

Increased understorey causes demise of mixed species flocks at Green Wattle Creek

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I published an article titled “Mixed foraging flocks in a Woodville woodland” in the Hunter Bird Observers Club Newsletter October/November 1997. The article was based on observations made during my monthly bird survey at Green Wattle Creek (32.661°S 151.649°E) on 12 July 1997 (Newman 2009). On that date I came across three separate foraging groups. Speckled Warbler *Chthonicola sagittata* and Jacky Winter *Microeca fascinans* were conspicuous members of these groups and the scolding calls of the former species often drew attention to the groups.

My newsletter article indicated that while each of the flocks had Speckled Warblers as core members, there were subtle differences in the composition of the flocks, possibly as a consequence of variations in the habitat they frequented. For instance, one flock in an area with fairly extensive shrub understorey was comprised primarily of small ground-feeding species, including Superb Fairy-wren *Malurus cyaneus* and Variegated Fairy-wren *Malurus lamberti* as well as Red-browed Finch *Neochmia temporalis*. Thornbills, particularly Yellow Thornbill *Acanthiza nana* and Brown Gerygone *Gerygone mouki* were often members of flocks in that area. In winter Brown Gerygone were very common in open woodland, having moved out of the dense wet forest areas where they breed, forming quite large groups at times.

The second mixed foraging flock and the one of primary interest to this note frequented an area of woodland with very little understorey. Jacky Winter, which favour open areas, were prominent members of this flock and used low perches for hawking. Speckled Warbler fed on the sparsely grassed ground with Buff-rumped Thornbill *Acanthiza reguloides*. Other members of this group included Varied Sittella *Daphoenositta chrysoptera* and White-throated Treecreeper *Cormobates leucophaea*. Foliage-feeding species attached to the group included Grey Fantail *Rhipidura albiscapa*, Golden Whistler *Pachycephala pectoralis*, Yellow-faced Honeyeater *Lichenostomus chrysops* and Fuscous Honeyeater *Lichenostomus fuscus*. The very

mobile honeyeaters appeared to be transient rather than constant members of the group.

The third flock frequented intermediate habitat, combining open areas with some scrub understorey. In this flock the seemingly inevitable Speckled Warbler shared the understorey with White-browed Scrub-wren *Sericornis frontalis* and Silvereeye *Zosterops lateralis* together with fairy-wrens. Thornbills and honeyeaters, including Lewin’s Honeyeater *Meliphaga lewinii*, were present in the lower foliage of the trees together with an immature Rose Robin *Petroica rosea*.

The formation of these flocks was seasonal at Green Wattle Creek, primarily occurring in autumn and winter. During these seasons other species, including Spotted Pardalote *Pardalotus punctatus* and Willie Wagtail *Rhipidura leucophrys*, were noted in the mixed-species flocks in addition to those described above for the survey on 12 July 1997.

Bell (1985) found thornbills were regular participants in mixed-species flocks of insectivorous birds. Participation was year-round, but fell off markedly during the breeding season. Buff-rumped Thornbill were a nuclear species around which other species gathered. They attracted species that fed on the ground or in the understorey. Bell found that when Varied Sittellas joined Buff-rumped Thornbills they attracted other thornbills including Striated Thornbill *Acanthiza lineata*, a canopy-feeding species. However, in less open areas where Buff-rumped Thornbills were absent Striated Thornbills acted as a nuclear rather than a follower species. When in mixed foraging flocks follower species tended to adapt and imitate the foraging preferences of nuclear or attracting species, an example being the increased proportion of time Striated Thornbill spent foraging on stringybarks when in association with Varied Sittella, which primarily feed on rough-barked trees (Bell 1985). In the Hunter Region it has been noted that Varied Sittella feed lower on trunks, right down to ground level, in the presence of mixed-species flocks containing Buff-rumped Thornbill (Mick Roderick pers. comm.).

There are a number of advantages in forming mixed-species flocks. One involves the possibility that collectively the flock will be more efficient in detecting predators, particularly ground predators. As suggested by Noske (1998) Varied Sittellas feeding as small groups on exposed branches may benefit from adopting a group foraging strategy. Their inclusion in mixed foraging flocks would enhance the effectiveness of this strategy and when in the company of Buff-rumped Thornbill also allow the trunks to be more fully exploited with less risk from ground predators, as described above. Bell (1985) proposed that it is easier for gregarious groups to maintain social cohesion in more open habitat. Although Speckled Warblers, the common factor in all the flocks, often provide the alarm system for the group with their grating scrub-wren-like call, it is unlikely that they are the most observant members of the mixed-species flock, because they primarily forage on the ground. However, when disturbance occurs they fly up to a perch and their alarm calls can be heard over considerable distances, punctuated by bursts of their surprisingly melodic song.

It is also probable that these mixed-species flocks feed more efficiently than any species would achieve on its own. For instance birds foraging on the ground, in the foliage and on trunks stir up insects for hawking Grey Fantail and Jacky Winter. As a group flocks are also more effective in finding areas where food is more abundant at a time of year when it is relatively scarce. As each species tends to specialise on different types of food and parts of the habitat, they are cooperative rather than competitive. However, when they have thoroughly gleaned an area it will require time to recover before it can be re-harvested.

Differences in the understorey apparently influenced the composition of the three mixed-species foraging groups described above. As the extent of the understorey decreased, the influence of ground-feeding species like the Buff-rumped Thornbill resulted in the habitat being fully exploited with species feeding on the ground, on trunks and branches, in the foliage and hawking in the open in the second group described. Based on Bell (1985) Buff-rumped Thornbill and Varied Sittella, two naturally gregarious feeders (Noske 1998 & Bell 1985) are the nuclear species which attract others. Both these species were absent from the mixed-species flocks exploiting areas with denser understorey, although Speckled Warblers still found the ground-level vegetation productive. This may indicate that Buff-rumped Thornbills and Varied Sittellas feel vulnerable to ground predators

as the lower level vegetation cover increases. This would explain why Varied Sittellas appear to favour, but not exclusively, open woodland habitat (Newman 2015) in that they are able to forage lower and more fully exploit the trunks of rough-barked trees.

Since the original article was published in 1997 understorey at Green Wattle Creek has become dense since grazing ceased in the mid-1990s. As a consequence there have been changes in the diversity of the bird population of Green Wattle Creek with ground-feeding species like the Speckled Warbler and Buff-rumped Thornbill now scarce (Newman 2010 & 2014). The Varied Sittella has also declined (Newman 2015). Consequently, diverse mixed-foraging flocks of the type attracted to Buff-rumped Thornbills and Varied Sittellas no longer occur. Mixed-species flocks still occur in the canopy, but are less diverse and more distant from the observer and hence less obvious. No longer is there the thrill of being surrounded by a frenetically feeding group of birds.

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