Locations visited

Locations:	Dates visited: (May)
1. Paro (2,250 m)	1,28
2. Thimphu (2,400 m)	1,2,26-28
3. Dochhu La (2,700-3,215 m)	2
4. Nobding (2,900 m)	2,3
5. Pele La (2,950-3,300 m)	3,16
6. Tongsa (2,100 m)	3-5,13,14
7. Tongsa-Yutong La (2,100-3,400 m)	4
8. east of Yutong La to Gyetsa (3,400-2,600 m)	4
9. Wangdinala/Wangdigang (1,000 m)	5-7
10. Nimshong (600-1,300 m)	7,8,12,13
11. Nobji (1,100-1,300 m)	8,9,11,12
12. Camp 5 km. upstream of Nobji (1,350 m)	9-11
13. Chendebji (2,400-2,600 m)	14-16
14. Phobjikha (2,780-2,870 m)	16,17
15. Khebetang (2,800-2,900 m)	17-20
16. Wangdiphodrang (1,100 m)	20
17. Punakha (1,275 m)	20
18. Rimchu (1,300-1,350 m)	20-22
19. Damji (2,200 m)	22,23,25,26
20. Gasa/Hot Springs (2,100-2,250 m)	23-25

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Rob Tymstra, 1209 Nottingham, Sarnia, Ontario, Canada N7S 5B1
Scott Connop, R.R.1, Camlachie, Ontario, Canada N0N 1E0
Chado Tshering, Nature Conservation Section, Forestry Service Division, Thimphu, Bhutan

Status and distribution of Stoliczka's Bushchat *Saxicola macrorhyncha* in India

ASAD R. RAHMANI

Stoliczka's Bushchat (or White-browed Bushchat) *Saxicola macrorhyncha* is a rare and local resident of the Indian subcontinent, which is listed as globally threatened. It is probably extinct in Pakistan, but in India there have been a few sightings during the last 20 years. In 1993-1994, four surveys were conducted in Rajasthan and Gujarat, mainly in the Thar desert, during which 86 individuals were seen at 18 different sites. In some places it was fairly common. Some general observations on its behaviour were made and recommendations for further studies are given.

INTRODUCTION

About 1,300 species of birds are found in the Indian subcontinent, out of which 71 species have been listed as threatened in India (Collar *et al.* 1994). Stoliczka's Bushchat (or White-browed Bushchat) *Saxicola macrorhyncha* is one of them (Rahmani 1993). F. Stoliczka first described it in 1872, from specimens collected at Rapar and Bhuj in Kutch (Gujarat).

Former distribution

According to Ali and Ripley (1983a), Stoliczka's Bushchat is a generally a rare and very local resident, but not uncommon in some areas. It has been recorded from Pakistan (east of the Indus river), Haryana (Hissar district), western Uttar Pradesh (Aligarh), eastern Rajasthan and Gujarat (Deesa, Kutch and Kathiawar). There are specimens labelled Kandahar and Dubrai in southern Afghanistan collected by Swinhoe in April 1881, in the British Museum (Swinhoe 1882, Ticehurst 1926), but Paludan did not come across it in his field work (Paludan, 1959), and considered that there was only one reliable record from Afghanistan (Roberts 1992). Roberts (1992) did not see this species during his 28 years' residence in southern Punjab, Pakistan, including many visits to Jhang district.

Recent sightings

During the last 20 years there have been only 15 sightings of this rare bird (Table 1). On 2 August, 1978, a male and several juveniles were seen near Khara village, between Phalodi and Pokharan in western Rajasthan (van den Berg *et al.* 1981), Ben King saw it in Desert National Park in Rajasthan

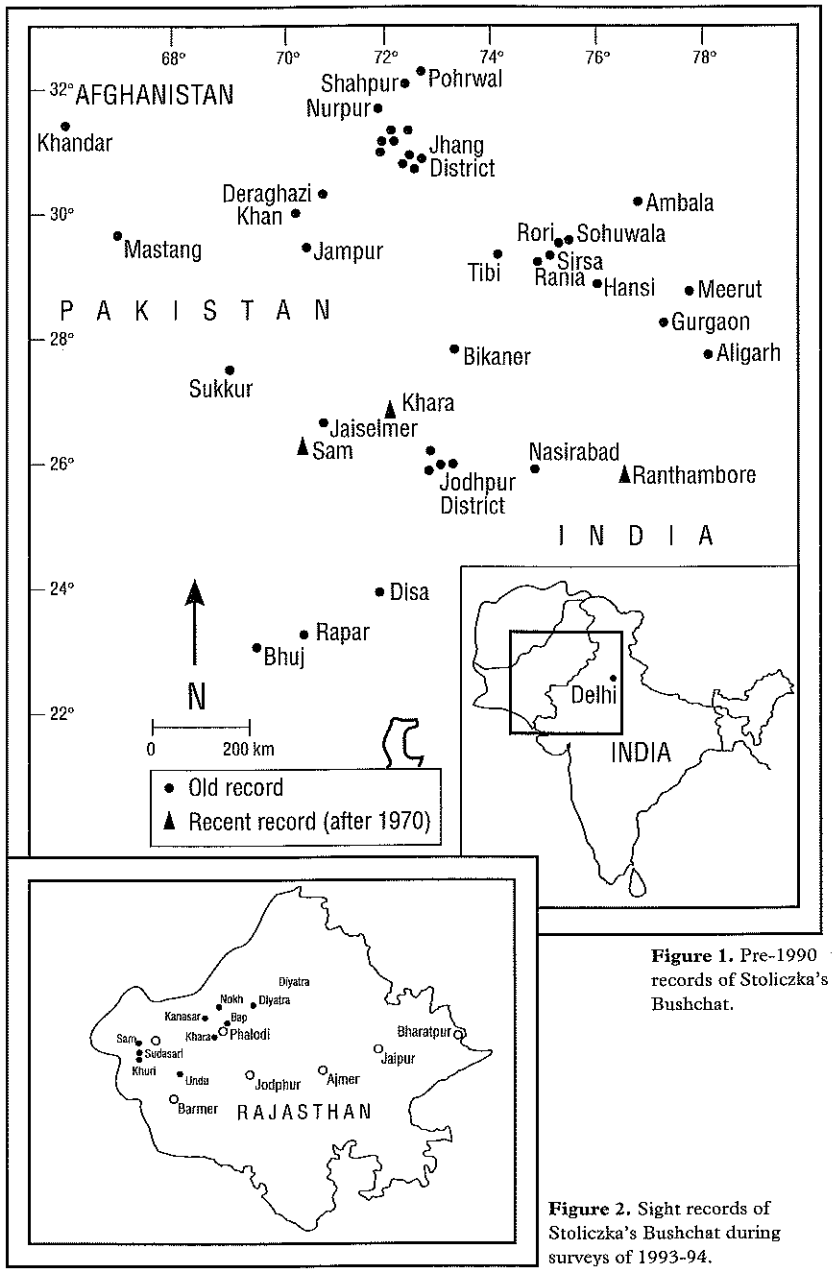


Figure 1. Pre-1990 records of Stoliczka's Bushchat.

Figure 2. Sight records of Stoliczka's Bushchat during surveys of 1993-94.

Table 1. **Recent (post 1975) sight records of Stoliczka's Bushchat**

Date	2 August 1978	6 March 1985
Locality	near Khara	Desert National Park
District and State	Jaisalmer (Rajasthan)	Jaisalmer (Rajasthan)
Number of birds	1 male and several juveniles	1 female
Observer(s)	van der Berg *et al.* (1981)	Steve Madge (Birdquest)
Date	13 February 1986	18 February 1987
Locality	Ranthambore	Desert National Park
District and State	Sawai Madhopur (Rajasthan)	Jaisalmer (Rajasthan)
Number of birds	5	1 female
Observer(s)	Nigel Lindsey	Steve Madge
Date	1987	29 January 1988
Locality	Ranthambore	Sonkhliya
District and State	Sawai Madhopur (Rajasthan)	Ajmer (Rajasthan)
Number of birds	?	2
Observer(s)	Anders Priemé & Nigel Lindsey	Steve Madge
Date	24 February 1988	27-30 January 1990
Locality	Keoladeo National Park	Desert National Park (Sam)
District and State	Bharatpur (Rajasthan)	Jaisalmer (Rajasthan)
Number of birds	1	1 female
Observer(s)	Dave Holman	Seb Buckton & Pete Morris
Date	14-16 February 1992	10 December 1992
Locality	Ranthambore	Mohangarh
District and State	Sawai Madhopur (Rajasthan)	Jaisalmer (Rajasthan)
Number of birds	1 female	1
Observer(s)	Anders Priemé, Morten Heegaard & R. Turin	Vibhu Prakash (BNHS)
Date	11-18 December 1992	28 December 1992-1 January 1993
Locality	Desert National Park (Sudasarai)	Velavadar National Park
District and State	Jaisalmer (Rajasthan)	Bhavnagar (Gujarat)
Number of birds	1	10
Observer(s)	Vibhu Prakash	Vibhu Prakash
Date	16 February 1994	16 February 1994
Locality	Ramgarh-Asatur	Desert National Park (Sam)
District and State	Jaisalmer (Rajasthan)	Jaisalmer (Rajasthan)
Number of birds	2	1
Observer(s)	Harkirat Sangha	Harkirat Sangha
Date	17 February 1994	
Locality	near Sam	
District and State	Jaisalmer (Rajasthan)	
Number of birds	1	
Observer(s)	Harkirat Sangha	

Date & time	Site	No. of birds	Habitat type	Ground cover	Terrain	Activity
1993						
Jaisalmer-Barmer crossing						
12 February, afternoon	near Undu	4	scrub	40-45%	sandy plains	foraging/resting
Jaisalmer (Desert National Park)						
25 July, afternoon	near Phulia	1	dry gravel	20-25%	stony/sandy	foraging
Total in 1993		5				
1994						
Diyatra area (Bikaner district)						
16 January, evening	Tokla	1	scrub	50%	sandy plains	foraging
17 January, afternoon	near Tokla	8	grassland	50%	sandy plains	foraging/resting
18 January, morning	near Tokla	2	scrub	40-50%	sandy plains	foraging
18 January, morning	Niagaon	5	grassland	45%	sandy plains	foraging/resting
18 January, afternoon	Hadda	20	grassland	30-40%	sandy plains	foraging/resting
Total in Diyatra		36				
Bap and Khara areas (Jodhpur district)						
25 January, evening	Bap	7	scrub	30-40%	sandy plains	foraging/resting
26 January, morning	Bap	2	scrub	30%	sandy plains	foraging
8 February, morning	Khara-Savreej	5	scrub	40%	sandy plains	foraging/resting
Total in Bap and Khara		14				
Nokh-Kanasar area (Jodhpur-Jaisalmer districts)						
27 January, evening	Sewada	2	scrub	30-40%	sand dunes	resting
28 January	Nokh area	12	scrub	35%	sandy plains	foraging
28 January, afternoon	Kanasar	2	scrub	35%	sand dunes	foraging/resting
29 January, afternoon	Kanasar-Bap	2	scrub	25%	sandy plains	foraging
Total in Nokh-Kanasar		18				
Desert National Park (Jaisalmer district)						
1 February, morning	Sam	3	grassland	40-50%	sand dunes	foraging
2 February, evening	Sudasari-Khuri road	5	grassland	50%	sandy plains	foraging
3 February, evening	Nibha	1	grassland	40%	sandy plains	foraging
4 February, evening	Sudasari	4	grassland	40%	sandy plains	foraging/resting
Total in Desert National Park		13				
Grand total		**86**				

Table 2. **Stoliczka's Bushchat sightings in 1993-1994 during this study**

(Roberts 1992) and Richard Grimmett saw 'a male (and probably a female)' in Sudasari bustard enclosure inside Desert National Park on 17 February 1982 (Roberts 1992) (see Table 1 for other records).

Confusion with other species

Stoliczka's Bushchat is similar to other *Saxicola* species found in the desert region. Roberts (1992) opined that it is very similar in general appearance to the Whinchat *Saxicola rubetra*, except for possessing a slightly heavier bill, and he claimed that juvenile males are probably inseparable in the field from female or subadult male White-tailed Stonechats *Saxicola leucura*, another chat of the Indus and Gangetic river systems. The tail pattern of males in flight is similar to some wheatears *Oenanthe*, commonly found in the deserts. As far as habits and habitats are concerned, Stoliczka's Bushchat comes closest to the Common Stonechat *Saxicola torquata*. However, the male *torquata* is distinguished from male *macrorhyncha* by having a black chin and throat, and a black tail and by lacking a white supercilium.

Moreover, *torquata* is slightly smaller than *macrorhyncha*, but the females and juveniles can be confused in the field.

Ali and Ripley (1983a) have reported four subspecies of *S. torquata* from the Indian subcontinent: *indica*, *maura*, *stejnegeri* and *przevalskii*. Only *maura* and *indica* have been recorded in the distributional range of *S. macrorhyncha*. However, Abdulali (1988) reported that all of the skins in the collection of the Bombay Natural History Society appear to be *indica*, and that none of them appears to be *maura*. Ninety-two skins of *S. torquata indica* are present in the BNHS collection, with 56 males, including two spotted juveniles, 31 females and five unsexed (Abdulali 1988). In some female *indica* the chin is very light brown or beige, and the breast and flanks have a rufous wash. These individuals at first glance look like female or juvenile *S. macrorhyncha*, but without the characteristic white supercilium. In a freshly moulted skin (Register No. 16406), collected in Ambernath, near Kalyan (Maharashtra) by Abdulali on 12 December 1949, the chin and breast are almost white, and there is a semblance of a white supercilium. Therefore, confusion between female *Saxicola* species would be quite likely in the field: either *macrorhyncha* has been overlooked as female *torquata* or a moulting female *S. torquata indica* has been misidentified as *S. macrorhyncha*.

In order to ascertain the present status and distribution of Stoliczka's Bushchat, the Oriental Bird Club and Cygnus Wildlife Holidays funded a small project, under which the first survey was done. Later, three more surveys were done under different projects.

METHODOLOGY

Literature survey

The existing literature on Stoliczka's Bushchat was collected from the Bombay Natural History Society (BNHS), the Oriental Bird Club (OBC) and BirdLife International (Rahmani 1993). Richard Grimmett of BirdLife International provided historical records from the Biodiversity Project Database and Nigel Redman of the OBC provided records up to 1992 (Appendix and Table 1). Dr. Philip McGowan and Tim Inskipp sent photographs of various *Saxicola* species, including *S. macrorhyncha*, which greatly helped me during the third and fourth surveys. Specimens of various *Saxicola* species were studied in BNHS (there is no specimen of *S. macrorhyncha* in India).

Field Surveys

This report is mainly based on four surveys conducted between February 1993 and May 1994.

First Survey: The first survey was conducted from 2 February to 13 March 1993. The following areas were visited (names of the districts are given in brackets): Keoladeo National Park (Bharatpur); Taal Chaper (Churu); Diyatra, Bajju, Gajner (Bikaner); Bap, Phalodi, Khara (Jodhpur); Desert National Park, Nokh, Nachna, Mohangarh (Jaisalmer); Undu, Shiv, Dhorimanna (Barmer); Sonkhaliya (Ajmer); Banni, Rapar (Kutch); and Velavadar (Bhavnagar).

Second Survey: The second survey was conducted between 15 July and 23 August 1993. The following areas were visited: Taal Chhaper (Churu); Diyatra, Bajju, Gajner (Bikaner); Bap, Phalodi, Kanasar (Jodhpur); Mohangarh, Nachna, Desert National Park (Jaisalmer); Shiv, Undu, Dhorimanna (Barmer); Sonkhaliya (Ajmer); Banni (Kutch) and Velavadar (Bhavnagar).

Third Survey: The third survey of one month was done between 12 January to 12 February 1994. The following areas were visited: Diyatra, Bajju, Gajner (Bikaner); Bap, Phalodi, Khara, Savreej (Jodhpur); Mohangarh, Khinya, Dhanana, Desert National Park, Phalsund, Rasla, Sankara, Banniyana (Jaisalmer); Undu (Barmer), Sonkhaliya (Ajmer).

Fourth Survey: A brief survey of one week was conducted in Jodhpur, Jaisalmer and Barmer districts between 17 to 23 May 1994. No Stoliczka's Bushchat was seen. The following areas were visited: Phalodi, Khara (Jodhpur); Desert National Park, Rasla (Jaisalmer); Shiv and Dhorimanna (Barmer).

Systematic search

In all of the places visited, very thorough searches were done. Any small *Saxicola*-sized bird, perched on a bush or shrub was checked through binoculars or telescope. In summer, most of the field work was done in the morning and evening when the birds are most active. During winter surveys, searches were done during noon also. During the third and fourth surveys, 38 line transects of 1.5 to 2 km were randomly conducted. These transects were done mainly to study the general bird life (Rahmani 1994), but Stoliczka's Bushchat was also studied. As Stoliczka's Bushchat was practically unknown among ornithologists in India, and easily mistaken for other *Saxicola* species, a specially prepared questionnaire survey drew a blank, except for some unconfirmed sightings.

The illustration of Stoliczka's Bushchat in the *Pictorial Guide* (Ali and Ripley 1983b) is not good and it would be difficult to identify the species using that alone. The illustration in *The birds of Pakistan* (Roberts 1992) is much better. Before the third survey, specimens of *Saxicola* species were thoroughly checked in the collection of the BNHS, and colour photographs of various *Saxicola* species from the British Museum were received. These greatly helped in field identification. Good colour photographs of Stoliczka's Bushchat, taken by P. Morris, were published in Rahmani (1993).

RESULTS AND DISCUSSION

Numbers of Stoliczka's Bushchat

During the first survey, four Stoliczka's Bushchats were seen between Undu and Kanasar, at the border of Jaisalmer and Barmer. During the second survey, one was seen in the Desert National Park, on 25 July 1993, in a small vegetated patch in an extremely dry area, 15 km before Phulia on the Khuri-Phulia road. Another bird, perhaps this species, was seen in flight for a few seconds on the same day near Bhiyand village on the Shiv-Kanasar road in Barmer district. It disappeared in a roadside plantation and could not be located again. The third survey during January-February 1994 was most productive as a total of 81 individuals of this species was located in 16 different sites (Table 2). Once we had identified the species, studied its behaviour and habitat, it was not difficult to locate it. In Diyatra area of Bikaner district, where we studied this bird for two days, 25 individuals were seen in one day on a 40 km drive and in two line-transects done in the morning and evening. In Sam and Sudasari areas of the Desert National Park, 13 individuals were located in four days during six line-transects of 1.5 km each. Out of the total 38 line transects done in the Thar desert at different sites, the Bushchat was seen in 9 transects.

Habitat

The typical habitat of the species in the Thar desert is dry, sandy areas, with low herbs and shrubs of 50-70 cm, and very scattered bushes. The ground cover ranged between 25% and 50%, generally around 35%. The shrubs consisted of *Crotolaria burhia*, *Aerva persica*, *A. pseudotomentosa*, and *Cassia italica*. The dominant bush was *Capparis decidua* which was seen in all the sites. In a few areas, *Calotropis procera* and *Leptadenia pyrotechnica* were seen. Referring to Jhang district (Pakistan), Whistler (1922) wrote that its 'favourite haunts are the wide plains of a hard, sandy soil, ...bare of grass for most part, but...studded with the small desert plants..., and diversified with small sand-dunes and broken ground'. Interestingly, he found that a few pairs also inhabited the somewhat different area of the Nurpur Canal escape, where the run off of canal-water had produced great reed-beds, surrounded by jungles of 'pampas grass'. This is the typical habitat of White-tailed Stonechat, the female of which resembles female and juvenile Stoliczka's Bushchat (Roberts, 1992). Interestingly, Roberts (1992, p. 132) found that one specimen in the British Museum (Tring) that Whistler had identified as *S. macrorhyncha* was actually a female *leucura*. Except for Whistler, none of the earlier workers who have studied or collected Stoliczka's Bushchat, has noted it as occurring in tall reed-beds. I also did not find it in the newly created reed-beds beside the Indira Gandhi Nahar Project (IGNP) and its tributaries. All recent sight records are from dry biotope, so it is reasonable to presume that Whistler's description of its occurrence in reed-beds was based on misidentification.

Curiously, in the same paper, Whistler (1922) mentioned that the future status and even existence of *S. macrorhyncha* was 'likely to be affected by the progress of the irrigation systems'. If it was found in the reed-beds of the Nurpur Canal escape, why should it not be able to adapt to habitat change by canal irrigation?

Behaviour

1. Food and feeding behaviour

Regarding the food of Stoliczka's Bushchat, Hume (1878) wrote 'I found nothing but insects recognizable in the stomachs of those I examined'. Ali and Ripley (1983a) and Roberts (1992), presumably based on Hume's observations also say that the food is insect matter. I also found that it spent much time either picking up something from the ground, or making aerial sallies to catch small, flying insects. It was never seen to take any seeds or other vegetable matter. In July 1993, a female Bushchat was seen picking up *Camponotus* ants, and after eating them, it used to fly back to a bush top. Thrice it sat on telegraph wires. According to T. J. Roberts (*in litt.* 1994) its foraging behaviour is similar to that of *S. torquata*. Chiefly two types of feeding behaviour were seen: picking from the ground and aerial sallies (sorties). One bird was watched for a total of 10 hours in two days. Many times it was seen hovering for 2-3 seconds to catch an insect. It was seen to fly up to 20 m to catch a flying insect. On average, 17 seconds lapsed between two aerial sallies. It always used to come back to a perch on a bush top, after catching an insect. Most of the time the insects were eaten on the spot or in the air. On both of the days, it was seen in the same area, going back again and again to its favourite perch on a *Capparis* bush. In January 1994, aerial sallies by Stoliczka's Bushchats were seen mainly at noon and evening when innumerable small insects were seen flying. During winter mornings, it is very cold in the desert, so most flying insects are inactive, and the Bushchats were generally seen picking small beetles and ants from the ground.

Beside Stoliczka's Bushchat, the Desert Wheatear *Oenanthe deserti* was also seen catching insects in the air. While the Bushchat was seen hovering for 2-3 seconds only, the Desert Wheatear was seen flying and hovering for up to one minute, and audibly snapping insects in the air.

2. Foraging time

I did not do any time-budget studies, but from our limited observations in January, it appears that the Bushchat is active almost throughout the day in winter. I saw many Bushchats actively foraging during mid-day on 18 January. Some individuals were still actively foraging 30 minutes after sunset.

3. General behaviour

Ali and Ripley (1983a) have written that it is 'at times fairly tame, at others excessively wild'. Most of the birds observed by us were very tame, but some were very wary and did not allow close approach. For example, the female Bushchat which we saw in a small patch of about 1 acre among extremely dry, gravel area near Phulia, was very bold and tame and allowed approach to 3-4 metres, while some individuals in the Sudasari area were very wild and we were able to watch them only from 50-100 m.

A curious behaviour which does not appear to be related to aggression or territoriality, is the puffing up of the breast and swaying sideways. The whitish breast and white belly become conspicuous and the bird appears larger than normal. Such behaviour was seen in many individuals during January and February and was always noted on the ground while the birds were foraging, never while they were perched on bushes. Richard Grimmett (quoted in Roberts 1992) has also seen this behaviour in February in Jaisalmer. In some instances, the bird picked up something, moved and swayed again, and then picked up another item, repeating the performance two or three times, before flying to a perch. Most of my sightings of

Bushchats were of solitary birds, the nearest other Bushchat being 200 to 400 m away. These Bushchats could see each other only when perched on a bush, not while foraging between bushes, whence this puffing up was done: so it does not appear to be in anyway related with aggression. If it is an adaptation to flush insects, it is not clear how puffing up and swaying sideways will help in locating prey, although Roberts (*in litt.* 1994) thinks that this behaviour is in some way advantageous. Further studies may reveal the significance of this behaviour.

4. Site fidelity

Stoliczka's Bushchat appears to be very parochial. One bird watched for three days was always seen in a small area of 0.5 acres. The bird had a favourite *Capparis* bush where it used to return every now and then. Even in this bush, there was one branch where it used to go and sit in the shade. The presence of faecal marking proved that the spot had been in use for many days or weeks (months?). For photographing, we brought our jeep (used as a hide) 5-6 m from the bush. The Bushchat was slightly disturbed so it started foraging nearby, but even in the presence of the jeep, it returned to its favourite bush three times in two hours. As soon as we removed our jeep, it returned to this bush and started foraging around it. In July 1993, near Phulia in the DNP, a female (or juvenile) was seen foraging in an area of approximately one acre.

5. Local Movement (Migration?)

Stoliczka's Bushchat is considered local and resident (Ali and Ripley 1983a), and Roberts (1992) suggested that it was sedentary. An interesting result which emerged from my four surveys in different months is that the species appears to undergo some local or, perhaps, some long distance movements. For instance, during January 1994, I saw 13 individuals in and around Sam and Sudasari enclosures of the Desert National Park.

However, in the same areas during May (19-21), in three days of search, no Stoliczka's Bushchat was seen, which indicates that most individuals had left for some other areas. However, on 25 July 1993, one bird was seen, about 40 km from Sudasari in the DNP, which suggests that some individuals remain in the Thar, unless it was an early returning bird.

The literature survey revealed that earlier workers found it to be common in the winter months in certain areas and were not sure of its residential status. Hume (1877a) had requested ornithologists to look out for this species in the 'next cold season' and in his next paper on this species (Hume 1877b) he surmised that the bird must breed somewhere in Central Asia. Later, he (1878) wrote: 'All my birds were killed at the end of January and during the first week of February, when the weather was singularly cold, and the generative organs were entirely undeveloped.... Also I may say that I am

now by no means sure from further enquiries that this is a migratory species.... One would naturally suppose it to be so, but natives....assured me that they breed in Jodhpur during the scanty rainy season'.

Whistler (1915) in Hissar district of Punjab (now in Haryana) found it to be not uncommon during the winter, being met with on various dates between 19 November and 10 March. However, in the Jhang district, Whistler (1922) was emphatic that it is strictly resident. He found pairs in April and July, and obtained young birds in the first or juvenile plumage in August and September. Ticehurst (1922, 1926) considered it to be resident and very local. Dharmakumarsinhji (1954) in Saurashtra described it as a winter migrant. Most of the records for which I know the months, were of individuals collected/seen in winter (Table 1), except for those from Dubrai and Kandahar in Afghanistan and Whistler's records from Hissar. It is likely that during summer Stoliczka's Bushchat moves from the Thar desert to more northern latitudes and returns with the rains to breed (?) because I have seen a female (or juvenile) near Khuri on 25 July, and van den Berg *et al.* (1981) saw an adult male with several juveniles on 2 August in the Khara area in Jodhpur district. Both these sites are located in the middle of the Thar desert. We can learn about the movement of the species only after a comprehensive study on marked birds.

6. Aggression towards other species

One Stoliczka's Bushchat was seen chasing a male Desert Wheatear. The Desert Warbler *Sylvia nana* was frequently associated with the Bushchat but no aggressive interaction was seen with this tiny bird. One of the reasons why the Bushchat does not tolerate the presence of the Desert Wheatear could be the competition for food: both the species were seen foraging on the same flying insects. However, Whistler (1922) found that the Bushchat is on 'good terms with Desert Wheatear, neither shy nor pugnacious in its presence'.

7. Song

Hume (1878) writes 'I never heard it sing or attempt to sing but it has a little sharp *chip chip* note, which I now and then caught'. During January 1994, we found that, while perched on a bush, the male uttered a soft, low, musical note 'twitch-chhe chee chee', lasting up to one minute. While singing, the throat is inflated. This song is audible from 10-15 m only, so it does not appear to be display or territorial song, because its neighbours are unlikely to be able to hear it. Perhaps the female also sings this song though I am not sure.

8. Breeding

Nothing is known about the nest, clutch size or breeding season of the Stoliczka's Bushchat. During our brief study we were unable to find any nests, not did we see any territorial behaviour.

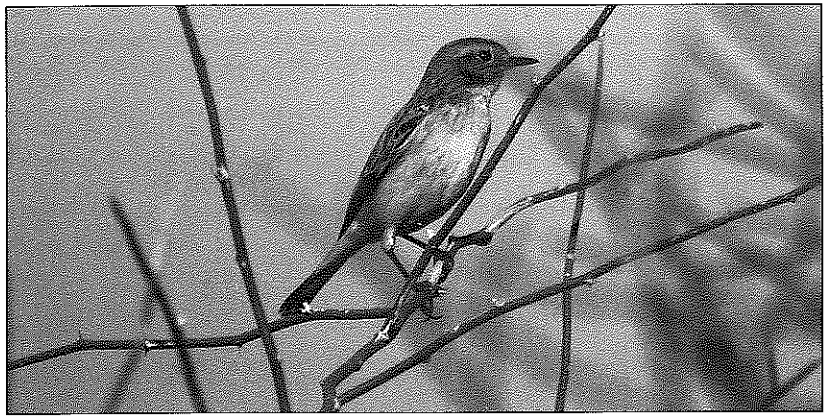
CONSERVATION

Since its discovery to science in 1872, Stoliczka's Bushchat has been considered local and patchily distributed, but not uncommon in some areas. Its typical habitat was described as desert biotope but it was also found in semi-arid areas (e.g. Aligarh, Meerut in western Uttar Pradesh) and open scrub (Saurashtra, Kandahar?). It appears that these areas were marginal for the species and that its main stronghold was the vast waterless, sandy plains of the Thar desert.

Stoliczka's Bushchat has disappeared from marginal areas in its distribution due to habitat alteration. More than 80 years ago, Whistler (1922) warned that the future of the species would be affected by the progress of the irrigation systems in India, and this prediction has come true. The case of Aligarh district is worth citing. Aligarh district, which used to be semi-arid with vast tracts of scrub-land and waste-land, has been almost totally converted into cropland, thanks to good irrigation facilities through a network of canals. In Pakistan, also, the same fate has befallen to this species. Roberts (1992) thinks it is extinct in Pakistan mainly because it was unable to adapt to the spread of irrigation and cultivation. However, the reasons for the rarity of the species are not so simple. No individual of this species has recently been found in Kutch district, especially in the Banni grasslands. Cultivation has not spread in the Banni area, and suitable scrubland is still present in this vast, sprawling district. Mr. Himmatsinhji, a very experienced Kutch ornithologist has never seen this species during 50 years of active bird-watching. Dharmakumarsinhji (1954) wrote 'rarely met with except in the drier portions of Saurashtra'. He does not mention where exactly it has been seen, or whether he himself had recorded it.

Beside habitat alteration, there does not appear to be any other threat to Stoliczka's Bushchat. It is neither trapped nor hunted and there does not appear to be any threat of hybridization with the congeneric *S. torquata* because the latter breeds no nearer than the Himalayas (Ali and Ripley 1983a). My recent surveys show that Stoliczka's Bushchat may not be as threatened as was thought earlier because in certain areas (e.g. Diyatra, Desert N.P.) it was fairly common. However, I did not see any individuals near Jodhpur, where it was extremely abundant a hundred years ago. Perhaps we did not visit the exact locations where Hume had made a series of collections.

In order to get an accurate picture of its distribution and status in India, a comprehensive project on this species is necessary. Without knowing its habitat requirements and local movements (if any), it will not be possible to develop a conservation strategy for Stoliczka's Bushchat.



Stoliczka's Bushchat (Photo: Asad Rahmani).

FUTURE STUDIES

A project of at least two years is necessary to study the biology, ecology and distribution of Stoliczka's Bushchat.

The following are the main aspects that should be studied:

1. A status survey in its distributional range in different seasons, with special emphasis on visiting areas in the same seasons when it has been earlier seen or collected.
2. A study of its local or migratory movements (?) by marking birds.
3. A study of its habitat requirements and the effect of canal irrigation systems.
4. A study of its general biology (food, territoriality, breeding season, clutch size, nesting success, predators, songs, etc).

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Asad R. Rahmani, Centre of Wildlife and Ornithology, Aligarh Muslim University, Aligarh 202 002, India.

APPENDIX

HISTORICAL RECORDS OF STOLICZKA'S BUSHCHAT

Year	Area	District	State	No. of specimens	Months	Remarks	Source
INDIA							
c. 1850	Sirsa		Haryana	1		Collected by Jerdon	Sharpe (1879)
1866	Umballah (= Ambala)	Ambala	Haryana	1	November	Collected by Beavan	Sharpe (1879)
1867	Lumbee (?) Sirsa		Haryana	1	November	Hume collection	Sharpe (1879)
1867	Bhotto (= ?Bhatu) Sirsa		Haryana	1	December	Hume collection	Sharpe (1879)
c. 1870	Raipur (= Rapar)	Nagar (= Kutch)	Gujarat	1		in open desert with low bushes	Stoliczka (1872)
c. 1870	Bhuj	Kutch	Gujarat	1		in open desert	Stoliczka (1872)
1875	Deesa (= Disa)		Gujarat	1	November	Collected by Butler	Sharpe (1879)
1876	Jesalmu (= Jaisalmer)	Jaisalmer	Rajasthan	1	March	Collected by Blanford	Sharpe (1879)
1876	Jodhpur		Rajasthan	1	February	Collected by Blanford	Sharpe (1879)
1877	Rooya (= ?Rooiya)	Aligarh	Uttar Pradesh	1	November	Collected by Brooks	Sharpe (1879)
1878	Sultanpur	Gurgau (= Gurgaon)	Haryana	2	January-February	Collected by Chell	Hume (1878)
c. 1878	Goorgaon (= Gurgaon)	Gurgaon	Haryana	?			Hume (1878)
c. 1878	Umballa (= Ambala)		Haryana	?			Hume (1878)
c. 1878	Sirsa	Hissar	Haryana	?			Hume (1878)
c. 1878	Hansi		Punjab	?			Hume (1878)
c. 1878	Shahpoor (= Shahpur)		Punjab	?			Hume (1878)
c. 1878	Jodhpur	Jodhpur	Rajasthan	33+S	January-February	Extremely abundant in scrub in sandy semi-desert	Hume (1878)

Year	Area	District	State	No. of specimens	Months	Remarks	Source
c. 1878	Bickanir (= Bikaner)	Bikaner	Rajasthan	?			Hume (1878)
c. 1878	Jeysalmir (= Jaisalmer)	Jaisalmer	Rajasthan	?			Hume (1878)
c. 1878		northern Gujarat		?			Hume (1878)
before 1892	Sirsa	Hissar	Haryana	2			Whistler (1915, 1922)
[1913	Meirut (= Meerut)	Meerut	Uttar Pradesh	1	January	Meinertzhagen collection	The Natural History Museum]
c. 1914	Ranian (= Raniya)	Hissar	Haryana	?	winter	Not uncommon, but local; waste sandy ground with low bushes	Whistler (1915)
c. 1914	Rori	Hissar	Haryana	?	winter	ditto	Whistler (1915)
c. 1914	Sohuwala	Hissar	Haryana	?	winter	ditto	Whistler (1915)
1915	Rori, near Sirsa		Haryana	1	March	Collected by Whistler	The Natural History Museum
1936	Nasirabad	Ajmer	Rajasthan	3		Meinertzhagen collection	The Natural History Museum
PAKISTAN							
1866	Hurriana (= Huriarmar)			1	February	Collected by Jerdon	Sharpe (1879)
c. 1878	Thurr district		Sind	?			Hume (1878)
c. 1878	Pakhur		Sind	?			Hume (1878)
1881	Kanduku	?	?	1	April	Collected by Swinhoe	
1918	Dab-kalan, Jhelum river	Jhang	Punjab	1	December	Collected by Ticehurst	The Natural History Museum
1919	Lallan	Jhang	Punjab	1	December	Collected by Whistler	The Natural History Museum
c. 1919	Bhowana	Jhang	Punjab	1	August	Collected by Whistler	Whistler (1922)
c. 1919	Ludhamani (= Ludmalini)	Jhang	Punjab	1	September	Collected by Whistler	Whistler (1922)
c. 1919	Nurpur canal escape	Jhang	Punjab	1	July	'A few pairs inhabit this area'	Whistler (1922)

Year	Area	District	State	No. of specimens	Months	Remarks	Source
1917, 1919, 1920	Khiwa, Mukhiana, Mochiwala, Winoka	Jhang	Punjab	5+	February, December	Collected by Whistler. Khiwa was a stronghold of the species	Whistler (1922)
before 1926	Bibi Nani	Bolan	Baluchistan			Recorded by Murray	Ticehurst (1926)
before 1926	Chaman		Baluchistan	?		Recorded by Murray	Ticehurst (1926)
1937	Jampur, near Indus river	Dera Ghazi Khan	Punjab	1	February	Collected by Waite	The Natural History Museum
[1937	Rohri		Sind	1	February	Meinertzhagen collection	The Natural History Museum
1938	Shadan Land (= Shadan Lund)	Dera Ghazi Khan	Punjab	1	December	Collected by Waite	The Natural History Museum
1942	Pohrwal	Guzerat	Punjab	1	January	Collected by Waite	The Natural History Museum
AFGHANISTAN							
1881	Dubrai			1 female	April	'Not very common' In British Museum	Swinhoe (1882)
1881	Kandahar			1 male	April	In British Museum	Swinhoe (1882)