

SHORT COMMUNICATIONS

INTRODUCTION AND SPREAD OF THE COMMON MYNA IN NEW SOUTH WALES

The Common Myna *Acridotheres tristis* is naturally distributed throughout south-eastern Asia (Cayley 1968) and has been introduced to Australia, New Zealand (Wilson 1973), Hawaii (Eddinger 1967) and Mauritius (Woods 1974). There have been no detailed ecological studies on the species in Australia but research in New Zealand suggests that the birds are omnivorous, commensal with man and readily breed in an urban environment (Wilson 1973) though with lower breeding success than in non-urban areas (Counsilman 1974). The effect of Mynas on native species of bird in New South Wales is unknown. It is an economic pest in some fruit-growing areas (Hartridge *et al.* 1976) and in New Zealand (Dawson and Bull 1970).

Details of the introduction and spread in New South Wales have not been previously described. This outline of its distribution and spread is based on reports in the literature, personal observations and those of many ornithologists. The assistance of many observers is gratefully acknowledged. Because this bird is distinctive, few, if any, records of this bird are likely to be mistaken.

INTRODUCTION OF MYNAS

The exact date(s) of, and the reasons for, the introduction of Common Mynas in New South Wales are uncertain. The species was included in a list of introduced birds that might be protected in New South Wales (Anon. 1880). Because the species was introduced in Victoria between 1863 and 1872 (Hindwood 1948) it was probably introduced in New South Wales during the same period, though the origin is unknown. Hall (1907) stated that Mynas were introduced in Victoria from India or Afghanistan and Cunningham (1948), that they were introduced in Australia from India but did not say where they were released. Neither gave evidence for their statements.

Mynas were introduced into northern Queensland as a predator of grasshoppers and cane beetles (Cayley 1968) and into Mauritius to control locusts (Woods 1974). They were probably not introduced into Sydney for similar reasons.

DISTRIBUTION TO 1930

E. Terry reported starling and mina birds flying about his estate at Ryde (Anon. 1884) (Fig. 1).

Froggart (1900) reported that the Indian Mina though not very numerous in the Sydney gardens and suburbs, seemed to be increasing about the western suburbs, small flocks of them hanging about the backyards and perching on the roof of the houses. In contrast, Lucas and Le Souëf (1911) did not consider that Common Mynas had a substantial or sustaining population but that the House Sparrows *Passer domesticus*, Starlings *Sturnus vulgaris* and doves *Streptopelia* spp had obtained a real hold round Sydney. The Common Myna is not listed as occurring in New South Wales by Leach (1911), probably by omission.

North (1914) reported Common Mynas at Double Bay, Rose Bay and Vaucluse, five to six kilometres east of the city, with the interesting comment that the species had frequented these localities for many years past and not spread over the surrounding country as it had in Victoria.

Harrison (1923) stated that the species was found along the southern shores of the harbour from Rushcutter's Bay to Rose Bay and that a small colony had in recent years taken possession of the University Grounds (about 2 km south of the city). It is not clear whether Harrison was describing a continuous distribution or two separate populations.

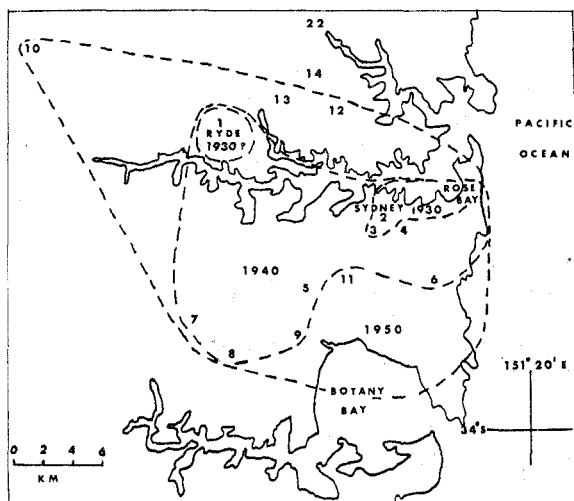


Figure 1. First sightings of Common Mynas in Sydney area. Numbers refer to localities listed in the Appendix. Distributions at 1930, 1940 and 1950 are marked by tentative contour lines.

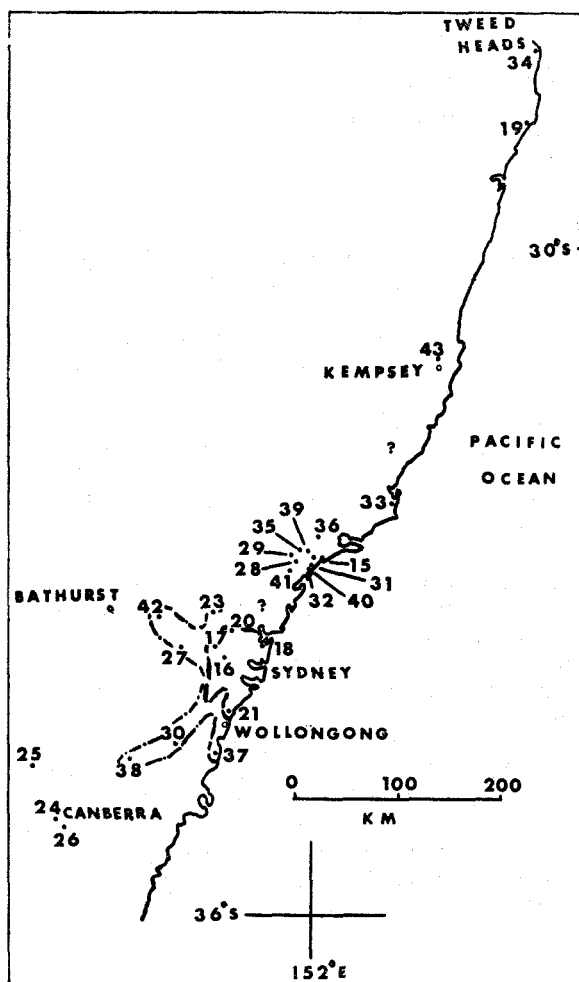


Figure 2. First sightings of Common Mynas in New South Wales and the Australian Capital Territory. Numbers refer to localities listed in the Appendix. Distribution round Sydney at 1960 is marked by the inner dashed line and at 1977 by the outer dashed-and-dotted line, both tentative.

Chisholm (1926) reported that Mynas had disappeared from Sydney but an editorial footnote stated that they occurred round Moore Park and in the eastern suburbs.

DISTRIBUTION AFTER 1930

The first sightings of Common Mynas after 1930 are shown on Figure 2, with details in the Appendix.

Hindwood (1948) considered that most Mynas were found within eight to sixteen kilometres of the centre of Sydney, mainly to the south between Sydney Harbour and Botany Bay. Tarr (1950) said Mynas

occurred as far as the outskirts of the western suburbs, occasionally in the northern suburbs. Hindwood and McGill (1958) considered that the birds were numerous in industrial areas between Sydney and Botany Bay; also in suburbs and towns in various parts of the County of Cumberland. McGill (1960) described them as confined to the County and adjoining settled districts.

At Newcastle, Mynas were described as casual visitors to Kooragang Island by Van Gessel and Kendall (1972) and as uncommon breeding residents by Morris (1975). Frith (1973) reported Mynas occasionally in north-eastern New South Wales.

Mynas were first recorded in Acton, ACT, on 26 May 1968 and six kilometres west of Yass, NSW, on 4 July 1968 (Anon. 1969), though Chapman (1970) reported that they were sighted in Canberra in 1967. The birds were apparently deliberately introduced to the Australian Capital Territory and have been regularly sighted since 1968 in older suburbs and breeding has been confirmed (Anon. 1976). Peters (1970) reported three birds on 14 December 1969 in Queanbeyan, NSW.

DISCUSSION

The Myna is now widely distributed round urban areas of eastern New South Wales and apparently still spreading. The spread after introduction late last century from the centre of Sydney occurred in the late 1930s and early 1940s. There are now three, possibly four, separate populations round Sydney, Canberra and Newcastle and north-eastern New South Wales. It is uncertain whether populations round Sydney and Newcastle are continuous or separate. Sightings at Frederickton near Kempsey could be of birds from either Newcastle or Ballina-Tweed Heads, as it is equidistant from these two localities. The species is an exception to Mayr's (1964) statement that introductions of birds to continental areas are generally not successful.

The reason for the long time between introduction and expansion is uncertain as there are no detailed ecological data on the species in New South Wales. However, there could have been changes in the bird's environment or genetics or both. At first the population apparently maintained itself, except perhaps at Ryde, but did not expand. Cunningham (1948) described the early rapid expansion and later decrease of Mynas in New Zealand but did not know why this occurred. They may have competed for nesting sites with Starlings though Wilson (1973) found a negative relation between the species to the advantage of the Myna. Moedd (1975) reported differences in the food of each species in the North Island though there was some overlap. Interspecific competition for food between Mynas and House

Sparrows, Starlings, Red-billed Gulls *Larus scopulinus*, Dominican Gulls *L. dominicanus*, Blackbirds *Turdus merula* and Feral Pigeons *Columba livia* was reported by Counsilman (1974) though it was considered unimportant. In Sydney, House Sparrows, Starlings and Feral Pigeons occur but the only common gull is the Silver Gull *L. novaehollandiae*. Wilson (1973) suggested that temperature may be important in determining distribution by affecting breeding success at latitudes greater than 40° S and also presumably at high altitudes. Neither should have been important in Sydney (34° S). The lower breeding success in urban compared to non-urban areas reported by Counsilman (1974) may have contributed to the slow spread of the species, though this is not certain.

During this century, the area and population of Sydney has increased substantially, which would have increased habitat available to Mynas. Whether this caused or just contributed to this spread is unknown. A factor in dispersal of Mynas has been the use of roads and maybe railways as corridors to towns previously uncolonized, though this could be biased because these are the sites of most intense observation. Mynas are territorial during breeding (Wilson 1973); so the dispersal was probably greatest in spring when young birds sought unclaimed territories.

These data ought to be viewed with caution because dates of first observations in an area probably lag behind colonization of an area, depending on the interest of competent observers.

The range of birds will probably increase considerably in New South Wales as suitable habitat occurs in coastal resorts, in the Hunter Valley and on the tablelands, e.g. Goulburn, Bathurst. Mynas dispersing from Queensland may colonize towns in north-eastern and north-western New South Wales.

APPENDIX

First sightings of Common Mynas at localities in New South Wales and Australian Capital Territory.

No. on Figs and Locality	Date	Source
1—Ryde	1884	Anon (1884)
2—Sydney Showground	1925	AJG*
3—Univ. of Sydney	1932	Harrison (1923)
4—Paddington	1937	Grant (1937)
5—Marrickville	1937	Grant (1937)
6—Randwick	11.12.1937	ARMcG
7—Lakemba	10.10.1937	Gilbert (1939)
8—Bexley	17. 7.1940	ARMcG
9—Arncliffe	July 1940	ARMcG
10—Baulkham Hills	15. 6.1947	ARMcG
11—Alexandria	21. 6.1947	Hindwood (1947)
12—St Leonards	July 1950	KHBRs, EH
13—Lane Cove	18.11.1950	Lane (1964)

14—Chatswood	Oct. 1953	KHBRs, EH
15—Newcastle S'tworks	1950s	AJG
16—Prospect	1955	KHBRs, EH
17—Richmond a'drome	1957	KHBRs, EH
18—Mooney Mooney	1958/9	McGill (1961)
19—Ballina	Dec. 1959	HJF
20—Wiseman's Ferry	1960	KHBRs, EH
21—Thirroul	6.12.1960	KHBRs, EH
22—East Lindfield	1962	KHBRs, EH
23—Colo River	1966	PAB
24—Acton, ACT	26. 5.1968	Anon (1969)
25—6 km W Yass	4. 7.1968	Anon (1969)
26—Queanbeyan	14.12.1969	Peters (1970)
27—Blackheath	1970	JNH
28—Cardiff	1970	FvG
29—Edgeworth	1970	FvG
30—Moss Vale	8. 8.1971	Rogers (1972)
31—Marks Point	1972	PAB
32—Budgewoi	1973	PAB
33—32 km S Forster	1974	FvG
34—2 km S Tweed Heads	15. 2.1975	HJF
35—Wickham	1975	NL
36—Raymond Terrace	1975	AKM
37—5 km N Kiama	1975	ARS
38—Marulan	1975	ARS
39—Mayfield	1976	NL
40—Blacksmiths	May 1976	AJG
41—Cooranbong	3.10.1976	pers. obs.
42—Marrangaroo	11. 9.1977	pers. obs.
43—Frederickton	30. 9.1977	AIU
44—Central Mangroves	25. 5.1978	pers. obs.

* Personal communications were received from: A. J. Gwynne (AJG), A. R. McGill (ARMcG), Keith Hindwood Bird Recording Service and E. Hoskin (KHBRs, EH), H. J. Frith (HJF), P. A. Bourke (PAB), A. R. Sefton (ARS), J. N. Hobbs (JNH), F. van Gessel (FvG), N. Livanos (NL), A. K. Morris (AKM) and A. I. Uptis (AIU).

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OSTEOLOGICAL DIFFERENCES IN THE LEG BONES OF TWO FORMS OF ANHINGA

Darters of the genus *Anhinga* were originally regarded as four species: *A. anhinga* in North and South America, *A. rufa* in Africa, *A. melanogaster* in Asia and *A. novaehollandiae* in Australasia. More recently they have sometimes been treated as two species (*A. anhinga* being kept separate) or merged in a single species because they appear similar and behave similarly, the differences in colour and pattern of plumage being regarded as subspecific characters. During examination of skeletons of these birds for identification of fossil material, some apparently consistent differences in osteology have been found in the tarsometatarsi. Two skeletons of *A. anhinga*, one of *novaehollandiae*, one of *rufa* and three of *melanogaster* were examined.

The flattened proximal end of the tarsometatarsus has two shallow hollows, the cotylae, which articulate with the tibiotarsus, and on the posterior side a projecting block of bone, the hypotarsus, which supports the tendons where they pass over the back of the leg-joint. The shape of the hypotarsus and the pattern of tendinal canals that form holes or grooves in it are usually sufficiently consistent to permit identification to the level of family and often to genus (Harrison 1974).

Two types of tarsometatarsus were apparent in *Anhinga* (Fig. 1). On both types a small groove is present at the posterior edge on the external side and towards the centre a larger canal occurs, the open posterior edge of which is closed by two thin cartilaginous sheets in the live bird. In Type A (Fig. 1) the main calcaneal ridge of the hypotarsus appears stoutly rectangular in proximal view with two canals, one anterior to the other and the more anterior one on a level with the single external canal. The angle between the calcaneal ridge and the posterior edge of the internal cotyla is sharp and the external cotyla is anteroposteriorly long.

In Type B the calcaneal ridge tapers more. The two canals are larger and irregular in shape. The anterior of the two is more posteriorly sited in relation to the single external canal than in Type A and the more posterior of the two canals borders the side of the hypotarsus and either opens into it laterally and is closed in the living bird with cartilage or is closed at the side with a thin sheet of bone. The general effect compared with Type A is as though the whole canal arrangement had been twisted towards the external side. In Type B the angle between the hypotarsus and the posterior edge of the internal