



# Ramsar Information Sheet

Published on 23 December 2020

## India

### Tso Kar Wetland Complex



|                  |                       |
|------------------|-----------------------|
| Designation date | 17 November 2020      |
| Site number      | 2443                  |
| Coordinates      | 33°17'53"N 78°00'42"E |
| Area             | 9 577,00 ha           |

## Color codes

Fields back-shaded in light blue relate to data and information required only for RIS updates.

Note that some fields concerning aspects of Part 3, the Ecological Character Description of the RIS (tinted in purple), are not expected to be completed as part of a standard RIS, but are included for completeness so as to provide the requested consistency between the RIS and the format of a 'full' Ecological Character Description, as adopted in Resolution X.15 (2008). If a Contracting Party does have information available that is relevant to these fields (for example from a national format Ecological Character Description) it may, if it wishes to, include information in these additional fields.

## 1 - Summary

### Summary

The Tso Kar Basin is a high-altitude wetland complex, consisting of two principal waterbodies, Startsapuk Tso, a freshwater lake of about 438 hectares to the south, and Tso Kar itself, a hypersaline lake of 1800 hectares to the north, situated in the Changthang region of Ladakh, India. It is called Tso Kar, meaning white lake, because of the white salt efflorescence found on the margins due to the evaporation of highly saline water. The Tso Kar Basin is an A1 category Important Bird Area (IBA) as per Bird Life International and a key staging site in the Central Asian Flyway. The site is also one of the most important breeding areas of the black-necked crane (*Grus nigricollis*) in India. This IBA is also the major breeding area for great crested grebe (*Podiceps cristatus*), bar-headed geese (*Anser indicus*), ruddy shelduck (*Tadorna ferruginea*), brown-headed gull (*Larus brunnicephalus*), lesser sand-plover (*Charadrius mongolus*) and many other species. During autumn migration, the Tso Kar Basin becomes an assembling place for local breeding birds as well as a major staging spot for migrants, congregations of thousands of birds can be observed here. Apart from water birds the Tso Kar basin has been documented as the only known breeding site in India of the endangered, saker falcon (*Falco cherrug*). In addition to avifauna, a wide range of mammals such as the Tibetan argali (*Ovis ammon hodgsoni*), Tibetan wolf (*Canis lupus chanco*), snow leopard (*Panthera uncia*), Tibetan wild ass (*Equus kiang*) use this site and its resources.

## 2 - Data & location

### 2.1 - Formal data

#### 2.1.1 - Name and address of the compiler of this RIS

##### Responsible compiler

|                    |                                                                                                                                     |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| Institution/agency | Department of Wildlife Protection, Government of the Union Territory of Ladakh                                                      |
| Postal address     | Office of the Chief Wildlife Warden, Department of Wildlife Protection, Badami Bagh, Skara, Leh, Union Territory of Ladakh, 194101. |

##### National Ramsar Administrative Authority

|                    |                                                                                                                                            |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| Institution/agency | Ministry of Environment Forest & Climate Change, Government of India                                                                       |
| Postal address     | Office of the Additional Secretary (Wetlands), Ministry of Environment Forest & Climate Change, Indira Paryavaran Bhawan, Jorbagh, 110003. |

#### 2.1.2 - Period of collection of data and information used to compile the RIS

|           |      |
|-----------|------|
| From year | 2015 |
| To year   | 2020 |

#### 2.1.3 - Name of the Ramsar Site

|                                               |                         |
|-----------------------------------------------|-------------------------|
| Official name (in English, French or Spanish) | Tso Kar Wetland Complex |
|-----------------------------------------------|-------------------------|

## 2.2 - Site location

### 2.2.1 - Defining the Site boundaries

#### b) Digital map/image

<1 file(s) uploaded>

|             |   |
|-------------|---|
| Former maps | 0 |
|-------------|---|

#### Boundaries description

The Tso Kar Wetland Complex lies 153 kilometres south west from the city of Leh. On the north-eastern bank of Tso Kar lies the nomadic pastoral village of Thukje. The freshwater Startsapuk Tso lies on the southern end of the basin. Interspersed along the banks of both the lakes are the pastures of the Changpa nomadic pastoralists, who graze their livestock here during the months of May and December-January. The boundary of the site follows the prominent ridgelines along the southern and eastern ends of the basin. The non-wetland area within the site is ideal habitat for Tibetan argali (*Ovis ammon hodgsoni*), Tibetan wild ass (*Equus kiang*), snow leopard (*Panthera uncia*) and many other species and therefore has been included. A road that connects the village of Thukje, runs parallel along the western part of the site boundary.

### 2.2.2 - General location

|                                                            |                                                       |
|------------------------------------------------------------|-------------------------------------------------------|
| a) In which large administrative region does the site lie? | Nyoma Block, Leh District, Union Territory of Ladakh. |
|------------------------------------------------------------|-------------------------------------------------------|

|                                                   |                |
|---------------------------------------------------|----------------|
| b) What is the nearest town or population centre? | Thukje Village |
|---------------------------------------------------|----------------|

### 2.2.3 - For wetlands on national boundaries only

a) Does the wetland extend onto the territory of one or more other countries? Yes  No

b) Is the site adjacent to another designated Ramsar Site on the territory of another Contracting Party? Yes  No

### 2.2.4 - Area of the Site

Official area, in hectares (ha): 9577

Area, in hectares (ha) as calculated from GIS boundaries 9589.428

### 2.2.5 - Biogeography

Biogeographic regions

| Regionalisation scheme(s)                 | Biogeographic region |
|-------------------------------------------|----------------------|
| Freshwater Ecoregions of the World (FEOW) | Upper Indus          |

[Other biogeographic regionalisation scheme](#)

Biogeographic classification of India is the division of India according to biogeographic characteristics. Biogeography is the study of the distribution of species (biology), organisms, and ecosystems in geographic space and through geological time. There are ten biogeographic zones in India. Tso Kar Wetland-Complex falls in Upper Indus Zone.

### 3 - Why is the Site important?

#### 3.1 - Ramsar Criteria and their justification

- Criterion 1: Representative, rare or unique natural or near-natural wetland types

Hydrological services provided

The wetland-complex collects water from the larger landscape that surrounds it, originating primarily from glacial streams. The wetland complex plays a significant role in maintaining the water table in the high-altitude mountain steppe and cold desert region and is paramount in maintaining the overall water cycle. Situated in the Upper Indus Basin, the Tso Kar Wetland Complex is the only such example of a wetland-complex where hypersaline and freshwater lakes co-exist, thereby, leading to a unique species assemblage and ecosystem.

Other reasons

The Tso Kar Wetland-Complex is a unique example of a natural wetland in the Upper Indus biogeographic region. This is one of the unique basins, where two types of wetlands are connected through a water channel. The freshwater lake Startsapuk Tso feeds Tso Kar which is a salt water lake. This typical character of this basin makes it a unique wetland not only in Ladakh but in the entire Indian subcontinent. This is the only reason that besides supporting so many Himalayan birds this wetland also supports coastal species like pied avocets (*Recurvirostra avosetta*). Also, there is no other wetland in India which support breeding of black-necked crane (*Grus nigricollis*), bar-headed goose (*Anser indicus*) and saker falcon (*Falco cherrug*) during same time of the year in a same basin, making this a unique wetland complex. It is one of the few sites where the great crested grebe (*Podiceps cristatus*) breeds in large numbers with 130-140 nests seen during summer months.

- Criterion 2 : Rare species and threatened ecological communities

- Criterion 3 : Biological diversity

Justification

The site is biologically rich in terms of flora and fauna. The site has recorded 139 species of birds, 232 species of vascular plants, up to 10 species of mammals and 2 species of reptiles. Although, forming less than 1% of the geographical area of Ladakh, the flora of the Tso Kar basin includes nearly 25% of the species reported from the region. Furthermore, species such as the black-necked crane, bar-headed goose, saker falcon breed here. Noteworthy mammals include snow leopard, Tibetan argali and Tibetan wolf amongst others.

- Criterion 4 : Support during critical life cycle stage or in adverse conditions

#### 3.2 - Plant species whose presence relates to the international importance of the site

| Scientific name              | Criterion 2              | Criterion 3                         | Criterion 4              | IUCN Red List | CITES Appendix I         | Other status | Justification                             |
|------------------------------|--------------------------|-------------------------------------|--------------------------|---------------|--------------------------|--------------|-------------------------------------------|
| <b>Plantae</b>               |                          |                                     |                          |               |                          |              |                                           |
| <i>Ephedra Gerardiana</i>    | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |               | <input type="checkbox"/> |              | Rare, high-collection for medicinal uses. |
| <i>Hyoscyamus niger</i>      | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |               | <input type="checkbox"/> |              | Rare                                      |
| <i>Physochlaina praealta</i> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |               | <input type="checkbox"/> |              | Rare                                      |
| <i>Rheum spiciforme</i>      | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |               | <input type="checkbox"/> |              | Rare, high-collection for medicinal uses. |
| <i>Rhodiola heterodonta</i>  | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |               | <input type="checkbox"/> |              | Rare, high-collection for medicinal uses. |

### 3.3 - Animal species whose presence relates to the international importance of the site

| Phylum            | Scientific name            | Species qualifies under criterion   |                                     |                          |                          | Species contributes under criterion |                          |                          |                          | Pop. Size | Period of pop. Est. | % occurrence 1) | IUCN Red List | CITES Appendix I                    | CMS Appendix I                      | Other Status       | Justification                                                                               |
|-------------------|----------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-----------|---------------------|-----------------|---------------|-------------------------------------|-------------------------------------|--------------------|---------------------------------------------------------------------------------------------|
|                   |                            | 2                                   | 4                                   | 6                        | 9                        | 3                                   | 5                        | 7                        | 8                        |           |                     |                 |               |                                     |                                     |                    |                                                                                             |
| <b>Others</b>     |                            |                                     |                                     |                          |                          |                                     |                          |                          |                          |           |                     |                 |               |                                     |                                     |                    |                                                                                             |
| CHORDATA/MAMMALIA | <i>Alticola roylei</i>     | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |           |                     |                 | NT            | <input type="checkbox"/>            | <input type="checkbox"/>            |                    | Breeding resident                                                                           |
| CHORDATA/MAMMALIA | <i>Canis lupus chanco</i>  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |           |                     |                 |               | <input type="checkbox"/>            | <input type="checkbox"/>            | IUCN Red List - LC | Breeding resident                                                                           |
| CHORDATA/MAMMALIA | <i>Equus kiang</i>         | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |           |                     |                 | LC            | <input type="checkbox"/>            | <input type="checkbox"/>            |                    | Breeding resident, Endemic to the Tibetan Plateau and listed in Appendix II of CMS & CITES. |
| CHORDATA/MAMMALIA | <i>Felis manul</i>         | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |           |                     |                 |               | <input type="checkbox"/>            | <input type="checkbox"/>            | IUCN Red list - LC | Resource Use                                                                                |
| CHORDATA/MAMMALIA | <i>Lepus oiostolus</i>     | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |           |                     |                 | LC            | <input type="checkbox"/>            | <input type="checkbox"/>            |                    | Breeding resident                                                                           |
| CHORDATA/MAMMALIA | <i>Lynx lynx</i>           | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |           |                     |                 | LC            | <input type="checkbox"/>            | <input type="checkbox"/>            |                    | Resource Use                                                                                |
| CHORDATA/MAMMALIA | <i>Marmota himalayana</i>  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |           |                     |                 | LC            | <input type="checkbox"/>            | <input type="checkbox"/>            |                    | Breeding Resident                                                                           |
| CHORDATA/MAMMALIA | <i>Mustela altaica</i>     | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |           |                     |                 | NT            | <input type="checkbox"/>            | <input type="checkbox"/>            |                    |                                                                                             |
| CHORDATA/MAMMALIA | <i>Ochotona curzoniae</i>  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |           |                     |                 | LC            | <input type="checkbox"/>            | <input type="checkbox"/>            |                    | Breeding resident                                                                           |
| CHORDATA/MAMMALIA | <i>Ochotona ladacensis</i> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |           |                     |                 | LC            | <input type="checkbox"/>            | <input type="checkbox"/>            |                    | Endemic to Ladakh, is a breeding resident                                                   |
| CHORDATA/MAMMALIA | <i>Ovis ammon</i>          | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |           |                     |                 | NT            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |                    | Resident species, resource use                                                              |
| CHORDATA/MAMMALIA | <i>Uncia uncia</i>         | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |           |                     |                 |               | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | IUCN Red list - VU | Resource Use                                                                                |
| CHORDATA/MAMMALIA | <i>Vulpes ferrilata</i>    | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |           |                     |                 | LC            | <input type="checkbox"/>            | <input type="checkbox"/>            |                    | Rare species, resource use                                                                  |
| CHORDATA/MAMMALIA | <i>Vulpes vulpes</i>       | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |           |                     |                 | LC            | <input type="checkbox"/>            | <input type="checkbox"/>            |                    | Breeding Resident                                                                           |
| <b>Birds</b>      |                            |                                     |                                     |                          |                          |                                     |                          |                          |                          |           |                     |                 |               |                                     |                                     |                    |                                                                                             |
| CHORDATA/AVES     | <i>Anas clypeata</i>       | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |           |                     |                 |               | <input type="checkbox"/>            | <input type="checkbox"/>            | IUCN Red list - LC | Breeding and migration                                                                      |

| Phylum        | Scientific name             | Species qualifies under criterion   |                                     |                          |                          | Species contributes under criterion |                          |                          |                          | Pop. Size | Period of pop. Est. | % occurrence 1) | IUCN Red List | CITES Appendix I                    | CMS Appendix I                      | Other Status       | Justification                                                                                     |
|---------------|-----------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-----------|---------------------|-----------------|---------------|-------------------------------------|-------------------------------------|--------------------|---------------------------------------------------------------------------------------------------|
|               |                             | 2                                   | 4                                   | 6                        | 9                        | 3                                   | 5                        | 7                        | 8                        |           |                     |                 |               |                                     |                                     |                    |                                                                                                   |
| CHORDATA/AVES | <i>Anas querquedula</i>     | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |           |                     |                 |               | <input type="checkbox"/>            | <input type="checkbox"/>            | IUCN Red list - LC | Breeding and migration                                                                            |
| CHORDATA/AVES | <i>Arenaria interpres</i>   | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |           |                     |                 | LC            | <input type="checkbox"/>            | <input type="checkbox"/>            |                    | Breeding and migration                                                                            |
| CHORDATA/AVES | <i>Aythya ferina</i>        | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |           |                     |                 | VU            | <input type="checkbox"/>            | <input type="checkbox"/>            |                    | Breeding and migration                                                                            |
| CHORDATA/AVES | <i>Aythya fuligula</i>      | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |           |                     |                 | LC            | <input type="checkbox"/>            | <input type="checkbox"/>            |                    | Breeding and migration                                                                            |
| CHORDATA/AVES | <i>Buteo hemilasius</i>     | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |           |                     |                 | LC            | <input type="checkbox"/>            | <input type="checkbox"/>            |                    | Breeding and resource use                                                                         |
| CHORDATA/AVES | <i>Falco cherrug</i>        | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |           |                     |                 | EN            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |                    | The site is the only known breeding location of the species in India as per available information |
| CHORDATA/AVES | <i>Grus nigricollis</i>     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |           |                     |                 | VU            | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |                    | Breeding and migration                                                                            |
| CHORDATA/AVES | <i>Gypaetus barbatus</i>    | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |           |                     |                 | NT            | <input type="checkbox"/>            | <input type="checkbox"/>            |                    | Breeding and resource use                                                                         |
| CHORDATA/AVES | <i>Netta rufina</i>         | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |           |                     |                 | LC            | <input type="checkbox"/>            | <input type="checkbox"/>            |                    | Breeding and migration                                                                            |
| CHORDATA/AVES | <i>Numenius arquata</i>     | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |           |                     |                 | NT            | <input type="checkbox"/>            | <input type="checkbox"/>            |                    | Breeding and migration                                                                            |
| CHORDATA/AVES | <i>Podiceps cristatus</i>   | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |           |                     |                 | LC            | <input type="checkbox"/>            | <input type="checkbox"/>            |                    | Breeding and migration                                                                            |
| CHORDATA/AVES | <i>Podiceps nigricollis</i> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |           |                     |                 | LC            | <input type="checkbox"/>            | <input type="checkbox"/>            |                    | Breeding and migration                                                                            |
| CHORDATA/AVES | <i>Syrhaptes tibetanus</i>  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |           |                     |                 | LC            | <input type="checkbox"/>            | <input type="checkbox"/>            |                    | Endemic to Tibetan Plateau, also breeds in the area                                               |
| CHORDATA/AVES | <i>Tadorna ferruginea</i>   | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |           |                     |                 | LC            | <input type="checkbox"/>            | <input type="checkbox"/>            |                    | Breeding and migration                                                                            |
| CHORDATA/AVES | <i>Tringa erythropus</i>    | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |           |                     |                 | LC            | <input type="checkbox"/>            | <input type="checkbox"/>            |                    | Breeding and migration                                                                            |

1) Percentage of the total biogeographic population at the site

### 3.4 - Ecological communities whose presence relates to the international importance of the site

<no data available>

## 4 - What is the Site like? (Ecological character description)

### 4.1 - Ecological character

The Changthang's wetlands represent oases of productivity in an otherwise arid environment. They play a key ecological role in sustaining a locally important vegetation cover, the main (and in winter quasi role) source of food for wildlife and livestock. With strong seasonal fluctuations, the Tso Kar basin receives water from nearby glaciers mainly in spring and early summer via the periodically active Pulong Kha Phu river from the east and the perennial Nuruchan Lungpa river from the south. Both rivers enter the freshwater lake Startsapuk Tso while the hyper-saline Tso Kar is only fed by water exchange through a small conduit between both lakes. Outside the water bodies the basin exhibits an undulating surface formed by permafrost action. The surface is dominated by exposed lake sediments, covered by salt. The region is characterized by extreme climatic conditions with local mean annual air temperature of about -4 degrees Celsius, and annual precipitation less than 90 mm. Temperature during winter ranges from -20 to -40 degrees Celsius while in summer it ranges from below 0 to 30 degrees Celsius. The regional vegetation at 4300-5500 meters ASL is classified as steppe or desert-steppe. In the Tso Kar region, modern vegetation cover comprises mainly desert steppe, scrub steppe and subnival cushion communities.

### 4.2 - What wetland type(s) are in the site?

#### Inland wetlands

| Wetland types (code and name)                                                             | Local name     | Ranking of extent (1: greatest - 4: least) | Area (ha) of wetland type | Justification of Criterion 1 |
|-------------------------------------------------------------------------------------------|----------------|--------------------------------------------|---------------------------|------------------------------|
| Fresh water > Lakes and pools<br>>> Q: Permanent freshwater lakes                         | Startsapuk Tso | 2                                          | 438                       | Unique                       |
| Saline, brackish or alkaline water > Lakes >> Q: Permanent saline/brackish/alkaline lakes | Tso Kar        | 1                                          | 1800                      | Unique                       |

#### Other non-wetland habitat

| Other non-wetland habitats within the site | Area (ha) if known |
|--------------------------------------------|--------------------|
| Dry Alpine Scrub and Marsh Meadow habitats |                    |

### 4.3 - Biological components

#### 4.3.1 - Plant species

##### Other noteworthy plant species

| Scientific name              | Position in range / endemism / other |
|------------------------------|--------------------------------------|
| <i>Arnebia guttata</i>       |                                      |
| <i>Hippuris vulgaris</i>     |                                      |
| <i>Rhodiola tibetica</i>     |                                      |
| <i>Saussurea gnaphalodes</i> |                                      |

##### Optional text box to provide further information

The major plant communities include Caragana-Eurotia, Artemisia-Tanacetum, Stipa-Oxytropis-Alyssum, and Carex melanantha-Leymus secalinus. Parts of the study area at very high altitudes (5000 m) have sparse fell-field communities with moss or cushion-like growth forms, e.g., Thylacospermum caespitosum, Arenaria bryophylla, Androsace sarmentosa, and a variety of lichens. Stream banks and marsh meadows around both the lakes (except areas of borax and salt deposits) exhibit a characteristic sedge-dominated vegetation represented by species of Carex, Kobresia, Scirpus, Triglochin, Pucciniella, Ranunculus, and Polygonum. The shallow parts of Startsapuk Tso support dense growths of aquatic plants such as Hippuris vulgaris, Potamogeton pectinatus, P. perfoliatus, Zannichellia palustris, and Ranunculus natans.

#### 4.3.2 - Animal species

##### Other noteworthy animal species

| Phylum            | Scientific name                  | Pop. size | Period of pop. est. | %occurrence | Position in range / endemism / other |
|-------------------|----------------------------------|-----------|---------------------|-------------|--------------------------------------|
| CHORDATA/MAMMALIA | <i>Alicola stoliczkanus</i>      |           |                     |             | Rare                                 |
| CHORDATA/AVES     | <i>Anser indicus</i>             |           |                     |             | Biogeographically important          |
| CHORDATA/REPTILIA | <i>Asymblespharus ladacensis</i> |           |                     |             | Endemic                              |
| CHORDATA/AVES     | <i>Athene noctua</i>             |           |                     |             | Rare                                 |
| CHORDATA/REPTILIA | <i>Phrynocephalus theobaldi</i>  |           |                     |             | Rare                                 |
| CHORDATA/AVES     | <i>Pseudopodoces humilis</i>     |           |                     |             | Unique                               |
| CHORDATA/AVES     | <i>Recurvirostra avosetta</i>    |           |                     |             | Rare                                 |



## 4.4 - Physical components

### 4.4.1 - Climate

| Climatic region | Subregion                                      |
|-----------------|------------------------------------------------|
| B: Dry climate  | BWk: Mid-latitude desert (Mid-latitude desert) |

### 4.4.2 - Geomorphic setting

a) Minimum elevation above sea level (in metres)

a) Maximum elevation above sea level (in metres)

- Entire river basin
- Upper part of river basin
- Middle part of river basin
- Lower part of river basin
- More than one river basin
- Not in river basin
- Coastal

Please name the river basin or basins. If the site lies in a sub-basin, please also name the larger river basin. For a coastal/marine site, please name the sea or ocean.

Indus River Basin

### 4.4.3 - Soil

- Mineral
- Organic
- No available information

Are soil types subject to change as a result of changing hydrological conditions (e.g., increased salinity or acidification)? Yes  No

### 4.4.4 - Water regime

Water permanence

| Presence?                       |           |
|---------------------------------|-----------|
| Usually permanent water present | No change |

Source of water that maintains character of the site

| Presence?                       | Predominant water source            |           |
|---------------------------------|-------------------------------------|-----------|
| Water inputs from surface water | <input checked="" type="checkbox"/> | No change |

Water destination

| Presence?         |           |
|-------------------|-----------|
| Feeds groundwater | No change |

Stability of water regime

| Presence? |           |
|-----------|-----------|
| Unknown   | No change |

Please add any comments on the water regime and its determinants (if relevant). Use this box to explain sites with complex hydrology.

With strong seasonal fluctuations, the Tso Kar basin receives water from nearby glaciers mainly in spring and early summer via the periodically active Pulong Kha Phu river from the east and the perennial Nuruchan Lungpa river from the south. Both rivers enter the freshwater lake Startsapuk Tso while the hyper-saline Tso Kar is only fed by water exchange through a small conduit between both lakes.

### 4.4.5 - Sediment regime

- Significant erosion of sediments occurs on the site
- Significant accretion or deposition of sediments occurs on the site
- Significant transportation of sediments occurs on or through the site
- Sediment regime is highly variable, either seasonally or inter-annually
- Sediment regime unknown

4.4.6 - Water pH

- Acid (pH<5.5)
- Circumneutral (pH: 5.5-7.4)
- Alkaline (pH>7.4)
- Unknown

Please provide further information on pH (optional):

The water pH level of Tso Kar is in the category - Alkaline (pH>7.4).  
 The water pH level of Startsapuk Tso is in the category - Circumneutral (pH: 5.5-7.4).

4.4.7 - Water salinity

- Fresh (<0.5 g/l)
- Mxohaline (brackish)/Mxosaline (0.5-30 g/l)
- Euhaline/Eusaline (30-40 g/l)
- Hyperhaline/Hypersaline (>40 g/l)
- Unknown

Please provide further information on salinity (optional):

The Water salinity of Tso Kar is in the category – Hyperhaline/Hypersaline (>40 g/l).  
 The Water salinity of Startsapuk Tso is in the category – Fresh (<0.5 g/l).

4.4.8 - Dissolved or suspended nutrients in water

- Eutrophic
- Mesotrophic
- Oligotrophic
- Dystrophic
- Unknown

4.4.9 - Features of the surrounding area which may affect the Site

Please describe whether, and if so how, the landscape and ecological characteristics in the area surrounding the Ramsar Site differ from the i) broadly similar  ii) significantly different  site itself.

4.5 - Ecosystem services

4.5.1 - Ecosystem services/benefits

Provisioning Services

| Ecosystem service         | Examples         | Importance/Extent/Significance |
|---------------------------|------------------|--------------------------------|
| Wetland non-food products | Livestock fodder | High                           |
| Wetland non-food products | Other            | Medium                         |

Regulating Services

| Ecosystem service                   | Examples                           | Importance/Extent/Significance |
|-------------------------------------|------------------------------------|--------------------------------|
| Maintenance of hydrological regimes | Groundwater recharge and discharge | High                           |

Cultural Services

| Ecosystem service           | Examples                                          | Importance/Extent/Significance |
|-----------------------------|---------------------------------------------------|--------------------------------|
| Recreation and tourism      | Nature observation and nature-based tourism       | High                           |
| Spiritual and inspirational | Spiritual and religious values                    | High                           |
| Spiritual and inspirational | Cultural heritage (historical and archaeological) | Medium                         |

Supporting Services

| Ecosystem service | Examples                                                                                                                                                | Importance/Extent/Significance |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| Biodiversity      | Supports a variety of all life forms including plants, animals and microorganisms, the genes they contain, and the ecosystems of which they form a part | High                           |

Within the site:

Outside the site:

Have studies or assessments been made of the economic valuation of ecosystem services provided by this Ramsar Site? Yes  No  Unknown

#### 4.5.2 - Social and cultural values

i) the site provides a model of wetland wise use, demonstrating the application of traditional knowledge and methods of management and use that maintain the ecological character of the wetland

Description if applicable

The local nomadic community use the pastures surrounding the wetlands to graze their livestock, in doing this, they continue to follow their age-old systems of rotational grazing, where pastures are left to regenerate for an adequate amount of time. This is an example of how traditional knowledge of the nomadic pastoral community helps maintain the vegetation cover around the wetlands.

ii) the site has exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland

Description if applicable

The wetland complex is revered by the local community who consider it to be of sacred origin. This has resulted in the local community prohibiting collection of water or any other resources from the lakes, which helps maintain its ecological character.

iii) the ecological character of the wetland depends on its interaction with local communities or indigenous peoples

Description if applicable

The prevailing norms/sanctions imposed by the local community, prohibiting use of the water from the wetlands and its biotic resources has aided in maintaining the ecological character of the wetlands.

iv) relevant non-material values such as sacred sites are present and their existence is strongly linked with the maintenance of the ecological character of the wetland

Description if applicable

The local Changpa community consider the wetlands in the basin to be of sacred origin. Stories/Folklore regarding its divine origin are embedded in the local culture. This results in the local community imposing sanctions and rules that prohibit use of the water from the wetlands and its biotic resources. The Buddhist ideology of the local community also prevents harvest of avifauna and other animals that use the sites and its resources. All this has resulted in the maintenance of the ecological character of the wetland.

#### 4.6 - Ecological processes

<no data available>

## 5 - How is the Site managed? (Conservation and management)

### 5.1 - Land tenure and responsibilities (Managers)

#### 5.1.1 - Land tenure/ownership

Public ownership

| Category                           | Within the Ramsar Site              | In the surrounding area             |
|------------------------------------|-------------------------------------|-------------------------------------|
| Provincial/region/state government | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

Other

| Category                   | Within the Ramsar Site   | In the surrounding area             |
|----------------------------|--------------------------|-------------------------------------|
| Commoners/customary rights | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Provide further information on the land tenure / ownership regime (optional):

(a) Site:  
The wetland area is owned by the Department of Wildlife Protection, Government of the Union Territory of Ladakh and is part of the Changthang Cold desert Wildlife Sanctuary.

(b) Surrounding:  
The surrounding area is largely State owned. Most of the land of the village Thukje near the Tso Kar is owned by local villagers and village communities.

#### 5.1.2 - Management authority

Please list the local office / offices of any agency or organization responsible for managing the site:

Department of Wildlife Protection, Government of Union Territory of Ladakh.

Provide the name and/or title of the person or people with responsibility for the wetland:

Chief Wildlife Warden, Department of Wildlife Protection, Government of Union Territory of Ladakh.

Postal address:

Office of the Wildlife Warden Leh, Department of Wildlife Protection, Near LAHDC Complex, Leh, Union Territory of Ladakh, 194101.

E-mail address:

cwladakh@gmail.com

## 5.2 - Ecological character threats and responses (Management)

### 5.2.1 - Factors (actual or likely) adversely affecting the Site's ecological character

#### Human settlements (non agricultural)

| Factors adversely affecting site | Actual threat | Potential threat | Within the site                     | In the surrounding area             |
|----------------------------------|---------------|------------------|-------------------------------------|-------------------------------------|
| Tourism and recreation areas     | High impact   |                  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

#### Agriculture and aquaculture

| Factors adversely affecting site | Actual threat | Potential threat | Within the site          | In the surrounding area             |
|----------------------------------|---------------|------------------|--------------------------|-------------------------------------|
| Livestock farming and ranching   | Medium impact |                  | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

#### Transportation and service corridors

| Factors adversely affecting site | Actual threat | Potential threat | Within the site          | In the surrounding area             |
|----------------------------------|---------------|------------------|--------------------------|-------------------------------------|
| Roads and railroads              | Medium impact | Medium impact    | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

#### Biological resource use

| Factors adversely affecting site | Actual threat | Potential threat | Within the site          | In the surrounding area             |
|----------------------------------|---------------|------------------|--------------------------|-------------------------------------|
| Unspecified                      | Low impact    | Low impact       | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

#### Human intrusions and disturbance

| Factors adversely affecting site    | Actual threat | Potential threat | Within the site                     | In the surrounding area             |
|-------------------------------------|---------------|------------------|-------------------------------------|-------------------------------------|
| Recreational and tourism activities | High impact   |                  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

#### Pollution

| Factors adversely affecting site | Actual threat | Potential threat | Within the site          | In the surrounding area             |
|----------------------------------|---------------|------------------|--------------------------|-------------------------------------|
| Garbage and solid waste          | Medium impact |                  | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

### 5.2.2 - Legal conservation status

National legal designations

| Designation type   | Name of area                              | Online information url                                                                          | Overlap with Ramsar Site |
|--------------------|-------------------------------------------|-------------------------------------------------------------------------------------------------|--------------------------|
| Wildlife Sanctuary | Changthang Cold Desert Wildlife Sanctuary | <a href="http://jkenvis.org/biodiversity_pan.html">http://jkenvis.org/biodiversity_pan.html</a> | partly                   |

Non-statutory designations

| Designation type    | Name of area  | Online information url                                                                                                                                  | Overlap with Ramsar Site |
|---------------------|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| Important Bird Area | Tso Kar Basin | <a href="http://datazone.birdlife.org/site/factsheet/tso-kar-basin-iba-in-dia">http://datazone.birdlife.org/site/factsheet/tso-kar-basin-iba-in-dia</a> | whole                    |

### 5.2.3 - IUCN protected areas categories (2008)

- Ia Strict Nature Reserve
- Ib Wilderness Area: protected area managed mainly for wilderness protection
- II National Park: protected area managed mainly for ecosystem protection and recreation
- III Natural Monument: protected area managed mainly for conservation of specific natural features
- IV Habitat/Species Management Area: protected area managed mainly for conservation through management intervention
- V Protected Landscape/Seascape: protected area managed mainly for landscape/seascape conservation and recreation
- VI Managed Resource Protected Area: protected area managed mainly for the sustainable use of natural ecosystems

### 5.2.4 - Key conservation measures

Legal protection

| Measures         | Status      |
|------------------|-------------|
| Legal protection | Implemented |

Human Activities

| Measures                                                             | Status      |
|----------------------------------------------------------------------|-------------|
| Harvest controls/poaching enforcement                                | Implemented |
| Regulation/management of recreational activities                     | Proposed    |
| Regulation/management of wastes                                      | Proposed    |
| Communication, education, and participation and awareness activities | Proposed    |

### 5.2.5 - Management planning

Is there a site-specific management plan for the site? No

Has a management effectiveness assessment been undertaken for the site? Yes  No

If the site is a formal transboundary site as indicated in section Data and location > Site location, are there shared management planning processes with another Contracting Party? Yes  No

### 5.2.6 - Planning for restoration

Is there a site-specific restoration plan? No need identified

### 5.2.7 - Monitoring implemented or proposed

| Monitoring    | Status      |
|---------------|-------------|
| Water quality | Implemented |
| Birds         | Implemented |

## 6 - Additional material

### 6.1 - Additional reports and documents

#### 6.1.1 - Bibliographical references

Ahmed, T., Chandan, P., & Khan, A., 2019. Observations on some nesting birds of the Tso-Kar Basin, Ladakh. *Indian BIRDS*. 15 (1): 13–16.

Grimmett, R., C. Inskipp & T. Inskipp (2011). *Birds of Indian Subcontinent*. 2nd Edition. Christopher Helm, London, 480pp.

IUCN (2019). The IUCN Red List of Threatened Species. Version 2019- <http://www.iucnredlist.org>. Downloaded on 21 March 2019.

Jamwal, P.S., S. Shrotriya & J. Takpa (2020). The pattern of waterbird diversity of the trans-Himalayan wetlands in Changthang Wildlife Sanctuary, Ladakh, India. *Journal of Threatened Taxa* 12(1): 15129–15139. <https://doi.org/10.11609/jott.5122.12.1.15129-15139>

Namgail, T. (2005) Winter birds of the Gya-Miru Wildlife Sanctuary, Ladakh, Jammu and Kashmir, India. *Indian Birds*, 1, 26-28.

Namgail, T., Bhatnagar, Y. V., Mishra, C. & Bagchi, S. (2007a) Pastoral nomads of the Indian Changthang: production system, landuse and socio-economic changes. *Human Ecology*, 35, 497-504.

Namgail, T., D. Mudappa & T.R.S. Raman (2009). Waterbird numbers at high altitude lakes in eastern Ladakh, India. *Wildfowl* 59: 135–142

Pfister, O. (2004) *Birds and mammals of Ladakh*, Oxford University Press, New Delhi.

Rawat, G. S. & Adhikari, B. S. (2005) Floristics and distribution of plant communities across moisture and topographic gradients in Tso Kar basin, Changthang plateau, eastern Ladakh. *Arctic Antarctic and Alpine Research*, 37, 539-544.

Sangha, H. S., Dhimal, S. S., & Ovalekar, S., 2014. The first breeding record of the Saker Falcon *Falco cherrug milvipes* for the Indian Subcontinent in Ladakh, Jammu & Kashmir. *Indian BIRDS* 9 (5&6): 146–148.

Wünnemann, B., et al., Hydrological evolution during the last 15 kyr in the Tso Kar lake basin..., *Quaternary Science Reviews* (2010), doi:10.1016/j.quascirev.2010.02.017

#### 6.1.2 - Additional reports and documents

i. taxonomic lists of plant and animal species occurring in the site (see section 4.3)

<1 file(s) uploaded>

ii. a detailed Ecological Character Description (ECD) (in a national format)

<no file available>

iii. a description of the site in a national or regional wetland inventory

<no file available>

iv. relevant Article 3.2 reports

<no file available>

v. site management plan

<no file available>

vi. other published literature

<1 file(s) uploaded>

#### 6.1.3 - Photograph(s) of the Site

Please provide at least one photograph of the site:



Aerial View of the Tso Kar basin. ( *Siddharth P*, 21-09-2020 )



Panoramic view of the freshwater lake of Startsapuk Tso, situated in the Tso Kar basin. ( *Siddharth P*, 20-09-2020 )



White salt efflorescence on the bank of Tso Kar. ( *Siddharth P*, 02-10-2019 )



A car passes along the road next to Tso Kar, leading to the village of Thukje. ( *Siddharth P*, 03-10-2020 )



Pasturelands in the Tso Kar basin, during the short summer season. ( *Siddharth P*, 18-07-2018 )



Close up of Startsapuk Tso. ( *Siddharth P*, 08-10-2019 )

#### 6.1.4 - Designation letter and related data

Designation letter

<1 file(s) uploaded>

Date of Designation