# THE SINGING BUSHLARK *MIRAFRA JAVANICA* IN THE SOUTH EAST OF SOUTH AUSTRALIA

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## SUMMARY

The status of the Singing Bushlark *Mirafra javanica* in the South East of South Australia was evaluated by taking specimens from a wide range of localities. The results show the species to be widespread and numerous. The race *keasti* cannot be maintained as a valid form since it intergrades extensively with the race *horsfieldi* which is represented throughout the area. The race *secunda* of South Australian agricultural areas is also losing its identity due to apparent invasion of the southern parts of its range by *horsfieldi*.


## INTRODUCTION

Mayr and McEvey (1960), in a comparative review of the distribution and variation of the Singing Bushlark *Mirafra javanica* in Australia, described several new races of the species including one, *keasti*, based on three specimens from Bool Lagoon in South Australia collected by J.B. Hood. Using Hood's observations and information they regarded *keasti* as being confined to the black soil plains of the South East and the few prior sight records from the lower South East were tentatively assigned to that race. Hood indicated that a northerly sighting from Mt Charles appeared to be of a lighter form.

In the 30 years since the description of *keasti* a further 29 specimens had been taken from the South East, ten of which were sent to the British Museum. All came from the vicinity of Bool Lagoon except for four taken at Western Flat in 1982 by J. Endersby. In an appraisal of *M. javanica* skins held by the SA Museum, S.A. Parker assigned these Western Flat birds to the race *horsfieldi*. Condon (1969) did not recognise this race as present within South Australia. One of two birds taken at Kinchina on 1 August 1925 by J.B. Cleland was the only specimen distant from Bool Lagoon that he assigned to the race *keasti*. This he regarded as an example of nomadism in the non-breeding season (Parker per comm).

The presence of *horsfieldi* so close to the heartland of the keasti population suggested that a more detailed study of *M. javanica* in the South East was warranted to assess 1) whether *keasti* was, in reality, restricted to the area adjacent to Bool Lagoon; 2) whether *keasti* might be vulnerable because of such restricted distribution; 3) what the status was of the form *horsfieldi* in the South East; and 4) what intergradation, if any, was evident between the two.

My study therefore involved the taking of specimens from as wide a range of localities as possible so as to find what differences might be attributable to locality, soil type, sex and life stage.

## METHODS

Three surveys, each of five or more days duration, were undertaken in April and November 1990, and February 1991. The Bool Lagoon area was not surveyed since adequate material was available from there. All areas of old or recent sightings were visited as well as those considered likely because of land use or soil type. Birds were either seen from the vehicle during travel or flushed by foot searches through likely patches of habitat.

## RESULTS

At the time of Mayr and McEvey's (1960) review only four sightings from the South East were recorded in literature. The few sightings since gave the impression that the species might be rare away from Bool Lagoon. However, this survey located the species at 11 localities in the lower South East and six in the upper South East. These are shown in Figure 1 as are the localities for specimens from previous studies. Despite a seemingly patchy distribution because of its preference for certain microhabitats, for example cereal crops, it can be regarded as widespread and numerically quite strong. On at least five occasions I encountered concentrations of more than one hundred birds in an area of 40 ha.

Table 1 shows the categories to which specimens were assigned and the numbers therein. The bias towards collecting males in the breeding season comes about because of their habit of singing high in the air on fluttering wings and tendency to perch in exposed positions, especially on fences. Singing birds may range quite widely, passing over the areas of other nesting pairs, but apparently only a small

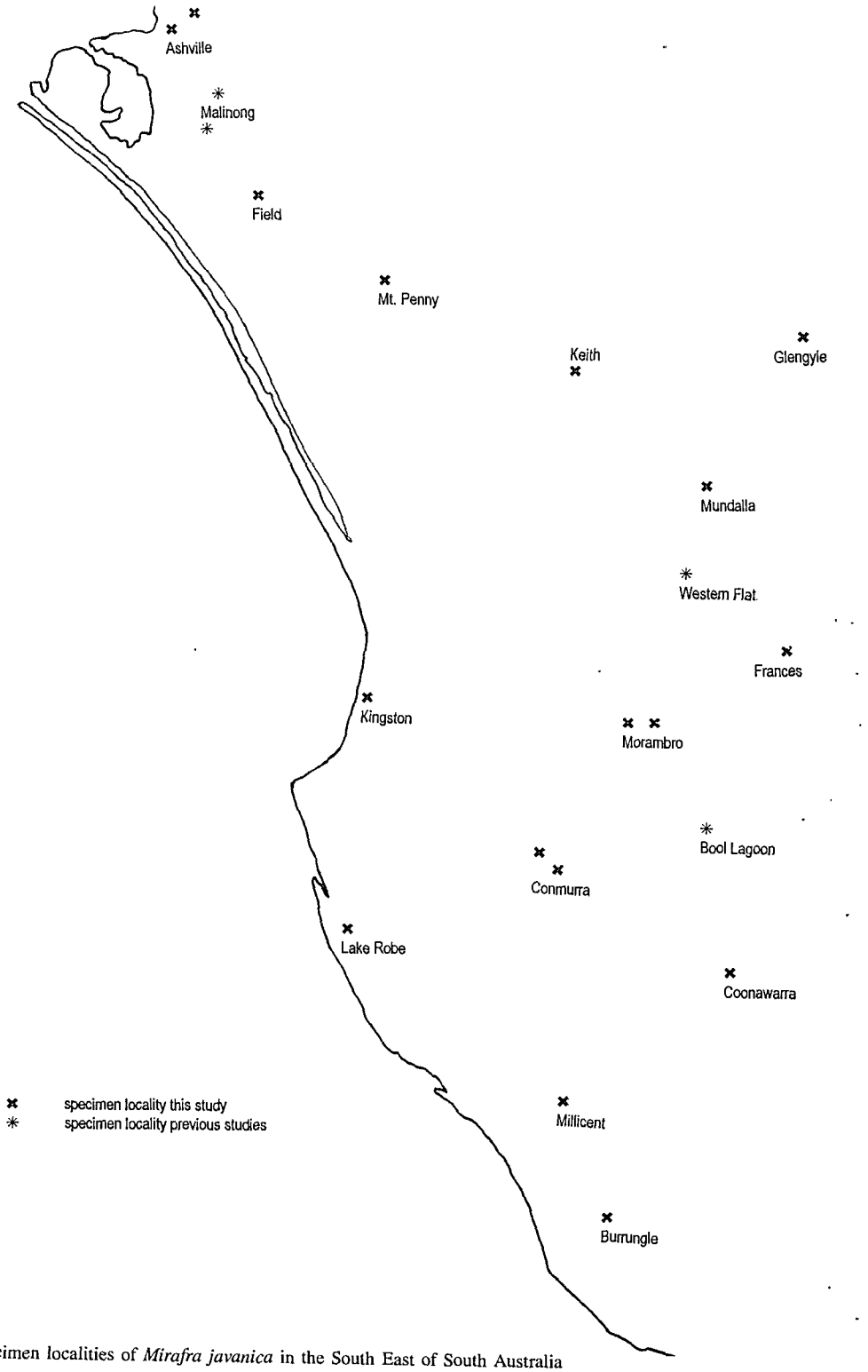


Figure 1. Specimen localities of *Mirafra javanica* in the South East of South Australia

Table 1. Specimens assessed for plumage variation

| Sex | Age (by skull) | Time of year | Number |
|---|---|---|---|
| Male | Adult | Breeding | 19 |
| Female | Adult | Breeding | 3 |
| Male | Adult | Non-breeding | 2 |
| Female | Adult | Non-breeding | 3 |
| Male | Immature | Breeding | 1 |
| Female | Immature | Breeding | 1 |
| Male | Immature | Non-breeding | 17 |
| Female | Immature | Non-breeding | 4 |

nesting territory is defended, as comparatively few antagonistic chases are witnessed. Only low-flying birds seem subject to chase. Not so easily explained is the preponderance of immature males taken in the non-breeding season. Presumably females are more furtive.

## Variation

Mayr and McEvey (1960) gave detailed descriptions of all races and discussed at length the ways by which each could be separated from either nearby or similar races. My material showed that the dark *keasti* form ranged much more widely than the Bool Lagoon area, some skins from Burrungule, Millicent, Conmurra and Frances readily aligning with the type material. At the conclusion of the surveys, material from the Australian Museum, National Museum of Victoria and CSIRO collections was obtained and compared with all available material held in South Australia. This revealed that many of the specimens taken were typical *horsfieldi* while others were intermediate and could be placed with either race. As early as 1963 a specimen typical of *horsfieldi* had been taken at Struan near Bool Lagoon by the Harold Hall Expedition while several specimens from Victorian and New South Wales localities closely resembled *keasti*. Mayr and McEvey (1960) had noted this in one or two specimens that they assessed. At all *keasti* localities some birds closely resembling *horsfieldi* were taken also. Such an amount of intergradation means that *keasti* should no longer be regarded as a valid race.

As might be expected, the darkest specimens came from the most northerly locations, a gradual infusion of warmer brown becoming increasingly evident with northerly movement; those from near Ashville were brownest and showed strong evidence of intergradation with the race *secunda*. There were some minor aberrations to this smooth clinal progression. A single bird obtained near Lake Robe appears much browner than other southerly specimens but this may be because it was heavily in moult. Four specimens from near Coonawarra were browner than Bool Lagoon specimens to the north of them. More significant was the consistently browner tone of three specimens from high ground near Morambro than that evident on another three specimens taken only 5 km to the east on a black soil plain. Also a specimen from 7 km west of Mundalla and another from 15 km north of Bordertown have sufficient brown toning to readily match with dark specimens from the Ashville or Langhorne Creek areas. Generally though, all specimens from south and east of Field could be regarded as either *keasti* or *horsfieldi*.

Juveniles and immatures are usually darker than adults from the same locality. The dark feathers of the crown and dorsum in young birds are tipped posteriorly with narrow pale margins, creating a scalloped effect which persists on the crown longer than on the body. Several specimens in adult plumage had skulls not quite fully ossified, suggesting that juvenile plumage might usually be lost by the end of the first year. While there is no apparent sexual dimorphism, most males found possessed short silvery under-feathers at the margins of the brood patch area, but all females handled did not. This feature is sufficiently altered in the skinning process so as not to be evident in prepared skins.

## Food

The stout bill shape of *M. javanica* suggests a mainly seed diet and this was borne out by the seed matter found in many stomachs. Hulled oat kernels and oat-like kernels of grass seeds were most prevalent but small round yellow or black seeds were also often present. Small amounts of insect remains often accompanied the seed content, but consistent with Hood's observations the insect content predominated in the diet of the November specimens. Most insect prey taken were caterpillars, and on fewer occasions cockroaches, moth bodies and larvae of unknown species were noted. Small amounts of fine grit were usually present in stomach contents.

## Movements

What becomes of *M. javanica* in the non-breeding season is far from fully understood. The adaptation of plumage colour to soil colour suggests a species with strong fidelity to its nesting areas. Yet there is

also a widely held view that it is migratory, at least to some extent, in southern parts of its range. The observations of J.B. Hobbs (Mayr and McEvey 1960) give evidence of large scale movement but at an unusual time of year and this may represent movement to a choice feeding area rather than migration. Hood considered the species to be present throughout the year at Bool Lagoon although harder to find in winter. In my own area of Langhorne Creek it is also hard to find in most autumns and winters but diligent searching can usually locate some at such times. Like the Brown Songlark *Cinclorhampus cruralis*, *M. javanica* seeks situations with good cover and will congregate in such places in the non-breeding season. They are most difficult to find in drought years with poor growth and I have seen them sheltering in reeds in a dry swamp or samphire on such occasions. In April 1990 I was unable to locate any of the species south of a line from Kingston to Bordertown despite searching oat stubbles which appeared to be an ideal habitat. At the same time I could not locate any at Langhorne Creek but was able to do so a few weeks later in May. So both theories – that of migration away from southerly breeding ground in autumn and winter, and that of non-migration, with birds moving to areas of best cover and being more cryptic during that period – have some supporting evidence but not enough in either case to solve what may be a complex situation.

**Penetration of South Australia by *horsfieldi***

An evaluation of specimens from elsewhere in South Australia reveals that *horsfieldi* has penetrated much of the range formerly allocated to the race *secunda*. Mayr and McEvey (1960) commented on the presence of birds with the characteristics of the other race within the ranges of both *secunda* and *horsfieldi* but chose to uphold *secunda* as a valid race despite this intermixing. With over 50 specimens of *secunda* now available compared to the 20 examined by them it seems that *secunda* is being genetically swamped, at least in the southern parts of its range, by an invasion of *horsfieldi*-type birds. In more northerly areas this effect is less for a series of 14 specimens taken near Koolonga in the late 1970s by L.P. Pedler. It contained only two birds which do not align with *secunda*, whereas a series of 10 centred on Langhorne Creek contained only two *secunda*-type birds. S.A. Parker (per comm) pointed out that one could gather an assemblage of almost 20 specimens from localities commencing at Malinong and Langhorne Creek through Adelaide to lower Yorke and Eyre peninsulas representing a form intermediate between both races. These birds are too dark dorsally to align with typical *secunda* but possess too much rufous colouration ventrally to readily align with typical *horsfieldi*. I assume that this assemblage might represent the result of recent hybridism between the two forms, even though a specimen of this intermediate type was taken near Adelaide as early as 1892. If forced to allocate these specimens to a race I would place all but two with *horsfieldi*.

Unfortunately there are insufficient pre-1920 specimens to present a meaningful picture of the *M. javanica* situation in early days. At the time of white settlement *secunda* may have been fairly effectively isolated from *horsfieldi* in the east by the tracts of the Murray Mallee and the Ninety-Mile Plain though Sutton (1930a) has shown that some were present in the latter area before extensive clearance. Only the narrow strip of grassland along the Coorong and possibly the floodplain of the Murray (White 1918) would have offered some opportunity for movement by bushlarks. These same barriers would also have effectively isolated *keasti* to the north and west while the Little Desert would have offered some protection to the east. The southerly and south-easterly portions of the *keasti* range appear to have always been more vulnerable to infiltration by *horsfieldi* from Victoria's Western District. The expansion of agriculture through many former barriers has allowed virtually unhindered movement of the species and the apparent intermixing. The species has colonised land north of Bordertown, and between Meningie and Tintinara, extensively cleared only in the last 40 years. Presumably the Murray Mallee was colonised earlier although no specimens are available to indicate the source of these immigrants (Sutton 1929a; Howe and Burgess 1942).

The statement by Mayr and McEvey (1960) that "the races *keasti*, *secunda* and *horsfieldi* are sharply demarcated" (their map shows *horsfieldi* as being isolated from the other two) no longer holds true. Hall (1974) said also that "birds from Bool Lagoon belong to the distinct race *keasti*". Further collecting and the passage of time have blurred the clear picture extensively. On lower Yorke Peninsula all specimens taken up until 1935 identify with *secunda*. Since then only four specimens have come from there, all within the last decade and all align with *horsfieldi* or the hybrid assemblage. On Eyre Peninsula the species seems poorly known. Terrill and Rix (1950), and Condon (1969) both restricted it to southern Eyre

Peninsula. I have specimens from Big Swamp and Mt Cooper, both of which fit the hybrid group. One would expect the bird to occur also in the northerly agricultural areas of the peninsula and specimens from the red soil areas there might present a different picture.

East of Spencer Gulf Terrill and Rix (1950) gave Wilmington, Paratoo and Morgan as northerly points of distribution based apparently on sightings. I examined specimens from Pt Pirie, Yatina and Yongala and would expect any specimens from more northerly agricultural districts to also align with *secunda*. There are sight records from pastoral areas east of the Flinders Ranges which are more open to conjecture as to race. Though no specimens were available at the time, Mayr and McEvey (1960) predicted that the pale sandy and grey race *rufescens* frequented the north-eastern corner of South Australia on the basis of sightings (Parsons 1921; Morgan 1930). Lawson and Parker (1976) proved this to be correct by giving details of an overlooked specimen taken 25 km south of Innamincka on 18 August 1957. They also pointed out that Parsons' sighting did not come from South Australian localities. Since then further specimens have been taken of this race, virtually all from within the area of this state defined by Mayr and McEvey (1960) on their map. The presence of this arid race points to the need for specimens to be available from east of the Flinders Ranges before attempting to determine origins.

The race *secunda* has always been regarded as smaller in size but while *horsfieldi* of the eastern state are somewhat larger, I find that specimens from this state show sufficient size variation among all races for this characteristic to be of little value. There is still much to be learned about *M. javanica* and a wide ranging collection of specimens taken several decades hence might show interesting alterations to the plumage patterns of this remarkably variable species.

## ACKNOWLEDGMENTS

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## CORRIGENDUM

A recent paper titled 'The Singing Bushlark *Mirafra javanica* in the South East of South Australia' by John Eckert (*S. Aust. Orn.* 32: 53-57) included the following statement: 'As might be expected, the darkest specimens came from the most northerly locations, a gradual infusion of warmer brown becoming increasingly evident with northerly movement...' (p. 55, left hand column, first sentence of last para). The first occurring 'northerly' should have been 'southerly'. I am grateful to John Eckert for pointing out the error which appears to have occurred after submission of the original MS.

– Ed.