2 to 4 individuals were present only in eight localities. In total 23 individuals were sighted directly. While, interview-based population estimation was 51 individuals. On the basis of occurrence of Black-necked Cranes and their numbers, it can be inferred that in Ladakh they mainly congregate in a few localities *i.e.* Tso Kar and adjacent localities such as Puga, Tso Moriri and Statspuk, Hanley and adjoining localities such as Lal Pahari and Astro-Physics Observatory, Nyoma and adjoining areas such as Tse Gul Tso, Parma valley and Pangong Tso and Loma Bridge adjoining wetlands such as Yaya Tso and Rongo village areas. The individuals frequently visit the wetlands located in that area and sometimes in the wetlands of other areas also. A recent study carried out by Wildlife Institute of India (WII) also indicates that cranes frequently visit different wetlands (WII, 2014).

Review of literature revealed that information on the population of Black-necked Crane in India is carried out by few earlier workers. In 2012, a total of 139 Black-necked Cranes and in 2014 a total of 112 Black-necked Cranes were recorded in Ladakh (Chandan *et al*., 2014). However, the numbers are much higher than what recorded during present study and prior to Chandan's work, by Pfister in late 1990s. The reason for high numbers was due to the coverage of much larger areas during different months of a particular year (Chandan *et al*., 2014). The population of Black-necked Cranes in many areas within the distribution range of the species is showing an increasing trend (Bishop *et al.,* 2012; Harris & Mirande, 2013; Farrington & Zhang, 2013). However, in the present study, it seems not true and the increasing trends as showed in previous studies may have been due to repeat counts. For example, a total of 22 breeding sites have been identified in Ladakh (Chandan *et al*., 2014). This is contrary to the earlier 12 breeding sites as recorded by Pfister (1998).

Conservation Issues

Unorganized development activities, fencing of wetlands and increasing population of feral dogs are main reasons for decreasing population of Black-necked Crane. While, free grazing of big herds of domestic livestock in the habitats is main threat for the sustainability of this species.

Figure 2. Black-necked Crane at Tso kar Lake.

Figure 5. Resting by Black-necked Crane at Tso Kar Lake.

Figure 3. A pair of Black-necked Crane at Tso kar Lake.

Figure 6. Black-necked Crane near Rongo village.

Figure 4. Foraging by Black-necked Crane at Tso kar Lake.

Figure 7. A pair of Black-necked Crane at Chushul.

Figure 8. A pair of Black-necked Crane near Loma Bridge.

Figure 9. Preening by Black-necked Crane at Hanley.

Figure 10. Escape behaviour by a pair of Black-necked Crane in a wetland located near Loma Bridge.

Figure 11. Construction work at near Puga wetlands.

Road construction activities in the region have increased the developmental activities and anthropogenic pressures. If not managed properly these activities, may affect the breeding of Black-necked Cranes. The Ladakh region is also experiencing a rapid increase in tourism related activities results in Kiang being chased by tourist jeeps and also disturbing the Black-necked Cranes in their feeding and breeding grounds. Due to tourism, pollution level is also increasing and gradually becoming a problem, especially improper disposal of garbage. In many places dumping of garbage into nearby streams and marshy areas has become common in recent years. Also, I observed that the construction of buildings near Puga is affecting the fauna of the wetland (Figure 11). The habitats are also degrading due to over grazing by livestock. However, livestock holdings in eastern Ladakh are not well documented, and overstocking has been reported in the regions (Darokhan, 1986). It is reported that the increase in the number of herders with large number of livestock compounding the pressure on eastern Ladakh pastural lands and wetlands. Pet dogs owned by these herders have emerged as one of the serious threats especially for breeding cranes. Often they chase the cranes and destroy their nests and eggs (Chandan *et al.,* 2006).

Other avifauna observed in the region

Over the decades, Ladakh has emerged as one of the most interesting places for avian researchers. Avifauna of this region comprised of over 300 species. Despite its harsh climate, and difficulties in accessibility, the avifauna of this region is documented by a number of workers

(Osmaston, 1925; Holmes, 1983; Mallon, 1987; Gole, 1992; Pfister, 2001; Namgail, 2005). The marshy habitats adjoining to the high altitude lakes (such as Tso Kar, Tso *Moriri and* Pangong Tso) located in eastern Ladakh, known to provide ample food and space to a number of migratory birds. A small population of some of these species (such as Bar-headed Goose, Ruddy Shelduck, Northern Pintail, Garganey and Northern Shoveler) has been reported to breed in Ladakh region. Pfister (2004) produced a book, on avifauna of Ladakh. Over 100 avian species have been known to breed in different habitats of Ladakh, including some rare and/or sporadic breeders and about 60 migratory species (Namgail & Yom-Tov, 2009).

In the present study, a total of 71 avian species belonging to 13 orders and 30 families were recorded (Table 5) including some rare/interesting records, besides a few species remained unidentified due to inadequate observations. Most dominant families were Muscicapidae, represents 8 species followed by family Corvidae (6 species) and Accipitridae (6 species). The area is rich in raptors and finches. Breeding of Black-necked Crane, Bar-headed Geese and Ruddy Shelduck was interesting as Tso Kar and Puga wetlands act as main breeding grounds for these species.

Table 5. Details of Avifauna observed in Ladakh

S. No.	Common Name of the species	Scientific Name	Abundance	Remarks
	Order ANSERIFORMES Family ANATIDAE			
1.	Bar-headed Goose	*Anser indicus*	C	Mostly seen at Hanley, TsoKar and Lal Pahari wetlands.
2.	Ruddy Shelduck	*Tadorna ferruginea*	C	As above
3.	Mallard	*Anas platyrhynchos*	B	Were observed in Nubra Valley
4.	Northern Pintail	*Anas acuta*	B	
5.	Garganey	*Anas querquedula*	B	
6.	Common Merganser	*Mergus merganser*	B	
	Order GALLIFORMES Family PHASIANIDAE			
7.	Chukar	*Alectoris chukar*	C	Wide spread, post breeding family flocks (comprised of up to 10 individuals) were seen.
8.	Tibetan Partridge	*Perdix hodgsoniae*	A	One group of four individuals was seen.
	Order PODICIPEDIFORMES Family PODICIPEDIDAE			
9.	Great Crested Grebe	*Podiceps cristatus*	B	
	ORDER PELECANIFORMES Family ARDEIDAE			
10.	Gray Heron	*Ardea cinerea*	A	Were seen in LalPahari wetland
	Order ACCIPITRIFORMES Family ACCIPITRIDAE			
11.	Lammergeier	*Gypaetus barbatus*	A	Seen at several locations.
12.	Himalayan Griffon	*Gyps himalayensis*	A	

S. No.	Common Name of the species	Scientific Name	Abundance	Remarks
13.	Steppe Eagle	*Aquila nipalensis*	A	
14.	Golden Eagle	*Aquila chrysaetos*	A	Seen in Hanley area
15.	Eurasian Sparrowhawk	*Accipiter nisus*	A	
16.	Black Kite	*Milvus migrans*	B	
	Order GRUIFORMES Family RALLIDAE			
17.	Eurasian Moorhen	*Gallinula chloropus*	A	Seen in Hanley area
18.	Eurasian Coot	*Fulica atra*	B	Seen in Nubra Valley
	Family GRUIDAE			
19.	Black-necked Crane	*Grus nigricollis*	C	Details are given in separate table.
	Order CHARADRIIFORMES Family RECURVIROSTRIDAE			
20.	Black-winged Stilt	*Himantopus himantopus*	C	
	Family SCOLOPACIDAE			
22.	Common Sandpiper	*Actitis hypoleucos*	B	
23.	Green Sandpiper	*Tringa ochropus*	B	
24.	Temminck's Stint	*Calidris temminckii*	B	
	Family LARIDAE			
25.	Brown-headed Gull	*Chroicocephalus brunnicephalus*	C	Mostly seen at Pongong Tso, Hanley, TsoKar and LalPahari wetlands.
26.	Pallas's Gull	*Ichthyaetus ichthyaetus*	C	As above
	Order COLUMBIFORMES Family COLUMBIDAE			
27.	Snow Pigeon	*Columba leuconota*	B	Seen in Changla area
28.	Hill Pigeon	*Columba rupestris*	C	
29.	Oriental Turtle-Dove	*Streptopelia orientalis*	B	
	Order Strigiformes Family Strigidae			
30.	Little Owl	*Athen enoctua*	A	Confined to Ladakh
	Order APODIFORMES Family APODIDAE			
31.	Common Swift	*Apus apus*	C	
	Order CORACIIFORMES Family UPUPIDAE			
32.	Eurasian Hoopoe	*Upu paepops*	B	
	Order FALCONIFORMES Family FALCONIDAE			
33.	Common Kestrel	*Falco tinnunculus*	B	Widespread
34.	Eurasian Hobby	*Falco subbuteo*	A	Seen in LalPahari area

S. No.	Common Name of the species	Scientific Name	Abundance	Remarks
	Order PASSERIFORMES Family LANIIDAE			
35.	Long-tailed Shrike	*Lanius schach*	A	
36.	Grey-backed Shrike	*Lanius tephronotus*	A	
	Family ORIOLIDAE			
37.	European Golden Oriole	*Oriolus oriolus*	A	
	Family DICRURIDAE			
38.	Black Drongo	*Dicrurus macrocercus*	A	Seen in Hanley
	Family CORVIDAE			
39.	Eurasian Magpie	*Pica pica*	C	Widespread
40.	Red-billed Chough	*Pyrrhocorax pyrrhocorax*	C	
41.	Yellow-billed Chough	*Pyrrhocorax graculus*	C	
42.	House Crow	*Corvus splendens*	C	Seen in Pang
43.	Large-billed Crow	*Corvus macrorhynchos*	C	
44.	Common Raven	*Corvus corax*	A	
	Family ALAUDIDAE			
45.	Horned Lark	*Eremophila alpestris*	C	Widespread
	Family HIRUNDINIDAE			
46.	Eurasian Crag-Martin	*Ptyonoprogne rupestris*	C	
47.	Dusky Crag-Martin	*Ptyonoprogne concolor*	C	
	Family PARIDAE			
48.	Great Tit	*Parus major*	A	
49.	Brown Dipper	*Cinclus pallasii*	A	
	Family PHYLLOSCOPIDAE			
50.	Mountain Chiffchaff	*Phylloscopuss indianus*	C	
51.	Tickell's Leaf-Warbler	*Phylloscopus affinis*	C	
52.	Sulphur-bellied Warbler	*Phylloscopus griseolus*	C	Commonly seen
	Family MUSCICAPIDAE			
53.	White-tailed Rubythroat	*Luscinia pectoralis*	A	Seen in Leharea
54.	White-capped Redstart	*Phoenicurus leucocephalus*	A	As above
55.	White-winged Redstart	*Phoenicurus erythrogastrus*	C	Widespread
56.	Black Redstart	*Phoenicurus ochruros*	C	Widespread
57.	Blue Rock-Thrush	*Monticola solitarius*	B	
58.	Siberian Stonechat	*Saxicola maurus*	A	
59.	Pied Wheatear	*Oenanthe pleschanka*	B	
60.	Desert Wheatear	*Oenanthe deserti*	C	Widespread
	Family STURNIDAE			
61.	Common Myna	*Acridotheres tristis*	C	Seen in Leh
	Family PRUNELLIDAE			

S. No.	Common Name of the species	Scientific Name	Abundance	Remarks
62.	Alpine Accentor	*Prunella collaris*	B	
63.	Robin Accentor	*Prunella rubeculoides*	B	
	Family MOTACILLIDAE			
64.	Gray Wagtail	*Motacilla cinerea*	C	Common
65.	White Wagtail	*Motacilla alba*	C	Common
66.	Rosy Pipit	*Anthus roseatus*	C	Common
	Family EMBERIZIDAE			
67.	Rock Bunting	*Emberiz acia*	B	
	Family FRINGILLIDAE			
68.	Plain Mountain-Finch	*Leucosticte nemoricola*	C	Widespread
69.	Black-headed Mountain-Finch	*Leucosticte brandti*	C	Widespread
70.	Common Rosefinch	*Carpodacus erythrinus*	A	Seen at Hanley
	Family PASSERIDAE			
71.	House Sparrow	*Passer domesticus*	C	Seen at various localities

(A: 1 to 20 individuals, B: 21 to 50 individuals, and C: above 51 individuals)

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