

An annotated list of birds wintering in the Lhasa river watershed and Yamzho Yumco, Tibet Autonomous Region, China

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The occurrence and distribution of birds in the Lhasa river watershed of Tibet Autonomous Region, People's Republic of China, is not well documented. Here we report on recent observations of birds made during the winter season (November–March). Combining these observations with earlier records shows that at least 115 species occur in the Lhasa river watershed and adjacent Yamzho Yumco lake during the winter. Of these, at least 88 species appear to occur regularly and 29 species are represented by only a few observations. We recorded 18 species not previously noted during winter. Three species noted from Lhasa in the 1940s, Northern Shoveler *Anas clypeata*, Solitary Snipe *Gallinago solitaria* and Red-rumped Swallow *Hirundo daurica*, were not observed during our study. Black-necked Crane *Grus nigricollis* (Vulnerable) and Bar-headed Goose *Anser indicus* are among the more visible species in the agricultural habitats which dominate the valley floors. There is still a great deal to be learned about the winter birds of the region, as evidenced by the number of apparently new records from the last 15 years.

INTRODUCTION

The Lhasa river watershed in Tibet Autonomous Region, People's Republic of China, is an important wintering area for a number of migratory and resident bird species. The valleys of the Lhasa river watershed are an important wintering area for c.1,300 Black-necked Cranes *Grus nigricollis* (Bishop *et al.* 2000) and 4,000 Bar-headed Geese *Anser indicus* (Bishop *et al.* 1997). The region is also home to two species endemic to the Tibetan Plateau: Tibetan Eared Pheasant *Crossoptilon harmani* and Giant Babax *Babax waddelli* (Lu 2004, Rasmussen and Anderton 2005); and one near-endemic: Brown-cheeked Laughingthrush *Garrulax henrici* (MacKinnon *et al.* 2000).

Despite the ornithological importance of the region, accurate and current information on bird distribution, especially during the winter months, is relatively scant. There are few published surveys or studies, and most birders visiting the area do so during the spring and summer. The best ornithological information on the Lhasa area available in English comes from British military and diplomatic personnel. On 3 August 1904, the British Expedition commanded by Col. Francis Younghusband, entered Lhasa and made the first ornithological records from the capital. Included in this expedition were three birdwatchers: Captain H. J. Walton, Lieutenant-colonel L. A. Waddell and Lieutenant F. M. Bailey. Walton published a list of 99 species from Tibet (Walton 1906), and Waddell (1905) provided an abbreviated bird list in the appendices to his book on Tibet. Bailey returned several times to south-eastern Tibet, and the records from these explorations are still the major source of ornithological data from this region (Bailey 1913). The most complete bird list for the Lhasa area was compiled by Frank Ludlow while assigned to the British Diplomatic Mission in the 1940s (Ludlow 1950), and this remains the best reference to date. In 1972, Charles Vaurie published *Tibet and its birds*, but this book was a review of the literature and museum specimens; he never visited Tibet himself.

China's Academia Sinica and Forestry Department organised a series of scientific expeditions from 1959 to 1989 (Zheng *et al.* 1983, Yin and Liu 1993). Most surveys occurred during the late spring and summer months and visited remote areas. Access to Tibet by foreigners was

limited from the late 1940s to the early 1980s. By the late 1980s the first joint ventures with foreign companies were initiated and some of the first foreign non-governmental organisations were allowed into Tibet, enabling our own observations. In this paper we have compiled these records as well as other available information on birds in the region during winter. We provide some conclusions, when possible, regarding abundance, distribution, and timing of arrival and departure of migrants.

STUDY AREA

Located in south-central Tibet (Fig. 1), the Lhasa river is a major tributary of the Yarlung Zangbo (=Brahmaputra river); it includes the Tolung and Phenpo tributaries draining from the north and west, and Meldro Phu from the east. There are also lesser rivers, some of which are seasonal, that primarily drain the southern and eastern parts of the watershed. Lhasa itself is situated in the south-western part of the watershed at 29°36'N 91°06'E. Yamzho Yumco (Yamdruk Yutso) is a large natural lake c.25 km south of the Lhasa river. We include this because of its proximity to the Lhasa river watershed and its importance for migratory and wintering waterfowl. Principal location names are taken from Times Atlas (Times 1999) and, when available, are followed by a transliteration in Tibetan in parentheses as shown on maps in Dorje (2004).

The city of Lhasa lies at an altitude of 3,650 m and enjoys a surprisingly pleasant climate. Winters are cool and dry; the average daily minimum and maximum temperatures at Lhasa during January, the coldest month, are -13.1°C and 5.7°C respectively. October–April is the dry season and during this time precipitation is rare, especially in the valleys. Any localised snowfall that does occur typically melts quickly. High winds occur regularly throughout the region during January–April, often causing dust storms in the afternoon and lifting sand from the dried river bed high up the hillsides (Bishop *et al.* 1998).

Major habitat types in the valleys include: pasture, shrub-steppe, rivers and their associated floodplains, freshwater marshes and agricultural fields (see Bishop *et al.* 1998 for a description of plant species in these

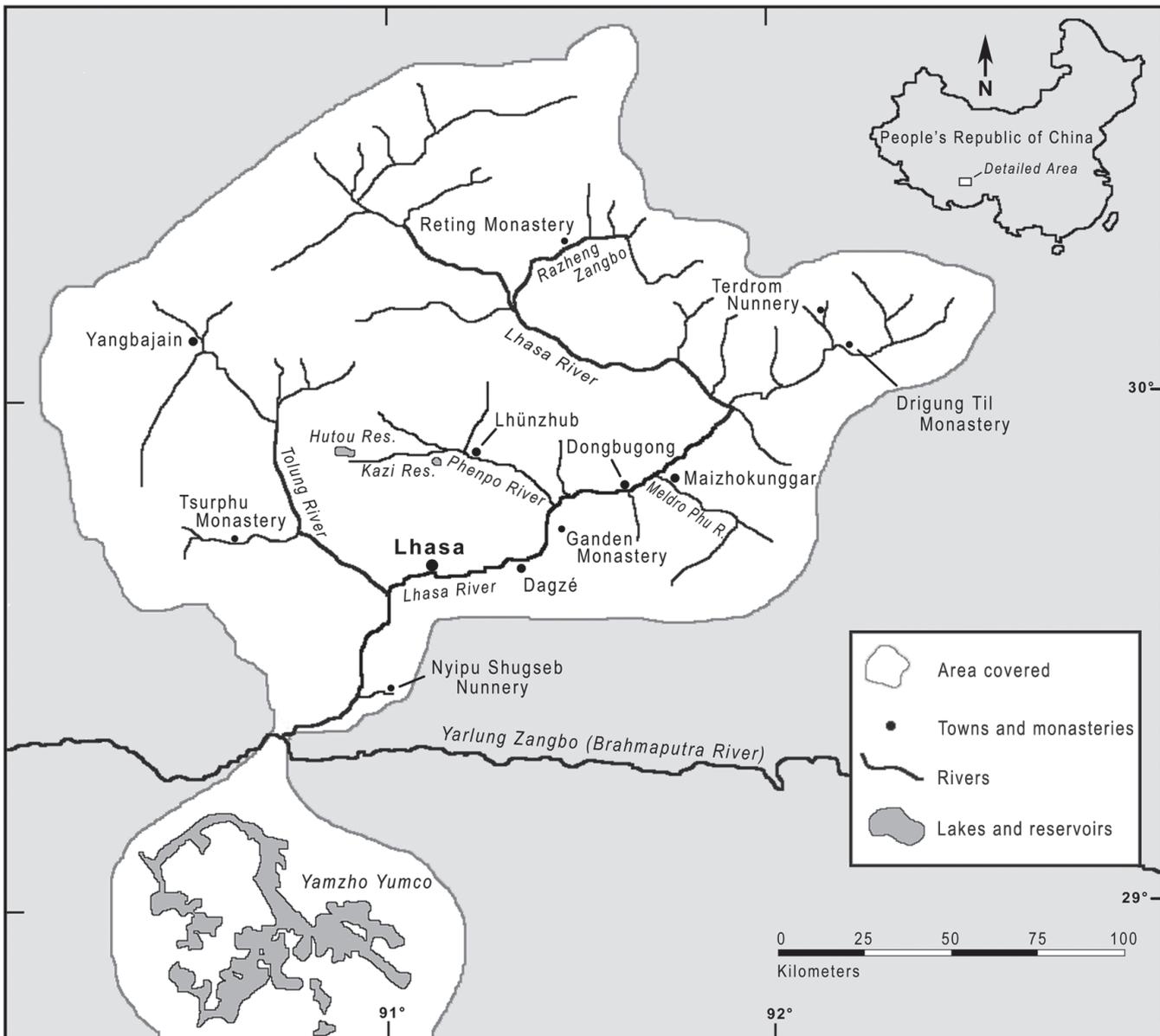


Figure 1. Map of the Lhasa river watershed and adjacent Yamzho Yumco.

habitats). Most of the valley floors are farmed, and major agricultural crops include barley, spring and winter wheat, broad beans and mustard. Freshwater marshes are common in the Phenpo river valley, but rare elsewhere. Two major reservoirs in Phenpo valley, Kazi and Hutou, and the natural lake of Yamzho Yumco, provide the most important lacustrine habitat within the watershed. The river valleys are surrounded by hills and mountains rising to an altitude of 5,400 m in the central areas of the watershed, while many of the high mountains defining the boundaries of the watershed exceed 6,000 m. A few peaks exceed 7,000 m at the north-west corner of the watershed. Most hillsides are uncultivated and sparsely vegetated with hardy plants able to withstand arid conditions and grazing by sheep, goats and yaks. Common hillside shrub species include *Salix sclerophylla*, *Spirace alpina*, *Rhododendron* spp. and *Sabina pingii* (Lu 2004). The ridge-tops themselves support sparsely vegetated alpine tundra habitat, including *Silene* spp. and *Saxifraga* spp. They are generally free from snow throughout the winter, except for the tallest mountains in the north and

north-west. Several mountain ridges in the region, including ones at Sera, Ganden and Drigung Til monasteries, are sites for sky burials—the traditional Tibetan ‘burial’ method where the deceased is divided into pieces and offered to birds. Not surprisingly these sites are major attractors for scavengers. However, they are all officially off-limits to foreigners.

METHODS

We each made observations in and around Lhasa for at least two winter seasons. ALS lived in and birded the Lhasa area from 1988 to 1992 (Le Sueur 2003). MAB conducted research on Black-necked Crane and Bar-headed Geese on behalf of the International Crane Foundation in all winters since 1990 except the three winters 1996–1999. AL spent November 2003–January 2004 and October–December 2004 living in the Lhasa area while working on an environmental education project for the International Crane Foundation.

Table 1. Description of major sites surveyed in the Lhasa river watershed and Yamzho Yumco.

Site	Coordinates	Elevation (m)	Habitat	Notes
City of Lhasa				
Norbulingka	29°39'N 91°06'E	3,650	Wooded gardens, including mature cottonwoods and conifers.	This site contains rare wooded habitats. A number of escaped or released cage birds have been recorded here, including Hwamei <i>Garrulax canorus</i> , Plain Laughingthrush <i>Garrulax davidi</i> , Crested Myna <i>Acridotheres cristatellus</i> , Budgerigar <i>Melopsittacus undulatus</i> and <i>Psittacula</i> sp.
Lhalu wetlands	29°41'N 91°07'E	3,650	Open grassland with patches of taller reeds, and small areas of marsh between heavily grazed areas. Some stream habitat.	Designated a provincial reserve in 1995, and a national nature reserve in 2005, Lhalu is the only remaining tract of native marshland in the immediate Lhasa area. It has dwindled in size from >10 km ² in the 1960s to c.6.2 km ² .
Drepung monastery	29°41'N 91°03'E	c.3,750	Shrubby hillsides, rocky canyons.	A monastery 8 km north-west of Lhasa.
Sera monastery	29°42'N 91°08'E	c.3,700	Shrubby hillsides, rocky canyons.	A monastery just north of Lhasa with active sky burials that attract many scavengers (but is off-limits to foreigners at such times).
Chubzang nunnery	29°43'N 91°08'E	c.3,800	Shrubby hillsides, rocky canyons.	A hillside nunnery c.3 km north of Sera.
Doiléndeqên (Tolung Dechen) county				
Tsurphu monastery	29°24'N 90°18'E	4,300	Shrubby hillsides, rocky canyons and streams.	Located c.70 km west of Lhasa, the surrounding hills hold similar species to other hillside monasteries.
Yangbajain (Yangpachen)	30°06'N 90°30'E	4,270	Arid grassland and pastures.	A small town on the Tolung river, c.85 km from Lhasa. The mountains to the north and west mark the boundary of the Lhasa river watershed and are the highest peaks in the region (>7,000 m).
Qüxü (Chushul) county				
Nyipu Shugseb nunnery	29°12'N 91°06'E	4,200	Shrubby hillsides, rocky canyons and streams.	A hillside nunnery supporting Giant Babax and Tibetan Eared Pheasant.
Dagzê (Taktse) county				
Ganden monastery	29°24'N 91°18'E	4,300	Sparsely vegetated hillsides and ridges.	One of the largest monasteries overlooking the Lhasa river, c.45 km north-east of Lhasa, this site offers a relatively easy access to alpine tundra-covered ridges.
Lhünzhub (Lhundrub) county				
Phenpo river valley	29°48'N 91°25'E– 30°00'N 90°58'E	c.3,750	Stony pastures, fields, extensive areas of short grass marsh, streams and two large reservoirs (Kazi and Hutou).	One of the major tributaries of the Lhasa river, this valley forms part of Yarlung Zangbo River Middle Reaches Black-necked Crane Reserve (Bishop and Tsamchu 2005) and supports a large population of wintering waterfowl, cranes, raptors, and shorebirds.
Hutou reservoir	29°54'N 90°54'E	c.3,750	Open water, muddy shores.	This reservoir holds a large diversity of wintering waterfowl and is an important roosting area for cranes.
Kazi reservoir	29°53'N 91°06'E	c.3,750	Open water, muddy shores.	Dabbling ducks and shorebirds seem to prefer the shallower waters and more gradually sloped shores of this site compared with Hutou.
Chak La pass	30°07'N 91°17'E	5,300	Rocky slopes, high sparsely vegetated ridges.	The highest pass on the road from Phenpo valley to Reting monastery.
Reting monastery	30°19'N 91°30'E	4,100	Mature juniper forests, shrubby hillsides.	Lying c.110 km north-east of Lhasa on the Razheng Zangbo (Reting Tsangpo), this site holds several forest species absent from the rest of the region.
Maizhokunggar (Meldro Gungkar) county				
Maizhokunggar (Meldro Gungkar)	29°48'N 91°56'E	c.3,750	Fields and pastures; riverine habitat.	Headquarters for Maizhokunggar county, 67 km north-east of Lhasa at the confluence of the Meldro Phu and Lhasa rivers. From Maizhokunggar south to the suspension bridge near Dagzê is part of the Yarlung Zangpo River Middle Reaches Black-necked Crane Reserve.

Site	Coordinates	Elevation (m)	Habitat	Notes
Dongbugong	29°30'N 90°40'E	3,750	Fields and pastures; riverine habitat.	A village located on the west side of the Lhasa river, near the town of Maizhokunggar.
Terdrom nunnery (Zhoto Tidro)	30°10'N 92°08'E	4,375	Rocky canyons and shrubby hillsides.	Located c. 160 km north-east of Lhasa, near the eastern edge of the watershed, Terdrom is situated at the confluence of two narrow canyons and is the site of hot springs which provide year-round open water.
Drigung Til monastery	30°06'N 92°12'E	4,280	Shrubby hillsides, high sparsely vegetated ridges.	Located c. 170 km north-east of Lhasa, this site has active sky burials and so supports notable numbers of raptors and scavengers.
Nagarzé (Nakartse) county				
Yamzho Yumco (Yamdruk Yutso) lake	29°00'N 90°40'E	4,400	Natural lake habitat, muddy shores.	This 754 km ² lake is one of the largest in southern Tibet. It is located c. 25 km south of the confluence of the Lhasa river and the Yarlung Zangbo. It is important for migrating and wintering waterfowl.

The major sites at which observations were made are described in Table 1. For this paper, we define winter as November–March. Records of birds occurring during this period that are believed to represent late or early migrants rather than wintering birds are noted as such.

RESULTS AND DISCUSSION

Our observations, in combination with previous records, show that at least 115 species occur in the Lhasa river watershed and adjacent Yamzho Yumco lake during the winter season. Of these, at least 88 species appear to occur regularly and 29 species are represented by only a few observations. Five additional species are included in the checklist but their status is uncertain or unconfirmed (see Appendix). We did not observe two species noted by Ludlow (1950) as common in Lhasa in the 1940s: Solitary Snipe *Gallinago solitaria* and Red-rumped Swallow *Hirundo daurica*, nor did we observe Northern Shoveler *Anas clypeata*, described by Ludlow (1950) as 'occur[ring] during the winter.' We did record 18 species previously not noted during winter: Common Shelduck *Tadorna tadorna*, Smew *Mergellus albellus*, Snow Pigeon *Columba leuconota*, Common Coot *Fulica atra*, Spotted Redshank *Tringa erythropus*, Wood Sandpiper *Tringa glareola*, Ruff *Philomachus pugnax*, Black-headed Gull *Larus ridibundus*, Little Grebe *Tachybaptus ruficollis*, Great Egret *Casmerodius albus*, Long-tailed Shrike *Lanius schach*, Grey-backed Shrike *Lanius tephronotus*, Kessler's Thrush *Turdus kessleri*, Common Stonechat *Saxicola torquata*, White-cheeked Starling *Sturnus cineraceus*, Coal Tit *Parus ater*, Eurasian Crag Martin *Hirundo rufestris* and Asian House Martin *Delichon dasypus*. We do not include in this list of new winter records species which are only represented by sightings that likely represent late autumn migrants or early spring migrants. There is still a great deal to be learned about the winter birds of the region, as evidenced by the number of apparently new records from the last 15 years. As more ornithologists and birders visit the region during the winter months new species will undoubtedly be added to this list and a number of species that have only been recorded once or twice may well be found to occur more regularly in the region.

During the past 15 years, the Chinese government has established two nature reserves aimed at benefiting birds in the Lhasa river watershed and Yamzho Yumco. In 1993, as a result of the joint China-USA winter crane surveys (Bishop *et al.* 1998, 2000, Bishop and Li 2002) and of local governmental interest, the 96.8 km² Phenpo Black-necked Crane Reserve was established by the Lhasa Municipal Government in Lhünzhub (Lhundrub) county. When it was created, the reserve was the first and only designated nature reserve for wintering Black-necked Cranes in Tibet. In 2003, the Tibet Autonomous Regional Government established the 6,143 km² Yarlung Zangbo River Middle Reaches Black-necked Crane Nature Reserve (Forestry Administration of Tibet Autonomous Region 2004). This expanded the area protected in the Phenpo river valley and included additional areas along the Lhasa river and around Yamzho Yumco. A second nature reserve, Lhalu Wetlands, is the only remaining tract of native marshland in the immediate Lhasa area. This was designated a provincial reserve in 1995, and since 2005 it has been listed as a national nature reserve.

Despite the designation of these two important nature reserves, habitat loss continues to be a problem throughout the region. Population growth and economic development, especially in and around the city of Lhasa and the major county towns of the watershed, has led to the loss of many natural wetlands and agricultural lands, which are critical wintering habitats for Bar-headed Geese, shorebirds and Black-necked Cranes. Tree planting, a government-sanctioned means of reclaiming wetlands, is also affecting smaller wetlands in the Phenpo river valley and surrounding valleys. Cultivated fields around populated areas are being rapidly converted for commercial uses, especially greenhouses, as well as for industrial and residential developments. Within the last 20 years, electricity transmission lines have proliferated throughout the watershed (Bishop and Tsamchu 2005), although their impacts on birds have yet to be determined. Climate change is also a cause for concern throughout the region as well as in the rest of the eastern Himalayas: as glaciers recede with warming temperatures, river regimes and vegetation composition will be altered.

Outbreaks of the avian influenza virus H5N1 pose a major conservation concern for waterbirds, especially for

Bar-headed Geese. In 2005, more than 5,000 Bar-headed Geese died during an outbreak in Qinghai province (Food and Agriculture Organization of the United Nations 2005). Live poultry operations, including ducks, geese and quail, have been linked to the recent rise in outbreaks of H5N1. Around Lhasa, confirmed outbreaks of H5N1 associated with poultry operations occurred in January 2004 (Food and Agriculture Organization of the United Nations 2004) and August 2005 (World Organisation for Animal Health 2005). More recently, in May 2006, an outbreak of H5N1 was confirmed in wild birds around Lhasa and north of the watershed around Nachu (World Organisation for Animal Health 2006). Bar-headed Geese are bred in captivity for commercial purposes, presumably for meat and eggs, and production facilities exist near Yamzho Yumco. In the Phenpo river valley, a domestic waterfowl production facility is located on the edge of a wetland used regularly by a variety of shorebirds, gulls, and waterfowl including Bar-headed Goose and Ruddy Shelduck. With >25% of Tibet's wintering Bar-headed Goose population residing in the Lhasa river watershed (Bishop *et al.* 1997), an outbreak of avian influenza in the wild waterfowl population could be disastrous.

Although the avifauna of the Lhasa river watershed and Yamzho Yumco has generally been understudied, our work confirms the region's ornithological importance. The growing human population's demand for natural resources, however, is contributing to a rapid habitat conversion and loss. Conservation education, especially around Lhasa and in areas such as the Phenpo valley, will be crucial to ensure that the Lhasa river watershed and Yamzho Yumco retain bird habitats that can sustain wintering bird populations.

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APPENDIX

Annotated Checklist

This list includes all the species that have been recorded in the Lhasa river watershed and at Yamzho Yumco during the winter season as defined in this paper (i.e., November–March). It is a compilation of our observations and those of others.

Species ¹	Abundance ²	Habitat	Notes
TIBETAN SNOWCOCK <i>Tetraogallus tibetanus</i>	F	On or near higher ridges	Largest flocks: a group of six and another of 11 at Ganden on 23 November 2003. Recorded from Tsurphu, Drepung, Ganden and Sera.
TIBETAN PARTRIDGE <i>Perdix hodgsoniae</i>	C	Brushy hillsides	Gregarious and fairly tame around monasteries.
TIBETAN EARED PHEASANT <i>Crossoptilon harmani</i> (NT)	U	Hillside shrub habitats	Largest flock: c.50 birds at Nyipu Shugseb on 25 December 2003. Occurs also at Reting.
BAR-HEADED GOOSE <i>Anser indicus</i>	C	Lhasa river and its larger tributaries; also Kazi and Hutou reservoirs. Feeds in agricultural fields.	Numbers appear to be increasing. Surveys in the early 1990s tallied c.3,000 wintering in the Lhasa watershed and <300 at Yamzho Yumco (Bishop <i>et al.</i> 1997). Surveys during 2000–2001 counted almost 6,000 in the Lhasa river watershed, including >3,500 in the Phenpo river valley (MAB unpublished data).
RUDDY SHELDUCK <i>Tadorna ferruginea</i>	C	As above	Highest concentrations occur along the Phenpo river valley (Bishop <i>et al.</i> 1997).
COMMON SHELDUCK <i>Tadorna tadorna</i>	R	Reservoirs, lakes, wetlands	Single birds were seen at Kazi reservoir in December 1991 and 19 November 2004, with three on 1 April 2005.
GADWALL <i>Anas strepera</i>	F	Reservoirs, lakes, wetlands; occasionally rivers	Most abundant in early winter; numbers appear to decline slightly after December. Uncommon away from Phenpo valley.
EURASIAN WIGEON <i>Anas penelope</i>	U	Wetlands and shallow edges to lakes and reservoirs	Largest flocks: 60 at Yamzho Yumco on 14 February 1993 and 21 on 21 January 1991. Highest count elsewhere was 10 at Kazi reservoir on 12 December 1999.
MALLARD <i>Anas platyrhynchos</i>	F	Wetlands, lakes and rivers	Largest flock: 400 at Kazi reservoir on 22 December 1991.
SPOT-BILLED DUCK <i>Anas poecilorhyncha</i>	F	Wetlands, lakes and rivers	Most observations were from Phenpo valley. Largest flock: 50 at Kazi reservoir on 22 December 1991.
NORTHERN SHOVELER <i>Anas clypeata</i>	*		Ludlow (1950) stated that Northern Shoveler was seen in winter, but gave no dates. We did not record it.
NORTHERN PINTAIL <i>Anas acuta</i>	F	Wetlands, lakes and rivers	Found throughout the watershed. Largest flocks: 150 at Kazi reservoir on 22 December 1992 and 128 at Yamzho Yumco on 19 January 1992.
COMMON TEAL <i>Anas crecca</i>	C	Reservoirs, lakes and wetlands	Most abundant in Phenpo valley; occasionally seen along the Lhasa river.
RED-CRESTED POCHARD <i>Rhodonessa rufina</i>	F	Lakes and reservoirs; occasionally Lhasa river	Largest flock: 1,370 birds at Yamzho Yumco on 19 December 1999. Typical flocks at Kazi and Hutou reservoirs numbered <50 birds.
COMMON POCHARD <i>Aythya ferina</i>	C	Lakes and reservoirs; rarely smaller wetlands	Largest flock: 794 birds at Yamzho Yumco on 19 January 1992; 11 were seen at a small wetland north of Lhasa in January 1992.
TUFTED DUCK <i>Aythya fuligula</i>	F	Lakes and reservoirs	Largest flock: 217 at Yamzho Yumco on 21 January 1991.
COMMON GOLDENEYE <i>Bucephala clangula</i>	U	Lakes and reservoirs	Small numbers occur on Kazi and Hutou reservoirs and Yamzho Yumco. Largest flock: 10 at Kazi on 12 December 1991.
SMEW <i>Mergellus albellus</i>	R	Lakes and reservoirs	Highest count: four at Yamzho Yumco on 19 January 1992; 1–2 birds at Kazi reservoir during December 1991 and 1999 and February 1993.
COMMON MERGANSER <i>Mergus merganser</i>	C	Lakes, reservoirs and larger rivers	Most abundant on the Lhasa river, occurring in flocks >20. Largest flock: 25 at Kazi reservoir on 12 December 1992.
COMMON HOOPOE <i>Upupa epops</i>	U	Fields, pastures and other open areas	Occurs in Lhasa in city parks and monastery grounds.
COMMON KINGFISHER <i>Alcedo atthis</i>	*	Streams and rivers	'In February 1943, a single bird belonging to this species took up its abode for a couple of days on a small stream flowing through the British Mission Garden, and then disappeared... Spencer Chapman saw this species in Lhasa in the winter of 1936–1937 and Richardson saw a bird there in March 1939 and also in November 1947' (Ludlow 1950). We did not record this species.
EURASIAN EAGLE OWL <i>Bubo bubo</i>	F	Rocky hillsides, wooded canyons, and groves	Seen during the day in the canyons behind Sera and Drepung several times in November 2004. One was found dead along Lhasa river south of Lhasa on 31 December 2002.

Species ¹	Abundance ²	Habitat	Notes
LITTLE OWL <i>Athene noctua</i>	F	Open and semi-open areas	Frequently seen perched on boulders, rock walls and power poles.
ROCK PIGEON <i>Columba livia</i>	C	Buildings in Lhasa	Uncertain when first introduced into Lhasa; Ludlow (1950) did not record this species.
HILL PIGEON <i>Columba rupestris</i>	C	Rocky hillsides, villages; feeds in agricultural fields	Usually in flocks of 20–30, occasionally more, e.g. c.600 in fields below Reting in March 1992.
SNOW PIGEON <i>Columba leuconota</i>	*	Higher-elevation rocky canyons	One winter report: a single bird in the canyon behind Terdrom on 20 November 2004, where the species apparently breeds (T. Tsering verbally 2004).
ORIENTAL TURTLE DOVE <i>Streptopelia orientalis</i>	F	Wooded areas	Largest flock: >100 present at Norbulingka throughout the winters of 2003–2004 and 2004–2005.
COMMON CRANE <i>Grus grus</i>	R	River plains, fields, reservoirs	Seen annually in very small numbers; 2–6 birds roosted with Black-necked Cranes in Phenpo valley during the winters of 2003–2004 and 2004–2005.
BLACK-NECKED CRANE <i>Grus nigricollis</i> (VU)	C	Roost along shallows of rivers, lakes and reservoirs. Feed heavily on waste grain in fields.	Usually present from the end of October to April. Over 50% of the world population winters in Tibet (MAB unpublished data, Li and Yang 2005). More than 500 normally winter in Phenpo valley (Bishop and Tsamchu 2005). Elsewhere, cranes are found north of Lhasa, from near Ganden to the new dam at Zekong (west of Maizhokunggar county seat), and south of Lhasa along the Tolung river, and more frequently along the Lhasa river in Qixu county, especially near Nyetang Dolma Lhakhang, and near the confluence of the Lhasa and Yarlung Zangbo rivers (Bishop <i>et al.</i> 1998, 2000).
COMMON COOT <i>Fulica atra</i>	F	Lakes and reservoirs	Fairly common only at Yamzho Yumco, elsewhere uncommon to rare. Largest group: 442 at Yamzho Yumco on 19 January 1992. Elsewhere, c.20 were recorded at Kazi reservoir on 19 November 2004. Not recorded by Ludlow.
SOLITARY SNIPE <i>Gallinago solitaria</i>	*		Although Ludlow (1950) observed this species to be 'common in autumn and winter', we have not recorded it.
[PINTAIL SNIPE <i>Gallinago stenura</i>]	*		On 13 January 2004, two snipe observed near Hutou reservoir were identified as Pintail Snipe based on pale fringes on both the outer and inner edges of the scapulars. In flight, the underwing was uniformly grey, lacking white bars in the underwing-coverts, and there was no white trailing edge to the secondaries. While these marks eliminate Common Snipe <i>G. gallinago</i> , Swinhoe's Snipe <i>G. megala</i> cannot be ruled out. Ludlow (1950) recorded Pintail Snipe during autumn migration.
COMMON SNIPE <i>Gallinago gallinago</i>	U	Wetlands, edges of smaller streams	3–5 were seen daily at Lhalu Wetlands during winters of 2003–2004 and 2004–2005. Regularly encountered in Phenpo valley.
SPOTTED REDSHANK <i>Tringa erythropus</i>	*		Observed once: a single bird at Kazi reservoir on 19 November 2004.
COMMON REDSHANK <i>Tringa totanus</i>	R	Wetlands, edges of lakes and reservoirs	Most observations were from Phenpo valley. Usually 1–3 birds were seen at Kazi reservoir.
COMMON GREENSHANK <i>Tringa nebularia</i>	R	Wetlands, edges of lakes and reservoirs; also rivers	Slightly more numerous than Common Redshank.
GREEN SANDPIPER <i>Tringa ochropus</i>	F	Wetlands, edges of lakes, reservoirs and rivers	Usually found singly, but widespread, being the most common <i>Tringa</i> .
WOOD SANDPIPER <i>Tringa glareola</i>	*		Observed twice: one at Lhalu Wetlands on 4 January 2004 and one near Kazi reservoir on 17 December 2004.
COMMON SANDPIPER <i>Actitis hypoleucos</i>	F	Shallows of rivers and streams	Usually seen singly or in small groups.
RUFF <i>Philomachus pugnax</i>	*		Observed once: a single male near Kazi reservoir on 17 December 2004.
IBISBILL <i>Ibidorhyncha struthersii</i>	U	Lhasa river and tributaries	Usually found singly or small groups. Largest flock: nine along the Lhasa river, near the confluence with the Phenpo river on 6 December 2003.
NORTHERN LAPWING <i>Vanellus vanellus</i>	U	Wetlands, edges of lakes and reservoirs	Largest flock: 21 at Lhalu Wetlands on 6 March 1992.
PALLAS'S GULL <i>Larus ichthyætos</i>	C	Rivers, lakes and reservoirs	Most common gull species, often in flocks of 20–30 birds.
BROWN-HEADED GULL <i>Larus brunnicephalus</i>	F	Rivers, lakes, reservoirs, and smaller ponds	Frequently seen in pools in Lhasa's city parks. Occurs in shallow ponds and wetlands more frequently than Pallas's Gull.
BLACK-HEADED GULL <i>Larus ridibundus</i>	*		Observed once: one along the Lhasa river, near Lhasa, on 6 December 2003.
BLACK KITE <i>Milvus migrans</i>	U	Wetlands and agricultural fields	Ludlow (1950) observed that this species 'leaves Lhasa early in October and returns towards the end of February.' A few, however, do remain through the winter. Largest flock: four birds at Lhalu Wetlands on 4 January 2004.

Species ¹	Abundance ²	Habitat	Notes
BRAHMINY KITE <i>Haliastur indus</i>	*		Ludlow (1950) reported one recorded by Sherriff in March 1945. We did not record this species.
WHITE-TAILED EAGLE <i>Haliaeetus albicilla</i>	U	Along major rivers, lakes, reservoirs	Usually found singly, the highest count was of four birds along the Lhasa river on 22 December 1991.
LAMMERGEIER <i>Gypaetus barbatus</i>	U	High ridges, especially near sky burial sites	Highest concentrations occur in the northern and eastern part of the watershed, at Drigung Til, Reting, and Terdrom. The highest count was 12–15 at Drigung Til during a sky burial on 22 November 2004.
HIMALAYAN GRIFFON <i>Gyps himalayensis</i>	C	High ridges	Gregarious. Highest count was >200 at Drigung Til on 22 November 2004 during a sky burial.
CINEREOUS VULTURE <i>Aegypius monachus</i> (NT)	*		Two birds near Lhasa on 4 March 1986 and another near Lhasa on 5 March 1986 (Robson 1986). One along the Lhasa river in December 1990 and one at Reting on 19 November 2004.
HEN HARRIER <i>Circus cyaneus</i>	F	Fields, wetlands, open areas	Often seen in groups of 2–4.
EURASIAN SPARROWHAWK <i>Accipiter nisus</i>	U	Wooded areas	Observed near Kazi reservoir, Nyipu Shugseb, and several wooded areas along the Lhasa river.
NORTHERN GOSHAWK <i>Accipiter gentilis</i>	*		One was observed at Dongbugong in December 1990. Ludlow (1950) mentioned that Richardson recorded it from the region, but gave no date.
COMMON BUZZARD <i>Buteo buteo</i>	C	Fields, wetlands, open areas	Light morphs appear to be commoner than dark morphs.
LONG-LEGGED BUZZARD <i>Buteo rufinus</i>	R	Fields, open areas	Largest group: three in a field near Lhasa on 6 December 2003.
UPLAND BUZZARD <i>Buteo hemilasius</i>	R	Fields, open areas	Observed in Phenpo valley, Dongbugong, Lhalu Wetlands, and several fields along the Lhasa river.
STEPPE EAGLE <i>Aquila nipalensis</i>	R	Higher ridges and passes	Robson (1986) observed 'at least 25 in the Lhasa area on 4–5 March 1986.' We recorded four at Ganden on 14 November 2004 and a single bird at Reting on 19 November 2004. Our only mid-winter observation was of a single bird near Dongbugong in December 1990.
GOLDEN EAGLE <i>Aquila chrysaetos</i>	U	High ridges and passes	This species regularly joins groups of soaring Himalayan Griffons. The mountains behind Sera and Drepung hold a few individuals throughout the winter.
COMMON KESTREL <i>Falco tinnunculus</i>	C	Fields, wetlands, also higher elevations	Hunts in open areas, but occurs in most habitats throughout the region.
SAKER FALCON <i>Falco cherrug</i> (EN)	R	High ridges and passes; occasionally lower valleys	Ludlow (1950) reported this species in winter from the Lhasa region. We recorded one at Dongbugong in December 1990, one in Phenpo valley in January 1991, and two near Kazi reservoir on 9 December 2003.
LITTLE GREBE <i>Tachybaptus ruficollis</i>	*		Two were observed: one at Kazi reservoir on 11 December 2003 and one at Yamzho Yumco on 20 January 1992.
GREAT CRESTED GREBE <i>Podiceps cristatus</i>	F	Lakes, reservoirs, occasionally rivers	Kazi and Hutou reservoirs usually attract 5–10 birds each. Largest flock: 24 at Yamzho Yumco on 19 January 1992. Occasionally seen singly on the Lhasa river.
GREAT CORMORANT <i>Phalacrocorax carbo</i>	F	Large rivers, lakes and reservoirs	Most common on the Lhasa river, with a maximum of 14 on 21 December 1999. Usually 1–2 present at Kazi and Hutou reservoirs.
GREY HERON <i>Ardea cinerea</i>	R	Wetlands, edges of lakes and rivers	Single birds were observed at Hutou reservoir on 21 December 1991, Phenpo valley in December–January 2001 and 26 November 2003, Kazi reservoir on 19 December 2003, and on the Lhasa river near Dongbugong in March 1991.
GREAT EGRET <i>Casmerodius albus</i>	*		Singles were seen on two dates in December 1993, once near Lhunzhub County Town and several days later on the Lhasa river a few kilometres south of Ganden, possibly involving the same bird. One was at Kazi reservoir on 19 November 2004.
LONG-TAILED SHRIKE <i>Lanius schach</i>	*		One was seen at Dongbugong in December 1990 and another was seen in Lhasa in January 1991.
GREY-BACKED SHRIKE <i>Lanius tephronotus</i>	*		A common breeder in the area, usually departing by the end of October. One winter observation: two birds along the Lhasa river 5 km east of Lhasa on 15 December 1991.
BLACK-BILLED MAGPIE <i>Pica pica</i>	C	Wooded and scrub areas, especially near villages and monasteries	Occasionally seen in large numbers, e.g. >100 in juniper forest at Reting.
HUME'S GROUNDPECKER <i>Pseudopodoces humilis</i>	F	Open areas, stony fields, pastures, and arid hillsides	Typically seen in groups of 10–15. Often seen around villages and houses in Phenpo valley.
RED-BILLED CHOUGH <i>Pyrrhocorax pyrrhocorax</i>	C	Rocky hillsides, cliffs, especially near monasteries and villages	Gregarious; occasionally seen feeding on waste barley in flocks of >100 birds.

Species ¹	Abundance ²	Habitat	Notes
YELLOW-BILLED CHOUGH <i>Pyrhocorax graculus</i>	U	Similar to Red-billed Chough, but prefers higher elevations	Only observed at Terdrom, Drigung Til and Tsurphu, where it occurs with, but is outnumbered by, Red-billed Chough.
COMMON RAVEN <i>Corvus corax</i>	F	Fields, pastures, villages, hillsides	Usually occurring singly or in small groups, but larger numbers occur at Drigung Til (e.g. 30 on 9 March 1992), Sera and other sky burial sites.
WHITE-THROATED DIPPER <i>Cinclus cinclus</i>	F	Shallow, fast moving streams	Occasionally seen in shallow braids of the Lhasa river, but much more common on smaller tributaries.
[BROWN DIPPER <i>Cinclus pallasi</i>]	?	Shallow, fast moving streams	Noted as uncommon from the region by several observers, but most (possibly all) observations may actually refer to dark-throated form of White-throated Dipper.
BLUE ROCK THRUSH <i>Monticola solitarius</i>	*		One observation: a male above Drepung monastery on 7 March 1986 (Robson 1986).
EURASIAN BLACKBIRD <i>Turdus merula</i>	U	Shrub-covered ridges, juniper stands	Locally common at Reting, uncommon elsewhere. Largest flocks: >200 feeding in the juniper trees at Reting on 14 January and 19 November 2004; 150–200 on shrub-covered ridge above Tsurphu on 12 December 2004. Observed in groups of <20 at Drepung, Nyipu Shugseb, Terdrom, and Norbulingka.
KESSLER'S THRUSH <i>Turdus kessleri</i>	*		One observation: one was seen feeding with a large flock of Eurasian Blackbirds at Reting on 19–20 November 2004.
DARK-THROATED THRUSH <i>Turdus ruficollis</i>	U	Wooded areas	Largest flock: 50 at Norbulingka on 12 November 2004. Most individuals were of the 'red-throated' <i>ruficollis</i> race, but a few 'black-throated' <i>atrogularis</i> were regularly encountered during the winters of 2003–2004 and 2004–2005. Only observed at Norbulingka and Reting where it associated with the large Eurasian Blackbird flocks.
WHITE-THROATED REDSTART <i>Phoenicurus schisticeps</i>	U	Shrubby hillsides, usually higher than White-winged Redstart	Usually seen singly or in pairs; however, on 5 February 1992, at least 30 were seen with an equal number of White-winged Redstarts <i>Phoenicurus erythrogaster</i> feeding together above Chubzang.
WHITE-WINGED REDSTART <i>Phoenicurus erythrogaster</i>	C	Shrubby hillsides, wooded areas, thickets, parks	Observed at Norbulingka, Sera, Drepung and throughout the agricultural areas, especially near trees. Frequently seen around villages and houses, perching regularly on buildings.
COMMON STONECHAT <i>Saxicola torquata</i>	*		Two observations: a single male at Lhalu Wetlands on 3 January 2004, and two males on 13 November 2004. All three individuals were separated from Hodgson's Bushchat (<i>Saxicola insignis</i>) by their dark chin and throat.
DESERT WHEATEAR <i>Oenanthe deserti</i>	*		One near Lhasa on 4 March 1986 (Robson 1986) was likely an early migrant.
WHITE-CHEEKED STARLING <i>Sturnus cineraceus</i>	*		Two were seen feeding in a muddy field adjacent to Kazi reservoir on 13 January 2004.
WALLCREEPER <i>Tichodroma muraria</i>	F	Rocky slopes, cliffs, also stony river banks	Found singly or in pairs at Nyipu Shugsheb, Phenpo valley, and along Lhasa river. Occasionally seen on buildings in Lhasa.
WINTER WREN <i>Troglodytes troglodytes</i>	C	Along streams, ravines, wooded areas	Observed at many sites. Occasionally heard singing, throughout the winter.
COAL TIT <i>Parus ater</i>	*		A flock of 2–3 were seen several times in mature conifers at Norbulingka in November and December 2003. Despite multiple visits to this site the following winter, the species was not seen again.
GREAT TIT <i>Parus major</i>	C	Parks, gardens, wooded areas	Usually seen in small groups; often very vocal.
PALE MARTIN <i>Riparia diluta</i>	*		Common summer breeder, but the only winter observation, likely representing a late migrant, was of a single bird seen in Lhasa along the Lhasa river on 12 November 1989.
EURASIAN CRAG MARTIN <i>Hirundo rupestris</i>	*		Lingers longer in autumn and returns earlier in spring than other swallows. The latest autumn observation was of at least six birds at the Potala, Lhasa, on 11 November 2004 (B. Dittrick and L. Moorhead verbally 2004); the earliest observed spring arrival was on 7 March 1992. The only mid-winter record was one seen at Lhalu wetlands on 4 and 10 January 2004.
RED-RUMPED SWALLOW <i>Hirundo daurica</i>	*		Ludlow (1950) found this species to be common in summer and noted a record by Richardson as late as 23 November. However, we had no records at any season.
ASIAN HOUSE MARTIN <i>Delichon dasypus</i>	*		This species nests in the region, with fall migrants departing by mid-October. One winter observation: a single bird flying over the Lhasa river in Lhasa on 8 December 1991.
WHITE-BROWED TIT WARBLER <i>Leptopoeile sophiae</i>	U	Shrubby areas, especially hillsides	Found in pairs or small groups. Even in January and February they occur to at least 4,300 m, e.g. on ridges above Ganden, Drepung and Terdrom.

Species ¹	Abundance ²	Habitat	Notes
BROWN-CHEEKED LAUGHINGTHRUSH <i>Garrulax henrici</i>	C	Shrubby hillsides and canyons	Easily observed at Drepung, Sera, Tsurphu, Reting, Nyipu Shugseb, and Terdrom.
GIANT BABAX <i>Babax waddelli</i> (NT)	R	Edge of wooded and scrub areas	Endemic to southern Tibet (Lu 2004). Rare throughout the region, but locally common and conspicuous at Reting and Nyipu Shugseb. Usually found in groups of 4–10 birds, often noisy, but skulking.
ORIENTAL SKYLARK <i>Alauda gulgula</i>	A	Fields, pastures, open areas	Frequently seen in flocks of >50 birds.
HORNED LARK <i>Eremophila alpestris</i>	F	Fields, pastures, open areas, higher ridges	Frequently mixes with Oriental Skylark, but often found at higher elevations.
EURASIAN TREE SPARROW <i>Passer montanus</i>	A	Villages and cities, woodlands, shrubby areas	Especially common around human settlements.
[WHITE-WINGED SNOWFINCH <i>Montifringilla nivalis</i>]	R	High-altitude rocky slopes; frequently near snow	On 16 October 2004, we observed a flock of 50 at 5,200–5,300 m at the extreme north-west corner of the watershed, west of Yangbajain. While this was just before the winter season, this species likely occurs in winter also.
TIBETAN SNOWFINCH <i>Montifringilla adamsi</i>	F	Ridges and high passes; occasionally in valleys	More likely to be encountered at lower elevations in fields and pastures than other snowfinches. Observed at Ganden, Drigung Til, Chak La Pass, Phenpo valley and along the Lhasa river.
WHITE-RUMPED SNOWFINCH <i>Pyrgilauda taczanowskii</i>	U	Ridges and high passes, especially in north-west	Only observed in the extreme north-west of the watershed, including several flocks of 15–20 individuals mixed with similar numbers of Rufous-necked Snowfinch <i>Pyrgilauda ruficollis</i> c. 10 km south of Yangbajain near the Tolung Chu river in late October. Both species likely occur in this area throughout the winter. Vaurie (1972) mentions records of both species from Yamzho Yumco on 14 November but does not give the year.
RUFIOUS-NECKED SNOWFINCH <i>Pyrgilauda ruficollis</i>	U	Ridges and high passes, especially in northwest	See preceding species.
WHITE WAGTAIL <i>Motacilla alba</i>	C	Open areas, especially stream and river banks	<i>M. a. alboides</i> is the regular wintering subspecies in Lhasa, usually occurring in pairs or small groups, with a maximum of c. 50 along the Lhasa river near Dagzê on 25 December 2003. Walton obtained two specimens of <i>M. a. leucopsis</i> in September (Ludlow 1950), and Ludlow noted this race passing through the Gyantse area to the west in September and October 1928. A few <i>M. a. leucopsis</i> apparently linger into winter: we observed a pair in Lhasa on 18 November 2004.
CITRINE WAGTAIL <i>Motacilla citreola</i>	*		One was observed once at Lhalu Wetlands on 13 November 2004. Birds pass through in small numbers in September and October, and this record probably represents a late migrant.
GREY WAGTAIL <i>Motacilla cinerea</i>	*		Observed once: a single bird in Lhasa along the Lhasa river on 18 November 2004.
OLIVE-BACKED PIPIT <i>Anthus hodgsoni</i>	*		An uncommon autumn migrant throughout the region. Ludlow (1950) obtained a specimen in September. On 12 November 2004, at least four were present at the Norbulingka, probably representing late migrants.
ROSY PIPIT <i>Anthus roseatus</i>	R	Fields, grassy areas	During the winter of 2003–2004, we regularly observed up to ten at Lhalu Wetlands. The species was not recorded elsewhere, but probably occurs in similar habitat in Phenpo valley.
ALPINE ACCENTOR <i>Prunella collaris</i>	U	Low scrub on ridges, usually above 4,100 m	Typically occurs in flocks of 6–12. Recorded from Terdrom, Ganden and Drigung Til.
ROBIN ACCENTOR <i>Prunella rubeculoides</i>	C	Wooded and shrubby areas	Occurs in a wide variety of habitats and locations, and frequently mixes with other <i>Prunella</i> spp.
RUFIOUS-BREASTED ACCENTOR <i>Prunella strophiatea</i>	U	Wooded and shrubby areas	Usually occurs in groups of 1–4 mixed with other <i>Prunella</i> spp. Observed at Drepung, Drigung Til and Norbulingka.
BROWN ACCENTOR <i>Prunella fulvescens</i>	A	Wooded and shrubby areas	The most common accentor in the watershed. Found in a variety of habitats and locations, usually in flocks of 5–15 birds.
TWITE <i>Carduelis flavirostris</i>	F	Fields, edges of wooded and shrubby areas	Usually found in flocks of 10–25 birds, occasionally up to several hundred birds.
[BRANDT'S MOUNTAIN FINCH <i>Leucosticte brandti</i>]	R		A flock of >100 was seen feeding in a shrubby canyon west of Yangbajain on 16 October 2004. While this observation is just before the winter season, the species likely occurs during winter.
COMMON ROSEFINCH <i>Carpodacus erythrinus</i>	*		The only winter observation was of a pair in the hills near Lhasa on 7 March 1992. As this species is an uncommon to rare summer visitor, the record likely represents an early returning migrant.
BEAUTIFUL ROSEFINCH <i>Carpodacus pulcherrimus</i>	F	Shrubby hillsides	Usually found singly or in pairs, occasionally in Lhasa's parks and neighbourhoods.

Species ¹	Abundance ²	Habitat	Notes
WHITE-BROWED ROSEFINCH <i>Carpodacus thura</i>	U	Wooded and shrubby hillsides	Usually found at higher altitudes than other rosefinches. Ludlow (1950) recorded it only on hillsides. Two subspecies occur, with both seen on one occasion at Terdrom. Most sightings (where subspecies was noted) were of the nominate race <i>thura</i> . However, a pair showing the characteristics of <i>feminius</i> was seen at Reting on 19 November 2004. Two days later a female <i>feminius</i> was seen at Terdrom, where in January 2004 we recorded nominate <i>thura</i> . Both records of <i>feminius</i> were identified on the basis of the females lacking a warm buffy-brown wash on the breast (Rasmussen 2005). Rasmussen and Anderton (2005) suggested that Chinese White-browed Rosefinch <i>C. dubius</i> (including <i>feminius</i>) warrants specific status.
GREAT ROSEFINCH <i>Carpodacus rubicilla</i>	C	Parks, wooded areas, villages	Very vocal and conspicuous. Common in Lhasa city.
[BROWN BULLFINCH <i>Pyrrhula nipalensis</i>]	*		Observed once: a single bird at Norbulingka on 12 November 2004, possibly an escaped cagebird.
WHITE-WINGED GROSBEAK <i>Mycerobas carnipes</i>	U	Wooded hillsides, especially juniper	Only recorded from Nyipu Shugseb and Reting. Largest flock: eight at Reting on 9 March 1992.
GODLEWSKI'S BUNTING <i>Emberiza godlewskii</i>	F	Rocky hillsides and canyons	Usually seen in small flocks. Largest flock: >20 along the Lhasa river on 15 December 1991.

Key

- ¹ Square brackets indicate that the occurrence of a species in the region in winter is unconfirmed. Acronyms within parentheses denote IUCN Red List category following BirdLife International (2001): EN = Endangered, VU = Vulnerable, NT = Near Threatened.
- ² A = Abundant: the species occurs regularly in apparently suitable habitat, and/or the region regularly hosts very large numbers.
 C = Common: the species occurs regularly in nearly all apparently suitable habitat, but some areas are occupied sparsely or not at all, and/or the region regularly hosts large numbers.
 F = Fairly common: the species occurs regularly in only some of the apparently suitable habitat, and large areas are occupied sparsely or not at all, and/or the region regularly hosts moderate numbers.
 U = Uncommon: the species occurs regularly, but in very little of the apparently suitable habitat, and/or the region regularly hosts small numbers of the species.
 R = Rare: the species occurs, or probably occurs, regularly within the region, but in very small numbers.
 * = The species has been observed in the Lhasa river watershed too few times to assess abundance accurately; occurrences are listed in the notes column.