THE BIRDS OF THE ALIEN ACACIA THICKETS OF THE SOUTH WESTERN CAPE

J. M. WINTERBOTTOM

Percy FitzPatrick Institute of African Ornithology, University of Cape Town

About 1876, the Cape Superintendent of Plantations began using the Australian *Acacia cyanophylla* and *A. cyclops* on a large scale to fix the shifting sand dunes brought about by over-exploitation of the Cape Flats, between Table Mountain and the Hottentots Holland Mountains (Roux 1961). These trees rapidly escaped from control and today they form dense thickets over much of the uncultivated land below 2,000 ft from the Hopefield District in the north-west to Still Bay in the east; and, along the coast, to George; and outliers, especially of *A. cyclops*, extend further north to the southern part of Vanrhynsdorp and further east to beyond Port Elizabeth (Roux & Middlemiss 1963). Some of our bird species have succeeded in adapting themselves to this new habitat and, in particular, many have taken to feeding on the red arils of *A. cyclops*, whose spread has been accelerated by birds in consequence. Even so improbable a species as the Greater Striped Swallow *Hirundo cucullata* has been recorded as eating these arils (Broekhuysen 1960).

The present study of the frequency of occurrence of birds in these thickets of small alien trees is based on 179 Field Cards in the files of the Cape Bird Club, relating to the area of densest infestation in the south-west. A total of 86 species has been recorded from this habitat, which is classified as H6 by Winterbottom & Skead (1962); but of these, 22 are represented by a single occurrence each and are merely stragglers from other habitats; and a further 27 occur in less than 5% of the lists. This leaves 37 species which can be regarded as forming the avifauna of the habitat.

In previous papers (Winterbottom 1966a, 1966b, 1968), I have used the term "dominant" for birds which occur in 40% or more of lists of this kind. On this criterion, the following species are the dominant birds of alient Acacias:

Cape Turtle Dove *Streptopelia capicola*, Laughing Dove *S. senegalensis*, Cape Bulbul *Pycnonotus capensis*, Cape Robin *Cossypha caffra*, Karoo Prinia *Prinia maculosa*, Fiscal *Lanius collaris*, Bokmakierie *Malaconotus zeylonus*, European Starling *Sturnus vulgaris*, Green White-eye *Zosterops virens*, Mossie *Passer melanurus*, and Cape Weaver *Ploceus capensis*.

This number of 11 dominants is the same as in Macchia and more than in Coastal Renosterbosveld or in any of the open country agricultural habitats (Table 1). The total number of species recorded, and the number present in 5% or more of the lists, however, are markedly lower than in any of the indigenous habitats; and the second of these is lower, too, than the figures for ploughed land and pastures. This is a measure of the difficulties experienced by birds of the South-western Cape in adapting themselves to woodland, for there is no indigenous woodland in this part of Africa, only scrub and closed forest. It is also the case that the alien Acacias form a monoculture, and monocultures notoriously restrict the number and variety of species which can be supported.

TABLE 1

NUMBER OF SPECIES IN DIFFERENT HABITATS IN SOUTH-WEST CAPE

Habitat	*No. of Lists*	*Total No. Recorded*	*Present in 5% or more*	*Dominant*
Macchia	368	146	56	11
Coastal Macchia ..	397	171	73	16
Coastal Renosterbosveld	90	126	71	9
Strandveld	119	105	79	17
Ploughed Land ..	64	64	55	1
Pastures..	141	141	48	8
Grain Fields	86	86	32	5
Alien Acacias	179	86	37	11

Of the dominant species listed above:

Streptopelia capicola is dominant also in Coastal Macchia, Coastal Renosterbosveld and Strandveld; but 38% of all nests recorded in the South-western Cape are in Acacia.

S. senegalensis is not dominant in any of the other habitats listed in Table 1. 26% of its nests occur in Acacias.

Pycnonotus capensis is dominant also in Macchia, Coastal Macchia and Strandveld but 38% of the recorded nests are in Acacias.

Cossypha caffra and *Prinia maculosa* are dominant in all four indigenous habitats in Table 1. The percentages of nests found in Acacia are 19 and 11 respectively.

Lanius collaris is dominant in all the other habitats in Table 1 except Macchia and Ploughed Land. 30% of the recorded nests are from Acacia.

Malaconotus zeylonus is dominant in Coastal Macchia, Coastal Renosterbosveld and Strandveld; 10% of its nests are made in Acacia.

Sturnus vulgaris is not dominant in any other habitat in Table 1, though, like *Streptopelia senegalensis*, it is a dominant garden bird. Like nearly all introduced species, it is virtually confined to areas drastically altered by man. It does not nest in Acacia.

Zosterops virens is dominant in Macchia. 21% of recorded nests are in Acacia.

Passer melanurus is dominant in Coastal Macchia, Strandveld, Pastures and Grain Fields. 15% of its recorded nests are in Acacia.

Ploceus capensis is dominant in Grain Fields. No less than 49% of its nests are recorded from Acacias, usually over water.

On the basis of its dominant species, therefore, the present habitat has more in common with Coastal Macchia and Strandveld than with any of the others in Table 1.

Notable absentees as dominants from the Acacia habitat, because dominant in all indigenous habitats except Macchia, are the Karoo Robin *Erythropygia coryphaeus* (7% in alien Acacias) and the Grey-backed Cisticola *Cisticola subruficapilla* (3%). More detailed comparison of the species present in 5% or more of the lists for alien Acacias with those for Coastal Macchia brings out the following points:

1. There are 73 such species in Coastal Macchia but only 37 in Acacias.

2. Of the 37 species in the Acacia list, only one (the Fiscal Flycatcher *Sigelus silens*) has not been listed at all in Coastal Macchia; and one other (the Olive Thrush *Turdus olivaceus*) occurs in fewer than 5% of the Coastal Macchia lists.

3. Of the 73 species in the Coastal Macchia list, 12 have not been recorded at all in Acacia and another 27 do not reach the 5% level.

4. Comparisons show that there are seven species which occur in about equal frequencies in both habitats, 14 that are more frequent in Acacias and 55 that are more frequent in Coastal Macchia. The species which have maintained much the same status in the two habitats are:

	% *in Acacia*	% *in Coastal Macchia*
Grey-winged Francolin, *Francolinus africanus*	4	5
Hoopoe *Upupa epops*	9	7
Pied Crow *Corvus albus*	13	11
Cape Bulbul *Pycnonotus capensis*	76	79
Karoo Prinia *Prinia maculosa*	78	79
Malachite Sunbird *Nectarinia famosa*	30	28
Cape Weaver *Ploceus capensis*	41	38

The species which are more frequent in Acacias are:

Cape Turtle Dove *Streptopelia capicola*, Laughing Dove *S. senegalensis*, Speckled Coly *Colius striatus*, Cape Coly *C. colius*, Pied Barbet *Lybius leucomelas*, Olive Thrush *Turdus olivaceus*, Cape Robin *Cossypha caffra*, Fiscal Flycatcher *Sigelus silens*, Fiscal Shrike *Lanius collaris*, Boubou *Laniarius ferrugineus*, Bokmakierie *Malaconotus zeylonus*, European Starling *Sturnus vulgaris*, Green White-eye *Zosterops virens* and Mossie *Passer melanurus*.

5. Of the 14 species listed above, four may be looked upon as birds derived from indigenous forest (*Turdus*, *Cossypha*, *Laniarius* and *Zosterops*). Six of the others (*Streptopelia* spp., *Colius* spp., *Sturnus* and *Passer*), as well as *Turdus* and *Zosterops*, are frequent in orchards and vineyards too, and ten of them (all but *Colius* spp., *Lybius* and *Sigelus*) are among the 14 most frequent species in gardens.

6. Dominant Coastal Macchia birds which show notable reductions in Acacia are:

	% *in Acacia*	% *in Coastal Macchia*
Cape Francolin *Francolinus capensis*	32	47
Karoo Robin *Erythropygia coryphaeus*	7	52
Grassbird *Sphenoeacus afer*	0.5	49
Pied Starling *Spreo bicolor*	18	49
Bar-throated Apalis *Apalis thoracica*	27	41
Grey-backed Cisticola *C. subruficapilla*	3	61
Lesser Double-collared Sunbird *Nectarinia chalybea*	30	63
Cape Bunting *Emberiza capensis*	9	43

TABLE 2

NUMBER OF SPECIES CLASSIFIED BY HABITAT AND FOOD

Food	*No. of Species*	*Percentage*
Predators—Large	0	
Medium	0	3
Small	1	
Insect-eaters—Foraging on Wing	1	
Hunting from Perch	1	
Hunting on Foot	3	
Probing Flowers	3	36
Probing Ground	1	
Hunting in Vegetation	5	
Hunting on Tree-trunks	0	
Seed-eaters	11	28
Fruit-eaters	5	12
Birds of Mixed Diet	8	21
Total	39	100

TABLE 3

SPECIES BY CATEGORIES OF SPECIES COMPOSITION OF AVIFAUNA

Habitat	*Number of Species*			*Total*
	Game-birds, etc.	*Other Non-Passerines*	*Passerines*	
Alien Acacias	2	7	30	39

Where the Acacias have invaded other botanical formations, the reduction may be even greater. Thus, of Strandveld birds, the Karoo Lark *Certhilauda albescens* comes down from 45% to 0%; the Karoo Robin from 88% to 7% and the Cape Bunting from 71% to 9%; even the Bokmakierie, a dominant species in both, is reduced from 92% to 67%. However, comparison of Map 2 in Roux & Middlemiss (1962) with that of Acocks (1953) shows that Coastal Macchia is the formation which has suffered most from the invasion.

Taking into consideration all those species present in 5% or more of the lists, we can classify them by food-types as in Table 2. As compared with agricultural land (Winterbottom 1968), there are more fruit-eaters (none in agricultural land) and decidedly fewer birds of mixed diet, the percentage of which in alien Acacias is very similar to that in Coastal Macchia and Coastal Renosterbosveld. It differs from the latter, however, in its smaller percentage of insect-eaters and higher percentage of seed-eaters. The reduction of insect-eaters is somewhat unexpected since the litter below the trees is much richer in small arthropods than the litter below indigenous vegetation (Middlemiss *pers. comm.*).

If we consider Moreau's classification (1966) into "Gamebirds and other Non-passerine Ground Birds", "Other Non-passerines" and "Passerines", we obtain the figures set out in Table 3. As compared with all other habitats considered, the number of species of "Gamebirds and other Non-passerine Ground Birds" is low, comparable to Macchia, which also has two species, and to two of the Karoo habitats (Winterbottom 1966b), which have three. The numbers in the other habitats vary from five to seven. In fact, the table bears a fairly close resemblance to that for Macchia, in which "Other Non-passerines" also number seven species. But Macchia has a richer passerine fauna (40 species).

It is, indeed, the reduction of the number of passerine species which marks the alien Acacia habitat off from the indigenous habitats of both the Winter Rainfall region and the Karoo. In this particular, the present habitat agrees more closely with agricultural land (Winterbottom 1968), but differs in the low figures for both non-passerine groups.

It is of some interest to compare the avifauna of these Acacia thickets with that of stands of mixed exotic trees, often including some *Acacia* but also *Eucalyptus*, *Pinus*, *Quercus*, *Populus* and other genera. Only 50 lists are available for this habitat, however. There are 35 species which occur in 5% or more of the lists, of which six are dominant, namely:

Streptopelia capicola, *Turdus olivaceus*, *Cossypha caffra*, *Laniarius ferrugineus*, *Zosterops virens* and *Serinus canicollis*.

Three of these are also dominant in Acacia, but *Turdus*, *Laniarius* and *Serinus* are much less frequent there. It is worth noting that the first two of these are forest forms.

A similar trend is seen in the list as a whole. Twenty-two of the 35 species present in 5% or more of these lists for mixed exotics occur also in the Acacia list; and of those which do not, six are essentially forest birds, namely:

Columba arquatrix, *Streptopelia semitorquata*, *Muscicapa adusta*, *Batis capensis*, *Terpsiphone viridis*.

Four others are Macchia and mountain species:

Buteo rufofuscus, *Monticola rupestris*, *Onychognathus morio*, *Nectarinia violacea*.

The Coefficient of Community between these two habitats is surprisingly low—only 42, lower than that between Acacia and Coastal Macchia.

I now comment briefly on the species present in 5% or more of the alien Acacia lists.

Elanus caeruleus (Desf.) Black-shouldered Kite.

21%

Chiefly on the outskirts, using the trees as perches from which to watch the ground for prey; but also sometimes nests in such trees.

Francolinus capensis (Gmel.) Cape Francolin.

32%.

Uses the thickets for daytime concealment and also eats the arils of *A. cyclops*.

Burhinus capensis (Licht.) Cape Dikkop.

7%.

Sometimes uses the thickets for daytime shelter.

Streptopelia capicola (Sund.) Cape Turtle Dove.

84%.

Uses the thickets for resting and nesting and also eats the seeds.

Streptopelia senegalensis (L.) Laughing Dove.

43%.

As for the preceding, but more of an open-country bird.

Oena capensis (L.) Namaqua Dove.

5%.

For the most part, these thickets are too dense to suit this species.

Colius striatus Gmel. Speckled Coly.

23%.

Even more frequent in alien Acacias than in Coastal Macchia. Feeds, rests and nests in the thickets.

Colius colius (L.) Cape Coly.

17%.

As for the preceding and shows relatively even greater preference for this type of vegetation.

Upupa epops L. Hoopoe.

9%.

I can give no explanation of the comparative frequency of the Hoopoe in this type of vegetation unless it is the sandy soil which facilitates the bird's feeding.

Lybius leucomelas (Bodd.) Pied Barbet.

1%.

Another species more frequent in this alien vegetation than in the indigenous bush.

Corvus albus Müll. Pied Crow.

13%.

About as frequent here as in Pastures.

Pycnonotus capensis (L.) Cape Bulbul.

76%.

Alien Acacias are as favoured by this Bulbul as are Coastal Macchia and Strandveld. Feeds, rests and breeds in the habitat.

Andropadus importunus (Vieill.) Sombre Bulbul.

6%.

A forest species which forages out in the Acacia thickets. More frequent (18%) in mixed exotics than in pure Acacia.

Turdus olivaceus L. Olive Thrush.

15%.

Another forest species, but considerably more successful in adapting itself to alien vegetation than the Sombre Bulbul—it is a common species in gardens, too, and dominant in woodland of mixed exotics.

Cossypha caffra (L.) Cape Robin.

83%.

As for the Thrush, but more so.

Erythropygia coryphaeus (Less.) Karoo Robin.
7%.
Only in the more open stands, where there is a fair amount of the indigenous flora still present.

Sylvietta rufescens (Vieill.) Long-billed Crombec.
8%.
Not as frequent in this habitat as in most of the indigenous ones.

Apalis thoracica (Shaw & Nodder) Bar-throated Apalis.
27%.
Any sort of thick bush suits this species.

Prinia maculosa (Bodd.) Karoo Prinia.
78%.
Frequent wherever there is a mixture of grass and bushes; in really dense thickets, chiefly found on the edges.

Sigelus silens (Shaw) Fiscal Flycatcher.
12%.
Not as frequent as in Coastal Macchia or Strandveld.

Motacilla capensis L. Cape Wagtail.
7%.
Merely a visitor from other habitats.

Lanius collaris L. Fiscal.
68%.
Chiefly on the edges, where it uses the trees as look-out posts; but also nests in the thickets.

Laniarius ferrugineus (Gmel.) Boubou.
24%.
Another forest species which has adapted itself to the Acacia thickets; dominant in mixed exotics.

Malaconotus zeylonus (L.) Bokmakierie.
67%.
Bushes and low trees suit this species.

Sturnus vulgaris L. European Starling.
57%.
Feeds freely on the arils of *A. cyclops* and when these are ripe, present in huge flocks. Much less frequent (12%) in mixed exotics.

Creatophora cinerea (Meusch.) Wattled Starling.
8%.
Has bred in Acacias in the Darling area.

Spreo bicolor (Gmel.) Pied Starling.
18%.
Chiefly on the edges of thickets but eats *A. cyclops* arils.

Promerops cafer (L.) Long-tailed Sugarbird.
11%.
Visits the thickets when adjacent to Proteas.

Nectarinia famosa (L.) Malachite Sunbird.
30%.
Almost as frequent as in indigenous bush.

Nectarinia chalybea (L) Lesser Double-collared Sunbird.
30%.
As for the preceding.

Zosterops virens Sund. Cape White-eye.
57%.
The alien Acacia woodland suits this species well and it is more frequent there than in indigenous vegetation but not so frequent as in mixed woodland (88%).

Passer melanurus (Müll.) Mossie.
47%.
Almost as frequent in Acacias as in Strandveld.

Ploceus capensis (L.) Cape Weaver.
41%.
Chiefly an off-season forager; and Acacias constitute a favourite habitat at that time. Sometimes uses the trees for nesting too.

Euplectes capensis (L.) Yellow Bishop.
12%.
Prefers indigenous vegetation.

Estrilda astrild (L.) Common Waxbill.
11%.
A visitor from wet rushes and reed-beds.

Serinus canicollis (Swains.) Cape Canary.
7%.
Relatively infrequent in Acacia, in contrast to mixed woodland (54%).

Serinus albogularis (Smith) White-throated Seed-eater.
10%.
Prefers indigenous bush.

Serinus flaviventris (Swains.) Yellow Canary.
15%.
As for the preceding.

Emberiza capensis L. Cape Bunting.
9%.
Decidedly less frequent than in natural habitats.

SUMMARY

The bird fauna of the thickets of the alien *Acacia cyanophylla* and *A. cyclops* in the South-western Cape Province was investigated, using 179 Field Cards relating to that habitat in the files of the Cape Bird Club at the Percy FitzPatrick Institute of African Ornithology. Species occurring in 5% or more of the cards were regarded as true inhabitants of these thickets and those occurring in 40% or more as dominant. There were 37 species in the first category, of which 11 were dominant.

This fauna is compared with those of various other indigenous and man-made habitats in the South-western Cape, and it is concluded that it has more in common with the fauna of Coastal Macchia than with any other; but has only half as many species.

Comments are made on individual species.

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