

Designation date: 07/05/2012 Ramsar Site no. 2033.

# Information Sheet on Ramsar Wetlands (RIS) – 2009-2012 version

Available for download from [http://www.ramsar.org/ris/key\\_ris\\_index.htm](http://www.ramsar.org/ris/key_ris_index.htm).

*Categories approved by Recommendation 4.7 (1990), as amended by Resolution VIII.13 of the 8<sup>th</sup> Conference of the Contracting Parties (2002) and Resolutions IX.1 Annex B, IX.6, IX.21 and IX. 22 of the 9<sup>th</sup> Conference of the Contracting Parties (2005).*

## Notes for compilers:

1. The RIS should be completed in accordance with the attached *Explanatory Notes and Guidelines for completing the Information Sheet on Ramsar Wetlands*. Compilers are strongly advised to read this guidance before filling in the RIS.
2. Further information and guidance in support of Ramsar site designations are provided in the *Strategic Framework and guidelines for the future development of the List of Wetlands of International Importance* (Ramsar Wise Use Handbook 14, 3rd edition). A 4th edition of the Handbook is in preparation and will be available in 2009.
3. Once completed, the RIS (and accompanying map(s)) should be submitted to the Ramsar Secretariat. Compilers should provide an electronic (MS Word) copy of the RIS and, where possible, digital copies of all maps.

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### 1. Name and address of the compiler of this form:

Sonam Choden

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Watershed Management Division  
Department of Forests and Park Services  
Ministry of Agriculture and Forests  
Royal Government of Bhutan

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Designation date

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Site Reference Number

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### 2. Date this sheet was completed/updated:

01 June 2012

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### 3. Country:

Bhutan

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### 4. Name of the Ramsar site:

The precise name of the designated site in one of the three official languages (English, French or Spanish) of the Convention. Alternative names, including in local language(s), should be given in parentheses after the precise name.

Khotokha

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**5. Designation of new Ramsar site or update of existing site:**

This RIS is for (tick one box only):

- a) Designation of a new Ramsar site ; or  
 b) Updated information on an existing Ramsar site

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**6. For RIS updates only, changes to the site since its designation or earlier update:****a) Site boundary and area**The Ramsar site boundary and site area are unchanged: 

or

**If the site boundary has changed:**

- i) the boundary has been delineated more accurately ; or  
 ii) the boundary has been extended ; or  
 iii) the boundary has been restricted\*\*

and/or

**If the site area has changed:**

- i) the area has been measured more accurately ; or  
 ii) the area has been extended ; or  
 iii) the area has been reduced\*\*

\*\* **Important note:** If the boundary and/or area of the designated site is being restricted/reduced, the Contracting Party should have followed the procedures established by the Conference of the Parties in the Annex to COP9 Resolution IX.6 and provided a report in line with paragraph 28 of that Annex, prior to the submission of an updated RIS.

**b) Describe briefly any major changes to the ecological character of the Ramsar site, including in the application of the Criteria, since the previous RIS for the site:**

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**7. Map of site:**

Refer to Annex III of the *Explanatory Note and Guidelines*, for detailed guidance on provision of suitable maps, including digital maps.

**a) A map of the site, with clearly delineated boundaries, is included as:**

- i) a hard copy (required for inclusion of site in the Ramsar List): ;  
 ii) an electronic format (e.g. a JPEG or ArcView image) ;  
 iii) a GIS file providing geo-referenced site boundary vectors and attribute tables .

**b) Describe briefly the type of boundary delineation applied:**

e.g. the boundary is the same as an existing protected area (nature reserve, national park, etc.), or follows a catchment boundary, or follows a geopolitical boundary such as a local government jurisdiction, follows physical boundaries such as roads, follows the shoreline of a water body, etc.

The Khotokha wetland is sub-alpine shrub marshes with presence of peat bogs and fens in a wide valley. The wetland site is government reserve land along the farm road towards Shellay village. Upstream is the Khotokha village and the site has a small river flowing south with intermitted streams.

**8. Geographical coordinates** (latitude/longitude, in degrees and minutes):

Provide the coordinates of the approximate centre of the site and/or the limits of the site. If the site is composed of more than one separate area, provide coordinates for each of these areas.

The centre of the designated site is :

	X	Y
Centre	27°25'54.92"N	89°59'33.27"E

The coordinates for the northern and southern boundary is:

No.		
Northern Boundary	27°26'44.2" N	90°0'10.1" E
Southern Boundary	27°25'58.3" N	89°59'21" E

**9. General location:**

Include in which part of the country and which large administrative region(s) the site lies and the location of the nearest large town.

Khotokha wetland is located under Wangdue Dzongkhag (District) in western Bhutan and west of the Black Mountain Range. It is a unique area where people from Ruepisa and Bjena gewog (Block) migrate to the area during the summer months. It is also a logging area where there are Forest Management Units present. The nearest large town is Bajo town in Wangduephodrang (District) with the population of 5063. The Bajo town is about 30 km towards the north-west direction of the Khotokha Ramsar site. The Punatsang Chhu Hydro power project (one of the mega hydropower projects in Bhutan) and the Baso Chhu hydro power plant are 42 km and 47 km away respectively located towards its south. It also lies west of the Phobjikha wetlands, one of the largest marshes in Bhutan. The Phobjikha wetland is 70 km away from the site.

**10. Elevation:** (in metres: average and/or maximum & minimum)

Maximum elevation: 2700 metres

Minimum elevation: 2500 metres

**11. Area:** (in hectares)

113.5 ha

**12. General overview of the site:**

Provide a short paragraph giving a summary description of the principal ecological characteristics and importance of the wetland.

The Khotokha wetland is one of the sources for the tributaries of the Puna Tsang Chhu (river flowing through Wangdue phodrang district). The sub-alpine shrub marshes consisting of peat bogs and fens, is one of the larger marshes that are typically present in sub-alpine regions of Bhutan. The wetland is covered in mist in the summer season and invites a lot of butterflies, insects and birds which is very different from its situation in the winter when it cold and the Black Necked Cranes (*Grus nigricollis*) are the only prominent bird you could spot apart from the usual crows. It is surrounded by pine and oak forests and many historical and cultural sites considered very important to the Bhutanese communities. The water seeping out of the marshes form small gully streams that accumulate to form a larger stream and

flow down south providing irrigation water and water for drinking and other domestic purposes. Streams in Bhutan are generally considered clean and is tapped for agriculture and household purposes. They hydrologically flow from a higher point and is considered cleaner and more useful. One of the main livelihood of the inhabitants of Khotokha is dairy and the cattle graze on the marshes. The water from the marshes are used for potato farming, another main cash crop of the village. The Black Necked Cranes winter at the sites each year due to the good roosting ground in the marshes and feeding ground in the farmlands. However, the number has been dwindling over the years. The local inhabitants live in harmony with the migratory birds considering them sacred and signifying a good harvest. The biodiversity is not very rich but is very unique.

### 13. Ramsar Criteria:

Tick the box under each Criterion applied to the designation of the Ramsar site. See Annex II of the *Explanatory Notes and Guidelines* for the Criteria and guidelines for their application (adopted by Resolution VII.11). All Criteria which apply should be ticked.

1 • 2 • 3 • 4 • 5 • 6 • 7 8 • 9

### 14. Justification for the application of each Criterion listed in 13 above:

Provide justification for each Criterion in turn, clearly identifying to which Criterion the justification applies (see Annex II for guidance on acceptable forms of justification).

#### Criterion 2:

The wetland is the roosting site of migratory and endangered bird *Grus nigricollis* (Black Necked Crane) in the winter months.

Mammals					
Common name	Scientific name	*Forest and Nature Conservation Act, 1995	IUCN Red List	CITES	
Himalayan Musk Deer	<i>Moschus leucogaster</i>		EN	Appendix I	
Red Panda	<i>Ailurus fulgens</i>	Schedule I	VU	Appendix I,	
Sambar	<i>Rusa unicolor</i>		VU		
Wild Dog/Dhole	<i>Cuon alpinus primaevus</i>		EN	Appendix II	
Birds					
Common Name	Scientific Name	RGOB	IUCN Red List	CITES	CMS Status
Blacked Necked Crane	<i>Grus nigricollis</i>	Schedule I	VU	Appendix I	Appendix I

\* Forest and Nature Conservation Act, 1995: Schedule I: All wild animals listed in schedule I are declared to be totally protected whether or not in a Government Reserved Forests in the 'Forest and Nature Conservation Act, 1995'.

**Criteria 4:**

The wetland area at Khotokha is one of the important wintering site for the Black Necked Crane *Grus nigricollis* in the biogeographic region as they migrate from Tibet (China). Up to 50 Black-necked Cranes have been recorded at the site in winter which is close to the 1% level of 80 individuals. There are few places in Bhutan where these cranes roost during the critical cold winter months and Khotokha has been one of these serene places that give refuge to them.

**15. Biogeography** (required when Criteria 1 and/or 3 and /or certain applications of Criterion 2 are applied to the designation):

Name the relevant biogeographic region that includes the Ramsar site, and identify the biogeographic regionalisation system that has been applied.

**a) biogeographic region:**

Himalayan Highlands

**b) biogeographic regionalisation scheme** (include reference citation):

[A classification of the biogeographical provinces of the world \(Udvardy, 1975\)](#)

**16. Physical features of the site:**

Describe, as appropriate, the geology, geomorphology; origins - natural or artificial; hydrology; soil type; water quality; water depth, water permanence; fluctuations in water level; tidal variations; downstream area; general climate, etc.

Khotokha falls within the Surey Formation of Thimphu Gneissic Complex under Greater Himalayan Sequence. The area comprises mainly of biotite gneiss with leuco granite intrusion towards the eastern part. The general soil type is clay loam with good permeability and moderate moisture retention.

	Name of streams	pH	Conductivity (microsiemen)	TDS (ppm)	Salinity (ppm)	Temperature (°C)
1	Khotokha (a) Stream 1	8.1	21.3	14.7	12.2	9.5
2	Khotokha (b) Stream 2	10.26	21.1	14.9	12.1	9.7
3	Khotokha (c) Stream 3	9.92	20.1	14.3	12.1	10.5
4	Khotokha (d) Stream 4	8.94	35.4	25.0	20.3	14.5
5	Khotokha (e) headwater Lechu	10.25	27.8	19.7	15	11.5
6	Khotokha (f) Downstream Lechu	8.3	38.4	22.5	21.3	14.6
7	Khotokha (g) Goenchu	8.63	34	24.2	19.4	13.9
8	Khotokha (h) Pangza	8.48	25.1	17.8	14.8	11.7

The pH of the stream is moderately to highly alkaline ranging from 8 to 10.5. the conductivity, total dissolved solids and the salinity are for the fresh water and are suitable for drinking and domestic purposes. The streams are of shallow depth and are perennial throughout the year.

The weather station is situated in Phojikha area and the weather condition is similar with the Khotokha area. The weather data has been collected daily from the year 1989 till 2010. The average maximum annual temperature is 15.5°C and average minimum annual temperature is 3.50°C with solar radiation more than 74 KJ/m<sup>2</sup> per year. The average temperature in July is +15.9°C and in January is +1.7°C. The maximum annual rainfall and minimum annual rainfall are 2361mm and 94mm respectively with 69-160 annual rain days

Stream Name	Q(l/s)	Q(L/day)
Khotokha (a)Stream 1	181.2467622	15,659,720.26
Khotokha (b) Stream 2	-	-
Khotokha (c) Stream 3	-	-
Khotokha (d)Stream 4	12.01323056	1,037,943.12
Khotokha (e) headwater Lechu	18.75483871	1,620,418.06
Khotokha (f) Downstream Lechu	29.20543215	2,523,349.34
Khotokha (g) Goenchu	12.30007355	1,062,726.35
Khotokha (h)Pangza	145.9179653	12,607,312.20

The discharges of the streams were determined using the Velocity-area method / float method. This method requires determining the average velocity of the stream and cross-sectional area of the stream

### 17. Physical features of the catchment area:

Describe the surface area, general geology and geomorphological features, general soil types, and climate (including climate type).

Characterized by wide U-shaped valley (possibly of glacial origin), the area is surrounded by rugged moderately elevated mountains with gentle to moderate slopes. The weathering of the country rock from these sloping mountains has lead to deposition of huge quantity of colluviums at the base which has given rise to several piedmont plains. The main catchments are all wide depressions which have span of 3 – 3.5 kilometres depositing alluvial materials into the valley which has lead to formation of lowly sloping alluvial plain, several alluvial fans and low terraces.

### 18. Hydrological values:

Describe the functions and values of the wetland in groundwater recharge, flood control, sediment trapping, shoreline stabilization, etc.

The tributaries are used for drinking and domestic purposes and for irrigation purposes. Presently, 4 villages viz. Sebesa, Eusa, Jalla and Rucheykha with total of 83 households are benefited from the tributaries.

### 19. Wetland Types

#### a) presence:

Circle or underline the applicable codes for the wetland types of the Ramsar “Classification System for Wetland Type” present in the Ramsar site. Descriptions of each wetland type code are provided in Annex I of the *Explanatory Notes & Guidelines*.

Marine/coastal: A • B • C • D • E • F • G • H • I • J • K • Zk(a)

Inland: L • M • N • O • P • Q • R • Sp • Ss • Tp Ts • U • Va •  
Vt • W • Xf • Xp • Y • Zg • Zk(b)

Human-made: 1 • 2 • 3 • 4 • 5 • 6 • 7 • 8 • 9 • Zk(c)

**b) dominance:**

List the wetland types identified in a) above in order of their dominance (by area) in the Ramsar site, starting with the wetland type with the largest area.

U, Xf, M, N, Tp, Xp.

**20. General ecological features:**

Provide further description, as appropriate, of the main habitats, vegetation types, plant and animal communities present in the Ramsar site, and the ecosystem services of the site and the benefits derived from them.

The Khotokha wetland is dominated by *Yushania sp.*, which forms shrub dominated freshwater marshes with peat bogs and fens. The wetland is also surrounded by forested area that consists mainly of Blue pine (*Pinus wallichiana*), Oak (*Quercus sp.*) and *Rhododendron sp.*, and is home to large numbers of bird and animal species.. This includes more than 50 species of plants, 40 species of birds and 14 species of mammals.

**21. Noteworthy flora:**

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 14, Justification for the application of the Criteria) indicating, e.g., which species/communities are unique, rare, endangered or biogeographically important, etc. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

Flora is mainly composed of 42 species of vascular plants, where 7.1% (3 species) of pteridophytes, 2.4% (1 species) of gymnosperms and 90.5% (38 species) of angiosperms were found. The most dominant species is the bamboo *Yushania microphylla*. The main vegetation type is *Yushania* meadow/grassland within the temperate zone.

The flora found in the area provides raw materials for various products for the local communities such as, *Yushania* used for weaving bamboo mats and construction of house, *Pinus wallichiana* used for timber, etc.

**22. Noteworthy fauna:**

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 14, Justification for the application of the Criteria) indicating, e.g., which species/communities are unique, rare, endangered or biogeographically important, etc., including count data. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

**Birds:** The Khotokha wetland consists of 47 species of birds of which 3 species of birds fall under CITES Appendices and IUCN Red List- *Grus nigricollis* (Blacked Naked Crane), *Falco tinnunculus* (Common Kestrel) and *Leiothrix lutea* (Red-Billed Leiothrix).

**Mammals:** 14 species of mammal are found in the wetland area of which 5 species falls under CITES Appendix I and III and also 2 endangered species are also found in the area; *Moschus leucogaster*(Himalayan Musk Deer) and *Ailurus fulgens* (Red Panda). Other noteworthy animals include *Panthera pardus* (Common Leopard), *Semnopithecus entellus* (Grey Langur) and *Martes flavigula* (Yellow-throated Martin).

**23. Social and cultural values:**

a) Describe if the site has any general social and/or cultural values e.g., fisheries production, forestry, religious importance, archaeological sites, social relations with the wetland, etc. Distinguish between historical/archaeological/religious significance and current socio-economic values:

Khotokha is one of the unique places of Bhutan where summer-winter migration of farmers are practiced. The main incomes of the farmers are dairy farming, potato farming and logging activities. All over Bhutan the trend has been disappearing but Khotokha upholds this system with the farmers from Bjena and Ruepisa practicing it. All agriculture land in Khotokha is dry land. The important crops are wheat, buckwheat, potato, and chili. The valley is too high in altitude for rice to grow. It is also one of the unique places of Bhutan where summer-winter migration of farmers are practiced. All over Bhutan the trend has been disappearing but Khotokha upholds this system with the farmers from Bjena and Ruepisa practicing it.

The valley is surrounded by 6 religious sites and 13 Buddhist temples which are considered very important by the Bhutanese. The local community also believes that the Black Necked Cranes are auspicious and therefore, they do not harm them. The birds feed in the farms freely. The absences of the cranes are believed to be an ill omen to the local people.

b) Is the site considered of international importance for holding, in addition to relevant ecological values, examples of significant cultural values, whether material or non-material, linked to its origin, conservation and/or ecological functioning?

If Yes, tick the box  and describe this importance under one or more of the following categories:

- i) sites which provide 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:
- ii) sites which have exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland:
- iii) sites where the ecological character of the wetland depends on the interaction with local communities or indigenous peoples:
- iv) sites where 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:

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**24. Land tenure/ownership:**

- a) within the Ramsar site: Government Reserve Land
- b) in the surrounding area: Government Reserve Land, Private farm lands.

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**25. Current land (including water) use:**

- a) within the Ramsar site: Grazing by domestic animals, irrigation, water for drinking and domestic use.
- b) in the surroundings/catchment: Agriculture, pasture, drinking water, irrigation, forest management units for planned logging.

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**26. Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land (including water) use and development projects:**



a) within the Ramsar site: Intermittent temporary logging tractors owned by farmers passing through /driving on the marsh during the winter time when soil is dry is fragmenting the wetlands damaging the marsh.

b) in the surrounding area: Logging activities might cause noise pollution and more sedimentation in the rivers. Construction of farm roads and many new constructions of houses have changed the general overlook of the site.

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**27. Conservation measures taken:**

a) List national and/or international category and legal status of protected areas, including boundary relationships with the Ramsar site:

In particular, if the site is partly or wholly a World Heritage Site and/or a UNESCO Biosphere Reserve, please give the names of the site under these designations.

b) If appropriate, list the IUCN (1994) protected areas category/ies which apply to the site (tick the box or boxes as appropriate):

Ia ; Ib ; II ; III ; IV ; V ; VI

c) Does an officially approved management plan exist; and is it being implemented?:

There are forest management plans in the surrounding area but not within the Ramsar site.

d) Describe any other current management practices:

The farmers are much concerned about the unplanned temporary tractor roads and has plans of constructing road diversion to the community school so that the wetland is not fragmented.

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**28. Conservation measures proposed but not yet implemented:**

e.g. management plan in preparation; official proposal as a legally protected area, etc.

Forest Management plan present in the nearby area for sustainable harvesting of timber.

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**29. Current scientific research and facilities:**

e.g., details of current research projects, including biodiversity monitoring; existence of a field research station, etc.

There are very less or minimal research done in the area and would be very interesting scientifically to initiate such researches both in terms of hydrology and ecology.

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**30. Current communications, education and public awareness (CEPA) activities related to or benefiting the site:**

e.g. visitors' centre, observation hides and nature trails, information booklets, facilities for school visits, etc.

There are very few tourists who come specifically to see the Black Necked Cranes and the serene valley with traditional Bhutanese architectural houses. There are four passes within Khotokha and are the traditional trekking routes to go to different villages (Bjena, Ruepisa, Phobjikha, Ngawang) in the vicinity which is still used by the farmers as their migration route Workshops have been organised by the Watershed Management Division to educate and raise awareness amongst local communities (farmers) about what is Ramsar. The local leader was invited to this workshop and he was also invited at the national level for the final consultation and presentation of the RIS.

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**31. Current recreation and tourism:**

State if the wetland is used for recreation/tourism; indicate type(s) and their frequency/intensity.

Eco-tourism but not so frequently visited.

No eco tourism facilities but occasional tourists camp at the site. Due to difficulty of access at the moment in particular during monsoon season.

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### 32. Jurisdiction:

Include territorial, e.g. state/region, and functional/sectoral, e.g. Dept of Agriculture/Dept. of Environment, etc.

Wangdue Territorial Division  
Department of Forests and Park Services  
Ministry of Agriculture and Forests

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### 33. Management authority:

Provide the name and address of the local office(s) of the agency(ies) or organisation(s) directly responsible for managing the wetland. Wherever possible provide also the title and/or name of the person or persons in this office with responsibility for the wetland.

Dzongkhag Forest Officer  
Department of Forests and Park Services  
Ministry of Agriculture and Forests  
Royal Government of Bhutan  
Phone number: +975-2-481413  
Fax number: +975-2-481671/ +975-2-481380  
Email address: kin\_gyeltshen@yahoo.com

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### 34. Bibliographical references:

Scientific/technical references only. If bio geographic regionalisation scheme applied (see 15 above), list full reference citation for the scheme.

Dorji, S. 2008. *Field Guide to the Orchids of Bhutan*. Bhutan Orchid Science Society

Grierson, A.J.C. & Long, D.G. *Flora of Bhutan; Vol. 1 Part I (1983), II(1984), III(1987), Vol. 2 Part I, II(1999), III (2001)*; Royal Botanic Garden Edinburgh and Royal Government of Bhutan.

Gurung, D. B. 2006. *An Illustrated Guide to the Orchids of Bhutan*. DSB Publications, Bhutan.

Noltie, H.J. *Flora of Bhutan; Vol. 3 Part I (1994) & II (2000)*. Royal Botanic Garden Edinburgh, UK and Royal Government of Bhutan.

Parker, C. 1992. *Weeds of Bhutan*. National Plant Protection Center, Semtokha, Royal Government of Bhutan.

Pearce, N.R. & Cribb, P.J. 2003. *The Orchids of Bhutan*. Royal Botanic Garden Edinburgh UK and Royal Government of Bhutan.

Polunin, O. & Stainton, A. 2009. *Flowers of Himalaya*. Oxford University Press.

Stainton, A. 2001. *Flowers of Himalaya – A Supplement*. Oxford University Press.

Thinley, U. 2004. *Know the Plants of Bhutan, Vol. I, 2<sup>nd</sup> Edition, 2004, p.1-p.32*. Thimphu.

[www.cites.org](http://www.cites.org): CITES website, CITES Appendices I,II,III (27/04/2011), p.33-p.42.

[www.iucnredlist.org](http://www.iucnredlist.org): IUCN website on red list of globally threatened species.

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