Bird surveys by A Rocha Australia
at Hart Road Wetlands, Aldinga Beach, South Australia
2020 to 2023

White-faced Heron (above)
Hart Rd Wetlands (below)

Prepared by Roger Jaensch

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Observers: Phil Barron, Taylor Headland, Sally Shaw, Leanne Lawrence, Jean Tucker, Malcolm Worthing & Roger Jaensch

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The Hart Road Wetlands lie in the traditional lands of the Kaurna People and A Rocha Australia pays its respects to Elders past, present and emerging.

All photographs are by R. Jaensch unless indicated otherwise.
roger.jaensch.bne@gmail.com

Eurasian Coot with chicks

Executive Summary

Surveys of birds using artificial wetlands and planted woodland were conducted by A Rocha Australia over the four years 2020 to 2023 at Hart Road Wetlands, Aldinga Beach, South Australia. The Wetlands are owned and managed by the City of Onkaparinga for stormwater retention and the 18 hectare property has been open to the public for passive recreation. The basic objective of the project was to develop a baseline inventory of bird usage of the property in a highly structured manner, to facilitate possible use of the information for potential management interventions.

Seven members and friends of A Rocha conducted 114 surveys of birds at Hart Road Wetlands, spread across each of the four seasons in each of the four project years; total volunteer effort was 66 person-hours. Records were made in six sites each 2.0 hectares in area, by applying the '2-ha, 20-minute' area search method of BirdLife Australia; data were entered into the national Birdata system. Four of the sites mainly comprised wetland habitat including open water and dense cover such as bulrush; two sites only had woodland habitat comprising planted low trees as well as slashed grassland. Water levels were consistently high throughout the project except in the first summer when some muddy shallows were exposed.

A total of 83 bird species was identified in the project; this included 30 waterbirds and 28 small bushbirds. One nationally threatened (and migratory) species, Latham's Snipe, was recorded on one occasion. Reporting rate was highest for three species of honeyeater. Abundance (highest count) and average count per hectare were highest for two species of cockatoo and the introduced starling. Evidence of breeding was recorded for 11 bird species. The numbers of bird species per year, and in each season, were reasonably consistent across the four project years. There was a substantial, regularly occurring component of the property's bird fauna as well as 17 species that were only occasional visitors. The number of species per site varied from 68 to 44 and tended to be highest where there was substantial wetland habitat as well as some tree/shrub habitat. Proximity to the adjacent Aldinga Conservation Park influenced occurrence of several species.

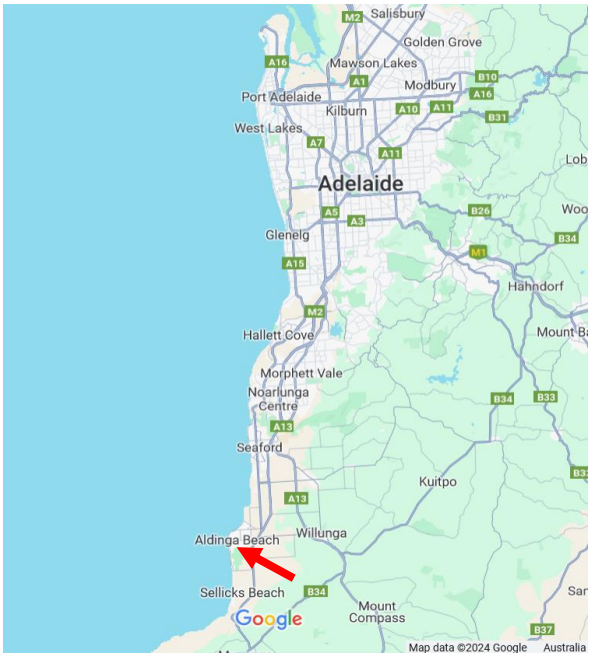
The project was considered successful in meeting its main objective, despite some limitations concerning the closeness of survey sites and variations in composition of the observer teams. More bird species are likely to be recorded in the future at Hart Road Wetlands, especially if water levels become low for extended periods. Presently, there is relatively little shallow wetland habitat, year round, but this could be enhanced by creating additional wetlands that would be inundated only seasonally. The Hart Road wetlands provide an attractive venue for recreational birdwatching and this could be enhanced by emplacement of interpretive signage. Further analysis of the bird survey data could be conducted and replication of the surveys could be considered in the future, especially if major changes to the hydrology or habitats are anticipated.

Purple Swamphen (P. Barron)

Introduction

In 2019, discussions between representatives of the City of Onkaparinga and A Rocha Australia [1] led to a proposal to survey birds using the Hart Road Wetlands at Aldinga Beach, South Australia. The Wetlands lie 42 km SSW of Adelaide's CBD (Fig. 1) and are owned and managed by the City of Onkaparinga; they are in a rectangular land parcel of 18.5 hectares, with independent water management infrastructure of SA Water in the NW and SW corners. The Wetlands were created to retain stormwater from suburban housing developments in adjacent areas and work was completed in 2013. Enhancement of the wetland and surrounding habitat was achieved through some planting of indigenous trees, shrubs and wetland vegetation. A network of walking paths was constructed, and the Wetlands have been open to visitation by the public for passive recreation.

Figure 1. Location of the Hart Road Wetlands, south of Adelaide, South Australia.



The Hart Road Wetlands lie on a flat to gently undulating coastal plain, about one kilometre from the ocean (Gulf St Vincent). Larger wetlands are present in the adjacent and many-times larger Aldinga Scrub (Aldinga Conservation Park), and excess water from the Hart Road Wetlands may overflow into some of those wetlands. Before European settlement and drainage works, a network of shallow wetlands in this district seasonally flowed southwards to the sea at Aldinga Washpool.

Habitats in the Hart Road wetlands include open water and beds of bulrush/cumbungi *Typha* sp., reed *Phragmites australis*, sedges (e.g. *Juncus* sp.) swards of nardoo *Marsilea* sp., tussocks of cutting grass *Gahnia filum* and clumps of lignum *Duma florulenta* (Fig. 2). A few old gum trees and dead trunks occur. Dry land has been planted with mixed woodland including mallee eucalypts; the remainder is slashed grassland. Habitats in the Aldinga Scrub are partly natural and include extensive eucalypt woodland and its wetlands are mostly surrounded by groves of eucalypt trees.

The City of Onkaparinga sought information on the biodiversity of the Hart Road Wetlands in order to wisely manage that property and inflowing stormwater. A Rocha was looking for a suitable project to which its network of volunteer members and friends could be deployed, as a community contribution. Accordingly, the main objective of the ensuing project was to establish a baseline knowledge of bird biodiversity in the Hart Road Wetlands. This was to be obtained in a management intervention context and therefore was to be highly site specific using replicable methods, achieved through supervised volunteer effort that met national standards.

[1] A Rocha is a Christian nature conservation organisation https://australia.arocha.org/

Figure 2. Habitats at Hart Road Wetlands

Deep open water with bulrush & sedge (site CN)

Open lake with bare shores (Site CS)

Bulrush & sedge with muddy edges (Site CN)

Sedge-dominated shallow swamp (Site SW)

Planted woodland (Sites NE and SE)

A Rocha had previous relevant experience from similar projects elsewhere in Australia. For project design it was able to draw on the expertise of several local and interstate members, some of whom worked professionally in nature conservation including the conduct of bird surveys.

The present report outlines the methods, results and conclusions from four years of the project, across calendar years 2020 to 2023.

Methods

The approach taken by A Rocha, in consultation with the managers, was to conduct bird surveys at the Hart Road Wetlands in six sites (plots), each of 2.0 hectares, of irregular shape but designed to include distinct wetland and/or woodland units, to inform property management (Fig. 3). The plots covered the majority of the property—where wetland or woodland habitat had been developed—and included all of the wetland areas; where possible, distinct wetland units were assigned to separate survey plots. It was not possible to widely separate the plots; rather, the intent was to ensure that all of the habitats in this relatively small property were included in the surveys.

Figure 3. Location of the six 2 ha plots in the Hart Road Wetlands for bird surveys by A Rocha.

Red lines indicate site (plot) boundaries; each site covers 2.0 hectares.
Other coloured lines represent typical routes followed by observers during surveys.

The plan was to survey all six sites in every visit (survey session) and there was scope for incidental records. For practical reasons around observer availability and to capture a sense of any seasonal variations in bird usage, one survey session in each of summer, autumn, winter and spring was proposed. Especially because woodland bird activity generally subsides greatly in afternoons, the intent was to conduct surveys consecutively and within the morning of the survey day.

The '2.0 ha, 20 minute' area search method of BirdLife Australia [2] was applied and records were documented in the Birdata database in the field, using a dedicated mobile phone application. Although designed principally for woodland birds, the method is also suitable for wetlands less than 2 ha in area. By limiting and defining the area surveyed and duration of survey effort, as well as quantifying the number of observers, use of this method optimises the comparability of data from

[2] https://birdata.birdlife.org.au/help/survey-techniques

around Australia and enables relatively robust statistical analyses; also ease of replication. With tens of millions of bird records in the Birdata system, BirdLife Australia is able to periodically analyse data on each bird species in Australia to detect trends in population size, which may lead to recommendations for threatened species designations by governments. Use of Birdata therefore was the most useful approach for the project in terms of contribution to bird conservation in Australia. Most Birdata information is publicly available online once a user account has been established or a link to a particular data set has been made available.

During each 20-minute survey, all birds confidently identified (seen, heard or flying over) were recorded. Due to the closeness of the various survey plots, care was taken to avoid or minimise forced movement of birds from one plot to another. The timeframe was not conducive to searching for nests of breeding birds and in a public place this was not advisable anyway, but evidence of breeding seen in the course of finding and counting birds was documented, using categories in Birdata. Wherever possible, surveys were to include both an experienced observer and a recorder.

Results

Habitat conditions. Limited attention was given to documenting rainfall and other weather conditions at the Hart Road wetlands during this project or for this report. That was largely because the primary habitat type was wetland and the water levels remained relatively stable throughout the project due to inflow of stormwater and outflow of excess water to Aldinga Scrub. Water levels in sites NW and SW (Fig. 2) were, however, much lower in the very first surveys, in late summer of 2020; at this time muddy shallows were a more significant feature than for most of the other seasons during 2020 to 2023.

Survey effort. The desired target of a survey of each of the six sites, in each of the four seasons, was achieved across the years 2020 to 2023. Additional survey rounds were conducted in summer 2020, spring 2020 and spring 2021 amounting to 18 additional surveys. Therefore, the total number of surveys conducted was 19 (standardised 2 ha, 20 minute type) at each site, giving 114 surveys overall. In addition, two incidental surveys were documented, one at site CN and one at site SW; data from these incidental surveys have been excluded from most analyses for this report.

The number of bird records added to Birdata from the project over these four years was 1826, a significant contribution.

The timing of surveys was largely determined by availability of the volunteer observers. As it happened, the summer surveys were mostly in February; the autumn surveys mostly in May; the winter surveys half each in July and August; and the spring surveys half each in October and November. Availability of observers and weather conditions had some impact on start and finish times but nearly all surveys were conducted in the morning; the earliest start was at 06:55 am and the latest finish of a survey session was at 12:47 pm.

The number of observers—perhaps not always recorded accurately—varied from one to five (average 1.7) but at least one highly experienced observer participated in each round of surveys. Excluding incidental surveys, a total of 11 person hours was contributed at each site, thus an overall volunteer effort of 66 person-hours during the four years of the project.

Species richness and diversity. Annex 1 lists the 85 bird taxa recorded at Hart Road Wetlands during the project. This tally includes a single semi-wild duck (Black Duck x Mallard hybrid) regularly seen in site CN, and an unidentified *Accipiter* species (Brown Goshawk or Collared Sparrowhawk); these have been excluded from most of the following analyses.

One species listed under the Commonwealth's environmental legislation [3] as a Matter of National Environmental Significance was recorded: Latham's Snipe (one bird, site SW, 20 January 2021) is listed both as a Threatened Species (Vulnerable status) and a Migratory Species.

Thirty of the 83 identified wild species (36%) were waterbirds—species dependent on wetlands—with representatives from most of the major waterbird families. There were 10 waterbird

[3] The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

species that mainly dive for their food ('deepwater species'), including all five possible cormorants/darters, but just three shorebirds (excluding lapwings) that feed in open shore or muddy habitat; this reflects the paucity of the latter habitat at the Hart Road Wetlands during the project period. Careful observation by the volunteers revealed four members of the secretive crake and small rail group, including the rarely sighted Lewin's Rail (one bird, site CN, 15 February 2022).

Other species groups or families recorded in the project included honeyeaters (8 species), parrots and cockatoos (6) and raptors (3). To ascertain the impact of certain aggressive species such as large honeyeaters, it can be useful to identify a class 'small bush birds', which in this location refers to non-waterbirds smaller than wattlebirds and excluding aerial species. Thus defined, 28 species of small bush birds were recorded during 2020 to 2023.

Six of the 83 identified wild species (7%) were introduced (exotic): Common Blackbird, Common Starling, European Goldfinch, House Sparrow, Rock Dove and Spotted Dove. The first four of these are small bush birds.

Musk Duck (male) in Site CN

Baillon's Crake in Site SW

Reporting rate, abundance, and breeding. The reporting rate for each recorded species, based on all standardised survey data, is shown in Annex 1 and the ten most highly-ranked species are listed in Table 1. (It should be noted that the variation in habitat between the six survey sites will have influenced these results, because many birds are habitat specific.) The top three species were honeyeaters. This list includes another small bush bird (Superb Fairy-wren), an introduced species (Common Starling) and just two waterbirds (swamphen and coot). It is interesting to note that a relatively secretive species, Little Grassbird, was recorded in 44% of surveys (Annex 1); it is readily identified by its distinctive piping call.

Forty-three species (52% of total), 19 of them waterbirds, were recorded in less than 10% of surveys and 12 of these were recorded only once (Annex 1), demonstrating that a large proportion of the bird fauna at this property does not occur regularly. This is typical for wetland habitats.

Table 1. The ten most highly ranked species by reporting rate (from all data).

Common Name	No. of records	Reporting rate
New Holland Honeyeater	**91**	**79.8%**
Red Wattlebird	**90**	**78.9%**
White-plumed Honeyeater	**89**	**78.1%**
Purple Swamphen	**86**	**75.4%**
Superb Fairy-wren	**82**	**71.9%**
Common Starling	**68**	**59.6%**
Crested Pigeon	**68**	**59.6%**
Welcome Swallow	**64**	**56.1%**
Australian Magpie	**62**	**54.4%**
Eurasian Coot	**60**	**52.6%**

Annex 1 and Table 2 reveal that the species counted in highest numbers (i.e. the maximum number from any site survey) were Galah, Little Corella and Common Starling, each with counts of over 50 birds. This measure is biased towards species that are gregarious or commonly occur in substantial flocks. There are only two waterbirds in this list, reflecting that the wetlands at this property are quite small and probably therefore not suited to supporting large aggregations.

Table 2. The 11 most highly-ranked species by highest number counted (from all data).

Common Name	Highest count
Galah	**80**
Little Corella	**80**
Common Starling	**56**
Purple Swamphen	**28**
Crested Pigeon	**25**
Rock Dove	**20**
Welcome Swallow	**19**
Black-tailed Native-hen	**18**
Australian Magpie	**16**
House Sparrow	**16**
Musk Lorikeet	**16**

Arguably, a more useful statistic is the average number recorded per hectare; in this case, simply the average count in all 2 ha site surveys in which the species was recorded, divided by two. This measure is most useful where a species has been frequently recorded, so in Annex 1 the result is shown only for species recorded at least four times—potentially, once per year. (These can be valuable data for comparing densities of bush birds between sites across a species' range of occurrence, where standardised surveys have been applied.) Table 3 shows the ten most highly ranked species by average count per hectare.

Table 3. The ten most highly-ranked species by average count per hectare.

Common Name	Average count/ha
Little Corella	**7.22**
Galah	**3.87**
Common Starling	**3.07**
Musk Lorikeet	**2.96**
Superb Fairy-wren	**2.62**
Black-tailed Native-hen	**2.45**
New Holland Honeyeater	**2.32**
Crested Pigeon	**2.28**
Rock Dove	**2.22**
Yellow-rumped Thornbill	**2.15**

The strong influence of the highest number counted shows in that seven of the species in Table 3 are also in Table 2. But the result for species in Table 3, which also are in the top ranks for reporting rate—Common Starling, Superb Fairy-wren, New Holland Honeyeater and Crested Pigeon—is most significant.

Annex 1 shows that 11 species were found breeding during the project; these are all relatively common species. (This includes unconfirmed breeding such as nest building.) About half were waterbirds, with highest number of breeding records being for Purple Swamphen (11 records) and Eurasian Coot (8). The result is biased towards waterbirds because, for many species, their nests and/or dependent young are relatively conspicuous whereas nests of many of the bush birds are not

readily detectable. As with many habitat areas of small size, potential sites for nesting by many bird species simply may not exist.

Temporal patterns. The number of species recorded each year, 2020 to 2023, was reasonably consistent: 65, 63, 49 and 64. The number of species by season (overall) was a little higher in summer (67) and spring (66), than in autumn and winter (60 species in both).

The occurrence of each recorded bird species at Hart Road Wetlands by number of years and by season, is illustrated in Annex 1. Thirty-eight species (46% of the total) were each recorded in all four of the calendar years of the project period; this reveals that there was a substantial, regularly occurring component of the property's bird fauna. Species recorded in all four years tended to have many occurrences: only five of these species (e.g. Grey Shrike-thrush) were recorded in less than 16 surveys (16 would potentially be once in every season, over four years).

Seventeen species (21%) were recorded in only one year; thus, many more than just a few occasional visitors. Species that were recorded in only one year all were recorded just once, or in a few cases in two surveys; an exception was Grey Fantail, which was recorded four times—in summer, autumn and winter of 2021.

The number of species recorded in all four seasons was 44 (53% of the total) whereas 16 species (19%) were recorded in only one season. It was encouraging to see that the relatively uncommon Elegant Parrot (17 records) was present in all four seasons, though not necessarily every year. Without a larger number of surveys and a more sophisticated analysis (e.g. number of records per season), it is difficult to obtain robust results by season for every species. Nevertheless, it was not surprising to see a known long-distance migrant such as Latham's Snipe recorded only in summer. Absence of some species (e.g. Crimson Rosella) in spring may indicate that the property had a shortage or absence of suitable nesting habitat on site, or too much competition from other species, e.g. Common Starling and Rock Dove, which like rosellas, nest in tree hollows.

Bird use of the six sites. Information on birds recorded in each of the six 2ha plots at Hart Road Wetlands, all years 2020 to 2023, is presented in Annex 2. Table 4 reveals that the number of species per site varied from 68 (SW site) to 44 (NE site) and tended to be highest where there was substantial wetland habitat as well as tree/shrub habitat. As the 2-ha, 20-minute survey method is not well suited to detection of bird breeding—greater time is usually needed, especially for finding nests of bush birds—not too much should be made of the results by site for breeding. Nevertheless, the two sites with no wetland (NE and SE) did have the lowest number of breeding species.

Table 4. Number of species recorded and number of species found breeding, by site.

site	NW	CN	NE	SE	CS	SW
species	48	57	44	45	53	68
breeding	5	6	0	1	3	4

It is beyond the scope of this report to identify major patterns in the number of records of each species, and highest count, by site. However, it is interesting to note (Annex 2) that for the prominent New Holland Honeyeater, these measures are remarkably consistent (15 to 17 records, 10 to 13 as highest count) across five of the six sites. An example of differences in use of the six sites by a common species was variation from 0.9 to 2.5 birds per hectare for Red Wattlebird, highest density being in the SE site.

Annex 2 also shows that 26 species (31% of the total) were recorded in all six sites and 17 species (21%) only in one site. The Elegant Parrot was, perhaps surprisingly, recorded in all six sites.

Habitat naturally plays a key part in spatial occurrence of some species; availability of wetland or woodland habitat in the site predictably influences the occurrence of species that exclusively use those habitats, e.g. grebes only occur where there is wetland with open water. The four species of crakes and rails require the concealing cover of dense reeds, bulrush and/or sedge, and thus occurred only where that habitat was best represented, i.e. in sites CN and SW. An interesting discovery was that six species of bush bird (e.g. Brush Bronzewing, Crested Shrike-tit,

Dusky Woodswallow, Grey Currawong, Peaceful Dove and Sacred Kingfisher) occurred only in those sites (SE, CS and/or SW) immediately adjacent to the much larger expanse of woodland in Aldinga Scrub.

Discussion and conclusions

Suitability of methods and caveats. Methods applied in the project were essentially the same as those applied widely in Australia for survey of woodland birds and based on protocols established by BirdLife Australia in its Birdata recording application. These methods were successful in establishing a substantial foundational inventory of bird species occurring at Hart Road Wetlands, within a highly structured set of management units [4]. Accuracy of the records was assured given the participation of a highly experienced observer in every survey. (It was beyond the scope of the present project to compare with bird records from other sources, which are many, given the unrestricted public access to the wetland, although not necessarily from standardised surveys or vetted for accuracy.)

In some situations or contexts it can be important that the dates and times of surveys be consistent and that the same observer/s conduct every survey. However, for this location in Australia and for a wetland-dominated set of sites, the author considers the variations in timing and number of observers not to have significantly influenced the survey results.

Ideally, survey plots for the 2 ha, 20 minute method should be well separated—centrepoints at least 400 m apart—to minimise double-counting of birds that move between plots during a survey session. This was not possible for the 2 ha plots at Hart Road Wetlands and thus some allowance should be made for bird movements. Indeed, despite care taken by observers, it was likely that some individuals of the common and frequently mobile species such as pigeons, parrots and starlings may have been counted in more than one of the six plots in some survey sessions. Regardless, no attempt has been made to combine counts from the six plots, hence the impact of this problem is considered to be of limited significance. Furthermore, in order to provide data useful for management of the various sectors and habitats of the property to the manager (City of Onkaparinga), the A Rocha team thought it more important to document bird usage of all (adjoining) sectors of the property.

Although three extra survey rounds were conducted during the project, on top of the annual quarterly surveys, some allowance can be made for this in examining seasonal patterns of bird occurrence in the property. A more sophisticated approach might use only the highest count of each species from any survey-month where more than one survey round was conducted.

Species composition. Clearly, the work by A Rocha and by the general public show that the Hart Road Wetlands supports a diverse bird fauna, with substantial representation of waterbirds as well as bush birds—including many small species. Among other factors such as location within a region and proximity to other reserves, the key influence must be the diversity and quality of habitats at Hart Road Wetlands itself.

A mix of open wetland without trees, dense cover in shallow water, and both deep and shallow water—as at this property—inevitably can be expected to support many waterbird species. During the four years of the project, water levels were rarely low and therefore shorebird species were few and in small numbers. Additional waterbird species are likely to occur in the future, even if mostly as occasional individuals, given their wandering habits. However, large numbers of waterbirds are unlikely to occur given the small size of these wetlands.

The woodland habitats at this property are still under development but already have matured sufficiently to support a substantial diversity of bird species, notably in the two eastern plots. Proximity to the extensive Aldinga Scrub, which is at the southern edge of Hart Road Wetlands (Fig. 2), likely explains the presence of several woodland bird species only in plots adjacent to that reserve. A similar claim may apply to some waterbirds, given the series of lagoons in Aldinga Scrub, though due to the high mobility of waterbirds this link is less likely or demonstratable.

[4] Many observations have been made at the property by the public including members of Birds SA and BirdLife Australia but the circumstances of the surveys and links to habitat are not necessarily known.

Probably, little can be done to reduce the presence and abundance of the introduced bird species at Hart Road Wetlands. These birds are well established throughout the region. Possibly, removal of some of the dead tree trunks could discourage starlings and Rock Doves, which nest in tree holes, but such holes also can be used by native parrots and pardalotes.

Elegant Parrot

Habitat improvements. Maintenance of the existing habitats is likely to preserve the present assemblage of bird species within any similar four-to-five-year period. For some species such as the irruptive Black-tailed Native-hen, external factors including the availability of breeding habitat in other regions of the continent, may entice birds to move elsewhere despite perfectly suitable habitat on site. Flowering of eucalypts on the property, if not regular, may influence short-term occurrence of nectarivores on the property.

Some intervention may be needed if, for example, siltation or gradual expansion of bulrush/reed beds eventually eliminates most of the open water areas. Spread may be controlled by deeper dredging some parts of some water bodies; otherwise by periodic manual or mechanical cutting of the plants. Some additional areas of shallow water could possibly be created, such as in the far north-west, by shallow scraping of the soil and control of wetland plants so the new site does not lose its open water and mud. Emplacement in seasonally shallow water of plants ideal for waterbird nesting, including lignum bushes and *Gahnia* tussocks, could attract some new species and encourage existing species to breed. A Rocha volunteers and staff of City of Onkaparinga have undertaken additional planting work at the property on several occasions.

Additional plantings of indigenous trees and shrubs in the far east of the property may enhance the eastern two plots as woodland bird habitats. As many birds feed on the ground, maintaining some patches and zones of bare or short-grassed ground would be advantageous. Extensive woodland exists in adjacent Aldinga Scrub, so the patchy woodland habitat at Hart Road Wetlands may be the most useful addition to the overall woodland estate in the Aldinga area.

The ready availability of drinking water and slashed grassland contribute to high grazing pressure in the property from kangaroos. This grazing limits the regeneration and survival of native shrubs, including those planted by Council and/or volunteers; a better understorey layer in the eastern woodland patches is likely to enhance the diversity and abundance of small bush birds. Already, some large-sized tree guards and small-scale exclosure fences have been tried and probably a greater effort on exclosures would have benefits for woody vegetation and birdlife.

The more common and aggressive honeyeater species and starlings almost certainly are favoured at Hart Road Wetlands by a steady increase in abundance of mistletoe (e.g. *Amyema miquelii* and *Lysiana exocarpi*), benefiting from the mistletoe flowers' nectar and ripe berries.

Wildfire is known to be a natural regulator of mistletoe [5] whereas fire is understandably excluded from the property. There is a legal guideline [6] for pruning *A. miquelii* under the *Native Vegetation Act 1991*, should this issue become necessary to actively address.

Given the proximity to the extensive bushland of Aldinga Scrub, to residential areas and the sheer volume of prey options that the wetlands themselves provide, feral predators of birds (i.e. foxes, cats both feral and domestic, and introduced rats) are likely to be having a significant (although mostly unseen) impact at Hart Road Wetlands. Victims would include wetland birds and other animals and species less adept at defending themselves or able to roost out of harm's way. This may be a matter for attention through standard fox control and education regarding residents' management of their cats.

Bird-watching destination. Birdwatchers are usually attracted to wetland sites, especially where there are shallow open areas that might support shorebirds and tall waders, and in this regard the Hart Road Wetlands are moderately well endowed. The woodland areas are mostly human-made but nevertheless have significant birdlife. Overall, it is probably the richness and diversity of birds and regular occurrence of so many species, which will continue to attract people to the Hart Road Wetlands for nature appreciation. The ease of access (i.e. pathways throughout the property) is another compelling factor and this also makes the property very suitable for educational and training purposes regarding birdwatching and bird surveys.

Design and emplacement of suitable signage on common and particularly interesting bird species at Hart Road Wetlands could add greatly to the benefits that visitors obtain from their visits. There is much experience and expertise available on suitable materials and production methods to minimise fading and other deterioration. Thought should also be given to how vandalism of signs could be prevented or that risk made low/negligible.

Follow-up work. A number of more elaborate analyses could be performed on the bird records obtained by A Rocha in this project and some of these might provide additional guidance to the property managers in their planning for water and habitat management. Comparisons with data obtained by other birdwatchers from any 2 ha, 20 minute surveys in Aldinga Scrub also may be informative for management of the Hart Road Wetlands.

Replication of the 2020 to 2023 bird surveys of the Hart Road Wetlands could be performed at any time because that would always provide useful new information—including reinforcement of what has been learnt so far. It would be especially useful if substantial changes are made to the way that water and vegetation are managed on site.

[5] https://www.anbg.gov.au/mistletoe/fire-mistletoe.html

[6] Clearance of Box Mistletoe (*Amyema miquelii*). Native Vegetation Council Guideline under Regulation 8(16) of Native Vegetation Regulations 2017.

Annex 1. Bird species recorded at Hart Road Wetlands, all A Rocha surveys, 2020 to 2023.

Common Name	Scientific Name	No. of records	Reporting rate	Highest count	Average count/ha	Breeding records	NW site	CN site	NE site	SE site	CS site	SW site	No. of sites	No. of years	summer	autumn	winter	spring	No. of seasons
Australasian Darter	*Anhinga novaehollandiae*	1	0.9%	1							X		1	1				X	1
Australasian Grebe	*Tachybaptus novaehollandiae*	5	4.4%	2	0.60		X				X	X	3	3	X	X	X	X	4
Australian Hobby	*Falco longipennis*	1	0.9%	1				X					1	1	X				1
Australian Magpie	*Gymnorhina tibicen*	62	54.4%	16	1.28		X	X	X	X	X	X	6	4	X	X	X	X	4
Australian Reed-Warbler	*Acrocephalus australis*	30	26.3%	6	1.02		X	X		X	X	X	5	4	X		X	X	3
Australian Spotted Crake	*Porzana fluminea*	3	2.6%	4								X	1	2	X		X	X	3
Australian White Ibis	*Threskiornis moluccus*	25	21.9%	7	1.26		X	X	X	X	X	X	6	4	X	X	X	X	4
Australian Wood Duck	*Chenonetta jubata*	10	8.8%	8	1.55		X		X			X	3	3	X	X	X	X	4
Baillon's Crake	*Zapornia pusilla*	1	0.9%	1								X	1	1	X				1
Black Duck-Mallard hybrid		13	11.4%	1	0.50			X					1	3	X	X	X	X	4
Black Swan	*Cygnus atratus*	1	0.9%	5		1						X	1	1			X		1
Black-faced Cuckoo-shrike	*Coracina novaehollandiae*	4	3.5%	2	0.63		X	X	X			X	4	3		X	X	X	3
Black-fronted Dotterel	*Elseyornis melanops*	13	11.4%	2	0.81	1	X				X	X	3	4	X	X	X	X	4
Black-tailed Native-hen	*Tribonyx ventralis*	9	7.9%	18	2.45		X					X	2	3	X	X	X	X	4
Brown Goshawk/C. Sparrowhawk		2	1.8%	1							X		1	1		X	X		2
Brush Bronzewing	*Phaps elegans*	3	2.6%	3							X	X	2	2	X		X	X	3
Collared Sparrowhawk	*Accipiter cirrocephalus*	2	1.8%	1				X		X			2	1				X	1
Common Blackbird	*Turdus merula*	18	15.8%	2	0.67			X	X	X	X	X	5	3	X	X	X	X	4
Common Bronzewing	*Phaps chalcoptera*	22	19.3%	3	0.68			X	X	X	X	X	5	4	X	X	X	X	4
Common Starling	*Sturnus vulgaris*	68	59.6%	56	3.07	4	X	X	X	X	X	X	6	4	X	X	X	X	4
Crescent Honeyeater	*Phylidonyris pyrrhopterus*	2	1.8%	1					X	X			2	1			X		1
Crested Pigeon	*Ocyphaps lophotes*	68	59.6%	25	2.28	1	X	X	X	X	X	X	6	4	X	X	X	X	4
Crested Shrike-tit	*Falcunculus frontatus*	1	0.9%	2								X	1	1			X		1
Crimson Rosella	*Platycercus elegans*	8	7.0%	3	1.00				X	X	X	X	4	4	X	X	X		3
Dusky Moorhen	*Gallinula tenebrosa*	36	31.6%	8	1.35	3	X	X			X	X	4	4	X	X	X	X	4
Dusky Woodswallow	*Artamus cyanopterus*	2	1.8%	1								X	1	1			X	X	2
Eastern Rosella	*Platycercus eximius*	17	14.9%	4	1.03		X	X	X	X	X	X	6	4	X	X	X	X	4
Elegant Parrot	*Neophema elegans*	17	14.9%	7	1.53		X	X	X	X	X	X	6	4	X	X	X	X	4
Eurasian Coot	*Fulica atra*	60	52.6%	14	1.73	8	X	X			X	X	4	4	X	X	X	X	4
European Goldfinch	*Carduelis carduelis*	18	15.8%	5	1.09		X	X	X	X	X	X	6	4	X	X	X	X	4
Fairy Martin	*Petrochelidon ariel*	12	10.5%	6	1.63	1	X	X	X	X		X	5	3		X	X	X	3
Galah	*Eolophus roseicapilla*	42	36.8%	80	3.87		X	X	X	X	X	X	6	4	X	X	X	X	4
Great Cormorant	*Phalacrocorax carbo*	1	0.9%	2								X	1	1				X	1
Great Pied Cormorant	*Phalacrocorax varius*	1	0.9%	1								X	1	1		X			1
Grey Currawong	*Strepera versicolor*	1	0.9%	1							X		1	1	X				1
Grey Fantail	*Rhipidura albiscapa*	4	3.5%	2	0.75			X		X		X	3	1	X	X	X		3
Grey Shrike-thrush	*Colluricincla harmonica*	11	9.6%	1	0.50		X	X		X	X		4	4	X	X	X	X	4
Grey Teal	*Anas gracilis*	5	4.4%	6	1.50			X				X	2	3	X	X		X	3
Hardhead	*Aythya australis*	6	5.3%	3	0.92			X			X	X	3	2		X	X	X	3
Hoary-headed Grebe	*Poliocephalus poliocephalus*	8	7.0%	4	0.69			X			X	X	3	2	X	X	X	X	4
Horsfield's Bronze-Cuckoo	*Chalcites basalis*	4	3.5%	1	0.50		X	X				X	3	3			X	X	2
House Sparrow	*Passer domesticus*	32	28.1%	16	1.99		X	X	X	X	X	X	6	4	X	X	X	X	4
Latham's Snipe	*Gallinago hardwickii*	1	0.9%	1								X	1	1	X				1
Lewin's Rail	*Lewinia pectoralis*	1	0.9%	1				X					1	1	X				1
Little Black Cormorant	*Phalacrocorax sulcirostris*	3	2.6%	1				X				X	2	2		X		X	2

Notes: Reporting rate = Number of records divided by number of surveys (114). Average count per hectare = average count in 2 ha sites divided by 2, where species was recorded at least 4 times (e.g. potentially once per year). Breeding records = all categories including unconfirmed. Number of years = calendar years.

Annex 1 continued. Bird species recorded at Hart Road Wetlands, all A Rocha surveys, 2020 to 2023.

Common Name	Scientific Name	No. of records	Reporting rate	Highest count	Average count/ha	Breeding records	NW site	CN site	NE site	SE site	CS site	SW site	No. of sites	No. of years	summer	autumn	winter	spring	No. of seasons
Little Corella	*Cacatua sanguinea*	7	6.1%	80	7.22		X	X	X		X	X	5	4	X				1
Little Grassbird	*Poodytes gramineus*	51	44.7%	5	0.86		X	X			X	X	4	4	X	X	X	X	4
Little Pied Cormorant	*Microcarbo melanoleucos*	49	43.0%	15	1.03		X	X		X	X	X	5	4	X	X	X	X	4
Little Raven	*Corvus mellori*	48	42.1%	7	1.00		X	X	X	X	X	X	6	4	X	X	X	X	4
Little Wattlebird	*Anthochaera chrysoptera*	9	7.9%	7	1.22		X	X	X	X	X		5	3	X	X		X	3
Magpie-lark	*Grallina cyanoleuca*	59	51.8%	6	1.07		X	X	X	X	X	X	6	4	X	X	X	X	4
Masked Lapwing	*Vanellus miles*	21	18.4%	5	1.05		X	X	X		X	X	5	4	X	X	X	X	4
Mistletoebird	*Dicaeum hirundinaceum*	26	22.8%	5	0.69		X	X	X	X	X	X	6	4	X	X	X	X	4
Musk Duck	*Biziura lobata*	4	3.5%	1	0.50			X					1	2	X	X	X		3
Musk Lorikeet	*Glossopsitta concinna*	13	11.4%	16	2.96		X	X	X	X	X	X	6	3	X		X	X	3
Nankeen Night-Heron	*Nycticorax caledonicus*	1	0.9%	1								X	1	1	X				1
New Holland Honeyeater	*Phylidonyris novaehollandiae*	91	79.8%	13	2.32		X	X	X	X	X	X	6	4	X	X	X	X	4
Pacific Black Duck	*Anas superciliosa*	54	47.4%	13	1.56	2	X	X	X	X	X	X	6	4	X	X	X	X	4
Peaceful Dove	*Geopelia placida*	4	3.5%	3	1.13					X	X	X	3	3	X	X			2
Peregrine Falcon	*Falco peregrinus*	3	2.6%	1			X			X		X	3	3	X	X		X	3
Purple Swamphen	*Porphyrio porphyrio*	86	75.4%	28	1.97	11	X	X	X	X	X	X	6	4	X	X	X	X	4
Purple-crowned Lorikeet	*Glossopsitta porphyrocephala*	3	2.6%	10				X	X		X		3	2	X			X	2
Rainbow Lorikeet	*Trichoglossus moluccanus*	23	20.2%	12	2.09		X	X	X	X	X	X	6	4	X	X	X	X	4
Red Wattlebird	*Anthochaera carunculata*	90	78.9%	10	1.67	1	X	X	X	X	X	X	6	4	X	X	X	X	4
Red-browed Finch	*Neochmia temporalis*	16	14.0%	10	2.13	1	X	X		X	X	X	5	3	X	X	X	X	4
Red-kneed Dotterel	*Erythrogonys cinctus*	1	0.9%	1								X	1	1				X	1
Rock Dove	*Columba livia*	37	32.5%	20	2.22		X	X	X	X	X	X	6	4	X	X	X	X	4
Sacred Kingfisher	*Todiramphus sanctus*	2	1.8%	1								X	1	2		X		X	2
Silvereye	*Zosterops lateralis*	33	28.9%	9	1.67		X	X	X	X	X	X	6	4	X	X	X	X	4
Singing Honeyeater	*Gavicalis virescens*	8	7.0%	5	0.88		X	X	X	X		X	5	3	X	X	X		3
Spotless Crake	*Zapornia tabuensis*	6	5.3%	2	0.59			X				X	2	2	X	X		X	3
Spotted Dove	*Spilopelia chinensis*	39	34.2%	4	0.86		X	X	X	X	X	X	6	4	X	X	X	X	4
Spotted Pardalote	*Pardalotus punctatus*	3	2.6%	2							X		1	2	X	X			2
Striated Pardalote	*Pardalotus striatus*	12	10.5%	2	0.67			X	X	X	X	X	5	4	X	X	X	X	4
Striated Thornbill	*Acanthiza lineata*	2	1.8%	3			X		X				2	2	X			X	2
Superb Fairy-wren	*Malurus cyaneus*	82	71.9%	15	2.62		X	X	X	X	X	X	6	4	X	X	X	X	4
Tree Martin	*Petrochelidon nigricans*	2	1.8%	4					X			X	2	1				X	1
Weebill	*Smicrornis brevirostris*	21	18.4%	7	1.15			X	X	X	X		4	4	X	X	X	X	4
Welcome Swallow	*Hirundo neoxena*	64	56.1%	19	2.03		X	X	X	X	X	X	6	4	X	X	X	X	4
White-browed Scrubwren	*Sericornis frontalis*	4	3.5%	3	1.25		X				X		2	2	X	X	X	X	4
White-faced Heron	*Egretta novaehollandiae*	25	21.9%	3	0.60		X	X	X	X	X	X	6	4	X	X	X	X	4
White-plumed Honeyeater	*Ptilotula penicillata*	89	78.1%	10	1.50		X	X	X	X	X	X	6	4	X	X	X	X	4
Willie Wagtail	*Rhipidura leucophrys*	53	46.5%	5	0.84		X	X	X	X	X	X	6	4	X	X	X	X	4
Yellow Thornbill	*Acanthiza nana*	11	9.6%	5	1.73				X	X			2	3	X	X	X	X	4
Yellow-rumped Thornbill	*Acanthiza chrysorrhoa*	17	14.9%	11	2.15		X	X	X	X		X	5	3	X	X	X	X	4

Notes: Reporting rate = Number of records divided by number of surveys (114). Average count per hectare = average count in 2 ha sites divided by 2, where species was recorded at least 4 times (e.g. potentially once per year). Breeding records = all categories including unconfirmed. Number of years = calendar years.

Annex 2. Birds recorded in each of the six 2ha plots at Hart Road Wetlands, all years 2020 to 2023.

Common Name	No. of records	Highest count	Average count/ha	Breeding records
NORTH-WEST SITE				
Australasian Grebe	1	2		
Australian Magpie	19	16	1.7	
Australian Reed-Warbler	7	2	0.6	
Australian White Ibis	7	6	1.3	
Australian Wood Duck	4	8	1.6	
Black-faced Cuckoo-shrike	1	1		
Black-fronted Dotterel	1	2		
Black-tailed Native-hen	8	18	2.7	
Common Starling	11	40	3.3	
Crested Pigeon	13	12	2.2	
Dusky Moorhen	8	7	1.3	
Eastern Rosella	5	3	1.0	
Elegant Parrot	1	3		
Eurasian Coot	8	4	1.1	2
European Goldfinch	4	2	0.6	
Fairy Martin	3	5		
Galah	9	80	7.8	
Grey Shrike-thrush	1	1		
Horsfield's Bronze-Cuckoo	1	1		
House Sparrow	1	3		
Little Corella	1	9		
Little Grassbird	13	2	0.6	
Little Pied Cormorant	8	15	1.9	
Little Raven	5	4	1.0	
Little Wattlebird	1	2		
Magpie-lark	13	6	1.2	1
Masked Lapwing	5	3	0.9	
Mistletoebird	3	2		
Musk Lorikeet	1	10		
New Holland Honeyeater	15	13	2.5	
Pacific Black Duck	12	13	1.6	1
Peregrine Falcon	1	1		
Purple Swamphen	19	28	2.3	4
Rainbow Lorikeet	3	4		
Red Wattlebird	16	6	0.9	1
Red-browed Finch	1	10		
Rock Dove	9	11	1.8	
Silvereye	4	6	1.6	
Singing Honeyeater	1	5		
Spotted Dove	6	1	0.5	
Striated Thornbill	1	3		
Superb Fairy-wren	13	9	1.8	
Welcome Swallow	16	12	2.3	
White-browed Scrubwren	1	3		
White-faced Heron	1	1		
White-plumed Honeyeater	15	4	0.9	
Willie Wagtail	11	2	0.7	
Yellow-rumped Thornbill	5	11	3.7	

Common Name	No. of records	Highest count	Average count/ha	Breeding records
CENTRAL NORTH SITE				
Australian Hobby	1	1		
Australian Magpie	13	4	1.0	
Australian Reed-Warbler	9	6	1.1	
Australian White Ibis	4	2	0.8	
Black Duck-Mallard hybrid	13	1	0.5	
Black-faced Cuckoo-shrike	1	1		
Collared Sparrowhawk	1	1		
Common Blackbird	4	2	0.8	
Common Bronzewing	1	1		
Common Starling	18	15	2.7	4
Crested Pigeon	9	5	1.3	
Dusky Moorhen	14	7	1.5	2
Eastern Rosella	1	4		
Elegant Parrot	1	5		
Eurasian Coot	19	14	2.7	6
European Goldfinch	1	1		
Fairy Martin	4	6	1.8	1
Galah	8	30	3.4	
Grey Fantail	1	1		
Grey Shrike-thrush	1	1		
Grey Teal	1	1		
Hardhead	3	3		
Hoary-headed Grebe	1	1		
Horsfield's Bronze-Cuckoo	1	1		
House Sparrow	10	12	2.0	
Lewin's Rail	1	1		
Little Black Cormorant	2	1		
Little Corella	1	3		
Little Grassbird	16	3	0.8	
Little Pied Cormorant	16	4	0.8	
Little Raven	9	3	0.8	
Little Wattlebird	1	2		
Magpie-lark	5	3	0.9	
Masked Lapwing	4	3	0.9	
Mistletoebird	3	1		
Musk Duck	4	1	0.5	
Musk Lorikeet	3	8		
New Holland Honeyeater	17	13	2.9	
Pacific Black Duck	13	10	2.1	1
Purple Swamphen	18	10	1.8	4
Purple-crowned Lorikeet	1	10		
Rainbow Lorikeet	4	10	2.5	
Red Wattlebird	12	5	1.4	
Red-browed Finch	1	5		
Rock Dove	10	7	1.9	
Silvereye	4	5	1.8	
Singing Honeyeater	2	1		
Spotless Crake	3	1		
Spotted Dove	7	3	0.8	
Striated Pardalote	2	1		
Superb Fairy-wren	15	8	1.8	
Weebill	1	1		
Welcome Swallow	12	12	2.2	
White-faced Heron	6	2	0.6	
White-plumed Honeyeater	14	5	1.0	
Willie Wagtail	8	3	0.7	
Yellow-rumped Thornbill	2	3		

Common Name	No. of records	Highest count	Average count/ha	Breeding records
NORTH-EAST SITE				
Australian Magpie	8	4	1.1	
Australian White Ibis	4	6	1.6	
Australian Wood Duck	1	5		
Black-faced Cuckoo-shrike	1	2		
Common Blackbird	2	1		
Common Bronzewing	3	1		
Common Starling	12	56	5.2	
Crescent Honeyeater	1	1		
Crested Pigeon	14	18	2.7	
Crimson Rosella	2	2		
Eastern Rosella	4	2	1.0	
Elegant Parrot	1	2		
European Goldfinch	3	2		
Fairy Martin	1	5		
Galah	4	9	3.0	
House Sparrow	2	2		
Little Corella	2	80		
Little Raven	11	4	0.9	
Little Wattlebird	1	1		
Magpie-lark	15	5	1.2	
Masked Lapwing	4	2	0.9	
Mistletoebird	6	2	0.8	
Musk Lorikeet	2	8		
New Holland Honeyeater	16	10	1.5	
Pacific Black Duck	2	2		
Purple Swamphen	12	9	2.6	
Purple-crowned Lorikeet	1	3		
Rainbow Lorikeet	6	12	3.2	
Red Wattlebird	16	8	1.9	
Rock Dove	5	20	5.1	
Silvereye	4	9	1.9	
Singing Honeyeater	2	2		
Spotted Dove	2	1		
Striated Pardalote	1	1		
Striated Thornbill	1	1		
Superb Fairy-wren	5	6	2.1	
Tree Martin	1	4		
Weebill	7	4	0.9	
Welcome Swallow	11	19	2.3	
White-faced Heron	2	1		
White-plumed Honeyeater	15	6	1.7	
Willie Wagtail	12	5	1.0	
Yellow Thornbill	2	3		
Yellow-rumped Thornbill	2	3		

Common Name	No. of records	Highest count	Average count/ha	Breeding records
SOUTH-EAST SITE				
Australian Magpie	17	5	1.3	
Australian Reed-Warbler	1	1		
Australian White Ibis	1	3		
Collared Sparrowhawk	1	1		
Common Blackbird	1	1		
Common Bronzewing	4	3	0.8	
Common Starling	5	20	2.6	
Crescent Honeyeater	1	1		
Crested Pigeon	8	25	4.1	
Crimson Rosella	1	3		
Eastern Rosella	1	3		
Elegant Parrot	1	3		
European Goldfinch	3	4		
Fairy Martin	1	3		
Galah	10	25	3.7	
Grey Fantail	2	2		
Grey Shrike-thrush	4	1	0.5	
House Sparrow	2	1		
Little Pied Cormorant	1	1		
Little Raven	7	3	0.9	
Little Wattlebird	3	5		
Magpie-lark	10	3	0.9	
Mistletoebird	5	5	0.9	
Musk Lorikeet	2	2		
New Holland Honeyeater	11	12	2.0	
Pacific Black Duck	4	4	1.0	
Peaceful Dove	2	3		
Peregrine Falcon	1	1		
Purple Swamphen	7	6	1.1	1
Rainbow Lorikeet	3	2		
Red Wattlebird	17	10	2.5	
Red-browed Finch	2	5		
Rock Dove	1	2		
Silvereye	9	6	1.7	
Singing Honeyeater	1	2		
Spotted Dove	3	1	0.5	
Striated Pardalote	2	1		
Superb Fairy-wren	12	7	1.9	
Weebill	10	7	1.4	
Welcome Swallow	7	4	1.2	
White-faced Heron	2	1		
White-plumed Honeyeater	12	5	1.3	
Willie Wagtail	10	3	0.9	
Yellow Thornbill	9	5	1.8	
Yellow-rumped Thornbill	7	7	1.7	

Common Name	No. of records	Highest count	Average count/ha	Breeding records
CENTRAL SOUTH SITE				
Australasian Darter	1	1		
Australasian Grebe	1	1		
Australian Magpie	2	2		
Australian Reed-Warbler	7	5	1.1	
Australian White Ibis	1	2		
Black-fronted Dotterel	3	2		
Brown Goshawk/Collared Sp	2	1		
Brush Bronzewing	2	3		
Common Blackbird	7	2	0.7	
Common Bronzewing	9	2	0.7	
Common Starling	5	6	1.5	
Crested Pigeon	12	6	1.4	1
Crimson Rosella	2	3		
Dusky Moorhen	3	2		
Eastern Rosella	1	1		
Elegant Parrot	5	7	1.8	
Eurasian Coot	16	5	1.3	
European Goldfinch	2	3		
Galah	6	3	1.1	
Grey Currawong	1	1		
Grey Shrike-thrush	5	1	0.5	
Hardhead	1	1		
Hoary-headed Grebe	5	1	0.5	
House Sparrow	5	16	3.3	
Little Corella	2	3		
Little Grassbird	6	2	0.6	
Little Pied Cormorant	11	3	0.8	
Little Raven	6	4	1.1	
Little Wattlebird	3	7		
Magpie-lark	4	3	1.3	
Masked Lapwing	1	5		
Mistletoebird	5	2	0.6	
Musk Lorikeet	4	16	2.9	
New Holland Honeyeater	17	13	3.1	
Pacific Black Duck	11	4	1.0	
Peaceful Dove	1	2		
Purple Swamphen	13	4	1.0	1
Purple-crowned Lorikeet	1	6		
Rainbow Lorikeet	4	5	2.0	
Red Wattlebird	14	8	1.9	
Red-browed Finch	7	6	1.8	1
Rock Dove	3	10		
Silvereye	7	5	1.5	
Spotted Dove	12	4	1.0	
Spotted Pardalote	3	2		
Striated Pardalote	5	2	0.8	
Superb Fairy-wren	19	15	3.9	
Weebill	3	4		
Welcome Swallow	5	5	1.5	
White-browed Scrubwren	3	3		
White-faced Heron	7	3	0.6	
White-plumed Honeyeater	18	10	2.1	
Willie Wagtail	3	2		

Common Name	No. of records	Highest count	Average count/ha	Breeding records
SOUTH-WEST SITE				
Australasian Grebe	3	1		
Australian Magpie	3	3		
Australian Reed-Warbler	6	5	1.3	
Australian Spotted Crake	3	4		
Australian White Ibis	8	7	1.3	
Australian Wood Duck	5	5	1.3	
Baillon's Crake	1	1		
Black Swan	1	5		1
Black-faced Cuckoo-shrike	1	1		
Black-fronted Dotterel	9	2	0.8	1
Black-tailed Native-hen	1	1		
Brush Bronzewing	1	1		
Common Blackbird	4	2	0.6	
Common Bronzewing	5	2	0.7	
Common Starling	17	20	2.4	
Crested Pigeon	12	21	2.2	
Crested Shrike-tit	1	2		
Crimson Rosella	3	2		
Dusky Moorhen	12	8	1.3	1
Dusky Woodswallow	2	1		
Eastern Rosella	5	3	0.9	
Elegant Parrot	8	5	1.3	
Eurasian Coot	17	5	1.3	
European Goldfinch	5	5	1.4	
Fairy Martin	3	4		
Galah	5	9	1.8	
Great Cormorant	1	2		
Great Pied Cormorant	1	1		
Grey Fantail	1	1		
Grey Teal	4	6	1.8	
Hardhead	2	2		
Hoary-headed Grebe	2	4		
Horsfield's Bronze-Cuckoo	2	1		
House Sparrow	12	8	1.9	
Latham's Snipe	1	1		
Little Black Cormorant	1	1		
Little Corella	1	4		
Little Grassbird	16	5	1.3	
Little Pied Cormorant	13	4	0.9	
Little Raven	10	7	1.3	
Magpie-lark	12	4	1.0	
Masked Lapwing	7	4	1.1	
Mistletoebird	4	2	0.6	
Musk Lorikeet	1	15		
Nankeen Night-Heron	1	1		
New Holland Honeyeater	15	7	1.7	
Pacific Black Duck	12	10	1.7	
Peaceful Dove	1	2		
Peregrine Falcon	1	1		
Purple Swamphen	17	10	2.4	1
Rainbow Lorikeet	3	3		
Red Wattlebird	15	7	1.4	
Red-browed Finch	5	5	2.1	
Red-kneed Dotterel	1	1		
Rock Dove	9	8	1.4	
Sacred Kingfisher	2	1		
Silvereye	6	4	1.6	
Singing Honeyeater	2	1		
Spotless Crake	3	2		
Spotted Dove	9	3	1.1	
Striated Pardalote	2	2		
Superb Fairy-wren	18	13	3.3	
Tree Martin	1	1		
Welcome Swallow	13	10	1.9	
White-faced Heron	7	2	0.6	
White-plumed Honeyeater	15	7	1.8	
Willie Wagtail	9	3	0.8	
Yellow-rumped Thornbill	1	3		