

## The current status and biology of the White-naped Tit *Parus nuchalis* in Kutch, Gujarat, India

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The White-naped (White-winged Black) Tit *Parus nuchalis* is endemic to India and has a disjunct and restricted range (Ali and Ripley 1987). Hussain *et al.* (1992) have described its recent distribution but its ecology has not been studied. Its current status is of some concern due to its very limited geographic range, an apparent decrease in abundance and distribution, and substantial destruction or modification of native vegetation within its known range. It is treated as globally threatened by Collar *et al.* (1994) and categorized as Vulnerable.

The species is now patchily distributed in Kutch, probably due to fragmentation of scrub forest by human interference. A special watch was kept for it during various surveys carried out in Kutch. S. N. Varu, N. N. Bapat and M. K. Himmatsinhji were approached for details of any recent sightings.

The current status is described on the basis of 26 sightings between August 1991 and August 1994, mainly from Nakhtrana and Abdhasa talukas (= subdistricts), including some sightings made by other observers (Table 1). Roosting and feeding behaviour were studied in a tropical thorn forest near the village of Fulay-Chhari, at the edge of Banni in Kutch. Data on the roosting behaviour were collected for 24 days, and the nesting behaviour was studied for a total of 100 hours over a period of 10 days.

### *Study area*

The village Fulay-Chhari lies on the southern edge of the famous grasslands of Banni (23°12'N 69°54'E) in Kutch district. The village is located about 80 km north-west of Bhuj (district headquarters). Small groves of *Acacia nilotica* are present around the village, which is inhabited by cattle graziers. The Banni is a vast alluvial plain of about 3,850 km<sup>2</sup>, covered in parts with *Haloxylon salicornicum* and *Salsola bryosoma*. Many portions of Banni subject to inundation are covered with coarse grasses and sedges. The White-naped Tit was found in small groves dominated by *Acacia*. A major part of Kutch still has tropical thorn forest, especially near Dhinodhar, Dayapar, Moti Virani, Piyoni, Matano Madh, Khadir, Ramvada and Barendra. Intense studies were carried out around Fulay-Chhari on the tit and other species, and short surveys were conducted elsewhere throughout Kutch.

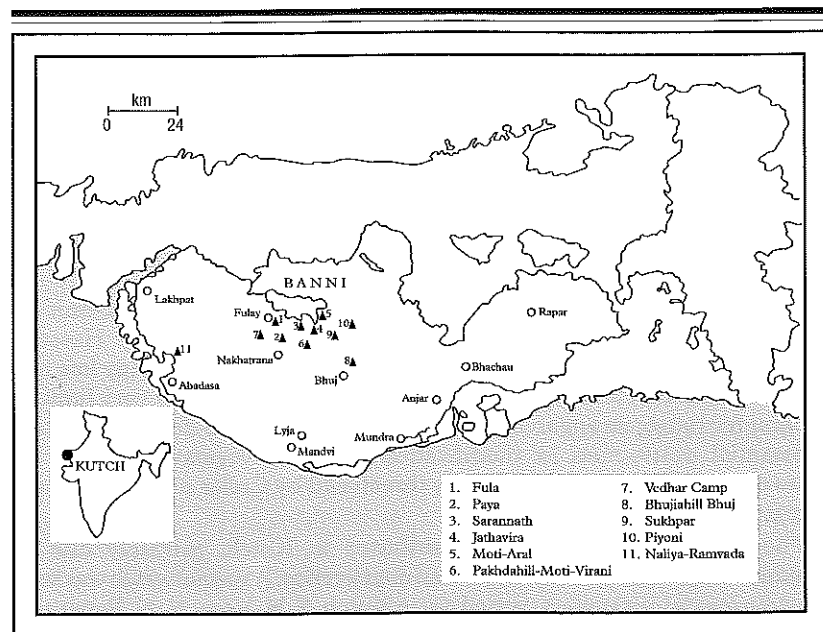


Figure 1. Distribution of White-naped Tit in Kutch district 1992-1994

## RESULTS AND DISCUSSION

### Current status of the species

The White-naped Tit revealed its presence in an area by its musical calls. During the breeding season (June - August) they were very vocal. They were very shy, flying off when approached to a distance between 30 and 50 m. The preferred habitat of the species was scrub forest, consisting of *Acacia leucophloea*, *A. nilotica*, *Prosopis cinerarea*, *Ziziphus jujuba*, *Capparis aphylla*, *Salvadora oleoides*, *S. persica* and *Grewia tenax*. However, in drought years, they have been observed in green stream beds and in irrigated fields, where they may well come into contact with insecticides used for pest control.

The species is found patchily distributed throughout most of Kutch, but nowhere is it common. It was always associated with dead and decaying trees, where it roosts and nests in holes made originally by Yellow-crowned Woodpeckers *Dendrocopos maharattensis*.

It is still found at a low density in all the suitable natural habitats, wherever appropriate snags in old or dying trees are available. There appears to be some local movement in search of food. They apparently disappeared from the study area for periods as long as three months, indicating that they wander extensively.

Locality	Date	Number	Remarks
Payva village	3 August 1991	1	<i>Acacia leucophloea</i> scrub
Pakhda Hill, Moti-Virani	27 September 1991	2	
Sanarnath, near Jathavira	1 October 1991	1	
Sukhpar road, near Moti-Virani	11 January 1992	2	
Ramvada, near Naliya-Abdhasa	20 May 1992	1	Navin Bapat
Pakhda Hill	2 July 1992	2	Feeding on insects on dung heap
Payva village	28 August 1992	1	<i>Acacia leucophloea</i> scrub
Piyoni temple	7 November 1992	2	Forest - N. Bapat (pers. comm.)
Fulay village	3 December 1992	4	Scrub
Fulay village	17 January 1993	2	Scrub
Jathavira	29 January 1993	1	Near a crop field
Verad camp near Fulay	13 April 1993	1	
Moti-Aral	19 April 1993	1	
Pakhda Hill, Moti-Virani	29 June 1993	1	
Bhujia Hill, near Bhuj	29 June 1993	1	
Payva village	4 July 1993	2	
Fulay village	7 July 1993	1	
Payva village	20 August 1993	1	
Fulay village	21 August 1993	5	2 adults and 3 fledglings
Fulay village	28 September 1993	2	
Jathavira village	17 November 1993	1	
Fulay village	12 January 1994	1	
Fulay village	6 April 1994	2	
Fulay village	12 July 1994	1	
Fulay village	29 August 1994	2	Near a nest

Table 1. Recent records of White-naped Tit in Kutch

### Breeding behaviour

Very little has hitherto been recorded concerning the breeding behaviour (Ali 1945) and the clutch size is still unknown.

In June 1993 a pair was found near a tall *Acacia nilotica* tree. One, perhaps the male, was very vocal, perching on the highest branch and emitting a variety of vocalizations, from a sweet song to bold scolding notes. It was noted around the same tree for eight days but the nest was not located. Fourteen apparently suitable holes were located in about 2 km<sup>2</sup> of scrub forest, five of which were occupied by Chestnut-shouldered Petronias *Petronia xanthocollis* and two by Brahminy Starlings *Sturnus pagodarum*. The number of available nest holes has been considered a major factor limiting the population size of several secondary hole-nesting species (Nilsson and Martin 1993).

Finally, on 24 July 1993 a nest of White-naped Tit was located in an old woodpecker's nest hole in a 5 m tall *Salvadora persica* near Fulay village, Kutch (23°12'N 69°54'E). The nest, which faced south-west, was 2.5 m from the ground and the hole had a circumference of 35 mm. Breeding behaviour was studied over ten days for a total of 100 hours, and roosting

behaviour was recorded on 24 days. The male advertises his presence from a prominent perch for several days and it seems likely that he chooses the nest site. Food was brought by both parents to the young a total of 470 times, at a rate of 4.68 times per hour. Caterpillars were the most frequent food, non-hairy ones constituting 56.6% of the total, and hairy ones 21.3%. Other items brought were insect pupae, beetles and weevils (together comprising 13% of the total) and spiders (9.1%). Food was brought by both parents, commencing as early as 06h25 (before sunrise) and continuing as late as 20h00 (long after sunset). The parents called when approaching the nest, eliciting a response from the nestlings. The maximum interval between visits was 62 mins and the minimum interval was 3 secs. When both parents arrived simultaneously with food one would enter the nest and the other would pass the food from outside. Sometimes the bird holding food outside would adopt a strange posture, fanning its tail, drooping and shivering its wings, whilst holding its neck tucked in. The parents generally remained quiet when predators appeared near the nest. The parents frequently removed faecal sacs from the nest: 236 times (50% of the number of occasions when food was brought). The sacs were dropped 30-40 m from the nest. Four chicks were reared in the nest that was studied.

The first chick left the nest at 10h15 on 3 August and the remaining three the following day. The fledglings moved to the middle canopy of a thorny *Acacia nilotica* and they remained in the vicinity of the nest site for about four or five days. About 40 days after leaving the nest the young birds were found without their parents in attendance.

The first author found a nest at the same site in August 1994. It was noted that only one of the pair was ringed. The nest was predated two days after it was found but, due to heavy rainfall, the cause of predation could not be determined. It is not known whether one of the adults from the previous year had died or whether this species regularly changes partners.

### Sexual dimorphism

Ali (1945) considered that the sexes were alike, but Adam (1873) noted that the male's white nuchal patch is larger and more semicircular than the female's. The male and female were trapped near to the nest that was being watched, just prior to the chicks fledging, and both birds were colour tagged to facilitate individual identification. A prominent brood patch was found in one bird - presumably the female. This bird was smaller than the other and had a flatter head, lacking the short crest shown by the male when it was excited. It was noted that the underparts of both birds were suffused with yellow, a colour which had begun to appear about one month prior to nesting. Both birds were ringed and released immediately after they had been measured. They appeared slightly agitated for about 15 mins after release, but soon recommenced bringing food to the nest.

### Biometrics:

	Wing (mm)	Bill (mm)	Tarsus (mm)	Tail (mm)	Weight (gm)
Male	67	12	20	53	-
Female	65	12	19	49	13

### Roosting behaviour

The birds normally retired to roost about sunset, but occasionally it would be as late as 20 mins afterwards. They selected natural hollows or fissures in dead *Acacia nilotica* trees. The height of the roosts varied from 4 to 8 m. Prior to retiring they were very vocal, emitting a variety of calls, including sweet, musical whistles and bold scolding notes. The individuals studied showed a strong fidelity to the roost sites, utilizing the same site on a number of consecutive days. At one site a Chestnut-shouldered Petronia had a nest in the same tree and used to chase the tits as they settled to roost; however, the tits continued to return to the site. One roost tree was cut down by local people and another was burnt when part of the scrub forest was cleared for cultivation - the base of the tree was set alight when the birds were occupying the roost. We were able to extinguish the blaze before it destroyed the tree.

This highlights the need to conserve dead and decaying trees in scrub forests in the area. Even while nesting one parent would use the normal roost site and, when the young birds became too big, both parents would occupy their favoured roost site.

### Food and feeding behaviour

The recorded food consists predominantly of insects and spiders. During the course of this study some individuals were noted feeding on the fruits of *Salvadora oleoides*, and on the nectar of *Capparis aphylla*. They usually fed in trees but they were noted to drop to the ground to catch insects (?) on a dungheap. On three occasions birds were noted drinking water from a small puddle.

### Predators and threat postures

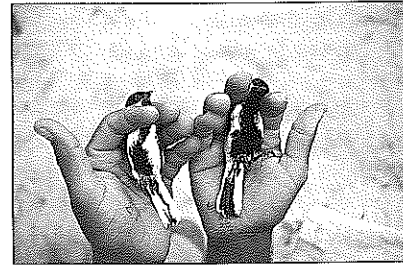
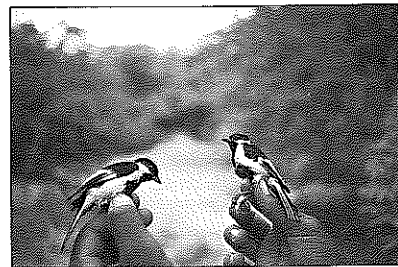
A John's Earth Boa *Eryx johni* was seen trying to enter the White-naped Tit's nest. The snake was caught and released away from the nest site.

Shikras *Accipiter badius* were noted several times near the nest site, and a White-eyed Buzzard *Butastur teesa* was seen once, but the birds were not seen to attempt to catch the tits. In the presence of a Shikra the tits became silent and hid in the bushes.

Rats *Rattus* were seen a few times in the nest tree. The tits adopted a threat posture, waving their heads to and fro, fanning their tails and spreading their wings apparently to give the appearance of a coiled snake with its head erect and swaying. This display caused the rat to move away rapidly.



Clockwise from top left: Scrub-forest habitat of White-naped Tit *P. nuchalis*; Chick of *P. nuchalis*, August; *P. nuchalis* on nest with food; Male (right) and female *P. nuchalis*; Male (right) and female *P. nuchalis*; Yellow-crowned Woodpecker, *Dendrocopos maharattensis*, on which *P. nuchalis* depends for nest sites (Photos: J. K. Tiwari)



### Conservation

This study indicates that the long-term survival of the species in Kutch is dependent on the tropical thorn forest and the conservation of dead and decaying *Acacia* trees. The main causes of deforestation in Kutch are illegal charcoal-making, the chopping of green fuel wood for bakeries, clearance of the scrub for cultivation, the lopping of *Acacia* trees for fodder, and the cutting of twigs for use as disposable toothbrushes. We estimate that in Bhuj alone two or three *Acacia nilotica* trees are lost daily due to heavy lopping to produce toothbrushes. About 40 families in Bhuj survive by selling tender

twigs from house to house, and it is estimated that 50% of the population of Kutch (1,200,000) use green twigs from this tree for tooth brushing. An estimated 100 trees are lost daily for this reason. This slow and steady use of *Acacia* trees is depleting the still abundant scrub cover of Kutch.

Excellent scrub forest is present in patches in Narayan Sarovar Chinkara Sanctuary. There is a great danger that this reserved forest will disappear or become degraded, if proposed cement factories are established in the sanctuary. The Government of Gujarat has initiated steps to denotify the sanctuary and reduce its size from 765 km<sup>2</sup> to 96 km<sup>2</sup>. There are also proposals to build 43 factories in the area to exploit the rich limestone resources underlying the thorn forests. If these are developed it is likely that most of the suitable habitat for the White-naped Tit in Kutch would be destroyed.

There is an urgent need to conserve the tropical thorn forests and to find other areas where the White-naped Tit still occurs.

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