

Comparison of two ephemeral wetlands in the lower Manning Valley

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Systematic surveys over 2013-2017 at two small and mostly ephemeral wetlands near one another in the lower Manning Valley revealed differences in bird populations. The differences were statistically very significant for three species, Black-fronted Dotterel *Euseyornis melanops*, Red-kneed Dotterel *Erythrogonys cinctus* and Purple Swamphen *Porphyrio porphyrio*. They were significant for eight other species: Pacific Black Duck *Anas superciliosa*, Chestnut Teal *Anas castanea*, Australian Pelican *Pelecanus conspicillatus*, Little Pied Cormorant *Microcarbo melanoleucos*, Brown Honeyeater *Lichmera indistincta*, Golden-headed Cisticola *Cisticola exilis*, Little Grassbird *Poodytes gramineus* and Fairy Martin *Petrochelidon ariel*.

INTRODUCTION

Cooperook Corner wetlands and Cattai Creek wetlands are ephemeral waterbodies in the lower Manning Valley, situated approximately 5 km apart (**Figure 1**) and similar distances away from the well-studied Cattai Wetlands (Carlson 2015; Stuart 2017).

Cooperook Corner wetlands straddle Cooperook Road, commencing ~200m from the Pacific Highway turn-off. The southern section comprises a shallow pond which dried out several times over 2013-2017. The northern section includes a deeper pond that always held some water over 2013-2017. A small tree-lined creek connects the southern and northern sections, and the remainder of the wetlands is surrounded by a mixture of paddocks and trees. Cattai Creek wetlands comprise a shallow southern section which dried out several times over 2013-2017 and a deeper and more expansive northern section. A small grove of mature trees separates the two sections while the remainder of the wetlands is surrounded by paddocks.

The above descriptions suggest the two wetlands to be quite similar. However, comparison of results from systematic surveys conducted at them between June 2013 and June 2017 has revealed some significant differences in their bird populations. This in turn suggests important subtle differences in the habitats which they provide.

METHODS

Both wetlands are on private property and could not be accessed directly. They were surveyed from the nearest road (Cooperook Road and Harrington Road respectively) using 10 x 42 binoculars, occasionally supplemented with a telescope to confirm an identification. Usually, both sites were surveyed within the same 24-hour period and in most cases the time interval was less than an hour. Twice, unsuitable conditions prevented surveys at Cattai Creek within the targeted 24-hour timeframe.

Survey areas of nominal 2 ha size were defined at both sites. In each visit, all species identified in a 20-minute period were recorded and estimates made of their numbers. The results were entered into Birddata (the BirdLife Australia Atlas portal) as 2 ha/20 min surveys.

Systematic surveys at Cooperook Corner wetlands started in mid 2012 and in June 2013 at Cattai Creek wetlands. To eliminate any potential effects from unknown variables, only the surveys from June 2013 onwards for both sites were analysed for this report.

RESULTS

As shown in **Table 1**, 32 surveys were conducted at Cooperook Corner wetlands in the four-year period, yielding 69 species, and 30 surveys at Cattai Creek wetlands yielding 71 species. However, there were many one-off records and only 48 species at each site had multiple records. These included 43 species in common.

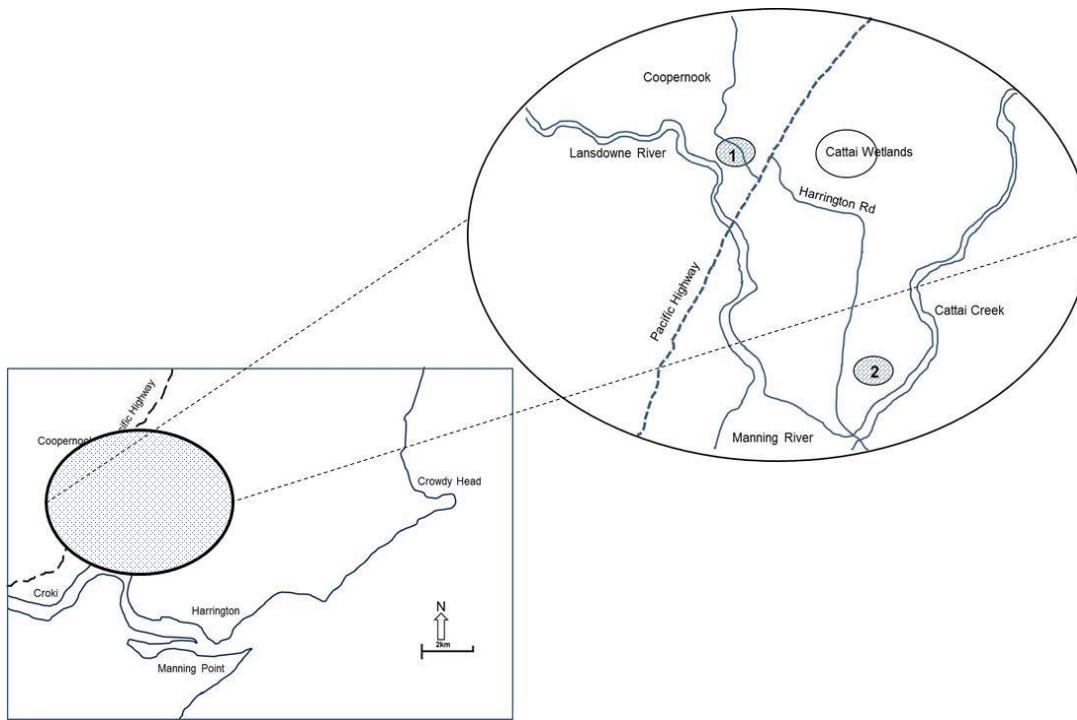


Figure 1. Location of the two wetlands in the lower Manning Valley. 1 = Coopernook Corner wetlands, 2 = Cattai Creek wetlands.

Table 1. Results from surveys at Coopernook Corner wetlands and Cattai Creek wetlands 2013-2017.

| | Coopernook Corner | Cattai Creek |
|---------------------------------|-------------------|--------------|
| No. of surveys | 32 | 30 |
| No. of species | 69 | 71 |
| Species with a single record | 21 | 23 |
| Species with multiple records | 48 | 48 |
| Species in common at both sites | 43 | 43 |

Differences in Reporting Rates (RRs) for species at the two sites were assessed statistically using the Yates-corrected Chi-square test (Fowler & Cohen 1994). In general, the Reporting Rates (RRs) for species at the two sites were of similar magnitude and any differences in RR were not statistically significant. However, eight species had RRs which were significantly different at the two sites and three species had RRs very significantly different. Details of differences in RRs for these species and certain others are given in **Table 2**.

DISCUSSION

The RRs for the Black-fronted Dotterel *Elseyaornis melanops* were 81.3% at Coopernook Corner and 10.0% at Cattai Creek (**Table 2**). This is a very

significant difference (at greater than 99% confidence level). The difference in RRs for the Red-kneed Dotterel *Erythrogonys cinctus* also were very significant (at greater than 99% confidence level). This indicates that the Coopernook Corner wetlands were more suitable for small shorebirds during the study period. Supporting this conclusion, the RRs for Sharp-tailed Sandpiper *Calidris acuminata* were 34.4% and 13.3% respectively. Although this difference is not statistically significant at 95% confidence level, it fits the same trend.

Coopernook Corner was also more important for Little Pied Cormorant *Microcarbo melanoleucos*, Brown Honeyeater *Lichmera indistincta*, Pacific Black Duck *Anas superciliosa* and Chestnut Teal *Anas castanea* (all at >95% confidence level). The presence of a small woodland fringing part of the Coopernook Corner wetlands explains why the Brown Honeyeater preferred this site. It is unclear why Pacific Black Duck and Chestnut Teal were recorded much more frequently there, particularly since the RRs for Grey Teal *Anas gracilis* were similar at both sites (40.6% and 36.7% respectively).

Purple Swamphen *Porphyrio porphyrio*, Australian Pelican *Pelecanus conspicillatus*, Golden-headed Cisticola *Cisticola exilis* and Fairy Martin

Table 2. Differences in Reporting Rate (RR) for selected species at the two wetlands.

| Species | Coopernook Corner | | Cattai Creek | | <i>p</i> | Statistical significance |
|---|-------------------|----------------|--------------|----------------|----------|--------------------------|
| | RR | No. of records | RR | No. of records | | |
| Pacific Black Duck <i>Anas superciliosa</i> | 62.5% | 20 | 20.0% | 6 | <0.02 | Significant |
| Grey Teal <i>Anas gracilis</i> | 40.6% | 13 | 36.7% | 11 | ~0.5 | Not significant |
| Chestnut Teal <i>Anas castanea</i> | 75% | 24 | 33.3% | 10 | <0.03 | Significant |
| Black-fronted Dotterel <i>Elsyornis melanops</i> | 81.3% | 26 | 10.0% | 3 | <0.01 | Very significant |
| Red-kneed Dotterel <i>Erythrogonys cinctus</i> | 68.8% | 22 | 23.3% | 7 | <0.01 | Very significant |
| Sharp-tailed Sandpiper <i>Calidris acuminata</i> | 34.4% | 11 | 13.3% | 4 | ~0.12 | Not significant |
| Purple Swamphen <i>Porphyrio porphyrio</i> | 0% | 0 | 33.3% | 10 | <0.01 | Very significant |
| Australian Pelican <i>Pelecanus conspicillatus</i> | 0% | 0 | 26.7% | 8 | <0.02 | Significant |
| Little Pied Cormorant <i>Microcarbo melanoleucos</i> | 25.0 | 8 | 3.3 | 1 | <0.05 | Significant |
| Brown Honeyeater <i>Lichmera indistincta</i> | 40.6% | 13 | 10.0% | 3 | <0.03 | Significant |
| Golden-headed Cisticola <i>Cisticola exilis</i> | 0% | 0 | 23.3% | 7 | <0.03 | Significant |
| Little Grassbird <i>Poodytes gramineus</i> | 12.5% | 4 | 0% | 0 | <0.02 | Significant |
| Fairy Martin <i>Petrochelidon ariel</i> | 0% | 0 | 23.3% | 7 | <0.03 | Significant |

Petrochelidon ariel were not recorded at Coopernook Corner wetlands in the study period (nor before it) but had RRs ranging from 23-33% at Cattai Creek (**Table 2**). The RR differences for the latter three species are statistically significant at 95% confidence level and very significant for the Purple Swamphen (at 99% confidence level). It is unclear why these differences occurred as superficially the habitats at the two sites seem quite similar. The areal extent of reeds and tall grass at Cattai Creek wetlands is larger than at Coopernook Corner which may partly explain why the RR for Golden-headed Cisticola is significantly higher. However, the converse occurred for the Little Grassbird *Poodytes gramineus* which had a statistically significantly higher RR at Coopernook Corner.

CONCLUSIONS

Two small wetlands situated within 5 km of one another and offering apparently similar mixes of

habitat had some significant differences in the bird populations which they supported. Although 43 species were common to both sites, the Reporting Rates for eleven species were significantly different and were very significantly different for three of those species (Black-fronted Dotterel, Red-kneed Dotterel and Purple Swamphen). This illustrates that subtle differences in habitat can have important consequences.

REFERENCES

- Carlson, A.J. (2015). Bird surveys of Cattai Wetlands (2006 to 2014) on the mid-north coast of New South Wales. *The Whistler* 9: 38-55.
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