Olive groves – habitat for Speckled Warbler and other birds

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Olive groves provide excellent bird habitat for a number of bird species, especially the Speckled Warbler *Chthonicola sagittata*, which is listed as vulnerable in the NSW *Threatened Species Conservation Act 1995*. The Double-barred Finch *Taeniopygia bichenovii* is another ground-feeding species attracted to this habitat. Unharvested olives bring in other species like the Black-faced Cuckoo-shrike *Coracina novaehollandiae*, which form flocks feasting on the rotting fruit. Insectivorous species like the thornbills and Grey Fantail *Rhipidura albiscapa* also find advantage, possibly from the mesic conditions resulting from irrigation. This paper shows how agricultural habitat can make an important contribution to the resilience of bird populations in a fragmented and highly modified landscape.

INTRODUCTION

When going bird watching the tendency is to search areas of woodland, creeks and open water; habitats known to attract birds. Instinctively olive groves are considered highly modified habitat with an expectation of limited species diversity other than a few opportunistic species. The results discussed in this paper suggest that contrary to this expectation they provide valuable bird habitat, especially for the Speckled Warbler, which is listed as vulnerable in the NSW *Threatened Species Conservation Act 1995* (Roderick & Stuart 2010).

Yaraandoo, a property of approximately 100 ha, is located at Duns Creek (32°38′25″S, 151°39′25″E) near Paterson, in the Hunter Region of NSW. In addition to grazed paddocks, there were two olive groves and a small area of grape vines when this study commenced in August 2009. During monthly surveys on the property I walked along the edges of the olive groves and noticed that I regularly observed Speckled Warblers foraging in the smaller grove. Consequently, in February 2010 I modified my survey design to include a 20-minute search of the entire smaller grove. The results of surveys at this smaller olive grove are the subject of this paper.

METHODS

The survey method I used at Yaraandoo is based on the survey techniques used in BirdLife Australia's (formerly Birds Australia) Atlas projects (Newman 2012). I have used this approach in a number of similar studies in the Paterson area (Newman 2007, Newman & Lindsey 2008, and Newman 2009).

At Yaraandoo I counted all species of birds, seen and heard, while walking along a fixed route. Initially two 2ha areas, sampling remnant patches of woodland, were selected along the route and surveyed for 20 minutes each. However, when the importance of the smaller olive grove was appreciated it was added to the survey as a third 2ha site. I compiled four lists of birds, one for each of the three 20-minute surveys and one for the birds counted on the route between the 2ha sites, ensuring birds were not double counted. Surveys typically started one hour after sunrise and took three hours to complete, thus keeping the survey effort constant. The olive grove 2ha site was reached about 2 hours after the start.

The olive grove 2ha site comprised seven rows of olive trees, most of which slightly exceeded 100m in length. There were a few large eucalypts within the grove, which was bounded on one side by a road leading to a house and on the other by a fence excluding cattle. Trees along the immediate boundaries were surveyed as they provided shelter for birds using the grove. At one end of the site there were buildings associated with the house. Food and water provided for chickens in the house complex may have benefited some of the birds observed in the adjacent olive grove.

The surveys covered three summers during which the harvesting and maintenance of the olive trees changed. In the summer of 2010 the olives were harvested, but in 2011 and 2012 they were left on the trees to rot. Failure to harvest the olives in 2011 resulted in a greatly diminished crop in 2012. In addition at the end of 2011 the trees were progressively removed from the larger olive grove.

RESULTS

During seven preliminary surveys of Yaraandoo, between August 2009 and January 2010, I observed Speckled Warblers on every survey, exclusively in the smaller olive grove, which was then made an additional site. The results of subsequent surveys of the smaller olive grove are described below.

I recorded 49 species of birds in the olive grove 2ha site during 27 surveys between February 2010 and April 2012. The mean number of species seen during the 20-minute survey was 9.4 with the bird list ranging from 3 to 17 species. The following analysis primarily involves the Speckled Warbler and other frequently present species (**Table 1**).

Speckled Warbler

Speckled Warblers primarily foraged on the bare ground at the bases of the olive trees. However, they were frequently observed in the foliage of the trees, probably taking cover in response to my approach, rather than foraging. Invariably when I stood still they soon dropped to the ground and continued to forage. I observed Speckled Warblers during 10 of 27 surveys at the olive grove site, but only recorded the species on six occasions on other parts of Yaraandoo. These other sightings were at five different locations and never on the same date that the birds were present at the olive grove site. One of these other locations was close to the olive grove site and another was on the edge of the larger grove.

Other ground-foraging species

Speckled Warblers often foraged with other small ground-feeding species, including Double-barred and Red-browed Finches, Superb Fairy-wren, Willie Wagtail and, less frequently, Yellow-rumped Thornbill *Acanthiza chrysorrhoa* and Buff-rumped Thornbill *Acanthiza reguloides* (2 records). At times these ground-foraging species formed larger flocks with other species foraging in the foliage of the olive trees (see below).

Occasionally other species were observed foraging on the ground under the olive trees. These included Painted Button-quail *Turnix varius*, Satin Bowerbird *Ptilonorhynchus violaceus*, White-winged Chough *Corcorax melanorhamphos*, and slightly more frequently Australian King-Parrot. The last three species were present as flocks of up to 20 birds.

Table 1. Species recorded at the olive grove 2ha site on Yaraandoo with a reporting rate (frequency of presence) of at least 20% during monthly surveys between February 2010 and April 2011 (n=27).

Species		**Reporting Rate (%)**	**Maximum Number**	**Average Number**
Australian King-Parrot	*Alisterus scapularis*	25.9	20	6.6
Superb Fairy-wren	*Malurus cyaneus*	37.0	9	3.5
Speckled Warbler	*Chthonicola sagittata*	37.0	4	2.0
Striated Thornbill	*Acanthiza lineata*	25.9	6	3.0
Yellow Thornbill	*Acanthiza nana*	40.7	12	3.7
Brown Thornbill	*Acanthiza pusilla*	37.0	2	1.4
Spotted Pardalote	*Pardalotus punctatus*	22.2	2	1.5
Striated Pardalote	*Pardalotus striatus*	22.2	1	1.0
Yellow-faced Honeyeater	*Lichenostomus chrysops*	74.1	4	2.0
Scarlet Honeyeater	*Myzomela sanguinolenta*	22.2	2	1.3
Black-faced Cuckoo-shrike	*Coracina novaehollandiae*	44.4	4	1.9
Grey Shrike-thrush	*Colluricincla harmonica*	25.9	1	1.0
Grey Fantail	*Rhipidura albiscapa*	63.0	5	1.5
Willie Wagtail	*Rhipidura leucophrys*	29.6	2	1.5
Australian Raven	*Corvus coronoides*	44.4	5	2.3
Jacky Winter	*Microeca fascinans*	37.0	3	1.8
Eastern Yellow Robin	*Eopsaltria australis*	29.6	2	1.5
Silvereye	*Zosterops lateralis*	29.6	40	7.5
Double-barred Finch	*Taeniopygia bichenovii*	44.4	19	5.8
Red-browed Finch	*Neochmia temporalis*	22.2	4	2.5

Species foraging in the olive trees

I regularly recorded mixed flocks of Yellow, Brown and Striated Thornbills foraging in the foliage of the olive trees. Although Silvereyes were less frequent, they were more numerous, with one flock of 40. Yellow-faced Honeyeaters (the most frequently recorded species), Grey Fantails, Eastern Yellow Robins, and Grey Shrike-thrush also regularly foraged in the foliage of the trees, sometimes loosely associated with the other species, but also occurring as solitary birds. These species had a wider range of foraging activities than the thornbills and silvereyes; e.g. the fantails hawking for insects.

Other species

Australian Ravens and Black-faced Cuckoo-shrikes also appeared to be attracted to the 2ha olive grove site, but their foraging activities were more difficult to characterise as I usually observed them flying away or perched in the eucalypts embedded in and immediately surrounding the olive trees. However, it appeared that the Black-faced Cuckoo-shrikes were taking ripe olives from the trees and then flying up into the eucalypts to devour them. Jacky Winters used the eucalypt trees and fences for perches while foraging. The canopies of the larger trees were frequented by Yellow-faced Honeyeaters, Spotted and Striated Pardalotes.

Observations at the larger olive grove

During the autumn of 2011 I noticed unusual flocks of birds in the larger olive grove where the olives had not been harvested, including Crimson Rosella *Platycercus elegans*, Eastern Rosella *P. eximius* and Pied Currawong *Strepera graculina* as well as the species mentioned earlier. Collectively the two olive groves attracted large flocks of these species with total numbers for the survey being exceptionally high for an area the size of Yaraandoo (e.g. 23 Black-faced Cuckoo-shrikes in July 2011, and 23 Satin Bowerbirds in June 2011).

In the autumn of 2012 just two rows of trees remained in the larger grove, again with unharvested olives and these continued to attract many species including a flock of eight Yellow-tufted Honeyeaters *Lichenostomus melanops*, which used the trees for foraging and as a connecting corridor across open ground to a patch of remnant woodland.

DISCUSSION

Speckled Warbler

Speckled Warblers forage on the ground and are absent from areas with dense ground cover (Newman 2010). In woodland at Green Wattle Creek near Paterson their numbers increased when light grazing reduced ground cover and understorey growth (Newman 2010). Numbers also increased when ground cover decreased following hazard reduction burns at Green Wattle Creek (Newman, unpublished information). At Yaraandoo, predominantly a cattle grazing property, bare ground under the olive trees and mown grass between the rows of trees provided a foraging niche in which Speckled Warblers were recorded 13 times more frequently than on the rest of the property, when the reporting rates were adjusted for survey effort. No other species showed this degree of selective use of the olive grove site.

Over the 34 months of the study from August 2009 to April 2012 there was a drop off in the frequency with which Speckled Warblers were found at the olive grove site. For instance, in the first six months, before the 2ha site was established, Speckled Warblers were always present, but over the subsequent 27 months the reporting rate was only 37%. This decline is attributed to intermittent maintenance of the olive grove site, involving mowing, spraying for weed control etc. The wide variation in the number of species, from 3 to 17, recorded during the 20-minute surveys supports this conclusion. Other than the olive groves, the grassy habitat of Yaraandoo appears unsuitable for Speckled Warblers and it is possible that all the observations are based on one or two family groups, which predominantly frequent the olive groves.

Other species

Of the other ground foraging species only the Double-barred Finch approaches the degree of preference for the olive grove habitat shown by the Speckled Warbler. However, unlike the latter species the Double-barred Finch is also attracted by the availability of water and food at the adjacent house. Double-barred Finches were recorded at the olive grove site (**Table 1**) twice as frequently and in double the numbers of Red-browed Finch, which is the commoner species in the area (Newman 2007 and 2009). The Double-barred Finch was also seen on a number of occasions in

and adjacent to the larger olive grove, and seldom elsewhere on Yaraandoo, suggesting that the two olive groves are preferred habitat.

Five species of thornbills were recorded at the 2ha olive grove site, with Brown, Yellow and Striated Thornbills regularly observed foraging in olive trees. Yellow-rumped and Buff-rumped Thornbills tended to spend more time foraging on the ground than the other thornbill species. As the occurrence of the Buff-rumped Thornbill at Green Wattle Creek had similar trends to the Speckled Warbler (Newman 2009) its scarcity and preference for the olive grove site on Yaraandoo were expected.

The impact of leaving the olives unharvested was difficult to assess because it was only appreciated after the event that a change in practice had occurred. While passing the edge of the bigger grove, I gained the impression that many larger birds (parrots, bowerbirds, currawongs and ravens) were feeding mainly on the ground. Unfortunately they flushed readily, allowing only obscure views which made accurate counts and observation of foraging behaviour difficult. One of the disadvantages of keeping survey effort constant is that it prevents detailed observation of bird behaviour. Also the difference in survey effort at the two groves prevented a quantitative comparison of their bird populations. However, during the 20-min surveys at the smaller olive grove site there was more opportunity for observation of behaviour. Black-faced Cuckoo-shrikes appeared to be feeding on ripe olives, which were taken from the trees. However, the dense foliage often made it difficult for them to eat while perched and they took the fruit to more secure perches in the surrounding eucalypts for consumption. In the autumn of 2012 for the first time large flocks of White-winged Chough were regularly present at the olive grove sites. This may have been in response to alternative habitat options being less suitable at that time as discussed in the next section. The other larger species, the Australian Raven, Australian King-Parrot and Pied Currawong, were more timid and once flushed seldom returned to the area while I was present.

Rainfall and irrigation

Insectivorous species like the thornbills and the Grey Fantail are attracted to mesic habitat like gullies and riparian vegetation (Palmer & Bennett 2006), particularly under drought conditions (Newman 2010), which prevailed for much of the decade 2000 to 2010. Irrigation of the olive trees would have provided an insect-rich mesic environment relative to the surrounding area and contributed to the observed high diversity of bird species, particularly at the start of the surveys. The summers of 2010/11 and 2011/12 were characterised by a change from drought to abnormally wet La Nina conditions. These conditions increased ground cover growth, which while advantageous to insectivorous species, would have been detrimental to species foraging on the ground (e.g. Speckled Warbler and White-winged Chough) making modified habitats like cultivated areas and gardens increasingly attractive to these species.

CONCLUSIONS

Olive groves support a diverse bird community attracted to bare ground under the trees and regularly mown grass, which provide a niche for both small (e.g. Speckled Warbler and Double-barred Finch) and large (e.g. White-winged Chough) ground-foraging species. The dense foliage of the trees provides both foraging and shelter opportunities for a number of species. Irrigation creates mesic conditions, which may be particularly important to small insectivorous species like thornbills and the Grey Fantail. Unharvested fruit rotting on the trees attracted a number of larger species including Black-faced Cuckoo-shrikes and several species of parrot. Lines of olive trees also provided connectivity between a remnant patch of woodland and surrounding continuous woodland. In fragmented landscapes it is important to appreciate how agricultural habitat can provide an important contribution to the resilience of bird populations.

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REFERENCES

Newman, M. (2007). Bird population of a cattle property near Paterson, NSW – an eleven year study. *The Whistler* **1**: 21–31.

Newman, M. (2009). Birds of Green Wattle Creek – monthly surveys 1996–2009. *The Whistler* **3**: 14–29.

Newman, M. (2010). Impacts on Speckled Warbler abundance in the Paterson area of NSW. *The Whistler* **4**: 54–58.

Newman, M. (2012). Fluctuations in numbers of Grey Fantails in the Hunter Region of New South Wales. *Australian Field Ornithology* **29**: 57-76.

Newman, M. and Lindsey, A. (2008). Bird population of Warakeila, a cattle property in the Allyn River Valley, NSW – a twelve year study. *The Whistler* **2**: 31–43.

Palmer, G.C. and Bennett, A.F. (2006). Riparian zones provide for distinct bird assemblages in forest mosaics of south-east Australia. *Biological Conservation* **130**: 447–457.

Roderick, M. and Stuart, A. (2010). The status of threatened bird species in the Hunter Region. *The Whistler* **4**: 1-28.