

- Melville, D. S. (1984) Seabirds of China and the surrounding seas. Pp. 501–511 in J. P. Croxall, P. G. H. Evans and R. W. Schreiber, eds. *Status and conservation of the world's seabirds*. Cambridge, U. K.: ICBP Techn. Publ. no. 2.
- Meyer de Schauensee, R. (1984) *The birds of China*. Oxford: Oxford University Press.
- Nisbet, I. C. T. and Drury Jr., W. H. (1968) Short term effects of weather on bird migration: a field study using multivariate statistics. *Animal Behaviour* 16: 496–526.
- Parish, D. (1985) Southeast Asia. *World Birdwatch* 7(3): 8–9.
- Sonobe, K. (1982) *A field guide to the birds of Japan*. Tokyo: Wild Bird Society of Japan.
- Styan, F. W. (1891) On the birds of the lower Yangtze basin—part II. *Ibis* (6)3: 481–510.
- Tugarinov, A. J. (1931) Die Wanderungen der nordasiatischen Vögel. *Vogelzug* 2: 55–56.
- Vermeer, E. B. (1984) Agriculture in China—a deteriorating situation. *Ecologist* 14(1): 6–13.
- Wilder, G. D. (1924) Migration notes. *China J. Sci. Arts* 2: 61–63.
- Wilder, G. D. (1940) Migration notes. *China J.* 32: 199–204.
- Wilder, G. D. and Hubbard, H. W. (1924) List of the birds of Chihli province. *J. North China Branch Royal Asiatic Soc.* 55: 156–239.
- Williams, M. D., ed. (1986) *Report on the Cambridge Ornithological Expedition to China 1985*. Unpublished.
- Zhang, Y. S., Zhao, T. A. and Wang, S. J. (1985) Bird of prey migration in the Tangshan district. *Chinese J. Zool.* 20(1): 17–21 (in Chinese).
- Zheng, Z. (1976) *A distributional list of Chinese birds*. Beijing: Beijing Institute of Zoology. (In Chinese).

Martin Williams, 398 Scalby Road, Scarborough, North Yorkshire.

David Bakewell, Gringle Cottage, Snow Street, Roydon, Diss, Norfolk.

Geoffrey Carey, 60 Sherborne Avenue, Ipswich, Suffolk.

Stephen Holloway, 4 Woolhams, Tupwood Lane, Caterham, Surrey.

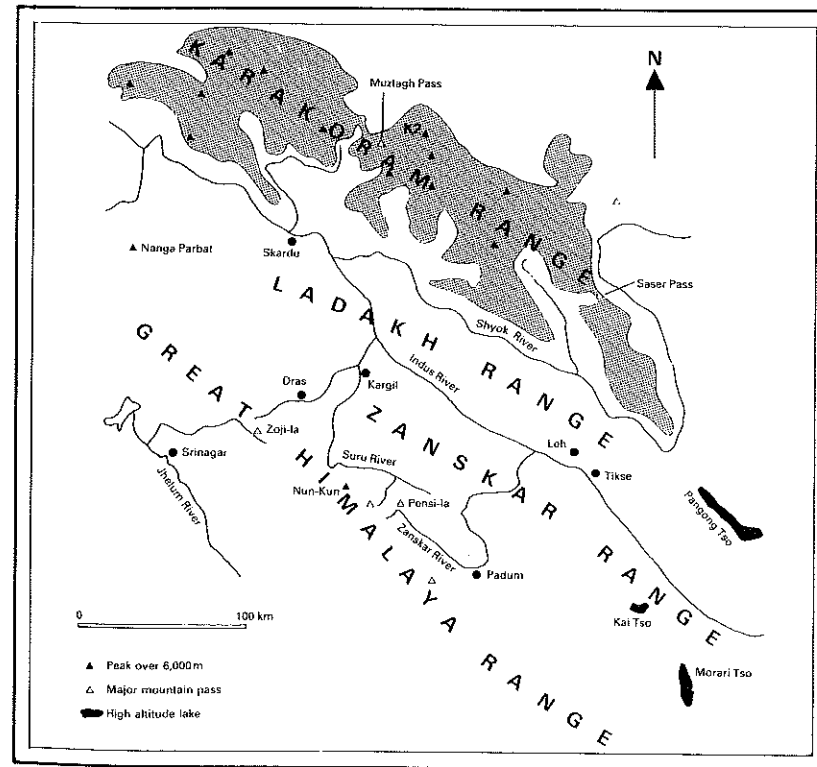
## The avifauna of the Suru River Valley, Ladakh

P. R. HOLMES

This paper presents a compilation of all bird records from the Suru Valley, Ladakh. The list of 128 species is likely to be extended by further work. The avifauna is found to be generally similar to that of the Upper Indus Valley around Tikse, approximately 100–140 km to the east, which has been intensively studied in recent years. Possible migration routes of some species, in particular Inornate (Yellow-browed) Warbler *Phylloscopus inornatus*, are discussed.

During the second half of the last century and the first part of this century, a great deal of interest was expressed in the ornithology of Ladakh, in the north-western Himalayas (Figure 1). This was largely because Ladakh was

Figure 1. Sketch map of Ladakh showing the main rivers and mountain ranges. The stippled area is the dominant mountain range, the Karakoram.



the first part of the Tibetan Plateau to be opened to outsiders. Several bird collecting expeditions were mounted. Most interest centred on the Indus Valley, but a few parties also explored side valleys, including the Suru Valley (Table 1). Several of the other Ladakh expeditions passed through Kargil in the Suru Valley on the way to Leh on the Indus (Table 2). The list in Table 2

Table 1. Expeditions that have visited the Suru Valley

F. Stoliczka	1868	Summer? – Kargil to Panikhar?	von Pelzeln (1868) Stoliczka (1868)
F. Ludlow	1919	April – Kargil July – Wakka Nullah to Rangdum Gompa	Ludlow (1920)
B. B. Osmaston	1925	July – Sanku to Zuildo	Osmaston (1926)
B. B. Osmaston and H. Whistler	1928	June – Kargil 26 June to 16 July – Rangdum to Kargil	Osmaston (1930)
W. Koelz	1931 1933	September – Rangdum July – Rangdum to Kargil	Koelz (1939)
Southampton University	1977	July – Kargil to Zuildo	Williams and Delaney (1980)
P. R. Holmes	1978	End August to early September – Rangdum and below Kun	Holmes (1978)
Southampton University	1980	July to early August – Kargil to Rangdum area	Delaney <i>et al.</i> (1982)
R. P. Martins and C. R. Robson Oxford University	1982 1983	July – Kargil, Sanku and Rangdum area August and September – Kargil to Rangdum	Unpublished Holmes <i>et al.</i> (1983)
P. M. Cocker	1984	end August to early September – Kargil and Zuildo	Unpublished

Table 2. Expeditions that have passed through Kargil or Kargil to the Wakka Nullah only.

G. Henderson (First Yarkand Mission) – end June/early July 1870 (Henderson and Hume 1873)	
J. Biddulph and F. Stoliczka (Second Yarkand Mission) – end August/early September 1873 (Sharpe 1891)	
W. L. Abbott – June 1893 (only?) (Richmond 1896)	
C. H. Crump (collector for A. E. Ward)* – May, June and September 1906 (only?) (Ward 1908)	
M. L. Wathen – July 1922 (Wathen 1923)	
B. B. Osmaston – May 1923 (Osmaston 1925)	
R. Meinertzhagen and V. S. LaPersonne – April 1925 (Meinertzhagen 1927)	
J. A. Sillem – May 1929 (Sillem 1931)	
*Crump's itinerary is unclear. He may also have passed through Kargil and the Suru Valley in previous years for the compilation in Ward (1906 – 1907), as may Ward himself.	

is probably not complete. The two earliest works quoted (Henderson and Hume 1873, Sharpe 1891) have not been examined; records of surviving specimens will be in Vaurie (1972). Vaurie also lists specimens from unpublished work, some of which (e.g. explorations by F. Ludlow) is likely to have involved the Suru Valley.

The reports of these expeditions generally dealt with birds collected rather than field observations. Vaurie (1972) describes in detail the ornithological exploration of Ladakh and lists all records of birds collected that are now in museum collections. However in many cases the specimens associated with published records have been lost. Vaurie also includes some otherwise unpublished records.

After the explorations of W. Koelz in the early 1930s interest in the region waned, and no ornithologists published records for the Suru Valley until the late 1970s when, after the opening of the road along the valley, several British university expeditions went there (Table 1). The expeditions from Oxford University were the first to adopt a widespread use of mist-nets in the Suru Valley.

The Suru Valley is interesting for two main reasons; it has until recently been little explored ornithologically, and its north-south orientation might be expected to concentrate trans-Himalayan migrants.

This compilation of the birds of the Suru Valley has been prepared for several reasons. It examines the numbers of trans-Himalayan migrants observed in the Suru Valley. It is also intended as an aid to visiting ornithologists; the opening of the road has already resulted in a large influx of tourists in the summer months, which is likely to increase in the coming years, so the area is now accessible to ornithologists. Finally it is intended as a record of the avifauna before human pressure increases. A comparison is made with the avifauna of the Tikse area in the nearby Indus Valley, which has been intensively studied in recent years (Williams and Delaney 1985, 1986).

## STUDY AREA

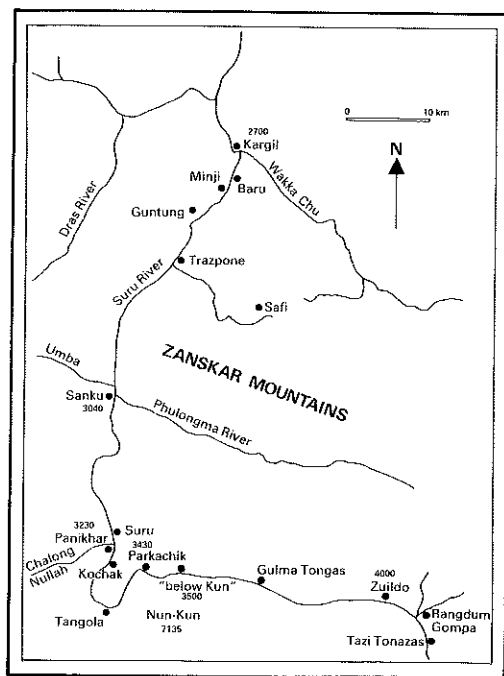
A map of the Suru River Valley is given in Figure 2. Detailed maps of the area are difficult to obtain, although the area is covered by the U. S. Aerial Survey (series U502, sheet NI 43-7, edition 2-AMS). The Suru River is formed from the confluence of several streams in the Rangdum plain (c.34°03'N 76°22'W) at 4,000m. It flows west for about 40km, and then turns sharply north for about 70km before joining the Dras River north of Kargil (c.34°36'N 76°07'E) at 2,600m. The valley floor may be roughly divided into four ecological areas (Williams and Delaney 1979). From Kargil to Parkachik the valley is mostly utilised for agriculture. Between Parkachik and Gulma Tongas the valley sides are much steeper, with the only vegetation being occasional patches of willow scrub growing out of the scree.

From Gulma Tongas to Zuildo the valley opens out into a wide, marshy area, which as one moves towards Rangdum and the source of the Suru, gives way to a flat, stony desert. On both sides the valley is bordered by high peaks, the highest being the Nun-Kun massif near Parkachik (7,135 m).

A major problem with compiling records for the Suru Valley is the frequent alteration of the names of settlements, in part due to variation in the romanisation of names. An example is present-day Parkachik, which was called Parkachen by Koelz (1939) and on the aerial survey map is split (perhaps correctly) into two villages called Parkaryan and Parkutse. The village of Panikhar, visited by most ornithologists, has its place taken on the map by a village called Suru, whereas the village known to ornithologists as Suru (or Namsuru) is recorded as Nanshor. Vaurie (1972) incorrectly makes Karpokhar (near Sanku) the same as Panikhar. Smaller villages are not necessarily permanent, and some (e.g. Gulma Tongas) have been abandoned. The names used on Figure 2 are not guaranteed as correct.

Most sites visited have been the major settlements – Kargil, Sanku, Panikhar, Parkachik, Zuildo, etc. One site, studied by Holmes (1978) and Holmes *et al.* (1983) was not in an inhabited area and is just referred to as 'below Kun' (see Figure 2). Many records for the eastern end of the valley (Zuildo, Rangdum, Tazi Tonazas) have just been recorded as 'Rangdum';

Figure 2. The Suru River Valley. Heights of the main study sites are given in metres.



thus for some of the older records 'Rangdum' is best interpreted as the Rangdum area.

## SYSTEMATIC LIST

The systematic list follows the order of species in Vaurie (1965) for easy comparison with Vaurie (1972). For each species, records are given starting from Kargil and moving upstream towards Rangdum. Where a species has been recorded by several observers in both the 1920s/1930s and recently, the sources and years are omitted. Vaurie (1972) does not give the year for any records.

The records presented here are for the main Suru Valley, with one or two records of species recorded a short way up side valleys. Species recorded along tributaries well away from the main valley are excluded, for example records of Western Crowned Warbler *Phylloscopus occipitalis* (Ludlow 1920) and Red-rumped Swallow *Hirundo daurica* (Williams and Delaney 1979) along the Wakka Nullah.

The following status codes are used: B = Breeding confirmed, PB = Probably breeding, M = Migrant, PM = Probable migrant, WV = Winter visitor, V = Presumed vagrant, ? = Status uncertain. For many species listed as PB breeding has probably been recorded, but this has not been published.

**BAR-HEADED GOOSE** *Anser indicus* (?) Parties of eight and ten recorded by Osmaston (1930) from the Zuildo area in late June/early July 1928. These were possibly from the nearby breeding lakes in Rupshu.

**RUDDY SHELDUCK** *Tadorna ferruginea* (PB) Records from the Rangdum area of single adults on 14 and 20 July 1977, a juvenile from 28 July to 4 August 1980 (Williams and Delaney 1979, Delaney *et al.* 1982) and one on 14–15 July 1982 (R. P. Martins and C. R. Robson *in litt.* 1986). The Suru Valley around Zuildo would appear to be suitable breeding habitat for this species.

**COMMON TEAL** *Anas crecca* (M) Singles recorded from Sanku on 31 August and 1 September 1983 (Holmes *et al.* 1983).

**NORTHERN PINTAIL** *Anas acuta* (M) A flock of eight observed in the Rangdum area between 27 June and 3 July 1928 (Osmaston 1930) and a flock of five seen on 12 September 1931 (Koelz 1939).

**GARGANEY** *Anas querquedula* (M) Two sightings at Sanku on 2 September 1983 (Holmes *et al.* 1983), three sightings each of two individuals in July 1980 at Rangdum (Delaney *et al.* 1982) and a single at Zuildo on 31 August 1984 (P. M. Cocker *in litt.* 1986).

**NORTHERN SHOVELER** *Anas clypeata* (M) Three birds recorded at Sanku on 2–3 September 1983 (Holmes *et al.* 1983).

COMMON MERGANSER (GOOSANDER) *Mergus merganser* (PB) Recorded in the Rangdum area by most visitors in June/July. According to Ali and Ripley (1983) no nests have been found in Indian limits, but downy young have been seen on Ladakh lakes in June.

BLACK KITE *Milvus migrans* (?) Three singles observed at Kargil and Baru in August 1980 (Delaney *et al.* 1982), and two seen at Kargil on 27 August 1984 (P. M. Cocker *in litt.* 1986). In 1983 one recorded at Minji on 30 August and two at Sanku on 2–3 September (Holmes *et al.* 1983). One was seen over Rangdum Gumpa on 17 July 1977 (Williams and Delaney 1979) and another was at Zuildo on 31 August 1984 (P. M. Cocker *in litt.* 1986).

NORTHERN GOSHAWK *Accipiter gentilis* (?) One at Zuildo on 13 July 1982 (R. P. Martins and C. R. Robson *in litt.* 1986).

EURASIAN SPARROWHAWK *Accipiter nisus* (?) A female was recorded north-west of Kargil on 9 July 1980 (Delaney *et al.* 1982), one was seen between Kargil and Baru on 14 October 1977 (Williams and Delaney 1979) and a female was present at Minji over 22–24 August 1983 (Holmes *et al.* 1983).

BOOTED EAGLE *Hieraaetus pennatus* (PM) Recorded at Sanku on 25 August (three) and 8 September 1983 (Holmes *et al.* 1983).

GOLDEN EAGLE *Aquila chrysaetos* (PB) Two immatures were seen over Panikhar on 16–17 July 1980 (Delaney *et al.* 1982). Several records of one or two birds from the Rangdum area in August 1980, July 1982 and August/September 1984 (Delaney *et al.* 1982, R. P. Martins, C. R. Robson and P. M. Cocker *in litt.* 1986). There are also several records from side valleys.

LAMMERGEIER *Gypaetus barbatus* (PB) From the north–south section of the valley there are two records from Kargil on 7 and 11 July 1980, with two birds on the latter date (Delaney *et al.* 1982), and a record from near Sanku on 9 July 1928 (Osmaston 1930). There are several records in July and August from Panikhar to Rangdum.

HIMALAYAN GRIFFON *Gyps himalayensis* (PB) Several sightings (maximum five individuals) from Kargil in July 1980 (Delaney *et al.* 1982), and four seen there on 11 July 1982 (R. P. Martins and C. R. Robson *in litt.* 1986). There are several records (up to four individuals) from Panikhar, Parkachik and the Rangdum area in July/early August 1977 and 1980 (Williams and Delaney 1979, Delaney *et al.* 1982).

MARSH HARRIER *Circus aeruginosus* (M) Three records of possibly the same individual at Sanku on 28 August and 8 and 9 September 1983 (Holmes *et al.* 1983). Two present at Zuildo between 31 August and 2 September 1984 (P. M. Cocker *in litt.* 1986).

SAKER FALCON *Falco cherrug* (?) One recorded at Panikhar on 11 July 1977 (Williams and Delaney 1979).

PEREGRINE FALCON *Falco peregrinus* (?) An immature was seen east of Parkachik on 12 July 1982 (R. P. Martins and C. R. Robson *in litt.* 1986). Two records in 1980, from Zuildo on 1 August and Tazi Tozanas on 5 August (Delaney *et al.* 1982).

NORTHERN HOBBY *Falco subbuteo* (B) Regular sightings between July and September from Kargil to Panikhar, with nesting recorded at Kargil and Sanku. One recorded in the Rangdum area on 14 July 1982 (R. P. Martins and C. R. Robson *in litt.* 1986).

EURASIAN KESTREL *Falco tinnunculus* (B) Apparently common between Kargil and Parkachik and in the Rangdum area. Records from July–September.

HIMALAYAN SNOWCOCK *Tetraogallus himalayensis* (B) Recorded from Kargil to the Rangdum area. Frequents mountainsides above the valley floor (at least in summer/autumn).

CHUKAR *Alectoris chukar* (B) Recorded at several sites from Kargil to Zuildo. Most records are from around cultivation. Delaney *et al.* (1982) discuss the current status of this species in the Suru Valley and suggest it may have declined recently.

COMMON QUAIL *Coturnix coturnix* (?) Heard in crops at Minji on 12 July 1928 (Osmaston 1930) and Panikhar on 17–18 July 1980 (Delaney *et al.* 1982). Perhaps in good years this species reaches the Suru Valley to breed.

[RAIN QUAIL *Coturnix coromandelica* (?) Osmaston (1925) reported hearing several calling in crops near Sanku on 6 August 1923, although Vaurie considered the record doubtful. Perhaps Osmaston recorded *C. coturnix* as *C. coromandelica* by mistake.]

PHEASANT-TAILED JACANA *Hydrophasianus chirurgus* (V) One recorded near Panikhar on 14 July 1980 (Delaney *et al.* 1982) was presumably a straggler from the Vale of Kashmir.

MONGOLIAN (LESSER SAND) PLOVER *Charadrius mongolus* (B) An immature was seen at Kargil on 27 August 1984 (P. M. Cocker *in litt.* 1986). Several pairs breed in the Rangdum area.

LITTLE STINT *Calidris minuta* (M) One was collected at Rangdum on 11 September 1931 by Koelz (1939).

TEMMINCK'S STINT *Calidris temminckii* (M) Eight recorded at Panikhar on 27 July 1980 (Delaney *et al.* 1982). Several in the Rangdum area from July–September, with a maximum of 20+ recorded on 30 July 1980 by Delaney *et al.* (1982).

CURLEW SANDPIPER *Calidris ferruginea* (M) One recorded east of Rangdum on 29 July 1980 (Delaney *et al.* 1982).

RUFF *Philomachus pugnax* (M) A flock of 33 seen east of Zuildo on 18 July

1977 (Williams and Delaney 1979), and a pair recorded at Rangdum on 30 July 1980 (Delaney *et al.* 1982).

**COMMON REDSHANK** *Tringa totanus* (B) Breeds in the Rangdum area. Birds recorded there in August and September (Koelz 1939, P. M. Cocker *in litt.* 1986) may be passage birds.

**COMMON GREENSHANK** *Tringa nebularia* (M) Records of singles from Sanku on 3–4 September 1983 (Holmes *et al.* 1983), Panikhar on 14 July 1980 (Delaney *et al.* 1982) and the Rangdum area from July and September (Williams and Delaney 1979, R. P. Martins, C. R. Robson and P. M. Cocker *in litt.* 1986).

**GREEN SANDPIPER** *Tringa ochropus* (M) Up to three seen on several dates between Kargil and Panikhar in July/August 1977 and 1980 (Williams and Delaney 1979, Delaney *et al.* 1982). Many records of small numbers (maximum three) from the Rangdum area between July and September.

**WOOD SANDPIPER** *Tringa glareola* (M) Two singles recorded from Sanku on 3 and 5 September 1983 (Holmes *et al.* 1983). One collected from near Parkachik in July 1933 (Koelz 1939). Found to be the commonest wader in the Rangdum area by Williams and Delaney (1979) and Delaney *et al.* (1982), with a maximum of 40+ on 30 July 1980. There are further records in the Rangdum area of two on 14 July 1982 (R. P. Martins and C. R. Robson *in litt.* 1986) and singles on 31 August and 1 September 1984 (P. M. Cocker *in litt.* 1986).

**COMMON SANDPIPER** *Actitis hypoleucos* (PB) Recorded from Sanku (Williams and Delaney 1979, Holmes *et al.* 1983), Panikhar and Rangdum (Delaney *et al.* 1982) from July–September. All sightings are of one or two birds.

**COMMON CURLEW** *Numenius arquata* (M) One at Kargil on 27 August 1984 (P. M. Cocker *in litt.* 1986).

**SOLITARY SNIPE** *Gallinago solitaria* (?) One at Zuildo on 31 August 1984 (P. M. Cocker *in litt.* 1986). This species may breed in Ladakh (Ali and Ripley 1983).

**BLACK-WINGED STILT** *Himantopus himantopus* (PM) Two birds recorded from Rangdum on 3–6 August 1980 (Delaney *et al.* 1982).

**IBISBILL** *Ibidorhyncha struthersii* (B) Several records between Kargil and Parkachik. Osmaston (1926) recorded breeding near Sanku on 10 July 1925.

**GREAT BLACK-HEADED GULL** *Larus ichthyaetus* (?) An adult was seen at Rangdum on 30 July 1980 (Delaney *et al.* 1982). Ludlow (1950) says this species probably breeds on Tibetan lakes.

**COMMON TERN** *Sterna hirundo* (B) Recorded all along the valley over July–September. Osmaston (1926) recorded breeding near Sanku in 1925; surprisingly this is the only breeding record for the valley.

**ARCTIC TERN** *Sterna paradisaea* (V) A male was collected at Zuildo on 2 July 1928 (Whistler 1936). This is the only record for the Indian subcontinent. It is not noted by Vaurie (1972), presumably an accidental omission.

**SNOW PIGEON** *Columba leuconota* (B) Recorded from the whole length of the valley over July–September.

**ROCK PIGEON** *Columba livia* (PB) Recorded from Kargil to Panikhar over July–September. Koelz (1939) described it as 'common in Purig'.

**HILL PIGEON** *Columba rupestris* (PB) Common throughout the Suru Valley (Delaney *et al.* 1982), with records over July–September. All three *Columba* species will feed in fields around settlements.

**COLLARED DOVE** *Streptopelia decaocto* (?) One recorded in the Baru plantation on 6 July 1980 by Delaney *et al.* (1982).

**ORIENTAL TURTLE DOVE** *Streptopelia orientalis* (PB) Fairly common around cultivation between Kargil and Panikhar over July–September.

**COMMON CUCKOO** *Cuculus canorus* (B) In July–September found quite commonly from Kargil to Panikhar (Williams and Delaney 1979, Holmes *et al.* 1983). Osmaston (1926) found nestlings between Parkachik and Gulma Tongas on 18 July 1925, and heard adults calling at Zuildo between 27 June and 3 July 1928 (Osmaston 1930).

**LITTLE OWL** *Athene noctua* (PB) Collected by Osmaston (1930) near Panikhar on 7 July 1928, where it was also heard on 25 July 1980 (Delaney *et al.* 1982). Vaurie (1972) has a record from Parkachik on 6 July which is probably Osmaston's specimen. A possible family party recorded at Zuildo on 20 July 1977 (Williams and Delaney 1979) and a single seen in the same site on 31 July 1980 (Delaney *et al.* 1982).

**EURASIAN NIGHTJAR** *Caprimulgus europaeus* (?) One was trapped in the scrub below Kun on 12 September 1983 (Holmes *et al.* 1983). This bird was probably a migrant, but the range of the species in Kashmir is little known and the Suru Valley may well be suitable breeding habitat.

**COMMON SWIFT** *Apus apus* (PB) Large flocks recorded between Kargil and Panikhar between July and early September (Williams and Delaney 1979, Delaney *et al.* 1982, Holmes *et al.* 1983). Koelz (1939) records it as common, especially in the lower valley.

**ALPINE SWIFT** *Apus melba* (?) One seen at Sanku on 3 September 1983 (Holmes *et al.* 1983).

**EUROPEAN ROLLER** *Coracias garrulus* (?) Singles recorded from Sanku on 8 July 1977 (Williams and Delaney 1979) and 26 August 1983 (Holmes *et al.* 1983). Koelz (1939) found one dead near Rangdum on 11 September 1931.

COMMON KINGFISHER *Alcedo atthis* (?) One recorded at Panikhar on 19 July 1980 (Delaney *et al.* 1982). Four further records in the Upper Indus Valley in 1980 and 1982 (Delaney *et al.* 1982, Southampton University Ladakh Expedition, winter 1981/1982, provisional report) suggest there is no reason to exclude the possibility of this species breeding in Ladakh.

HOOPOE *Upupa epops* (B) Common around villages between Kargil and Parkachik. Single birds recorded east of Parkachik as far as the Rangdum plain (Delaney *et al.* 1982, Holmes *et al.* 1983). Records over July–September.

EURASIAN WRYNECK *Jynx torquilla* (PB) Several records in plantations between Kargil and Panikhar from July and September.

SCALY-BELLIED GREEN WOODPECKER *Picus squamatus* (PB) Three records from Kargil on 27 July 1977 (Williams and Delaney 1979) and 8 and 9 July 1980 (Delaney *et al.* 1982). The 1977 bird was probably a juvenile.

NORTHERN CRAG MARTIN *Hirundo rupestris* (B) Fairly common around cliffs all along the valley.

BARN SWALLOW *Hirundo rustica* (?) Single records in 1980 from Panikhar on 14 July and Zuildo on 2 August (Delaney *et al.* 1982). Ali and Ripley (1983) suggest this species might breed in Ladakh.

HOUSE MARTIN *Delichon urbica* (B) Records are ascribed to this species rather than Asian House Martin *D. dasypus* since Vaurie (1972) gives the range of the latter as south-east Tibet eastwards. Recorded from Panikhar (Williams and Delaney 1979, Delaney *et al.* 1982), Kochak (Williams and Delaney 1979), below Kun (Holmes *et al.* 1983) and Zuildo (Delaney *et al.* 1982). Koelz (1939) recorded the species as common from Kargiak (Zanskar?) to Kargil. In the Suru Valley this species is often and perhaps usually found in company with *Hirundo rupestris*.

SHORT-TOED LARK *Calandrella cinerea* (?) The only definite record is of at least three in the Rangdum area on 13–14 July 1982 (R. P. Martins and C. R. Robson *in litt.* 1986).

HUME'S SHORT-TOED LARK *Calandrella acutirostris* (B) Apart from the above, all definite records of *Calandrella* larks (including all specimens listed in Vaurie 1972) are this species rather than *C. cinerea*. Recorded in small numbers between May and July from the length of the valley. Frequents dry, open areas on the valley floor, so is most numerous between Parkachik and Rangdum.

HORNED LARK *Eremophila alpestris* (B) Recorded on scree slopes near Kargil (Williams and Delaney 1979) and Panikhar (Vaurie 1972, Williams and Delaney 1979). Abundant around Rangdum, and west to Tangola (Koelz 1939).

ORIENTAL SKYLARK *Alauda gulgula* (B) Common throughout the Suru

Valley in fields and grassland areas.

BROWN TREE PIPIT *Anthus trivialis* (?) Recorded from Kargil on 27 August 1984 (P. M. Cocker *in litt.* 1986), Sanku on 7 September (two) and 9 September 1983 (Holmes *et al.* 1983), near Zuildo on 19 July 1977 (Williams and Delaney 1979) and Rangdum on 27 June (Vaurie 1972). Ali and Ripley (1983) say that Meinertzhagen (1927) suggests this species (subspecies *A. t. hartingtoni*) might breed in Ladakh, but this is not the impression gained from the original paper.

ROSY PIPIT *Anthus roseatus* (PB) Two adults in heavy moult trapped in the scrub below Kun on 26 August 1983 (Holmes *et al.* 1983), with one retrapped on 2 September. Several records from grass and marshy areas in the Rangdum area in July/August.

FOREST WAGTAIL *Dendronanthus indicus* (?) A single record from 'Suru Valley in August' (Stoliczka 1868, quoted by Vaurie 1972 and Ali and Ripley 1983) is thought unlikely by Vaurie (1972). However other stragglers have been recorded in Simla and Kutch (Ali and Ripley 1983).

YELLOW WAGTAIL *Motacilla flava* (M) Koelz (1939) collected a single *M. f. beema* at Rangdum on 12 September 1931. Ward (1906–1907) says this subspecies breeds in Ladakh.

YELLOW-HOODED (CITRINE) WAGTAIL *Motacilla citreola* (B) Common all along the valley over July–September, breeding along field edges and in scrub patches.

GREY WAGTAIL *Motacilla cinerea* (PB) Recorded in April and July/August from Kargil to Panikhar. One recorded at Zuildo on 1 August 1980 (Delaney *et al.* 1982).

WHITE (PIED) WAGTAIL *Motacilla alba* (B) Common all along the valley over July–September. The dominant Ladakh subspecies is *M. a. alboides*, but *M. a. personata* may also breed sporadically (Ali and Ripley 1983). This species is more a bird of stony river banks than *M. citreola*.

GREY-BACKED SHRIKE *Lanius tephronotus* (?) Vaurie (1972) lists a record for this species at Sanku on 10 July. Biswas (1950) gives the range of *L. tephronotus* as including Kargil and the Suru Valley and lists specimens from Kargil and Sanku, the latter probably the same one as Vaurie's.

LONG-TAILED SHRIKE *Lanius schach* (PB) Recorded at Kargil (Osmaston 1925, Delaney *et al.* 1982, P. M. Cocker *in litt.* 1986), Minji (Holmes *et al.* 1983) and Sanku (Williams and Delaney 1979, Holmes *et al.* 1983). A shrike (either *L. schach* or *L. tephronotus*) was seen between Sanku and Kargil on 16 July 1982 (R. P. Martins and C. R. Robson *in litt.* 1986). Records are from July to September. Both *tephronotus* and *schach* were found together at Padum in Zanskar in 1983 (Holmes *et al.* 1983) and it may be that the species co-exist along the Suru Valley. However since all recent records

are for *schach*, an alternative possibility is that *schach* is displacing *tephronotus*.

**GOLDEN ORIOLE** *Oriolus oriolus* (PB) Common at Kargil. Koelz (1939) recorded one at Guntung on 27 July 1933, Holmes *et al.* (1983) recorded several at Minji and Sanku in August 1983 and Williams and Delaney (1979) saw one at Kochak in July 1977. All records are from plantations.

**ROSY STARLING** *Sturnus roseus* (M) Three records of juveniles at Sanku on 25 August (two) and 31 August 1983 (Holmes *et al.* 1983), and an adult recorded on 18 July 1980 at Panikhar (Delaney *et al.* 1982). Between four and six immatures present at Zuildo from 31 August to 1 September 1984 (P. M. Cocker *in litt.* 1986).

**BLACK-BILLED MAGPIE** *Pica pica* (B) Common around villages between Kargil and Parkachik, with records from May to September.

**RED-BILLED CHOUGH** *Pyrhacorax pyrrhacorax* (PB) Common all along the valley. Many observers suggest that this species has a greater tendency to feed at the valley bottom than *P. graculus*.

**YELLOW-BILLED (ALPINE) CHOUGH** *Pyrhacorax graculus* (PB) Common all along the valley.

**COMMON JACKDAW** *Corvus monedula* (?) A small flock was recorded at Kargil in early May 1923 by Osmaston (1925).

**LARGE-BILLED CROW** *Corvus macrorhynchus* (B) Nests recorded at Kargil on 18 April 1919 (Ludlow 1920) and early May 1923 (Osmaston 1925) with other records at Kargil on 1 June (Vaurie 1972) and in July (Wathen 1924, Delaney *et al.* 1982). Two seen at Sanku on 23 August 1983 (Holmes *et al.* 1983). Unidentified crows seen at Kargil, Sanku and Panikhar (Williams and Delaney 1979, Delaney *et al.* 1982) were probably this species. Williams and Delaney (1979) recorded 300+ crows over Kargil on 14 October 1977.

**CARRION CROW** *Corvus corone* (?) Meinertzhagen (1927) recorded two at Kargil in April 1925. Recorded as common at Kargil in early June and Sanku on 9 July 1928 (Osmaston 1930). Koelz (1939) recorded the species from Tsaliko (c.10km south of Minji?) to Kargil in July 1933. There are also records from Kargil on 20 April and 28 July (Vaurie 1972), the former possibly Meinertzhagen's record and the latter possibly taken by Koelz. Some sight records, particularly those of Osmaston, may refer to *C. macrorhynchus*.

**COMMON RAVEN** *Corvus corax* (B) Recorded at Kargil (Williams and Delaney 1979, Delaney *et al.* 1982), Tangola and Parkachik (Koelz 1939) and Rangdum.

**WHITE-THROATED DIPPER** *Cinclus cinclus* (?) The only record from the Suru Valley proper is of one on a small stream at Zuildo on 1 August 1980 (Delaney *et al.* 1982), but there are several records from tributaries of the

Suru. Ali and Ripley (1983) say this species prefers smaller streams to *C. pallasi*, so it would not be expected on the main Suru River.

**BROWN DIPPER** *Cinclus pallasi* (B) Recorded from Kargil in April, July, September and October, with further July records from Trazpone, Sanku and Panikhar (Williams and Delaney 1979, Delaney *et al.* 1982).

**NORTHERN WREN** *Troglodytes troglodytes* (B) One heard near Kargil on 11 July 1980 (Delaney *et al.* 1982), one recorded below Kun on 15 September 1983 (Holmes *et al.* 1983) and an adult feeding young at Zuildo on 6 August 1980 (Delaney *et al.* 1982) are the only records, all from rocky areas away from habitation.

**ROBIN ACCENTOR** *Prunella rubeculoides* (B) Recorded as common in the Rangdum area by all visitors between July and September. Osmaston (1930) includes this species in a list of birds nesting at Suru Bridge (=Panikhar) on 6–8 July 1928, and Vaurie (1972) lists a record for this site (presumably Osmaston's) for 7 July. I find this record doubtful since it is below the altitude range and in the wrong habitat: the species is found in wet and swampy areas, usually between 3,600 and 5,300m (Ali and Ripley 1983). The record may refer to *P. strophhiata*.

**RUFOUS-BREASTED ACCENTOR** *Prunella strophhiata* (B) Recorded from the scrub below Kun in August/September 1983, where fairly common (Holmes *et al.* 1983). Ludlow (1920) refers to a nest taken 'near Suru' on 6 July 1919; from Ludlow's itinerary this was between Parkachik and Gulma Tongas, and so may be 'below Kun'.

**BROWN ACCENTOR** *Prunella fulvescens* (?) Two birds seen between Parkachik and Gulma Tongas on 26 July 1980 (Delaney *et al.* 1982).

**BLACK-THROATED ACCENTOR** *Prunella atrogularis* (M/WV) At least one was in the Baru plantation on 14 October 1977 (Williams and Delaney 1979).

**LONG-BILLED BUSH WARBLER** *Bradypterus major* (B) Recorded as common between Kargil and Parkachik in July 1925 and 1928 by Osmaston (1926, 1930). Koelz (1939) found several in crops at Guntung on 27 July 1933. The only recent record was of two at Sanku on 24 July 1977 (Williams and Delaney 1979); none was recorded in 1980 by Delaney *et al.* (1982) or in 1983 by Holmes *et al.* (1983). Williams and Delaney (1979) suggest that the decline of this species has been caused by the destruction of scrub and rank grass. A detailed survey is required of the current status of this local species in the Suru Valley.

**BLYTH'S REED WARBLER** *Acrocephalus dumetorum* (M) Singles recorded from Sanku on 9 September 1983 (Holmes *et al.* 1983), below Kun on 31 August 1978 (Holmes 1978) and 12 September 1983 (Holmes *et al.* 1983), and Rangdum on 29 August 1978 (Holmes 1978). All records are of birds trapped in scrub patches. A single *Acrocephalus* warbler (probably either

*dumetorum* or Paddyfield Warbler *A. agricola*) was seen at Kargil on 27 August 1984 (P. M. Cocker *in litt.* 1986).

**BARRED WARBLER** *Sylvia nisoria* (M) A juvenile was trapped in the scrub below Kun on 2 September 1983 (Holmes *et al.* 1983). This is only the fifth record for India, but is the fourth for Ladakh, and the third there within three years. This species may be a regular migrant through Ladakh.

[COMMON WHITETHROAT *Sylvia communis* (?) Williams and Delaney (1979) noted four singing birds possibly of this species at Kargil on 7 July 1977. One individual was obtained in Ladakh on 1 June 1925 by Meinertzhagen (1927).]

(HUME'S) LESSER WHITETHROAT *Sylvia curruca* (B) *S. c. althaea* has been recorded as common in scrub areas between Kargil and Panikhar from June to September. Osmaston (1926) found a nest between Parkachik and Gulma Tongas on 18 July 1925. The species was noticeably absent in the scrub below Kun in 1983 (Holmes *et al.* 1983).

EURASIAN CHIFFCHAFF *Phylloscopus collybita* (M) One trapped at Minji on 30 August 1983 (Holmes *et al.* 1983).

MOUNTAIN CHIFFCHAFF *Phylloscopus sindianus* (B) Common in plantations and tall and low scrub throughout the valley from April to October, even at Rangdum (Williams and Delaney 1979, Delaney *et al.* 1982). Newly fledged juveniles were caught below Kun on 2 and 3 September 1983 (Holmes *et al.* 1983). 'Hundreds' of presumed migrants were in the plantation between Kargil and Baru on 14 October 1977 (Williams and Delaney 1979). Vaurie (1972) refers records of this species to *P. collybita tristis*.

PLAIN LEAF WARBLER *Phylloscopus neglectus* (B) Ward (1908) records that his collector C. H. Crump collected a pair plus their eggs at Kargil on 28 May 1906, and again on 22 June. These records are not in Vaurie (1972), and there is the possibility of confusion with *P. sindianus*. However *neglectus* has been recorded elsewhere in Ladakh (Vaurie 1972, Williams and Delaney 1979).

TICKELL'S LEAF-WARBLER *Phylloscopus affinis* (B) Records from Minji on 16 August (two) and 22 August 1983 (Holmes *et al.* 1983). Recorded from between Panikhar and Parkachik on 8 July (Vaurie 1972), below Kun in August/September 1978 and 1983 (Holmes 1978; Holmes *et al.* 1983) and in the Rangdum area in July. All records are from scrub patches.

SULPHUR-BELLIED WARBLER *Phylloscopus griseolus* (B) Occurs widely throughout the valley, with records from June to September. The species breeds on rocky or stony hillsides or on scree slopes (Ali and Ripley 1983). Six were trapped in the scrub below Kun on 12–13 September 1983 (Holmes *et al.* 1983). These were probably altitude migrants.

INORNATE (YELLOW-BROWED) WARBLER *Phylloscopus inornatus* (M) Found in late August/September at Kargil in 1984 (P. M. Cocker *in litt.* 1986), Minji, Sanku and Panikhar in 1983 (Holmes *et al.* 1983) and below Kun in 1979 and 1983 (Holmes 1978, Holmes *et al.* 1983). By the second week of September 1983 it was very common and increasing at Panikhar and below Kun; several individuals were in the later stages of moult (last primaries and secondaries almost fully grown, waxy sheaths present). Ali and Ripley (1983) describe *P. inornatus* as breeding in coniferous or birch forest; Ladakh is east and north of the known breeding areas in Indian limits, so these birds may be migrants from for example the Tien Shan mountains north of the Takla Makan desert in the Chinese province of Sinkiang (see discussion).

LARGE-BILLED LEAF-WARBLER *Phylloscopus magnirostris* (?) and GREENISH WARBLER *P. trochiloides* (B) Williamson (1976) suggests a few distinguishing characters for these two species but in the hand they may be practically indistinguishable, although *magnirostris* tends to be slightly larger. Records in August/September 1983 by Holmes *et al.* (1983) of one from Minji, two from Sanku, and several from Panikhar and below Kun were provisionally recorded as *magnirostris*. The range of wing-lengths recorded for the adults among these suggests at least some *magnirostris*. There are no records for either species in the Suru Valley in Vaurie (1972). One female with a brood-patch trapped below Kun on 26 August and 3 and 12 September 1983 had been ringed as a juvenile in the same site on 30 August 1978 (Holmes *et al.* 1983). An adult male definitely *magnirostris* was caught at Panikhar on 30 August 1983 (Holmes *et al.* 1983). Singles definitely *trochiloides* were caught at Sanku on 29 August and at Panikhar on 11 September 1983 (Holmes *et al.* 1983). Delaney *et al.* (1982) report 2–3 pairs of *trochiloides* breeding at Panikhar in July 1980, with other July records of birds seen and heard (the call is distinctive) between Panikhar and Rangdum.

GOLDCREST *Regulus regulus* (?) Meinertzhagen (1927) collected three males from a small party at Kargil on 20 April 1925. A record from Kargil on 30 April (Vaurie 1972) may refer to the same birds. Meinertzhagen referred his specimens to *R. r. tristis*; since this race breeds in Turkestan (Ali and Ripley 1983) this would make them passage birds.

WHITE-BROWED (STOLICZKA'S) TIT-WARBLER *Leptopoeile sophiae* (?) A pair seen on 14 October 1977 between Kargil and Baru by Williams and Delaney (1979). Ali and Ripley (1983) say this species breeds in Ladakh between 3,000 and 3,900 m.

STONECHAT (COLLARED BUSH CHAT) *Saxicola torquata* (PB) Eight birds seen at Baru on 6 July 1980 (Delaney *et al.* 1982), and one there on 18 August 1983 (Holmes *et al.* 1983). Pairs were recorded at Sanku in July 1977 (Williams and Delaney 1979) and September 1983 (Holmes *et al.* 1983), and one was recorded at Zuildo on 31 August and 1 September 1984 (P. M. Cocker *in litt.* 1986).



PIED WHEATEAR *Oenanthe pleschanka* (B) Several records from Kargil and Baru over June–August. Juvenile wheatears probably this species were trapped at Minji on 19 August and 4 September 1983 (Holmes *et al.* 1983). A family party was seen at Sanku in July 1977 (Williams and Delaney 1979). Records are from around cultivated areas.

VARIABLE WHEATEAR *Oenanthe picata* (B) Recorded at Kargil on 16 July (Vaurie 1972). Three birds, including a female feeding a juvenile, were on a scree slope above Kargil on 7 July 1977 (Williams and Delaney 1979).

DESERT WHEATEAR *Oenanthe deserti* (B) Recorded east of Kargil on 7 June (Vaurie 1972). An adult female and juvenile recorded in a boulder-strewn area outside Panikhar on 31 August 1983 (Holmes *et al.* 1983). Koelz (1939) described the species as generally distributed west to Parkachik as a breeding bird.

BLUE ROCK THRUSH *Monticola solitarius* (B) Apparently relatively common in boulder-strewn areas and on scree slopes all along the valley.

BLACK REDSTART *Phoenicurus ochruros* (B) Very common at all sites along the valley. Found in the complete range of habitats, from plantations and scrub to cultivated fields and wild rocky areas.

GÜLDENSTÄDT'S REDSTART *Phoenicurus erythrogaster* (?) Recorded at Kargil on 20 April 1925 by Meinertzhagen (1927). Williams and Delaney (1979) refer to this species as present in the Baru plantation on 14 October 1977 in their description of the ornithological fieldwork, although they omit it from their systematic list. The species probably breeds in the hills above the Suru, and would be expected to frequent the valley bottom in winter, as in the Indus Valley (Williams and Delaney 1979, Delaney *et al.* 1982).

RIVER CHAT *Chaimarrornis leucocephalus* (B) Recorded in April and July–September from Kargil to below Kun.

WHITE-TAILED RUBYTHROAT *Erithacus (Luscinia) pectoralis* (B) Koelz (1939) recorded this species as common in July 1933 between the Pensi-La and Rangdum. Osmaston (1926) found a nest between Parkachik and Gulma Tongas on 18 July 1925, and found the species to be fairly common around Zuido between 27 June and 3 July 1928 (Osmaston 1930). The only recent records are a juvenile trapped below Kun on 29 August 1978 (Holmes 1978) and one male from near Panikhar over 21–24 July 1980 (Delaney *et al.* 1982). Williams and Delaney (1979) discuss the apparent reduction in numbers of this species, and suggest this is due to a reduction in scrub habitat. This may be especially true in the Rangdum area, where scrub is cut for fuel for the tourist tea stalls.

BLUETHROAT *Erithacus (Luscinia) svecica* (B) Very common in the north–south section of the valley between April and September, especially at Sanku (Holmes *et al.* 1983). Not recorded above Panikhar by Williams and Delaney (1979) or Delaney *et al.* (1982), but Holmes *et al.* (1983) found them

to be common below Kun in August/September 1983. One was trapped at Rangdum on 29 August 1978 (Holmes 1978), and singles were recorded there on 31 August and 1 September 1984 (P. M. Cocker *in litt.* 1986). Williams and Delaney (1979) suggest that this species has declined like *E. pectoralis*. The more recent survey of Holmes *et al.* (1983) found Bluethroats to be very common but these may have been migrants rather than locally breeding birds.

BLACK-THROATED THRUSH *Turdus ruficollis atrogularis* (M/WV) Observed 'between Dras and Kargil' in April 1925 by Meinertzhagen (1927) and a total of 12 recorded on 14 October 1977 from plantations at Kargil and Baru (Williams and Delaney 1979).

BLUE WHISTLING THRUSH *Myophonus caeruleus* (PB) Recorded from Kargil to Parkachik, mostly along side streams. Records over July–September.

LITTLE FORKTAIL *Enicurus scouleri* (?) A pair were recorded in a gorge above Sanku on 23 July 1977 (Williams and Delaney 1979). This is the only record for Ladakh.

GREAT TIT *Parus major* (PB) Fairly common at Kargil and Minji. Recorded less commonly as far as Panikhar (Williams and Delaney 1979, Delaney *et al.* 1982, Holmes *et al.* 1983). All records are from willow or poplar plantations.

WALLCREEPER *Tichodroma muraria* (PB) Singles recorded at Kargil on 11 July 1980 (Delaney *et al.* 1982) and Minji on 25 August 1983 (Holmes *et al.* 1983). Several records between Parkachik and Rangdum in July/early August (Williams and Delaney 1979, Delaney *et al.* 1982).

FIRE-CAPPED TIT *Cephalopyrus flammiceps* (B) Two recorded on 31 July 1977 at Kargil (Williams and Delaney 1979). Recorded at Sanku on several dates in late August/early September 1983, with an adult feeding a juvenile on 31 August (Holmes *et al.* 1983). Several records from below Kun in late August/early September 1983 with at least four on 26 August (Holmes *et al.* 1983). All these records are from scrub patches. Koelz (1939) saw a flock east of Rangdum in September 1931.

HOUSE SPARROW *Passer domesticus* (B) Fairly common around all human habitation, more abundant between Kargil and Panikhar than around Rangdum.

BLACKISH-WINGED (ADAMS'S) SNOWFINCH *Montifringilla adamsi* (B) Flocks up to 40 recorded on rough grazing and boulder-strewn slopes in the Rangdum area in July/August (Williams and Delaney 1979, Delaney *et al.* 1982, R. P. Martins and C. R. Robson *in litt.* 1986).

RED-FRONTED SERIN *Serinus pusillus* (B) Found quite commonly in small flocks in cultivated areas and scrub patches along the whole length of the valley.

EURASIAN GOLDFINCH *Carduelis carduelis* (B) Found fairly commonly in scrub patches and cultivated areas between Kargil and Panikhar and in the scrub below Kun.

TWITE *Acanthis flavirostris* (PB) Records in the Rangdum area of three to five on 13–14 July 1982 (R. P. Martins and C. R. Robson *in litt.* 1986) and up to seven from 31 August to 1 September 1984 (P. M. Cocker *in litt.* 1986).

PLAIN MOUNTAIN FINCH *Leucosticte nemoricola* (PB) Common all along the valley, generally in areas away from cultivation. Particularly numerous in the Rangdum area where some were even found in Zuildo village (Williams and Delaney 1979, Delaney *et al.* 1982).

BLACK-HEADED (BRANDT'S) MOUNTAIN FINCH *Leucosticte brandti* (PB) Recorded in small groups on grassy areas and stony slopes from Panikhar to Rangdum, often in association with *L. nemoricola* and *Montifringilla adamsi*.

COMMON ROSEFINCH *Carpodacus erythrinus* (B) Abundant in cultivated areas and scrub patches at most sites. Fewer at Rangdum, where they are found on boulder-strewn slopes and in dwarf scrub (Delaney *et al.* 1982).

GREAT ROSEFINCH *Carpodacus rubicilla* (?) A pair recorded on 27 June 1928 near Rangdum by Osmaston (1930) and up to seven in the Rangdum area on 13–14 July 1982 (R. P. Martins and C. R. Robson *in litt.* 1986).

RED-BREASTED ROSEFINCH *Carpodacus puniceus* (PB) Records from the Rangdum area in July and August (Osmaston 1926, Koelz 1939, Delaney *et al.* 1982).

ROCK BUNTING *Emberiza cia* (B) Common on rocky slopes all along the valley, often entering scrub areas e.g. below Kun (Holmes *et al.* 1983).

## DISCUSSION

If further intensive studies of the avifauna of the Suru Valley were carried out in late autumn, winter and spring, as at Tikse in the Upper Indus Valley (Delaney and Williams 1985, 1986), the species list would undoubtedly be greatly extended from the 128 definitely recorded so far. The breeding species along the Suru and Upper Indus Valleys are very similar. There is evidence that the common wintering species from the Indus Valley also occur in the Suru Valley: Gldenstdt's Redstart, Brown Accentor, Black-throated Thrush and Stoliczka's Tit-warbler have all been observed, and only Eastern Great Rosefinch *Carpodacus rubicilloides* has yet to be recorded from the Suru Valley.

The number of migrant species so far recorded in the Suru Valley is considerably less than in the Upper Indus Valley (Williams and Delaney 1979, Delaney *et al.* 1982, Southampton University Ladakh Expedition,

winter 1981/1982, provisional report). This is probably due to the smaller amount of study in the Suru Valley, particularly in the use of mist-nets. However, there are differences in the numbers of some migrant species recorded in the two valleys. For example Inornate (Yellow-browed) Warblers were first recorded in the Suru Valley in 1978 when 11 were trapped below Kun in late August/early September (Holmes 1978). In 1983 this species was very common in early–mid-September both at Panikhar and below Kun, and numbers were perhaps increasing at other sites during the same period (102 trapped in total: Holmes *et al.* 1983). However in the Indus Valley this species was not recorded until 1981, when only seven were trapped (Southampton University Ladakh Expedition, winter 1981/1982, provisional report).

The large difference in numbers may be explained by a migration route that takes Inornate Warblers through the Suru Valley but not the Upper Indus Valley. The Muztagh Pass, which is at a point where the main mass of the Karakoram Range is almost divided in two, is directly north of the Suru Valley (Figure 1), whereas Tikse is south of the eastern end of the main mass of the Karakoram Range. It may be that Inornate Warblers from the Tien Shan and other mountain ranges to the north move along the mountains and river valleys on the western edge of the Takla Makan desert. Following such a route, many would arrive at the Muztagh Pass and could move through; very few would be likely to go right round to the eastern end of the Karakoram. Having passed through the Muztagh, they could continue south-east along the Indus Valley to its junction with the Dras/Suru Valley. Following the Suru Valley they would be forced east by the Great Himalaya Range and Nun-Kun and would move either out into Zaskar over the Pensi-La – Inornate Warblers were found in Zaskar in autumn by Koelz (1939) and Holmes *et al.* (1983) – or via a pass over the Great Himalaya into Punjab.

There is evidence of a difference between the Suru and Upper Indus Valleys in some other species, although since these have Ladakh breeding populations it is not easy to distinguish migrants from local birds. One example concerns Common Rosefinch. The three Southampton University expeditions, operating almost daily at Tikse from mid-August to mid-October (all winter in 1981/1982), trapped 183, 164 and 212 Common Rosefinches in 1977, 1980 and 1981 respectively, with birds caught into October in all three years. Williams and Delaney (1979) say that there is no evidence of passage birds in the 1977 total. In the Suru Valley in 1983, the trapping totals for Common Rosefinches at the three main study sites between mid-August and early to mid-September were Minji 140 (14 days trapping), Sanku 139 (18 days) and below Kun 217 (13 days). On several days there appeared to be arrivals of groups of birds, many of which were carrying substantial levels of subcutaneous fat, which suggests that they were migrants (Holmes *et al.* 1983).

Some of the other passerine species trapped at Tikse, for example Eurasian Chiffchaff and Blyth's Reed Warbler, as well as the rarer passerine migrants recorded, may follow some other route to reach Tikse. These may come over

the top of the Karakoram, but it is perhaps more likely that they come round the eastern end.

There is much scope for further study of the birds of the Suru Valley. The winter avifauna needs to be studied to see if it is similar to that recorded at Tikse. Suitable sites for such long-term studies would be the Baru plantation and the large areas of scrub around Sanku. The Muztagh Pass could also be studied to examine its role as a migration route.

The members of the 1983 Oxford University expedition all contributed to this study: Adam Gretton, Ben Hatchwell, Hilary Holmes, Mark Hunter, Adrian Parr and Ian Sleigh. Mark Cocker, Rod Martins and Craig Robson very kindly provided their unpublished records. I would also like to thank Charlie Williams and Simon Delaney from the Southampton University expeditions for their help. Rings for use by the Oxford University expeditions were provided by the Bombay Natural History Society.

#### REFERENCES

- Ali, S. and Ripley, S. D. (1983) *Handbook of the birds of India and Pakistan*. Compact edition. Bombay: Oxford University Press.
- Biswas, B. (1950) On the shrike *Lanius tephronotus* (Vigors), with remarks on the *erythronotus* and *tricolor* groups of *Lanius schach* Linne, and their hybrids. *J. Bombay Nat. Hist. Soc.* 49: 444 – 455.
- Delaney, S. N., Denby, C. A. and Norton, J. A. (1982) Pp.5 – 47 in University of Southampton Himalayan Expedition 1980 – Report. Unpublished.
- Henderson, G. and Hume, A. O. (1873) *Lahore to Yarkand*. London: Reeve.
- Holmes, P., ed. (1978) Report of the Oxford Ornithological Expedition to Kashmir, 1978. Unpublished.
- Holmes, P. R., Holmes, H. J. and Parr, A. J., eds. (1983) Oxford University Expedition to Kashmir, 1983 – Report. Unpublished.
- Koelz, W. (1939) Notes on the birds of Zanskar and Purig, with appendices giving new records for Ladakh, Rupshu and Kulu. *Pap. Michigan Acad. Sci.* 25: 297 – 322.
- Ludlow, F. (1920) Notes on the nidification of certain birds in Ladakh. *J. Bombay Nat. Hist. Soc.* 27: 141 – 146.
- Ludlow, F. (1950) The birds of Lhasa. *Ibis* 92: 34 – 45.
- Meinertzhagen, R. (1927) Systematic results of birds collected at high altitudes in Ladakh and Sikkim. *Ibis* (12)3: 363 – 422, 571 – 633.
- Osmaston, B. B. (1925) The birds of Ladakh. *Ibis* (12)1: 663 – 719.
- Osmaston, B. B. (1926) Birds nesting in the Dras and Suru Valleys. *J. Bombay Nat. Hist. Soc.* 31: 186 – 196.
- Osmaston, B. B. (1930) A tour in further Kashmir. *J. Bombay Nat. Hist. Soc.* 36: 108 – 134.
- von Pelzeln, A. (1868) On the species of birds collected by Dr Stoliczka in Thibet and the Himalayas. *Ibis* (2)4: 302 – 321.
- Richmond, C. W. (1895) Catalogue of a collection of birds made by Doctor W. L. Abbott in Kashmir, Baltistan and Ladakh, with notes on some of the species and a description of a new species of *Cyanecula*. *Proc. U. S. Natn. Mus.* 18: 451 – 491.
- Sharpe, R. B. (1891) *Scientific results of the second Yarkand mission – Aves*. London: Taylor and Francis.
- Sillem, J. A. (1934) Ornithological results of the Netherlands Karakorum expedition 1929/30. *Orgaan der Gl. Nederland Vogelk.* 7: 1 – 48.
- Stoliczka, F. (1868) Ornithological observations in the Sulej Valley, N. W. Himalayas. *J. Asiatic Soc. Bengal* 37: 1 – 70.
- Vaurie, C. (1972) *Tibet and its birds*. London: H. F. and G. Witherby.
- Vaurie, C. (1965) *The birds of the Palaearctic fauna*. London: H. F. and G. Witherby.
- Ward, A. E. (1906 – 1907) Birds of the provinces of Kashmir and Jammu and adjacent districts. *J. Bombay Nat. Hist. Soc.* 17: 108 – 113, 479 – 485, 723 – 729, 943 – 949.
- Ward, A. E. (1908) Further notes on the birds of the provinces of Kashmir and Jammu and adjacent districts. *J. Bombay Nat. Hist. Soc.* 18: 461 – 464.
- Wathen, M. L. (1924) Ornithological notes from a trip in Ladakh. *J. Bombay Nat. Hist. Soc.* 29: 694 – 702.
- Whistler, H. (1936) Arctic Tern in Kashmir. *Ibis* (13)6: 600 – 601.
- Williams, C. T. and Delaney, S. N. (1979) Pp.104 – 229 in University of Southampton Himalayan Expedition 1977 – Report. Unpublished.
- Williams, C. and Delaney, S. (1985) Migration through the north-west Himalaya – some results of the Southampton University Ladakh expeditions 1. *Bull. Oriental Bird Club* 2: 10 – 14.
- Williams, C. and Delaney, S. (1986) Migration through the north-west Himalaya – some results of the Southampton University Ladakh expeditions. Part 2. *Bull. Oriental Bird Club.* 3: 11 – 16.
- Williamson, K. (1976) *Identification for ringers 2 – the genus Phylloscopus*. Revised edition. Tring, Hertfordshire: British Trust for Ornithology.

P. R. Holmes, Liverpool School of Tropical Medicine, Pembroke Place, Liverpool L3 5QA, U.K.