



Hunter Bird Observers Club

Affiliated with BirdLife Australia

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Land Bird Monitoring on Broughton Island Status Report April 2013

Summary

Good progress has been made on the assembly of baseline data from which future changes in land bird populations and distributions can be identified. Thus far, 92 sub-area surveys have been conducted (63 in spring 2012, 29 in autumn 2013), with a total of 42 species recorded. Four species, Brown Quail, Golden-headed Cisticola, Tawny Grassbird and Welcome Swallow, have been recorded at every land-dominated site. Their reporting rates are >70% for all those sites. The Silvereye has been recorded at all but one of the land-based sites, and it also has >70% reporting rate at those sites.

Small numbers of Yellow-faced Honeyeaters were regularly recorded. This may be the first instance of colonisation (or re-colonisation) post-eradication of Broughton Island's vermin.

Golden-headed Cisticolas and Tawny Grassbirds are abundant and the present survey method may not be well suited for detecting any population changes. Supplementary options for monitoring them are being considered.

Introduction

Surveys of land birds on Broughton Island by Hunter Bird Observers Club (HBOC) commenced in spring 2012. The project is a collaborative effort that involves assistance in various ways from NSW NPWS and the Broughton Island Conservation Society. The surveys complement those for nesting seabirds conducted by OEH staff in the preceding 2-3 years (N. Carlile *et al.*, in press). Feral animals were removed from Broughton Island in 2009-11 and the Island recently was declared vermin-free (ABC News, 12 March 2013). As a result, the vegetation on the Island is changing (T. Clarke pers. comm.). The habitat changes and absence of predators/prey (rats, rabbits) may lead to changes in the populations and/or distributions of many bird species.

The intention of the land bird surveys is firstly to establish a set of baseline data about numbers and distribution for each resident, regular visitor or vagrant species on Broughton Island and then monitor for changes. However, it must be noted that the Island's vegetation already was well recovered when the surveys commenced. Some species may already have been at equilibrium population levels having bred up rapidly, with no further changes occurring.

Methods

The plan is that the bulk of the effort will be based around structured visits by a dedicated small team of experienced birdwatchers during spring and autumn each year. Now that the methods are established, there can be opportunity for casual visitors to contribute to the survey effort.

Factors in selecting the survey methodology were:

- Appropriate for meeting the project objectives;
- Able to be carried out consistently by different observers;
- Compatible with BirdLife Australia's Atlas project, which HBOC uses as its primary means of data storage.

Based on inputs from regular visitors to Broughton Island and supplemented by preliminary surveying in late August 2012, the Island was divided into 11 survey sites (see Figure 1 for the locations of these sub-areas). The survey areas are:

- Six 2ha land-based sites, BT1-BT6, that are representative of the main vegetation types on the Island. These sites are surveyed for 20 minutes by 1-2 observers. The results are compatible with Birdlife Australia's preferred 2ha/20 min survey method.
- Three predominantly land-based sites, BT7-BT9, each representing approximately 1/3 of the total landmass. These are approximately equivalent in area to 500m radius sites which are another Birdlife Australia option for Atlas surveys. The sites are surveyed for periods typically of 2-3 hours (occasionally longer but always within a single day) by 1-3 observers. The results are compatible with Birdlife Australia's 500m radius survey method. The 2ha sites are embedded within these three sites. Records occurring in the 2ha site within 20 minute period are only included in the 2ha results. All records occurring outside that period, including from within the 2ha site, are used for the "500m area" survey results.
- Two shoreline/bay sites, BT10 and BT11. The former comprises Providence Beach extending from the shore side of the dunes to ~200m out to sea. The latter comprises Esmeralda Cove including the shoreline and the area around the huts. The sites are approximately equivalent to 500m radius sites and are treated as such. BT10 is surveyed by 1-2 observers over a 1-2 hour period. The surveys of BT11 are based on recording all species that are seen/heard during each day or part day that observers are present.

Exact numbers for all species present are recorded during each survey. The records from the surveys are entered into the Birdlife Australia Atlas database, and also into a purpose-designed Excel file which has dedicated spreadsheets for each of the 11 sites linked to a summary table.

Figure 1. Broughton Island showing the survey areas BT1-BT11



Results and Discussion

Over the course of 9 days or part-days, 92 surveys have been conducted (63 in spring 2012, 29 in autumn 2013), with a total of 42 species recorded. Table 1 summarises the overall results, and Tables 2 and 3 provide the spring and autumn data separately.

No species has been recorded at all the sites but this is because there are 2 shoreline/bay sites. Four species – the Brown Quail, Golden-headed Cisticola, Tawny Grassbird and Welcome Swallow – have been recorded at every land-dominated site. These species, plus Silvereye, have reporting rates exceeding 70% for all those sites, excepting BT1 for the Silvereye. Of the other passerines, the Australian Raven, Australian Pipit and Yellow-faced Honeyeater have been regularly recorded. It seems to be the first known records for the latter, which had a very high recording rate in BT3 where a large bottlebrush has had regular blossom. This may be the first instance of colonisation (or re-colonisation) post-eradication of Broughton Island's vermin.

The Lewin's Rail has also been regularly present, and again these are the first known records of it. However, it is a very cryptic species, easily overlooked by those unfamiliar with its call. It appears to be resident and perhaps has been so for a long time. Most records are from BT11, where at least 2 birds inhabit the dense vegetation of the escarpment immediately behind the huts. However, there also are two records from BT9, and a possible (unconfirmed) record from BT10, and the species may prove to be widespread.

Thus far, all other passerine species seem to be vagrants during the migration period (including the first known records of Grey Fantail and White-throated Gerygone); however, this is how the list of resident species potentially will grow.

The main raptors present have been the White-bellied Sea-Eagle Whistling Kite, Black-shouldered Kite and Swamp Harrier. Records of them are widespread but this reflects the wide-ranging nature of their foraging and the maximum numbers are considered to be 4 birds (Sea-Eagle and Whistling Kite) and 2 birds (Black-shouldered Kite and Swamp Harrier). Up to 4 Ospreys have been present at the one time. Peregrine Falcons have been recorded many times and possibly they breed on the Island. The autumn surveys yielded the first known records of Spotted Harrier, a species which is rare in coastal areas.

The Sooty Oystercatcher has been the most abundant shorebird, with at least 17 birds (probably 20+, including some immatures) present in September and at least 9 adult birds (probably 13 birds) present in April. These are high numbers from a regional perspective. Birds might breed on secluded rocky parts of Broughton Island (and its offshore islands) but this is not proven. A pair of Australian Pied Oystercatcher was present in September, and had a nest with one egg. The fate of this nesting attempt is unknown. Only one bird was recorded in November and no birds were seen in April.

Up to four Red-capped Plovers have been present on Providence Beach most surveys and there are several records of up to three Ruddy Turnstones (the only other migratory shorebird record is of 2 Red-necked Stints on the beach in front of the huts, briefly in November).

There have been breeding records for Welcome Swallow (nesting at the huts) and Silver Gull (incompletely fledged bird, unable to fly, on beach in front of the huts) as well as for the Australian Pied Oystercatcher as previously discussed.

Overall, we consider that good progress has been made on the assembly of baseline data from which future changes in land bird populations and distributions can be identified. However, it may require another 2 years of survey effort before we can have enough data to analyse with confidence about the conclusions that are reached.

Any changes to the Golden-headed Cisticola and Tawny Grassbird populations will not be readily identified by the present survey methods. Both species have been found to be numerous and widespread across most of Broughton Island except its shorelines. They were recorded in almost every survey of the 9 land-dominated survey sites in spring 2012, slightly less frequently in autumn 2013 when birds were not defending territories and hence less readily detected. The reporting rates are high and would continue to be so even if the population declined to some extent. Increases in population are unlikely to be detected. Therefore, supplementary options for monitoring them are being considered. Some of these were trialled during the April surveys and the results will be evaluated, and possibly tweaked, ahead of the spring surveys (when birds defending territories are more easily detected).

Acknowledgements

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Alan Stuart

11 April 2013

BROUGHTON ISLAND SURVEYS 2012-2013: SUMMARY

	# of sites	Reporting Rates											
		Overall	BT1	BT2	BT3	BT4	BT5	BT6	BT7	BT8	BT9	BT10	BT11
Brown Quail	9	43.5%	40.0%	40.0%	33.3%	70.0%	37.5%	16.7%	75.0%	100.0%	66.7%		
Bar-shouldered Dove	5	15.2%		20.0%	55.6%	10.0%				50.0%	33.3%		
Shearwater spp	6	12.0%	10.0%	20.0%		20.0%			37.5%	25.0%			14.3%
Australasian Gannet	2	3.3%							12.5%			20.0%	
Australian Pelican	1	4.3%											57.1%
Great Cormorant	5	16.3%						62.5%	25.0%	33.3%	30.0%		42.9%
Pied Cormorant	4	16.3%						50.0%	12.5%		50.0%		71.4%
Little Black Cormorant	4	6.5%						12.5%	12.5%		10.0%		42.9%
White-faced Heron	3	3.3%						12.5%	12.5%	16.7%			
Eastern Reef Egret	5	10.9%						37.5%	12.5%	50.0%	20.0%		14.3%
Eastern Osprey	5	8.7%		10.0%				12.5%		33.3%	20.0%		28.6%
Black-shouldered Kite	8	19.6%	20.0%	10.0%			25.0%	16.7%	62.5%	12.5%	50.0%		42.9%
White-bellied Sea-Eagle	9	21.7%	10.0%	10.0%		10.0%	12.5%		25.0%	50.0%	50.0%	10.0%	85.7%
Whistling Kite	10	28.3%	30.0%	20.0%		22.2%	10.0%	25.0%	87.5%	50.0%	33.3%	10.0%	28.6%
Swamp Harrier	6	14.1%				22.2%	10.0%		37.5%	37.5%	50.0%		14.3%
Brown Falcon	1	1.1%							12.5%				
Nankeen Kestrel	3	3.3%				10.0%				16.7%			
Australian Pied Oystercatcher	1	4.3%										40.0%	
Sooty Oystercatcher	5	32.6%							75.0%	62.5%	66.7%	100.0%	71.4%
Red-capped Plover	1	6.5%										60.0%	
Ruddy Turnstone	1	5.4%										50.0%	
Crested Tern	4	6.5%						25.0%	12.5%	16.7%			28.6%
Silver Gull	5	18.5%		10.0%				37.5%	37.5%		50.0%		71.4%
Yellow-faced Honeyeater	5	16.3%		20.0%	88.9%	30.0%	12.5%		12.5%				
Willie Wagtail	4	6.5%		10.0%					12.5%			20.0%	28.6%
Australian Raven	8	29.3%		30.0%	22.2%	60.0%			50.0%	62.5%	16.7%	30.0%	42.9%
Golden-headed Cisticola	10	75.0%	90.0%	80.0%	77.8%	90.0%	100.0%	83.3%	100.0%	100.0%	100.0%		14.3%
Tawny-Grassbird	9	68.5%	70.0%	70.0%	100.0%	80.0%	87.5%	66.7%	100.0%	87.5%	100.0%		
Silvereye	9	44.6%	10.0%	50.0%	88.9%	40.0%	62.5%		75.0%	75.0%	66.7%		28.6%
Welcome Swallow	11	69.6%	30.0%	90.0%	77.8%	90.0%	75.0%	33.3%	87.5%	62.5%	100.0%	40.0%	85.7%
Australian Pipit	7	19.6%	10.0%	10.0%					25.0%	12.5%	33.3%	90.0%	28.6%
Little Pied Cormorant	1	1.1%								12.5%			
Peregrine Falcon	3	5.4%								12.5%	50.0%	10.0%	
Lewin's Rail	2	8.7%									50.0%		71.4%
Brahminy Kite	2	3.3%								12.5%			28.6%
White-throated Gerygone	1	1.1%							12.5%				
Pheasant Coucal	2	3.3%			22.2%					12.5%			
Shining Bronze-cuckoo	2	2.2%		10.0%									14.3%
Red-necked Stint	1	1.1%											14.3%
Brown Goshawk	2	2.2%		10.0%		10.0%							
Spotted Harrier	2	2.2%								16.7%			14.3%
Grey Fantail	1	1.1%			11.1%								

No of surveys done

BT1	BT2	BT3	BT4	BT5	BT6	BT7	BT8	BT9	BT10	BT11	Total
10	10	9	10	8	6	8	8	6	10	7	92

No of Species recorded

BT1	BT2	BT3	BT4	BT5	BT6	BT7	BT8	BT9	BT10	BT11	Total
10	18	12	14	9	6	24	27	22	18	25	42

No of Species recorded overall: 42

Site coordinates

	Start			Mid			End		
BT1	32	37	16.4	32	37	16.9	32	37	17.3
	152	18	53.4	152	18	50.9	152	18	48.3
BT2	32	37	5.0	32	37	4.5	32	37	3.9
	152	18	51.8	152	18	48.6	152	18	45.4
BT3	32	37	1.0	32	36	58.7	32	36	56.4
	152	18	55.8	152	18	55.9	152	18	56.0
BT4	32	36	52.9	32	36	51.0	32	36	49.0
	152	18	55.3	152	18	54.8	152	18	54.3
BT5	32	36	42.9	32	36	45.2	32	36	47.4
	152	18	28.2	152	18	24.9	152	18	21.6
BT6	32	37	13.1	32	37	11.8	32	37	10.5
	152	19	14.2	152	19	16.0	152	19	17.8
BT7				32	37	18			
				152	18	53			
BT8				32	36	56			
				152	18	44			
BT9				32	37	3			
				152	19	16			
BT10				32	36	46			
				152	18	51			
BT11				32	37	8			
				152	18	59			

BROUGHTON ISLAND SURVEYS SPRING 2012: SUMMARY

	# of sites	Reporting Rates											
		Overall	BT1	BT2	BT3	BT4	BT5	BT6	BT7	BT8	BT9	BT10	BT11
Brown Quail	8	42.9%	28.6%	57.1%	33.3%	100.0%		25.0%	60.0%	100.0%	50.0%		
Bar-shouldered Dove	5	19.0%		14.3%	66.7%	14.3%			66.7%	50.0%			
Shearwater spp	6	14.3%	14.3%	28.6%		28.6%			40.0%	16.7%			20.0%
Australasian Gannet	2	4.8%							20.0%			28.6%	
Australian Pelican	1	3.2%											40.0%
Great Cormorant	5	17.5%							60.0%	16.7%	25.0%	42.9%	60.0%
Pied Cormorant	4	19.0%							60.0%	16.7%		42.9%	100.0%
Little Black Cormorant	3	7.9%								16.7%		14.3%	60.0%
White-faced Heron	0	0.0%											
Eastern Reef Egret	4	9.5%							40.0%	16.7%	50.0%	14.3%	
Eastern Osprey	5	12.7%		14.3%					20.0%		50.0%	28.6%	40.0%
Black-shouldered Kite	6	14.3%	14.3%				20.0%		40.0%	16.7%	50.0%		40.0%
White-bellied Sea-Eagle	8	20.6%	14.3%	14.3%		14.3%			20.0%	33.3%	50.0%	14.3%	80.0%
Whistling Kite	8	20.6%	28.6%	14.3%			20.0%		80.0%	33.3%	25.0%	14.3%	20.0%
Swamp Harrier	6	14.3%			16.7%	14.3%			60.0%	16.7%	50.0%		20.0%
Brown Falcon	1	1.6%							20.0%				
Nankeen Kestrel	3	4.8%				14.3%		25.0%			25.0%		
Australian Pied Oystercatcher	1	6.3%										57.1%	
Sooty Oystercatcher	5	33.3%							60.0%	83.3%	75.0%	100.0%	60.0%
Red-capped Plover	1	7.9%										71.4%	
Ruddy Turnstone	1	4.8%										42.9%	
Crested Tern	4	6.3%							20.0%	16.7%	25.0%		20.0%
Silver Gull	4	15.9%							60.0%	16.7%		42.9%	60.0%
Yellow-faced Honeyeater	3	14.3%			100.0%	28.6%	20.0%						
Willie Wagtail	0	0.0%											
Australian Raven	8	23.8%		14.3%	16.7%	42.9%			40.0%	50.0%	25.0%	42.9%	20.0%
Golden-headed Cisticola	9	76.2%	85.7%	85.7%	100.0%	100.0%	100.0%	75.0%	100.0%	100.0%	100.0%		
Tawny-Grassbird	9	71.4%	85.7%	85.7%	100.0%	71.4%	100.0%	50.0%	100.0%	100.0%	100.0%		
Silvereye	8	44.4%	14.3%	57.1%	83.3%	42.9%	60.0%		80.0%	83.3%	75.0%		
Welcome Swallow	11	68.3%	14.3%	100.0%	83.3%	85.7%	80.0%	25.0%	100.0%	66.7%	100.0%	28.6%	80.0%
Australian Pipit	3	14.3%	14.3%	14.3%								100.0%	
Little Pied Cormorant	1	1.6%								16.7%			
Peregrine Falcon	3	6.3%								16.7%		50.0%	14.3%
Lewin's Rail	2	9.5%									75.0%		60.0%
Brahminy Kite	2	4.8%								16.7%			40.0%
White-throated Gerygone	1	1.6%							20.0%				
Pheasant Coucal	2	4.8%			33.3%					16.7%			
Shining Bronze-cuckoo	2	3.2%		14.3%									20.0%
Red-necked Stint	1	1.6%											20.0%

No of surveys done

BT1	BT2	BT3	BT4	BT5	BT6	BT7	BT8	BT9	BT10	BT11	Total
7	7	6	7	5	4	5	6	4	7	5	63

No of Species recorded

BT1	BT2	BT3	BT4	BT5	BT6	BT7	BT8	BT9	BT10	BT11	Total
10	13	10	12	7	5	21	23	19	17	19	37

No of Species recorded overall: 37

Site coordinates

	Start			Mid			End		
BT1	32	37	16.4	32	37	16.9	32	37	17.3
	152	18	53.4	152	18	50.9	152	18	48.3
BT2	32	37	5.0	32	37	4.5	32	37	3.9
	152	18	51.8	152	18	48.6	152	18	45.4
BT3	32	37	1.0	32	36	58.7	32	36	56.4
	152	18	55.8	152	18	55.9	152	18	56.0
BT4	32	36	52.9	32	36	51.0	32	36	49.0
	152	18	55.3	152	18	54.8	152	18	54.3
BT5	32	36	42.9	32	36	45.2	32	36	47.4
	152	18	28.2	152	18	24.9	152	18	21.6
BT6	32	37	13.1	32	37	11.8	32	37	10.5
	152	19	14.2	152	19	16.0	152	19	17.8
BT7				32	37	18			
				152	18	53			
BT8				32	36	56			
				152	18	44			
BT9				32	37	3			
				152	19	16			
BT10				32	36	46			
				152	18	51			
BT11				32	37	8			
				152	18	59			

BROUGHTON ISLAND SURVEYS AUTUMN 2013: SUMMARY

	# of sites	Reporting Rates										
		Overall	BT1	BT2	BT3	BT4	BT5	BT6	BT7	BT8	BT9	BT10
Brown Quail	6	44.8%	66.7%		33.3%		100.0%		100.0%	100.0%		
Bar-shouldered Dove	2	6.9%		33.3%	33.3%							
Shearwater spp	2	6.9%						33.3%	50.0%			
Australasian Gannet	0	0.0%										
Australian Pelican	1	6.9%										100.0%
Great Cormorant	3	13.8%						66.7%	50.0%	50.0%		
Pied Cormorant	2	10.3%						33.3%			66.7%	
Little Black Cormorant	1	3.4%						33.3%				
White-faced Heron	3	10.3%						33.3%	50.0%	50.0%		
Eastern Reef Egret	4	13.8%						33.3%		50.0%	33.3%	50.0%
Eastern Osprey	1	3.4%										50.0%
Black-shouldered Kite	7	31.0%	33.3%	33.3%			33.3%	50.0%	100.0%	50.0%		50.0%
White-bellied Sea-Eagle	5	24.1%					33.3%	33.3%	100.0%	50.0%		100.0%
Whistling Kite	9	44.8%	33.3%	33.3%	66.7%	33.3%	33.3%	100.0%	100.0%	50.0%		50.0%
Swamp Harrier	3	13.8%			33.3%				100.0%	50.0%		
Brown Falcon	0	0.0%										
Nankeen Kestrel	0	0.0%										
Australian Pied Oystercatcher	0	0.0%										
Sooty Oystercatcher	4	31.0%						100.0%		50.0%	100.0%	100.0%
Red-capped Plover	1	3.4%									33.3%	
Ruddy Turnstone	1	6.9%									66.7%	
Crested Tern	2	6.9%						33.3%				50.0%
Silver Gull	4	24.1%		33.3%					100.0%		66.7%	100.0%
Yellow-faced Honeyeater	4	20.7%		66.7%	66.7%	33.3%			50.0%			
Willie Wagtail	4	20.7%		33.3%					50.0%		66.7%	100.0%
Australian Raven	6	41.4%		66.7%	33.3%	100.0%		66.7%	100.0%			100.0%
Golden-headed Cisticola	10	72.4%	100.0%	66.7%	33.3%	66.7%	100.0%	100.0%	100.0%	100.0%		50.0%
Tawny-Grassbird	9	62.1%	33.3%	33.3%	100.0%	100.0%	66.7%	100.0%	100.0%	50.0%	100.0%	
Silvereye	8	44.8%		33.3%	100.0%	33.3%	66.7%	66.7%	50.0%	50.0%		100.0%
Welcome Swallow	11	72.4%	66.7%	66.7%	66.7%	100.0%	66.7%	50.0%	66.7%	50.0%	100.0%	100.0%
Australian Pipit	5	31.0%						66.7%	50.0%	100.0%	66.7%	100.0%
Little Pied Cormorant	0	0.0%										
Peregrine Falcon	1	3.4%								50.0%		
Lewin's Rail	1	6.9%										100.0%
Brahminy Kite	0	0.0%										
White-throated Gerygone	0	0.0%										
Pheasant Coucal	0	0.0%										
Shining Bronze-cuckoo	0	0.0%										
Red-necked Stint	0	0.0%										
Brown Goshawk	2	6.9%		33.3%		33.3%						
Spotted Harrier	2	6.9%								50.0%		50.0%
Grey Fantail	1	3.4%			33.3%							

No of surveys done

BT1	BT2	BT3	BT4	BT5	BT6	BT7	BT8	BT9	BT10	BT11	Total
3	3	3	3	3	2	3	2	2	3	2	29

No of Species recorded

BT1	BT2	BT3	BT4	BT5	BT6	BT7	BT8	BT9	BT10	BT11	Total
6	12	11	8	8	4	18	16	16	9	17	32

No of Species recorded overall: 32

Site coordinates

	Start			Mid			End		
BT1	32	37	16.4	32	37	16.9	32	37	17.3
	152	18	53.4	152	18	50.9	152	18	48.3
BT2	32	37	5.0	32	37	4.5	32	37	3.9
	152	18	51.8	152	18	48.6	152	18	45.4
BT3	32	37	1.0	32	36	58.7	32	36	56.4
	152	18	55.8	152	18	55.9	152	18	56.0
BT4	32	36	52.9	32	36	51.0	32	36	49.0
	152	18	55.3	152	18	54.8	152	18	54.3
BT5	32	36	42.9	32	36	45.2	32	36	47.4
	152	18	28.2	152	18	24.9	152	18	21.6
BT6	32	37	13.1	32	37	11.8	32	37	10.5
	152	19	14.2	152	19	16.0	152	19	17.8
BT7				32	37	18			
				152	18	53			
BT8				32	36	56			
				152	18	44			
BT9				32	37	3			
				152	19	16			
BT10				32	36	46			
				152	18	51			
BT11				32	37	8			
				152	18	59			