# A REVIEW OF RECORDS OF THE NORTHERN SHRIKE-TIT *FALCUNCULUS FRONTATUS WHITEI* IN NORTHWESTERN AUSTRALIA

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## SUMMARY

Specimens of the Northern Shrike-tit *Falcunculus frontatus whitei* were first collected in 1910. A search of the literature shows that since then there have been only 26 records from 22 localities. These records indicate a limited and sparse distribution across northern Western Australia and the Northern Territory. There is insufficient information to explain this distribution. However, the bark foraging habits of the shrike-tit may be affected by the physical and reproductive characteristics of the dominant trees and the seasonality of the area.

## INTRODUCTION

Specimens of the northern subspecies of the Crested Shrike-tit *Falcunculus frontatus whitei* were first obtained during a collecting trip by Mr G. F. Hill to the Kimberleys in 1909-1910 (Hill 1911) – a trip 'liberally subsidised' by H. L. White (Campbell 1910). A. J. Campbell named the type specimen *Falcunculus whitei* in honour of Mr White's liberal sponsorship of the expedition, and gave it the vernacular name 'Yellow Shriketit' (Campbell 1910). Subsequently, it has become known as the 'Northern Shrike-tit'.

Hill recorded the Northern Shrike-tit for the first time on 31 December 1909, at the Mission Station, Napier Broome Bay, Western Australia (14°02'S, 126°36'E). He collected the first specimens at the Mission Station and 11 miles southeast of the Mission Station (14°08'S, 126°42'E) in March and June, 1910. Since then, there have been only 26 records of this elusive bird from 22 localities. This paper summarises those records and the scant information they yield on the Northern Shrike-tit's ecology and status.

## METHODS

Records were sought from the RAOU *Atlas of Australian Birds* (Blakers *et al.* 1984), Northern Territory Biological Records Scheme (NTBRS), museums, observers' field notes and literature searches of *Emu, Northern Territory Naturalist, Western Australian Naturalist, Western Australian Bird Notes, South Australian Ornithologist, Australian Bird Watcher, Bird Observer,* North (1909) and Mathews (1923-24).

## RESULTS

Three years after G. F. Hill collected his specimens in the Kimberley region of Western Australia, H. G. Barnard collected one bird and two sets of eggs from near Borroloola, on the McArthur River, in the Northern Territory (Barnard 1914; White 1914). This locality remains the easternmost known site for the Northern Shrike-tit, and is widely separated from populations of Crested Shrike-tit in northeastern Queensland by the arid hinterland of the Gulf of Carpenteria (Blakers *et al.* 1984). Sadly, the Borroloola site appears to be a historical locality. No shrike-tits have been recorded from the McArthur River district since Barnard's collecting trip, despite subsequent ornithological surveys of the area (Schodde 1976; Blakers *et al.* 1984; M. Fleming pers. comm.), and Hill failed to find the bird there in 1911-12 (Hill 1913).

In the Northern Territory most recent records come from the region 14°-16°S and 130°-133°E (Fig. 1), notably from Larrimah, Mataranka and the Katherine district (Table 1). There are outlying records from Kapalga, near Montejinni Station and the eastern edge of the Arnhem Land escarpment, approximately 50 km south of Ramingining (Table 1).

In the Kimberley, few birds have been recorded since Hill collected his specimens in 1910. Sedgwick recorded one bird at Beverley Springs Station in May, 1979 (Sedgwick 1988a). Birds have also been recorded from Wotjulum Mission, Kimberley Research Station, Ord River (Slater 1959), and Drysdale River crossing (Blakers *et al.* 1984; Aumann 1991) (Table 1). No birds have been recorded recently from near Napier Broome Bay (Storr *et al.* 1975; Johnstone *et al.* 1977; Blakers *et al.* 1984).

## HABITAT

Although Barnard (1914) recorded shrike-tits only from the ridges near the McArthur River, Northern Shrike-tits have been recorded from a range of landforms. These include stony hill sites near Mt Todd, the east Arnhem Land escarpment, blacksoil

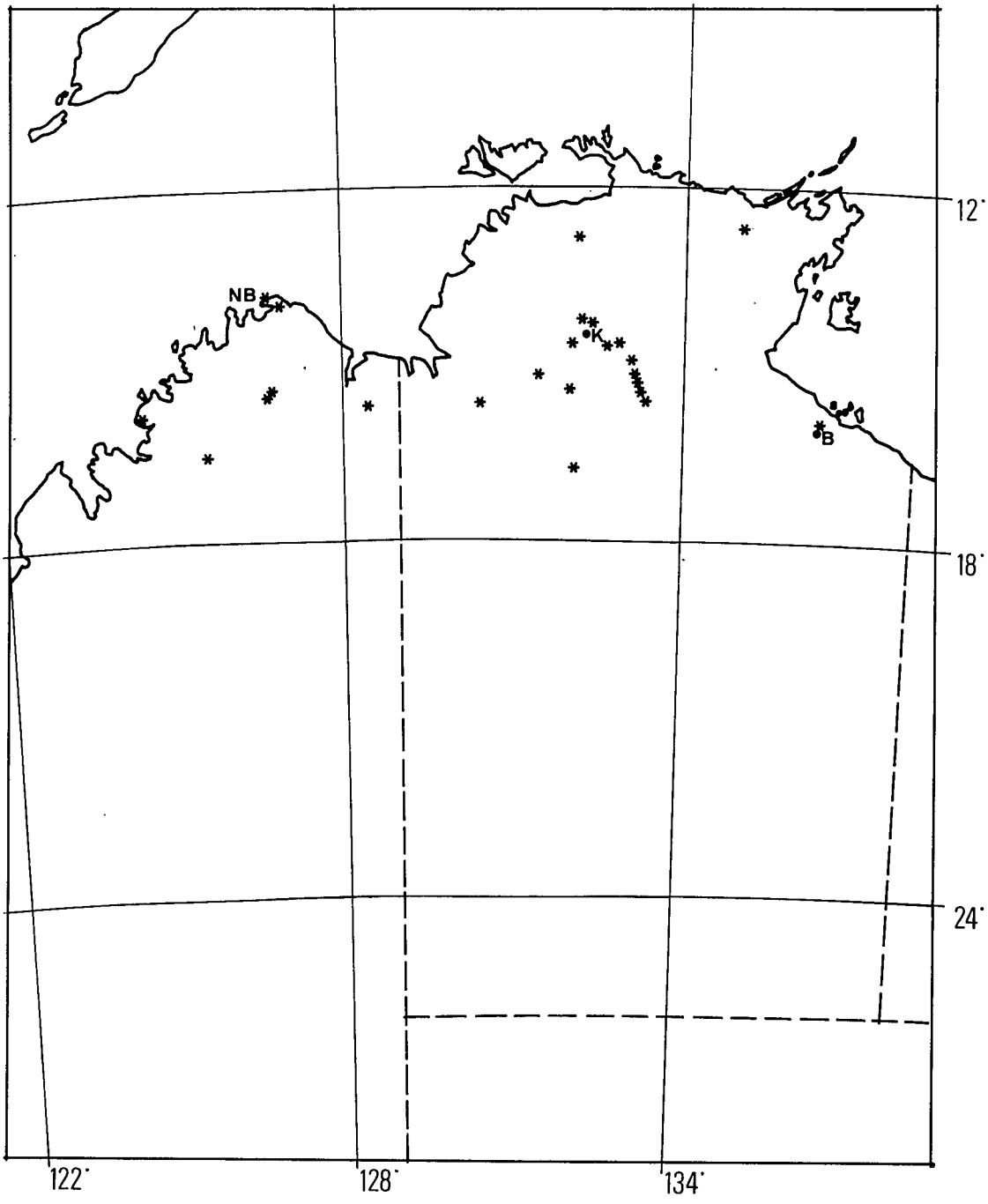


Figure 1. Map of northwestern Australia showing locations of records of the Crested Shrike-tit. The localities of Napier Broome Bay (NB), Katherine (K) and Borroloola (B) are indicated.

Table 1. Locality records of Crested Shrike-tits in northwestern Australia.

| Locality | Grid co-ordinates | Date | Number | Source |
|---|---|---|---|---|
| Borroloola | 16°04'S, 136°18'E | 16/6/13 | 2 | Barnard 1914, Mathews 1923-24 |
| Borroloola | 16°04'S, 136°18'E | 22/1/14 | (eggs) | White 1914 |
| 50 km S of Ramingining | 12°38'S, 134°49'E | 6/8/90 | 2 | D. Robinson |
| 'Maryfield', Larrimah | 15°45'S, 133°25'E | 9/7/80 | 1 | Blakers *et al.* 1984 |
| 10 km N of Larrimah | 15°33'S, 133°11'E | 10/44 | 2 | Sedgwick 1947 |
| Mataranka | 14°55'S, 133°05'E | 9/52 | 4 | Tarr 1954 |
| 10 km S of Mataranka | 15°02'S, 133°05'E | 15/8/81 | 1 | G. Roberts, pers. comm. |
| 'Old Elsey', Roper Hwy | 15°05'S, 133°05'E | 12/7/80 | 2 | Blakers *et al.* 1984 |
| Eva Valley Rd, Maranboy | 14°30'S, 132°48'E | 18/12/87 | 1 | Holmes & Noske 1990 |
| Leach's Lagoon, Maranboy R.S. | 14°40'S, 132°37'E | 7/67 | 1 | Rix 1970 |
| Kapalga | 12°15'S, 132°08'E | 76 | ? | Keast 1985 |
| Mt Todd | 14°08'S, 132°06'E | 11/86 | 3 | J. Woinarski |
| Mt Todd | 14°08'S, 132°06'E | 4/89 | ? | B. Lane, pers. comm. |
| Katherine Gorge N.P. | | 13/7/89 | 1 | NTBRS |
| 25 km SW of Katherine | 14°35'S, 132°05'E | 12/12/77 | 3 | M. Reed pers. comm. |
| 50 km SE of 'Willeroo' | 15°37'S, 131°54'E | 11/83 | 3 | NTBRS |
| 25 km SSE of 'Montejinni' | 16°50'S, 131°50'E | 12/83 | ? | NTBRS |
| 30 km SW of 'Willeroo' | 15°27'S, 131°22'E | 4/3/86 | 3 | S. Tidemann, pers. comm. |
| 30 km SW of 'Willeroo' | 15°27'S, 131°21'E | 4/3/86 | 3 | S. Tidemann, pers. comm. |
| Timber Creek | 15°35'S, 130°25'E | 10/8/77 | 3 | Blakers *et al.* 1984 |
| Kimberley Research Station | 15°35'S, 128°25'E | 55-56 | ? | Slater 1959 |
| 17 km SE of Napier Broome Bay | 14°08'S, 126°42'E | 9/6/10 | 2 | Hill 1911, Mathews 1923-24 |
| Napier Broome Bay | 14°02'S, 126°36'E | 31/12/09 | 2 | Hill 1911 |
| Drysdale River crossing | 15°42'S, 126°23'E | 25/4/76 | ? | Blakers *et al.* 1984 |
| Drysdale River crossing | 15°42'S, 126°23'E | 26/8/91 | 1 | Peter Lansley, pers. comm. |
| 8 km N of Drysdale River crossing | 15°42'S, 126°23'E | 7/8/89 | 1 | Aumann 1991 |
| Beverley Springs Station | 16°35'S, 125°30'E | 24/5/79 | 1 | Sedgwick 1988a |
| Wotjulum Mission | 16°11'S, 123°37'E | 1940s | ? | R. Johnstone, pers. comm. |

plain and floodplain environments (Hill 1911; Slater 1959; NTBRS; S. Tidemann pers. comm.), rocky ridges (Barnard. 1914) and river edges (T. Aumann pers. comm.). Of the 14 records for which habitat descriptions are available, seven have been in *Eucalyptus miniata, E. tetrodonta, E. bleeseri* woodlands, the woodland type claimed to be the shrike-tit's preferred habitat (Storr 1977). The other records have been in woodlands dominated by *Eucalyptus* spp., *Melaleuca* spp. or *Terminalia arostrata* (Table 2).

Several observers mention a grass understorey, with little or no shrub understorey (B. Lane pers. comm.; M. Reed *in litt.;* G. Roberts pers. comm.; D. Robinson). Other records have alluded to a shrub understorey of species such as *Melaleuca viridiflora* (Holmes and Noske 1990). The site near Ramingining was noteworthy for the large average size of the eucalypts, but tree size has not been commented on elsewhere.

## BEHAVIOUR

The few foraging records available suggest that Northern Shrike-tits forage in a similar manner to the eastern subspecies. Barnard (1914) noted them 'hunting among the dead leaves and dry tree stems for insects'. Sedgwick (1947) recorded that 'In each case the bird was tearing bark from a limb in a similar manner to that frequently employed by the Eastern Shrike-Tit'. At the Ramingining site, the two birds prised bark flakes from branches of *E. miniata, E. bleeseri* and a dead standing tree. At Mt Todd, birds foraged on the bark and outer branchlets of *E. tintinnans.*

The only food item recorded is a bark cricket (Barnard 1914).

At Ramingining, Timber Creek (Blakers *et al.* 1984) and Beverley Springs (Sedgwick 1988b), the shrike-tits appeared to be part of mixed-species feeding flocks. Similar behaviour seems to have been recorded only rarely for the eastern or southwestern

Table 2. Dominant tree species at Northern Shrike-tit sites.

| Habitat | No. of records | Source |
|---|---|---|
| *Eucalyptus tetrodonta/E. miniata/E. bleeseri* | 7 | (NTBRS; Barnard 1914; Sedgwick 1947, 1988a; A. Keast, S. Tidemann, M. Reed, pers. comm.) |
| *E. clavigera* | 1 | (J. Woinarski) |
| *E. latifolia/E. tectifica/E. dichromophloia* | 1 | (Holmes & Noske 1990) |
| *E. tintinans/E. dichromophloia/Erythrophleum chlorostachys* | 1 | (B. Lane) |
| *Eucalyptus camaldulensis/E. confertiflora/E. microtheca* | 1 | (Slater 1959) |
| *Melaleuca leucadendra/E. camaldulensis* | 1 | (T. Aumann) |
| *Melaleuca miniata* | 1 | (S. Tidemann) |
| *Terminalia arostrata* | 1 | (S. Tidemann) |

subspecies (Hindwood 1937; Sedgwick 1949; Bell 1980; Hermes 1981; R. Noske pers. comm.), although shrike-tits in southeastern Australia may join influxes to areas with abundant food (Loyn *et al.* 1983).

Two nests of the Northern Shrike-tit have been recorded, both collected at Borroloola by Barnard (1914), who noted that the nests were '. . . in the forks of the topmost branches of tall stringy-bark saplings'. Eggs from one of the nests were collected in January (White 1914). In the Kimberley region, Hill (1911) suspected birds to be nesting in early October, but could not locate the nest.

In contrast to the eastern subspecies of the Crested Shrike-tit, the northern subspecies appears to call only rarely and appears to give very subdued notes (Hill 1911). Of 12 records in which observers noted the behaviour of the birds, only four commented that the birds called.

The most detailed description of the call is given by Rix (1970). He noted that the call '. . . commenced with the familiar mournful descending notes of the Eastern species but instead of repeating the same descending call it followed immediately with an upward group of similar duration and with a similar range of notes but in reverse . . . On no occasion did it merely give part of the bracket viz. the descending portion without the upward bracket following immediately'.

## DISCUSSION

In eastern and southwestern Australia, the Crested Shrike-tit is generally considered an uncommon, sedentary species in forest and woodland habitats (Blakers *et al.* 1984; Emison *et al.* 1987), occurring at average densities of 0.2 birds/ha in various areas of eastern Australia (Blakers *et al.* 1984). Reporting rates for the subspecies *F. f. frontatus* (eastern Australia) and *F. f. leucogaster* (southwestern Australia) nonetheless are far higher than for *F. f. whitei:* 24% of birdlists compiled in Victoria between 1973 and 1986 included Crested Shrike-tit – a total of 3211 records of the nominate subspecies in 14 years (Emison *et al.* 1987); 4% of birdlists compiled in southwestern Australia during the Field Atlas included a Shrike-tit (a total of 157 records), and breeding was recorded from ten 1° blocks (Blakers *et al.* 1984). By contrast, less than 1% of birdlists compiled in northwestern Australia during the Field Atlas included Shrike-tit (a total of 4 records) and no nests were found. Altogether, only 28 known sightings have been made of the northern subspecies from its discovery in 1909 to the present day, and only two nests have ever been found.

Comments by early observers suggest that the northern subspecies has always been scarce. Hill (1911) collected his first specimens in March, 1910, but noted that 'I saw no more until 9/6/10, when I noticed another pair in some lightly-timbered country 11 miles south-east of Napier Broome Bay'. Barnard described them as 'rare on the M'Arthur' and, in one year of collecting, recorded 'only a few pairs' (Barnard 1914). Additional, indirect evidence for the scarcity of the Northern Shrike-tit may be gleaned from the failure of many early observers and collectors to record them (e.g. Ashby 1914, 1915; White 1917; Campbell 1919; Tindale 1925). Recent biological surveys of the Kimberley region (Storr *et al.* 1975; Johnstone *et al.* 1977, 1981; Johnstone 1983), Keep River National Park (McKean 1985), Victoria River Downs (Boekel 1980), Kakadu National Park (Woinarski and Braithwaite 1991) and parts of Arnhem Land (Deignan 1964; Frith and Hitchcock 1974; Hall 1974) also have not recorded them.

Populations in southeastern and southwestern Australia are known to be vulnerable to loss of mature forest and fragmentation of wooded habitats (Recher *et al.* 1987; Storr and Johnstone 1988; Saunders and Curry 1990). In northern Australia, however, wooded cover is virtually continuous from the Kimberley to the Queensland border, and comprises the largest continuous area of wooded land in Australia (Bowman 1991). *E. miniata/E. tetrodonta* open forest/woodland, an apparently important habitat for the Northern Shrike-tit (Table 2), is one of the most widely distributed woodland communities in northern Australia (Brock 1988). Why then, is the Northern Shrike-tit seemingly so rare?

Woodlands in northern Australia generally have fewer species and lower densities of bark-foraging birds than comparable habitats in southern Australia (Keast 1985; Brooker *et al.* 1990; Woinarski and Tidemann 1991). It has been proposed that this paucity of bark-foragers reflects differences between temperate and tropical Australian woodlands in food resources, physical and reproductive characteristics of dominant trees, and/or fire regimes (Brooker *et al.* 1990; Woinarski and Tidemann 1991).

Northern Australian woodlands have relatively few eucalypts with decorticating bark. They also have few eucalypts of the subgenera *Monocalyptus* or *Symphyomyrtus* that are so widespread through southeastern and southwestern Australia. Both of these differences may affect the abundance of bark-dwelling arthropods in northwestern Australia. Accordingly, Crested Shrike-tits may have to forage over huge areas of woodland in northern Australia to find sufficient food. Hill's (1911) observations, for instance, indicate very wide spacing between groups of birds and intimate that observations of groups of birds 20 km apart might conceivably refer to the one group of birds.

The marked wet-dry seasonality of the environment in northern Australia may make it an unsuitable environment for specialist foragers (Brooker *et al.* 1990), perhaps due to marked seasonality in availability of certain food resources (Woinarski and Tidemann 1991) or some phenological events (e.g. bark shedding).

Frequent fires, particularly the hot fires typical of the late dry season, may reduce the suitability of habitat by destroying food resources or causing invertebrates to disperse. Unburnt patches consequently may contain more food than burnt patches, perhaps causing specialist foragers such as bark-foragers to join mixed-species flocks in search of food (Greig-Smith 1978), and to disperse more widely (Woinarski and Tidemann 1991). Frequent fires may have a further impact through the loss of large eucalypts from the open forest and woodland environment and consequent loss of available habitat. In southeastern Australia, shrike-tits selectively forage on large eucalypts (Smith 1985a) and appear to be more common in older forest than young regrowth forest (Loyn 1985; Smith 1985b; Recher and Lim 1990). Similar patterns may be true of shrike-tits in northern Australia but more data are needed. For example, more information is needed on the long-term effects of fire on specialist bark-foraging and foliage-foraging birds (see Woinarski 1990), and on arthropods of bark and foliage.

As the above discussion highlights, it is not yet clear why Crested Shrike-tits are so rare in northwestern Australia. Nevertheless, the apparent absence of the bird from so much of the extensive *E. miniata/E. tetrodonta* woodland community suggests that additional factors other than tree species limit its distribution, and stress the need for detailed studies of its ecology. Although there is no evidence that the bird has declined since its discovery in 1909, it is significant that it has not been recorded from its type localities in Western Australia or the Northern Territory in the past 80 years. We concur with the listing of the bird as 'insufficiently known' (Garnett 1992).

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