

Monitoring Hooded Plovers on the Fleurieu Peninsula:

A summary of breeding success for the 2019/2020 season

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June 2020

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Photo: Gary Jackson: Hindmarsh River Fledgling.

This project is supported by the Adelaide and Mount Lofty Ranges Natural Resources Management Board, through funding from the Australian Government's National Landcare Program and the NRM Levy.

Executive Summary

During the 2019/20 season, we had 59 people entering data into the MyBeachBird data portal, with 2,849 data entries. Fifty six sites were visited, with 28 breeding pairs confirmed on the Fleurieu this season. There were 82 breeding attempts (218 eggs), with 69 chicks, and 17 fledglings. This is the second highest number of breeding attempts and eggs recorded in a season across ten consecutive seasons, with the 2018/19 season having the highest number. A high percentage of the nests failed at egg stage (61.0%) and many failures were suspected to have been taken by predators. Chick survival has improved since last season from 21.7% in 2018/19 to 24.6% in 2019/20. This season had a record number of chicks, with 69 chicks sighted and an extra 11 chicks suspected to have hatched. In comparison, 2015/16 season was when there were a high number of chicks observed (63 chicks). The Hooded Plover fledgling per pair result was 0.61, which is a great improvement compared to last season's below-target result of 0.30 fledglings/pair.

Management (protection of the breeding site via signage and temporary fencing) was undertaken for 74.4% of breeding attempts: nine managed nests produced fledglings and four nests from remote sites that did not require management also fledged chicks. In addition to on-ground management, many events were undertaken on the Fleurieu Peninsula to raise awareness of the plight of the Hooded Plover, and to recruit new volunteers.

Sightings of flagged birds revealed some pairs using multiple sites within the season. We were able to confirm that Ballaparudda and Callawonga are utilised by the same flagged birds. This was always a theory that the birds flew from one beach to the other, but with JZ (White) moving into this territory, we were able to confirm it used both beaches. Likewise, with JT (White) being flagged at the end of last season, we were able to confirm that this bird and its partner use multiple 'territories'. This season, EV (Orange) was found dead at Parsons Beach in early June. Two additional birds have gone missing, presumed dead, PD (Orange) at Carrickalinga North and YB (White) at Tunkalilla East, who have not been seen at all this season. LP (Orange) at Carrickalinga Rotunda has not been sighted this season either, but more monitoring needs to occur to confirm this bird has disappeared.

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Introduction

The pressures placed on the Australian coast by over 85% of the population living within 50 kms of the coast, a growing trend for a 'seachange', and coastal tourism representing a 20 million dollar recreation investment, are undoubtedly taking their toll on the resident shorebirds who breed on our ocean beaches during the spring and summer. In South Australia, there are four species of resident shorebirds, the Pied and Sooty Oystercatchers, Red-capped Plovers and Hooded Plovers, that nest on ocean beaches and offshore islands, as well as seabirds such as the nationally threatened Fairy Tern.

Hooded Plovers are listed as Vulnerable and both Oystercatcher species as Rare in South Australia under the National Parks and Wildlife Act 1972. Hooded Plovers (Eastern) are also listed as Vulnerable under national legislation, the Environment Protection and Biodiversity Conservation Act 1999. This listing occurred in 2015 after years of detailed data collection that was able to provide evidence for the species eligibility for meeting threatened criteria.

The Hooded Plovers are the most threatened of beach-nesting resident shorebirds because they are habitat specialists. They are limited to breeding exclusively on ocean beaches in South Australia, with the rare exception of some coastal saline lakes in parts of the South East coast, Yorke Peninsula and on the Eyre Peninsula. The oystercatchers have a broader nesting habitat range which includes rocky outcrops, islands and more heavily vegetated dune areas, and red-capped plovers occupy a range of habitats including samphire saltmarsh, freshwater wetlands, low energy beaches, saltfields and claypans.

Beach-nesters make simple nest-scrapes in the sand and their well-camouflaged eggs and chicks are extremely difficult to spot, and therefore at great risk of being trampled by visitors to the beach. People, unleashed dogs, horses and vehicles on beaches not only pose a direct threat, but they also disturb incubating adults, resulting in temporary nest abandonment which exposes the eggs to harsh temperatures, and predators such as ravens, gulls, foxes and cats. This is particularly true of disturbances caused by unleashed dogs, where adults spend long periods away from the nest. Furthermore, residential development and littering attract increased numbers of predators to beaches.

Chicks cannot fly for five weeks and need to forage on the beach in order to survive: this places them in harm's way, and they are easily crushed or disturbed by people, dogs and vehicles on the beach. If they spend too much time in hiding, they can starve to death or

be exposed to harsh temperatures in the absence of brooding. The adult birds attempt to distract potential threats, leaving the chicks unattended and exposed to predators. In addition, vehicles on beaches compact the sand, killing the bulk of prey items that these shorebirds rely on.

Given the severe pressures placed on coastal breeding birds, in particular the threatened status of the Hooded Plover, BirdLife Australia embarked on a project to 'promote coexistence between recreationists and beach-nesting birds' in 2006. Beaches will always be popular places for recreation within Australian culture, and the best solution to a problem which is very much human generated, is to try and engage people to change their behaviours and help protect these birds so they have a future. This project has evolved in to the National Beach-nesting Birds Program and is currently funded by a range of Government grants and stakeholder partnerships, as well as various philanthropic trusts and donors. The Beach-nesting Birds program on the Fleurieu Peninsula was initiated as a collaboration with Adelaide and Mt Lofty Ranges Natural Resources Management Board in 2008 -2009, with initial investment supporting the 2008 Hooded Plover Biennial Count.

The main aim of the beach-nesting birds' (BNB) project is to involve coastal communities and land managers in protection of breeding sites to see an overall improvement in breeding success. The project focuses on the Hooded Plover in Victoria and South Australia and uses an adaptive management approach, improving on-ground management and community awareness strategies over time. The results are applicable in a broader sense to other beach-nesting birds around Australia.

The national objectives of this recovery program are to:

1. Improve breeding success and population resilience of Hooded Plovers through:
 - On-ground threat mitigation at priority sites across the species range
 - Research to overcome key knowledge gaps including improving threat mitigation, as well as to evaluate and adapt best practice for Hooded Plover recovery
 - Education to shape sustainable beach use behaviours
2. Identify, protect and restore critical habitat so that the current distribution is protected and maintained or improved
3. Develop tools, resources, capacity and supportive policy to ensure long-term sustainability and consistent delivery of recovery actions

On the Fleurieu Peninsula specifically, our aims are expanded into the following detailed actions:

1. Improve breeding success and population resilience of Hooded Plovers:

- i. Monitor the breeding status of all known pairs on the Fleurieu Peninsula during the breeding months (August-March). Seek to maintain monitoring of sites over time to quantify improvements in breeding success related to management investment;
- ii. Ensure all sites where birds are monitored, have potential threats being simultaneously monitored. This is to assess changes in the occurrence and severity of threats over time, to detect new and emerging threats, and to assess the impact of threats on breeding outcomes;
- iii. Implement on-ground protection of individual breeding sites assessed as vulnerable, following best practice management protocols outlined in 'A practical guide to managing beach-nesting birds in Australia' (Maguire 2008);
- iv. Implement an adaptive management approach, by investigating the effectiveness of nest site protection and modifying where appropriate (and following best practice) in subsequent seasons. For example, management techniques can be adapted to local geomorphological and beach user specifications;
- v. Install remote cameras at nest sites where nests repeatedly fail to detect and identify nest predators. This is done following strict protocols and there are strict limits on the frequency of use of remote cameras to avoid any predator associations between cameras and nests;
- vi. Band a sample of Hooded Plovers on the Fleurieu Peninsula and maintain a database of future sightings to track movements, survival rates and site and pair fidelity. This will lead to better knowledge about the exchange of birds between the Fleurieu Peninsula and other regions of South Australia, and possibly other states, enabling a better idea of what we consider a population. Blood samples are taken to contribute to a collaborative study of population genetics carried out by Museums Victoria, Deakin University and BirdLife Australia, and;
- vii. Increase awareness and engagement of communities in Hooded Plover conservation via media, social media, and organised events and activities such as the biennial count, scope viewing, dogs' breakfasts, school visits and craft stalls. Awareness raising and opportunities to participate are carried out with the aim of changing beach user behaviour to promote long-term coexistence and minimise human impacts.

2. Protect and restore critical habitat so that the current distribution is maintained and protected

- i. Maintain a current distribution map and database of the location of breeding pairs of Hooded Plovers on the Fleurieu Peninsula;
- ii. Participate in the Hooded Plover eastern mainland census (Biennial Count) every two years (e.g. November 2016, November 2018) to inform population trend and high level threat trend analyses;
- iii. Using threat assessments from the Biennial Count, coupled with local volunteer knowledge of intensively monitored sites, identify sites where habitat is being degraded by invasive or introduced weeds and target these sites for weed control;
- iv. Identify sites at risk of tidal inundation and investigate potential for habitat retreat or habitat improvements to create longer-term resilience to adapt to rising sea levels;
- v. Protect sites from habitat modifications that will impact suitability for nesting, foraging, roosting or flocking, and;
- vi. Seek to understand impacts of climate change on population distribution and to prioritise sites for habitat protection, including protection from future coastal armouring projects.

3. Develop tools, resources, capacity and supportive policy to ensure long-term sustainability and consistent delivery of recovery actions.

- i. Establish 'Friends of the Hooded Plover' regional groups on the Fleurieu Peninsula to encourage community ownership and long-term sustainability of the program;
- ii. Develop new resources and materials to support and improve participation of volunteers and land managers in monitoring and recovery actions for the Hooded Plover;
- iii. Hold regular meetings, workshops and training opportunities and support communications between volunteers, land managers and program coordinators so that all participants share feedback and work collaboratively toward improved recovery outcomes;
- iv. Ensure all data is entered in to BirdLife Australia's MyBeachBird portal to contribute to the national program;
- v. Work in partnership with land managers to deliver consistent on-ground recovery actions, signage and messaging, and;

- vi. Engage with local, state and federal government policy and decision makers to ensure threats to Hooded Plovers and their habitat are acknowledged and managed accordingly. This may for example include influencing local bylaws, statewide threatened species or coastal planning legislation, tourism or events management, beach renourishment projects, etc.

The main roles of the different groups working on this project are as follows:

- BirdLife Australia staff provide strategic direction for recovery of Hooded Plovers across the Eastern mainland, register and induct volunteers, maintain ethics and permit approvals, provide advice, workshops, training and technical support, as well as data analysis and maintenance of the national MyBeachBird database. BirdLife Australia staff also carry out research to improve recovery efforts, analyse and review data to maintain an adaptive management approach, and maintain a national network for information sharing and supporting recovery of the Hooded Plover.
- On the Fleurieu Peninsula, Natural Resources Adelaide and Mount Lofty Ranges coastal and marine team coordinate and support the project and volunteers, and local council and some Department for Environment and Water (DEW) staff assist with nest protection responses. In addition the Sharing our Shores with Coastal Wildlife project officers, funded by NRM, assist in delivering key actions.
- Volunteer Regional Coordinators and Volunteers undertake the very important roles of monitoring breeding birds and site threats, recording data on the portal, installing fences/signs, and talking with the public, etc.

At a regional level, two Coastal Action Plans have been completed for the Adelaide and Mount Lofty Ranges Natural Resources Management Board region; the Southern Fleurieu Coastal Action Plan and for relevant coastal areas of the Metropolitan Adelaide and Northern Coastal Action Plan. These plans contain detailed coastal maps and plant and animal lists. The plans also outline key conservation priorities along the coast, provide suggested actions and identify key players to be involved.

The Coastal Action Plans are used to assist in priority setting of coastal management actions for the AMLR NRM Board, councils and DEW. In implementing the Coastal Action Plans, the Adelaide and Mount Lofty Ranges NRM Board resources the local implementation of actions identified in the Coastal Action Plans including implementation of local initiatives to conserve Hooded Plovers, as well as resourcing towards BirdLife Australia coordination.

The South Australian Recovery Plan for the Hooded Plover (Baker-Gabb and Weston 2006) still remains in draft form. Relevant actions and priorities of this draft were incorporated into the Coastal Action Plan's detailed local actions to manage foreshore use to minimise impact on the species during the nesting and fledging season. Key players identified are the Department for Environment and Water, councils, community and the Natural Resources Management Board. Many of these actions and priorities however, need updating due to the considerable advances in research and knowledge of South Australian Hooded Plover sites, threats and actions since 2006.

There is no National Recovery Plan for the species. The Federal Government compile Conservation Advice for the species, and this was updated in 2019 and is currently awaiting approval.

In view of the status of this species, the Hooded Plover has also been flagged as a focal species for the Southern Fleurieu Coastal Action Plan and for relevant coastal areas of the Metropolitan Adelaide and Northern Coastal Action Plan area.



Photo: Sue and Ash Read, Ochre Cove Maslin Beach

An overview of the 2019/2020 Breeding Season

As part of BirdLife Australia's Beach-nesting Birds Program, monitoring of breeding Hooded Plover pairs via the MyBeachBird portal occurred at priority sites across South Australia. On the Fleurieu Peninsula, an attempt is made to monitor all occupied sites, i.e. the entire population of Hooded Plovers, while elsewhere in South Australia, only a small sample of breeding pairs are monitored within each NRM region due to logistical and resource constraints.

The volunteers on the Fleurieu Peninsula once again displayed a tremendous effort in entering their sightings into the MyBeachBird portal with a total of 2,849 data records entered during the 2019/2020 season. This is an increase in entries (224 more entries) from the previous season. Eleven data portal user accounts were responsible for 2,026 (71%) data portal entries. Some of these entries are reports passed on to these users and entered on their behalf, but otherwise the high number of entries by some users signals a greater need to share the load at some sites to avoid volunteer burnout. The additional 29% of data is entered by a larger number of volunteers (48 portal users) who each contribute to build a picture of the breeding success and threats at sites. Every observation counts, and each and every one of the Fleurieu volunteers should be very proud as they are a region with one of the highest quality data sets for Hooded Plovers.

Overall, volunteers from the Fleurieu accounted for 66% of the data portal entries received from across South Australia, and 22% of all Victorian and South Australian data, which is to be commended. It also highlights the value of having an employed volunteer coordinator (funded by the Adelaide and Mount Lofty Ranges NRM Board), BirdLife Australia staff based in Adelaide working on the Sharing our Shores with Coastal Wildlife Project, and the network of support available from the NR AMLR Coast and Marine team.

There were 56 sites that were checked by volunteers over the breeding season. Of these 56 sites, 32 had pairs on territory, but this represented only 28 breeding pairs as there were pairs that used multiple sites within the season. Figures 1-4 provide an overview of breeding sites monitored. At Port Stanvac, while nesting Hooded Plovers were present, there were too few data records to include in the detailed nesting summaries as key months of the breeding season were missed. Data included in the report is from breeding pairs that have had monthly visits (as a minimum), as anything less than that, we are not able to confirm the number of nesting attempts and eggs, and could potentially miss an entire fledging event if enough months are missed. Five sites had no birds sighted for the

season, but are still checked as they were historically occupied and potentially a location where young birds may try to establish a territory. The remaining sites had birds sighted, either individuals or flocks at least once during the season. A breakdown of the number of data portal entries for each site, and threat assessments at each site can be found in Table 1.

In the 2019/20 season, there were a number of territory changes, and territories that were not used, even though they historically were used for breeding. Through the flagging program, we were also able to confirm multiple sites being used by the same pair:

- MR (White) nested at Hallett Cove in 2018/2019, but this season after one attempt at Hallett Cove, moved to West Beach.
- During previous seasons, nesting 'pairs' were sighted at Aldinga North and Snapper Point. There was only ever one nesting attempt at a given location at a time. No nests were ever found at the same time, so priority banding was undertaken to determine if Aldinga North and Snapper Point were indeed one pair using two sites. In April 2019, at the end of the breeding season, JT (White) was flagged. This season we were able to confirm that JT (White) uses multiple territories. Although this year, Snapper Point and Port Willunga South were used for nesting, not Aldinga North.
- JZ (White) nested successfully at Yankalilla River Mouth last season, but moved to Ballaparrudda this season. Because of this move, it was confirmed that the territories Ballaparrudda and Callawonga are used as one. It was suspected that it was one pair using both beaches, but never confirmed. A different pair nested at Yankalilla River Mouth this season.
- The vehicle accessible section of Moana Beach was used as a breeding territory for the first time (a pair nested in the vehicle-free section of Moana beach in 2010/11), with two unbanded birds having three nesting attempts during the season here.
- SR (Orange) moved from its previous season's nesting site, Aldinga, down to Sellicks Beach.
- PX (White) was confirmed using Victor Central during 2018/2019 but when it had chicks, utilised multiple sites, including use of Hindmarsh River Mouth and Oliver's Reef. YV (White) typically used Oliver's Reef. This season, PX (White) took over the entire territories of Victor Central, Oliver's Reef and Hindmarsh River Mouth and YV (White) was found nesting at Middleton Beach East.

Figure 1. Breeding sites within Fleurieu Peninsula Adelaide Metro Region (West Beach to Hallett Cove) for the 2019/2020 season.



Figure 2. Breeding sites within Fleurieu Peninsula North Region (Onkaparinga) for the 2019/2020 season.



Figure 3. Breeding sites within Fleurieu Peninsula Central Region (Myponga – Cape Jervis) for the 2019/2020 season



Figure 4. Breeding sites within Fleurieu Peninsula South Region (Tunkalilla – Goolwa) for the 2019/2020 season



Table 1. Number of portal entries and threat assessments on the Fleurieu Peninsula during the 2019/20 breeding season. Portal entries are the number of entries entered via the online data portal. Full threat assessments include both the observed number of threats plus print assessments. There are some sites where the substrate does not allow for print data to be collected (eg. Rocky coastline, with no sand).

Site/Territory	Portal entries	Number Threat assessments	Full threat assessments	% Full threat assessments completed
Aldinga	18	18	16	89%
Aldinga Nth (Aldinga Beach Rd)	15	15	15	100%
Ballaparudda	8	8	8	100%
Bashams Beach	103	101	100	97%
Callawonga	12	12	12	100%
Carrickalinga Estuary	1	0	0	0%
Carrickalinga North	84	40	32	38%
Carrickalinga Rotunda	55	21	11	20%
Carrickalinga South	8	0	0	0%
Coolawang	2	2	1	50%
Dep's Beach	7	7	7	100%
Goolwa beach	16	16	16	100%
Hallett Cove	41	35	28	68%
Hindmarsh River Mouth	155	139	109	70%
Inman River Outlet	109	80	54	50%
Lands End	7	4	4	57%
Marino	5	1	0	0%
Marino rocky platform	4	1	0	0%
Maslin Beach	183	176	97	53%
Middleton Beach East	52	52	51	98%
Middleton Beach West	107	105	100	93%
Moana Beach	188	177	167	89%
Moana Beach South	49	49	49	100%
Morgans beach Fleurieu	2	2	2	100%
Myponga Beach	32	24	20	63%
Normanville North	13	4	1	8%
Normanville South	168	116	48	29%
Ochre Cove, Maslins	195	183	138	71%
Olivers Reef	61	59	46	75%
Parsons Beach	36	36	33	92%
Port Stanvac	5	0	0	0%
Port Willunga	98	98	96	98%

Site/Territory	Portal entries	Number Threat assessments	Full threat assessments	% Full threat assessments completed
Port Willunga South	96	95	95	99%
Rapid Bay	1	0	0	0%
Seacliff	115	85	76	66%
Second Valley	1	0	0	0%
Sellicks Beach	49	46	44	90%
Sheepies beach	24	24	19	79%
Shelley Beach (lady bay)	51	25	22	43%
Silver Sands	17	17	17	100%
Snapper Point	80	63	54	68%
Southport	9	9	9	100%
Tennyson Dunes	2	1	1	50%
Tunkalilla 1st alcove far east	6	6	6	100%
Tunkalilla East	20	20	20	100%
Tunkalilla Midway	20	20	18	90%
Tunkalilla Tunk Head alcove	8	8	8	100%
Tunkalilla West	20	20	20	100%
Victor Central	50	45	29	58%
Waitpinga Beach (east)	31	30	26	84%
Waitpinga Beach (west)	15	15	15	100%
Waitpinga Estuary	16	16	14	88%
Watsons Gap	96	91	87	91%
West Beach	83	45	25	30%
West Lakes Shore Beach	2	0	0	0%
Yankalilla river mouth	27	9	5	19%
Yilki	169	125	79	47%
Total	2,849	2,409	1,950	68%

In the 2019/20 breeding season there were 82 nesting attempts by 28 breeding pairs on the Fleurieu Peninsula. This was the second highest number of nests recorded since monitoring began in 2008/09, and the highest number of chicks observed since monitoring began (see Table 2).

Table 2. Summary of number of breeding pairs, sites monitored for breeding, nests, hatching or failing at egg stage, total number of eggs and chicks observed, and total chicks that fledged on the Fleurieu Peninsula over eleven breeding seasons.

Season	# pairs (# sites monitored)	# nests	# nests hatch	# nests fail egg stage	# eggs	# chicks obsv. (% of eggs)	# fledglings (% of chicks)	Fldlg/ Pair
2009/10	12 (12)	18	9 (50.0%)	9	49	19 (38.8%)	7 (36.8%)	0.58
2010/11	19 (23)	36	14 (38.9%)	22	83	26 (31.3%)	9 (34.6%)	0.47
2011/12	14 (26)	24	10 (41.7%)	14	60	22 (36.7%)	8 (36.4%)	0.57
2012/13	20 (38)	34	11 (32.4%)	23	76	23 (30.3%)	9 (39.1%)	0.45
2013/14	18 (35)	35	12 (34.3%)	23	84	23 (27.4%)	9 (39.1%)	0.50
2014/15	20 (44)	46	17 (37.0%)	29	107	32 (29.9%)	10 (31.3%)	0.50
2015/16	21 (45)	42	26 (61.9%)	16	112	63 (56.3%)	19 (30.2%)	0.90
2016/17	24 (46)	56	19 (33.9%)	37	141	39 (27.7%)	16 (41.0%)	0.67
2017/18	27 (47)	59	23 (39.0%)	36	153	52 (34.0%)	18 (34.6%)	0.67
2018/19	33 (50)	86	22 (25.6%)	64	223	46 (20.6%)	10 (21.7%)	0.30
2019/20	28 (43)	82	32 (39.0%)	50	218	69 (31.7%)	17 (24.6%)	0.61

Seventeen fledglings were produced in the 2019/20 breeding season, while not the highest number of fledglings in all the seasons monitored, it is a significant improvement on last season's (2018/2019) fledgling tally of 10.

The approximate benchmark for fledgling production to maintain population viability over time is set as 0.40 – 0.50 fledglings per pair per season. In 2018/19, the Fleurieu had the worst fledgling per pair result since monitoring began, with 0.30 fledglings per pair. This season, 2019/2020, exceeded the target with 0.61 fledglings per pair. In addition to setting a benchmark to measure success, we also want to ensure variation in the pairs responsible for this fledgling production to maintain genetic variation and to be assured that all occupied breeding sites have potential to be 'source' sites. Figures 5 to 9 provide a geographic overview of those nests that hatched and nests that fledged. Table 3 provides a summary of nesting attempts for each pair monitored and Table 4 expands this into more detail about each individual nesting attempt.

The earliest recorded nests were at the start of August. As usual, the Ochre Cove pair started the season off with a nest on the 7th August. This failed and the pair re-nested again still within August. Eleven other pairs started nesting in August: Seacliff (failed), Port Willunga (chicks failed) , Snapper Point (failed), Normanville South (failed), Shelley

Beach (Lady Bay) (failed), Yilki (failed), Victor Central (chicks failed), Watsons Gap (failed), Bashams Beach (failed) and Middleton Beach West (fledged x1). Eight of these early nests failed, Victor Central and Port Willunga August nests both hatched but the chicks failed, and Middleton Beach West fledged one chick by the 1st November. This was the first fledgling of the season.

Breeding slowed after January, with the last nest recorded in early February at Tunkalilla East. This failed due to suspected avian predation (magpie or raven). Tunkalilla East was also the pair that bred latest in the previous season (2018/19). Of the chicks that fledged for the season, 38.5% (5) fledged in November, 30.8% (4) in February, 23.1% (3) in March, and only 7.7% (1) nest fledged in January (at Port Willunga South).

Four pairs (14.3%) had only one nesting attempt for the entire season (the lowest number of pairs to have only one attempt in at least five seasons); eight pairs (28.6%) had two nesting attempts; seven pairs (25%) had three nesting attempts; five pairs (17.9%) had four nesting attempts, and three pairs (10.7%) had five nesting attempts. The pairs that had five nesting attempts were: Tunkalilla Midway, Yilki and Watsons Gap. Of these sites both Tunkalilla Midway and Yilki produced fledglings, so that their repeated efforts paid off. RR (Orange) and unbanded had the highest number of attempts of any pair, with 6 nesting attempts producing 15 eggs. Only three chicks hatched and none survived to fledge.

The pair at Inman River, RR (Orange) and unbanded, have consistently had a high number of nesting attempts over the last three seasons, with little success. In the last three seasons, they have had 17 nesting attempts, 44 eggs, and only 4 chicks produced. The pair have not had fledging success since 2016/2017, where a single nesting attempt resulted in one fledgling. It is sites like these that need to be targeted for remote camera installation to determine what the cause of nest failure is and how to best manage the site, as it is at great risk of becoming a 'sink'.

Of the 82 confirmed nests that were monitored, 61% (50 nests) failed during the egg stage while 39% hatched. It is difficult to determine the causes of fate without using remote cameras or being present at the exact moment of nest failure, and so many causes of nest failure are recorded as unknown. In 2019/2020, 82% of nests (41) failed to unknown causes. However for a number of these nests (n=19), there were prints and evidence around the nest suggesting the following potential causes of failure: 26.8% (11)

nests were suspected depredated by fox; with seven of these having prints leading to the nest. Avian predators (raven, magpie and birds of prey), were suspected in 9.8% (4) of nest losses, 4.9% (2) were suspect either fox, dog or cat, 2.4% (1) suspect cat and 2.4% (1) suspect dog. The remaining 44% (22) had no evidence around the nest.

Of the causes of nest failure that could be confirmed (18%; 9 nests), one nest (egg) was found depredated by an avian predator (11.1%), one nest was abandoned (11.1%), three failed due to tidal inundation (33.3%), and four had unviable eggs (44.4%), which meant that the birds incubated for at least 6 days more than the 28 days it takes for an egg to hatch. Typically, these nests were reported as having faced days of extreme heat during the incubation phase. In cases where birds have been incubating for over 28 days, BirdLife Australia analyses the data entered into the portal to ensure there is no chance the birds may have laid another nest. We also undertake testing to determine the age of the eggs, which is undertaken only by trained staff or Volunteer Regional Coordinators. If the eggs are deemed unviable, the eggs are removed. Removing eggs from Hooded Plover nests is not something that is undertaken lightly, as there is risk that viable eggs could be removed. BirdLife Australia has stringent protocols to avoid the possibility that this would happen: in each case, volunteers contacted BirdLife Australia to discuss these nests in detail. The welfare of the incubating adults is also considered, as the birds could continue sitting on unviable eggs for extended periods, during extreme weather conditions and high recreational beach use days. This can lead to deterioration of body condition, as well as reduce the chance that the birds will relay.

Photo: Sara-Kate Mansell: Myponga Adults and chicks

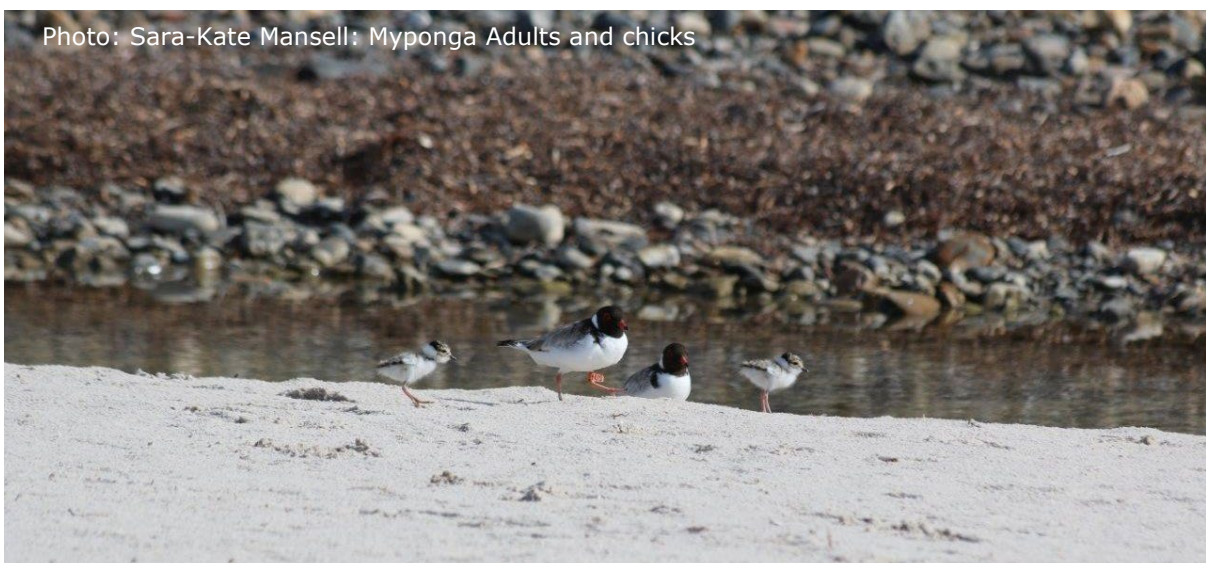


Figure 5: Hatched nests on the Adelaide Metro Region (West Beach to Hallett Cove) for the 2019/2020 season



Figure 6: Hatched nests on the North Region (Onkaparinga) for the 2019/2020 season.



Figure 7: Hatched nests on the Central Region (Myponga – Cape Jervis) for the 2019/2020 season.

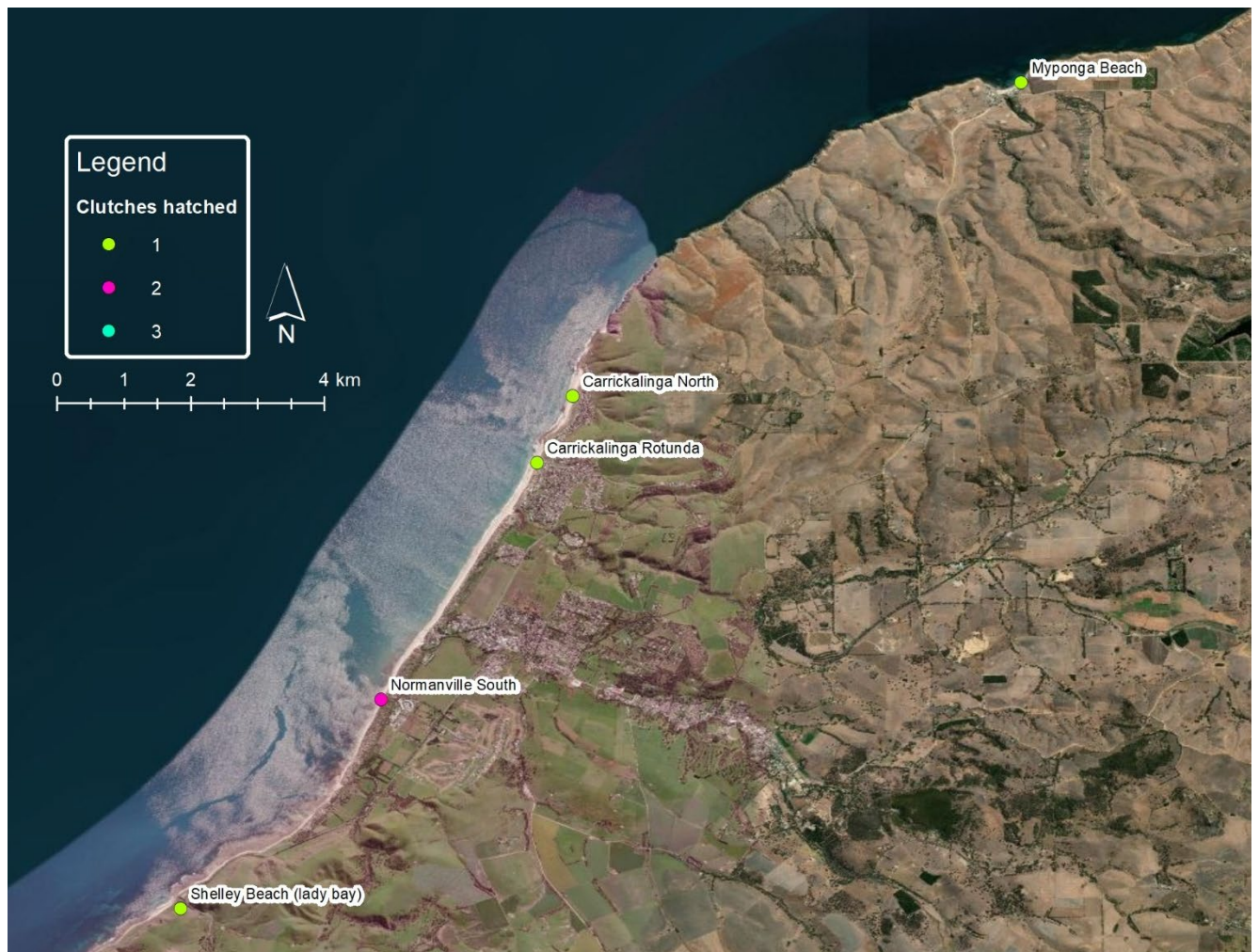


Figure 8: Hatched nests on the South Region (Tunkalilla - Goolwa) for the 2019/2020 season



Figure 9: Fledged nest sites on the Fleurieu Peninsula during the 2019/2020 season



Table 3. Summary of nests, number of nests that failed, hatched and fledged, and total number of eggs, chicks observed and chicks that fledged from each site monitored in the 2019/20 breeding season.

Site	Pair ID	# Nests	# nests fail egg stage	# nests hatch/suspect	# nests fledg e	# eggs	# chick obsv.	# fledglings
Hallett Cove	MR Right (White) & unb	1	1	0	0	3	0	0
West Beach	MR Right (White) & unb	1	0	1	0	2	2	0
Seacliff	XS Right (White) & unb	2	1	1	1	6	3	2
Moana Beach	unb & unb	3	1	2	0	9	6	0
Ochre Cove, Maslins	NA Right (Orange) & unb	4	3	1	1	11	2	2
Maslin Beach	RV Right (Orange) & unb	3	1	2	0	8	2	0
Port Willunga	DP Left (Orange) & HV Right (Orange)	3	0	3	0	8	4	0
Port Willunga South	JT Right (White) & unb	1	0	1	1	3	3	1
Snapper Point	JT Right (White) & unb	2	2	0	0	5	0	0
Sellicks Beach	SR Right (Orange) & unb	2	1	1	0	4	2	0
Myponga Beach	Suspect EY and US	1	0	1	0	3	2	0
Carrickalinga North	unb & unb	1	0	1	0	3	1	0
Carrickalinga Rotunda	unknown & unknown	2	1	1	0	6	2	0
Normanville South	NC Right (White) & unb	4	2	2	0	12	6	0
Yankalilla river mouth	unknown & unknown	1	1	0	0	3	0	0
Shelley Beach (lady bay)	DT Right (White) & unb	3	2	1	1	8	2	1
Tunkalilla West	EW Right (Orange) & unb	2	1	1	1	4	1	1
Tunkalilla Midway	ME Right (Orange) & unb	5	4	1	1	13	2	2
Tunkalilla East	unb & unb	4	4	0	0	11	0	0
Ballaparudda/ Callawonga	JZ Right (White & Unb)	2	1	1	1	4	2	1
Sheepies beach	unb & unb	2	0	2	1	6	2	1
Parsons Beach	EV Left (Orange) & unb	2	2	0	0	2	0	0
Waitpinga Beach (east)	UA Right (White) & unb	4	4	0	0	9	0	0
Yilki	KV Right (Orange) & VH Left (Orange)	5	4	1	1	15	3	1

Site	Pair ID	# Nests	# nests fail egg stage	# nests hatch/suspect	# nests fledg e	# eggs	# chick obsv.	# fledglings
Inman River Outlet	RR Right (Orange) & unb	6	5	1	0	15	3	0
Victor Central	PX Right (White) & unb	2	1	1	0	6	3	0
Hindmarsh River Mouth	PX Right (White) & unb	1	0	1	1	3	3	1
Olivers Reef	PX Right (White) & unb	1	0	1	0	3	2	0
Watsons Gap	BX Left (Orange) & unb	5	4	1	0	13	3	0
Bashams Beach	unb & unb	3	1	2	2	9	5	3
Middleton Beach West	UE Right (Orange) & metal only (assumed SA)	3	2	1	1	8	3	1
Middleton Beach East	YV Right (White) & unb	1	1	0	0	3	0	0
TOTAL 28 Pairs		82	50	32	13	218	69	17

There were 29 nests confirmed as hatched (35.4%) and three cases (3.7%) where chicks were suspected to have hatched, but were not sighted. Of the confirmed hatched nests, 13 successfully fledged chicks (i.e. 44.8% of hatched nests fledged). Of the chicks observed (69 confirmed chicks), 17 (24.6%) fledged.

The 17 fledglings produced this season were from 12 pairs of Hooded Plovers, with one pair producing fledglings from two separate nesting attempts. The pairs were: Port Willunga South (1 fledgling), Shelley Beach (Lady Bay) (1 fledgling), Tunkalilla West (1 fledgling), Ballaparudda/Callawonga (1 fledgling), Sheepies Beach (1 fledgling), Yilki (1 fledgling), Hindmarsh River Mouth (1 fledgling), Middleton Beach West (1 fledgling), Seacliff (2 fledglings), Tunkalilla Midway (2 fledglings), Ochre Cove (2 fledglings) and Bashams Beach (3 fledglings from two separate nesting attempts).

This represents repeated success for some territories across the past two seasons. Bashams Beach produced one fledgling in the 2018/19 season, Shelley Beach (Lady Bay) also produced one fledgling last season, and Seacliff produced two fledglings last season. Ochre Cove last produced a fledgling in 2017/2018, but this is the first time the pair have fledged two from one clutch.

This is the first season that a pair on Tunkalilla East have not produced fledglings. This site has been the most productive site on the Fleurieu Peninsula, with 13 fledglings produced from 19 nests over seven seasons. This territory was previously occupied by ST (Orange), then DK (Orange) took over and was successful for two seasons. Recently, YB (White) has produced six fledglings within three seasons, but YB (White) has not been sighted this season and an unbanded pair moved into the Tunkalilla East territory. Whilst this new pair had four nesting attempts, they did not produce chicks from these attempts.

Whilst Tunkalilla East did not produce any fledglings, both Tunkalilla Midway and Tunkalilla West produced a total of three fledglings this season, reinforcing Tunkalilla as the Fleurieu Peninsula's stronghold for fledgling production. Whilst fledgling production at Tunkalilla is high, the loss of breeding adult birds is of concern (see Flagging section of report for details). It is imperative that access through the locked gate at Tunkalilla be provided to volunteers next season to ensure we can adequately monitor this site due to its conservation significance.

Overall in 2019/20, an egg had a 7.8% chance of fledging (17 fledglings from 218 eggs), which is higher than 4.5% in 2018/19, but still lower than the 11.8% achieved in 2017/18. A nest had a 15.9% chance of fledging at least one chick (13 nests out of 82), which is an increase from 10.5% in 2018/19. Chick survival was slightly increased compared to last season, with 24.6% of chicks fledging this season compared to 21.7% in 2018/19. The highest ever recorded chick survival rate, of 41.0%, occurred in 2016/17.

The causes of chick failure were predominantly unknown (90.5%), with 5.3% suspected bird of prey depredation, 5.3% silver gull and 5.3% suspect fox and 2.6% suspected dog disturbance/predation due to high density of dog prints in the area. One fox was captured on remote camera at the time the chicks hatched, searching the area. The chicks were not sighted after this incident, but the camera did not conclusively confirm the fox depredating the chicks.

There were four cases (9.5%) where chick failure was confirmed. The depredation by silver gull of one (6 day old) chick at West Beach was witnessed and photographed by a birdwatcher. The site also had a pair of Red-capped Plovers that had two chicks at the time. The Hooded Plovers were being territorial towards the Red-capped Plovers, and also attempting to distract the human threat away, so that the silver gull had an opportunity to take one of the Hooded Plover chicks.

At Yilki, a volunteer recorded an Australian Magpie in the grassed area that flew off with a six-day old chick, with the adult Hooded Plover running towards the Magpie. At Moana Beach, a volunteer witnessed a dog stalk and chase with intent a 34-day old chick. While the chick was so close to fledging, it would not have been able to out run or fly to escape the chase. The chick's body was located the next day and taken for a necropsy, but the body had deteriorated too extensively. The final chick failure, witnessed by a volunteer, was at Hindmarsh River Mouth, where a 17-day old chick was seen limping as it had an injured leg. What caused the injury is unknown, but over the next three days, it was not able to recover from that injury and keep up with the other two chicks and adults. This chick appeared to be abandoned by the parents, or was left alone for an extensive period of time as it could not keep up, and an intruding Hooded Plover attacked and killed the chick. While uncommon, this aggressive within-species behaviour can occur, as the birds are extremely territorial.

At Seacliff, one of the chicks was witnessed to have been chased into the water at Edward St drain by a dog. The dog was attempting to grab the chick with its mouth. The dog left the area and the chick remained motionless, but survived as it began to feed, run and undertake practice flights within an hour after the encounter. This chick went on to successfully fledge four days later!



Photo: Ash Read: Hooded Plover fledgling at Ochre Cove

Table 4. Detailed summary of nest progress for each site according to data entered in the MyBeachBird data portal and sent to BirdLife Australia for the 2019/20 breeding season. * denotes where an egg/nest number is assumed.

Site	Date	Nesting stage	Attempt #	egg #	chick #	band ID
Hallett Cove	03/09/19	Nest (with eggs)	1	3		MR Right (White) & unb
Hallett Cove	08/09/19	Nest (with eggs)	1	unchecked		
Hallett Cove	10/09/19	Failed since last visit (suspect dog; prints around nest site) <i>MR Right (White) & unb moved to West Beach</i>	1			
West Beach	18/10/19	Nest (with eggs)	2	2		MR Right (White) & unb
West Beach	19/11/19	Chicks sighted	2		1	
West Beach	19/11/19	Chicks sighted; second chick confirmed	2		2	
West Beach	25/11/19	Chicks sighted (x1 chick fail; confirmed gull)	2		1	
West Beach	01/12/19	Chicks sighted	2		1	
West Beach	02/12/19	Failed since last visit (unknown)	2			
Seacliff	23/08/19	Nest (with eggs)	1	3		XS Right (White) & unb
Seacliff	23/08/19	Nest (with eggs)	1	3		
Seacliff	05/09/19	Nest (with eggs); one egg fail unknown	1	2		
Seacliff	08/09/19	Failed since last visit; unknown				
Seacliff	23/09/19	Scrape (no eggs)	2			
Seacliff	24/09/19	Scrape (no eggs)	2			
Seacliff	24/09/19	Nest (with eggs)	2	3		
Seacliff	23/10/19	Chicks sighted	2		3	
Seacliff	27/10/19	Chicks sighted; one chick failed unknown	2		2	
Seacliff	24/11/19	Chicks sighted; one chick chased by dog attempting to grab chick - chick survived	2		2	
Seacliff	28/11/19	Fledged	2		2	
*Port Stanvac	24/10/19	Nest (with eggs)	1	3		unknown & unknown
Port Stanvac	04/12/19	Failed since last visit (unknown): Chick sighted	2	3*	1	
Port Stanvac	13/12/19	Failed since last visit (unknown)				

Site	Date	Nesting stage	Attempt #	egg #	chick #	band ID
Moana Beach	04/09/19	Nest (with eggs)	1	3		unb & unb
Moana Beach	14/09/19	Nest (with eggs) (2 eggs failed; fox prints through nest)	1	1		
Moana Beach	15/09/19	Failed since last visit (suspect fox took final egg)	1			
Moana Beach	24/09/19	Scrape (no eggs)				
Moana Beach	26/09/19	Nest (with eggs)	2	3		
Moana Beach	23/10/19	Chicks sighted	2		1	
Moana Beach	23/10/19	Chicks sighted (second chick confirmed)	2		2	
Moana Beach	25/10/19	Chicks sighted (third chick confirmed)	2		3	
Moana Beach	26/10/19	No birds sighted	2			
Moana Beach	27/10/19	Chicks sighted (two chicks failed; unknown - 1 chick remains)	2		1	
Moana Beach	31/10/19	Chicks sighted	2		1	
Moana Beach	01/11/19	Suspect chicks failed	2			
Moana Beach	04/11/19	Failed since last visit (suspect silver gull; 30 within fenced area with chick when chick last sighted)	2			
Moana Beach	18/11/19	Nest (with eggs)	3	3		
Moana Beach	17/12/19	Chicks sighted	3		3	
Moana Beach	17/12/19	Chicks sighted (one chick failed; unknown)	3		2	
Moana Beach	21/12/19	Chicks sighted (second chick failed; unknown)	3		1	
Moana Beach	20/01/20	Chicks sighted (chick chased by dog at day 34; not sighted after this)	3		1	
Moana Beach	21/01/20	No birds sighted	3			
Moana Beach	21/01/20	Failed since last visit (chick body found)	3			
Ochre Cove, Maslins	07/08/19	Nest (with eggs)	1	3		NA Right (Orange) & unb
Ochre Cove, Maslins	09/08/19	Nest (with eggs) (one egg failed; no prints, assume avian predator)	1	2		
Ochre Cove, Maslins	21/08/19	Failed since last visit (suspect fox; prints around nest)	1			
Ochre Cove, Maslins	26/08/19	Scrape (no eggs)				
Ochre Cove, Maslins	29/08/19	Nest (with eggs)	2	1		

Site	Date	Nesting stage	Attempt #	egg #	chick #	band ID
Ochre Cove, Maslins	01/09/19	Nest (with eggs) second egg confirmed	2	2		
Ochre Cove, Maslins	04/09/19	Nest (with eggs) third egg confirmed	2	3		
Ochre Cove, Maslins	07/09/19	Nest (with eggs) (eggs washed by tide, one egg moved by tide, but not reclaimed)	2	1		
Ochre Cove, Maslins	09/09/19	Nest (with eggs) (no incubation)	2	1		
Ochre Cove, Maslins	11/09/19	Nest (with eggs) (no incubation)	2	1		
Ochre Cove, Maslins	13/09/19	Failed plus NEW scrape (no eggs) (tide washed all eggs out, remaining one egg never reclaimed)	2			
Ochre Cove, Maslins	13/09/19	Failed since last visit	2			
Ochre Cove, Maslins	18/09/19	Nest (with eggs)	3	2		
Ochre Cove, Maslins	18/09/29	Nest (with eggs) third egg confirmed	3	3		
Ochre Cove, Maslins	16/10/19	Nest (with eggs)	3	unchecked		
Ochre Cove, Maslins	17/10/19	Chicks sighted	3		2	
Ochre Cove, Maslins	21/11/19	Fledged	3		2	
Ochre Cove, Maslins	26/12/19	Nest (with eggs)	4	2		
Ochre Cove, Maslins	22/01/20	Nest (with eggs)	4	unchecked		
Ochre Cove, Maslins	24/01/20	Failed since last visit (unknown)	4			
Maslin Beach	07/09/19	Scrape (no eggs)				RV Right (Orange) & unb
Maslin Beach	09/09/19	Nest (with eggs)	1	1		
Maslin Beach	11/09/19	Nest (with eggs); third egg confirmed	1	3		
Maslin Beach	10/10/19	Nest (with eggs)	1	unchecked		
Maslin Beach	11/10/19	Suspect chicks	1			
Maslin Beach	11/10/19	Suspect chicks failed	1			
Maslin Beach	12/10/19	Failed since last visit (unknown chick failure)	1			
Maslin Beach	18/10/19	Scrape (no eggs)				
Maslin Beach	25/10/19	Nest (with eggs)	2	2		
Maslin Beach	21/11/19	Nest (with eggs)	2	unchecked		
Maslin Beach	22/11/19	Chicks sighted	2		2	

Site	Date	Nesting stage	Attempt #	egg #	chick #	band ID
Maslin Beach	24/11/19	Chicks sighted (one chick failed; unknown - but kestrel in dunes)	2		1	
Maslin Beach	26/11/19	Chicks sighted	2		1	
Maslin Beach	27/11/19	Suspect chicks failed	2			
Maslin Beach	28/11/19	Failed since last visit (unknown chick failure)	2			
Maslin Beach	04/12/19	Scrape (no eggs)				
Maslin Beach	12/12/19	Nest (with eggs)	3	1		
Maslin Beach	16/12/19	Nest (with eggs); second egg confirmed	3	2		
Maslin Beach	17/12/19	Nest (with eggs)	3	unchecked		
Maslin Beach	28/12/19	Nest (with eggs); day of extreme heat	3	unchecked		
Maslin Beach	09/01/20	Nest (with eggs); third egg confirmed	3	3		
Maslin Beach	10/01/20	Nest (with eggs); fence extended for nudist games	3	unchecked		
Maslin Beach	14/01/20	Nest (with eggs); eggs due to hatch	3	unchecked		
Maslin Beach	20/01/20	Failed since last visit; birds not incubating, thought abandoned	3			
Maslin Beach	21/01/20	Nest (with eggs); birds still incubating	3	unchecked		
Maslin Beach	22/01/20	Nest (with eggs)	3	unchecked		
Maslin Beach	23/01/20	Failed since last visit (non-viable eggs)	3			
Port Willunga	17/08/19	Nest (with eggs)	1	1		DP Left (Orange) & HV Right (Orange)
Port Willunga	18/09/19	Nest (with eggs) third egg confirmed	1	3		
Port Willunga	22/09/19	Nest (with eggs)	1	unchecked		
Port Willunga	23/09/19	Chicks sighted	1		2	
Port Willunga	23/09/29	Chicks sighted; third chick confirmed	1		3	
Port Willunga	25/09/19	Chicks sighted; two chicks failed (unknown)	1		1	
Port Willunga	28/09/19	Chicks sighted	1		1	
Port Willunga	30/09/19	Suspect chicks failed	1			
Port Willunga	30/09/19	Failed since last visit (unknown)	1			

Site	Date	Nesting stage	Attempt #	egg #	chick #	band ID
Port Willunga	14/10/19	Nest (with eggs)	2	2		
Port Willunga	12/11/19	Nest (with eggs); third egg confirmed	2	3		
Port Willunga	13/11/19	Nest (with eggs)	2	unchecked		
Port Willunga	14/11/19	Suspect chicks	2			
Port Willunga	15/11/19	Suspect chicks failed	2			
Port Willunga	16/11/19	Failed since last visit (unknown)	2			
Port Willunga	27/11/19	Nest (with eggs)	3	1		
Port Willunga	30/11/19	Nest (with eggs); second egg confirmed	3	2		
Port Willunga	26/12/19	Nest (with eggs)	3	unchecked		
Port Willunga	28/12/19	Suspect chicks	3			
Port Willunga	29/12/19	Suspect chicks	3			
Port Willunga	30/12/19	Chicks sighted	3		1	
Port Willunga	03/01/20	Chicks sighted	3		1	
Port Willunga	04/01/20	Suspect chicks failed	3			
Port Willunga	05/01/20	Failed since last visit (unknown; brown falcon? At back of site)	3			
Port Willunga South	02/11/19	Nest (with eggs)	1	3		JT Right (White) & unb
Port Willunga South	28/11/19	Nest (with eggs)		unchecked		
Port Willunga South	29/11/19	Chicks sighted			2	
Port Willunga South	02/12/19	Chicks sighted; third chick confirmed			3	
Port Willunga South	26/12/19	Chicks sighted; two chicks failed (unknown; lots of human and dog prints inside fenced area)			1	
Port Willunga South	04/01/20	Suspect Chicks Failed				
Port Willunga South	05/01/20	Chicks sighted			1	
Port Willunga South	07/01/20	Fledged			1	
		<i>JT Right (White) & unb moved to Snapper Point</i>				
Snapper Point	26/08/19	Nest (with eggs)	1	2		JT Right (White) & unb
Snapper Point	05/09/19	Nest (with eggs)	1	unchecked		

Site	Date	Nesting stage	Attempt #	egg #	chick #	band ID
Snapper Point	07/09/19	Failed since last visit (tide)	1			
Snapper Point	21/09/19	Nest (with eggs)	2	3		
Snapper Point	02/10/19	Nest (with eggs)	2	unchecked		
Snapper Point	06/10/19	Failed since last visit (unknown)	2			
Sellicks Beach	24/10/19	Nest (with eggs)	1	2		SR Right (Orange) & unb
Sellicks Beach	16/11/19	Nest (with eggs); one egg remaining - one chick hatched	1	1	unseen	
Sellicks Beach	17/11/19	Chicks sighted	1		1	
Sellicks Beach	17/11/19	Chicks sighted; second chick confirmed	1		2	
Sellicks Beach	19/11/19	Chicks sighted; one chick failed (unknown)	1		1	
Sellicks Beach	20/11/19	Suspect chicks failed	1			
Sellicks Beach	21/11/19	Suspect chicks failed	1			
Sellicks Beach	22/11/19	Failed since last visit (unknown)	1			
Sellicks Beach	12/12/19	Nest (with eggs)	2	2		
Sellicks Beach	13/01/20	Nest (with eggs); should have hatched by now	2	unchecked		
Sellicks Beach	15/01/20	Nest (with eggs); eggs overdue	2	unchecked		
Sellicks Beach	19/01/20	Failed since last visit (eggs gone, but eggs were unviable from 13/1)	2			
Myponga Beach	23/09/19	Nest (with eggs)	1	3		
Myponga Beach	24/10/19	Nest (with eggs)	1	unchecked		
Myponga Beach	26/10/19	Chicks sighted	1		2	
Myponga Beach	04/11/19	Chicks sighted; one chick failed (unknown)	1		1	
Myponga Beach	07/11/19	Chicks sighted	1		1	
Myponga Beach	15/11/19	No birds sighted	1			
Myponga Beach	18/11/19	Birds sighted	1			
Myponga Beach	19/11/19	Birds sighted	1			
Myponga Beach	24/11/19	Failed Since last visit (Unknown)	1			
Carrickalinga North	21/09/19	Scrape (no eggs)				unb & unb
Carrickalinga North	22/09/19	Scrape (no eggs)				

Site	Date	Nesting stage	Attempt #	egg #	chick #	band ID
Carrickalinga North	14/10/19	Nest (with eggs)	1	2		
Carrickalinga North	20/10/19	Nest (with eggs); third egg confirmed	1	3		
Carrickalinga North	02/11/19	Nest (with eggs)	1	3		
Carrickalinga North	04/11/19	Chicks sighted; 2 eggs remain	1		1	
Carrickalinga North	05/11/19	Chicks sighted	1		1	
Carrickalinga North	05/11/19	Nest (with eggs); suspect chick failed, 2 eggs remain	1	2		
Carrickalinga North	06/11/19	Birds sighted	1			
Carrickalinga North	07/11/19	Birds sighted	1			
Carrickalinga North	07/11/19	Suspect Chicks; adult broken wing display	1			
Carrickalinga North	11/11/19	Failed since last visit (unknown)	1			
Carrickalinga Rotunda	26/10/19	Suspect nest	3?			unknown & unknown
Carrickalinga Rotunda	27/10/19	Nest (with eggs)	1	3		
Carrickalinga Rotunda	21/11/19	Nest (with eggs)	1	3		
Carrickalinga Rotunda	24/11/19	No birds sighted	1			
Carrickalinga Rotunda	25/11/19	Chicks sighted	1		2	
Carrickalinga Rotunda	01/12/19	Chicks sighted; one chick failed (unknown)	1		1	
Carrickalinga Rotunda	02/12/19	Suspect chicks failed	1			
Carrickalinga Rotunda	04/12/19	Failed since last visit (unknown)	1			
Carrickalinga Rotunda	23/12/19	Nest (with eggs)	2	2		
Carrickalinga Rotunda	01/01/20	Nest (with eggs); third egg confirmed	2	3		
Carrickalinga Rotunda	28/01/20	Nest (with eggs) - one egg failed (unknown) (other 2 eggs failed; overdue)	2	2		
Carrickalinga Rotunda	30/01/20	Nest (with eggs) (eggs failed; overdue)	2	2		
Carrickalinga Rotunda	06/02/20	Failed since last visit (eggs due to be tested for viability, but gone)	2			
Normanville South	25/08/19	Scrape (no eggs)				NC Right (White) & unb
Normanville South	30/08/19	Nest (with eggs)	1	2		
Normanville South	03/09/19	Nest (with eggs); third egg confirmed	1	3		

Site	Date	Nesting stage	Attempt #	egg #	chick #	band ID
Normanville South	12/09/19	Nest (with eggs)	1	unchecked		
Normanville South	13/09/19	Failed since last visit (unknown)	1			
Normanville South	17/09/19	Scrape (no eggs)				
Normanville South	26/09/19	Nest (with eggs)	2	3		
Normanville South	24/10/19	Nest (with eggs)	2	unchecked		
Normanville South	24/10/19	Chicks sighted	2		2	
Normanville South	25/10/19	Chicks sighted; third chick confirmed	2		3	
Normanville South	28/10/19	Chicks sighted; one chick failed (unknown)	2		2	
Normanville South	28/10/19	Chicks sighted	2		2	
Normanville South	29/10/19	Suspect chicks failed	2			
Normanville South	29/10/19	Failed since last visit (unknown)	2			
Normanville South	13/11/19	Suspect nest				
Normanville South	14/11/19	Nest (with eggs)	3	2		
Normanville South	15/11/19	Nest (with eggs); third egg confirmed	3	3		
Normanville South	13/12/19	Nest (with eggs)	3	unchecked		
Normanville South	14/12/19	Chicks sighted	3		3	
Normanville South	18/12/19	Chicks sighted; one chick failed (unknown)	3		2	
Normanville South	18/12/19	Chicks sighted; second chick failed (unknown)	3		1	
Normanville South	19/12/19	Failed since last visit (unknown)	3			
Normanville South	07/01/20	Nest (with eggs)	4	3		
Normanville South	31/01/20	Nest (with eggs)	4	unchecked		
Normanville South	01/02/20	Failed since last visit (unknown)	4			
Yankalilla river mouth	29/10/19	Scrape (no eggs)				unknown & unknown
Yankalilla river mouth	30/10/19	Scrape (no eggs)				
Yankalilla river mouth	23/12/19	Suspect nest				
Yankalilla river mouth	24/12/19	Nest (with eggs)	1	3		
Yankalilla river mouth	28/12/19	Nest (with eggs)	1	3		
Yankalilla river mouth	30/12/19	Failed since last visit	1			

Site	Date	Nesting stage	Attempt #	egg #	chick #	band ID
Shelley Beach (lady bay)	31/08/19	Nest (with eggs)		3		DT Right (White) & unb
Shelley Beach (lady bay)	11/09/19	Nest (with eggs)	1	unchecked		
Shelley Beach (lady bay)	13/09/19	Failed since last visit (unknown)	1			
Shelley Beach (lady bay)	15/09/19	Failed since last visit	1			
Shelley Beach (lady bay)	26/09/19	Nest (with eggs)	2	3		
Shelley Beach (lady bay)	28/09/19	Nest (with eggs)	2	unchecked		
Shelley Beach (lady bay)	01/10/19	Failed since last visit (unknown; but some of the rope had been cut and removed)	2			
Shelley Beach (lady bay)	23/12/19	Nest (with eggs)	3	2		
Shelley Beach (lady bay)	01/01/20	Nest (with eggs)	3	unchecked		
Shelley Beach (lady bay)	04/01/20	Nest (with eggs)	3	unchecked		
Shelley Beach (lady bay)	17/01/20	Chicks sighted	3		2	
Shelley Beach (lady bay)	24/01/20	Chicks sighted; one chick failed (unknown)	3		1	
Shelley Beach (lady bay)	15/02/20	Chicks sighted	3		1	
Shelley Beach (lady bay)	17/02/20	Fledged	3		1	
Tunkalilla West	27/09/19	Scrape (no eggs); fox prints through scrape - possibly failed nest rather than new scrape				EW Right (Orange) & unb
Tunkalilla West	09/10/19	Nest (with eggs)	1	1		
Tunkalilla West	19/10/19	Failed since last visit (unknown)	1			
Tunkalilla West	28/11/19	Scrape (no eggs)				
Tunkalilla West	19/12/19	Nest (with eggs)	2	3		
Tunkalilla West	07/01/20	Nest (with eggs)	2	3		
Tunkalilla West	15/01/20	Chicks sighted	2		1	
Tunkalilla West	05/02/20	Chicks sighted	2		1	
Tunkalilla West	14/02/20	Fledged	2		1	
Tunkalilla Midway	29/08/19	Scrape (no eggs)				ME Right (Orange) & unb
Tunkalilla Midway	11/09/19	Nest (with eggs)	1	2		
Tunkalilla Midway	27/09/19	Failed since last visit (unknown)				

Site	Date	Nesting stage	Attempt #	egg #	chick #	band ID
Tunkalilla Midway	09/10/19	Nest (with eggs)	2	2		
Tunkalilla Midway	19/10/19	Failed since last visit (unknown)				
Tunkalilla Midway	04/11/19	Nest (with eggs)	3	3		
Tunkalilla Midway	13/11/19	Failed since last visit (unknown)				
Tunkalilla Midway	28/11/19	Nest (with eggs)	4	3		
Tunkalilla Midway	19/12/19	Nest (with eggs); one egg failed (unknown)		2		
Tunkalilla Midway	07/01/20	Failed since last visit (unknown) plus NEW nest (with eggs)	5			
Tunkalilla Midway	15/01/20	Nest (with eggs)		3		
Tunkalilla Midway	29/01/20	Nest (with eggs)		3		
Tunkalilla Midway	05/02/20	Suspect chicks; one egg abandoned near nest		1		
Tunkalilla Midway	14/02/20	Chicks sighted			2	
Tunkalilla Midway	25/02/20	Chicks sighted			2	
Tunkalilla Midway	04/03/20	Fledged			2	
Tunkalilla East	27/09/19	Scrape (no eggs)				unb & unb
Tunkalilla East	19/10/19	Scrape (no eggs)				
Tunkalilla East	04/11/19	Nest (with eggs)	1	1		
Tunkalilla East	13/11/19	Nest (with eggs); nest has been washed over, birds still incubating	1	2		
Tunkalilla East	28/11/19	Nest (with eggs)	1	2		
Tunkalilla East	19/12/19	Failed plus NEW nest (with eggs)	2	3*		
Tunkalilla East	07/01/20	Failed since last visit (unknown)	2			
Tunkalilla East	15/01/20	Nest (with eggs)	3	3		
Tunkalilla East	21/01/20	Nest (with eggs)	3	3		
Tunkalilla East	29/01/20	Failed (suspect fox) plus NEW scrape (no eggs)	3			
Tunkalilla East	05/02/20	Nest (with eggs)	4	3		
Tunkalilla East	14/02/20	Failed (suspect magpie/raven) plus NEW scrape (no eggs)	4			
Ballaparudda	30/10/19	Scrape (no eggs)				JZ Left (White)

Site	Date	Nesting stage	Attempt #	egg #	chick #	band ID
Ballaparudda	14/11/19	Birds sighted				
Ballaparudda	27/11/19	Nest (with eggs)	1	1		
Ballaparudda	12/12/19	Failed since last visit (suspect tide)	1			
Callawonga	12/12/19	<i>JZ Left (White) moved to Callawonga</i> Nest (with eggs)	2	1		
Callawonga	05/01/20	Nest (with eggs): third egg confirmed	2	3		
Callawonga	17/01/20	Chicks sighted: x1 egg never hatched	2		2	
Callawonga	06/02/20	Chicks sighted: one chick failed (unknown cause)	2		1	
Ballaparudda	19/02/20	Fledged	2		1	
Sheepies beach	18/09/19	Suspect nest				unb & unb
Sheepies beach	18/10/19	Nest (with eggs)	1	1		
Sheepies beach	23/10/19	Nest (with eggs); washed over by tide, but remained in rock cradled nest	1	3		
Sheepies beach	14/11/19	Nest (with eggs); one egg failed (unknown)	1	2		
Sheepies beach	19/11/19	Suspect chicks	1			
Sheepies beach	25/11/19	Failed since last visit (unknown)	1			
Sheepies beach	06/12/19	Scrape (no eggs)				
Sheepies beach	14/01/20	Nest (with eggs)	2	3		
Sheepies beach	20/01/20	Nest (with eggs)	2	3		
Sheepies beach	31/01/20	Chicks sighted	2		2	
Sheepies beach	06/02/20	Chicks sighted	2		2	
Sheepies beach	13/02/20	Chicks sighted (one chick failed; unknown)	2		1	
Sheepies beach	25/02/20	Chicks sighted	2		1	
Sheepies beach	05/03/20	Fledged	2		1	
Coolawang	30/03/20	Juvenile sighted at Coolawang				
Parsons Beach	12/09/19	Scrape (no eggs)				EV Left (Orange) & unb
Parsons Beach	18/09/19	Scrape (no eggs)				
Parsons Beach	21/09/19	Nest (with eggs)	1	1		

Site	Date	Nesting stage	Attempt #	egg #	chick #	band ID
Parsons Beach	25/09/19	Failed since last visit (suspect fox; prints through nest)	1			
Parsons Beach	28/09/19	Scrape (no eggs)				
Parsons Beach	30/09/19	Scrape (no eggs)				
Parsons Beach	23/10/19	Nest (with eggs)	2	1		
Parsons Beach	01/11/19	Failed since last visit (unknown)	2			
Parsons Beach	13/12/19	Scrape (no eggs)				
Waitpinga Beach (east)	12/09/19	Scrape (no eggs)				UA Right (White) & unb
Waitpinga Beach (east)	26/09/19	Nest (with eggs)	1	3		
Waitpinga Beach (east)	29/09/19	Nest (with eggs)	1	3		
Waitpinga Beach (east)	02/10/19	Failed (unknown) plus NEW scrape (no eggs)	1			
Waitpinga Beach (east)	08/10/19	Scrape (no eggs)				
Waitpinga Beach (east)	23/10/19	Scrape (no eggs)				
Waitpinga Beach (east)	01/11/19	Scrape (no eggs)				
Waitpinga Beach (east)	10/11/19	Nest (with eggs)	2	2		
Waitpinga Beach (east)	15/11/19	Nest (with eggs)	1	3		
Waitpinga Beach (east)	19/11/19	Failed since last visit (suspect fox)	1			
Waitpinga Beach (east)	25/11/19	Scrape (no eggs)				
Waitpinga Beach (east)	06/12/19	Scrape (no eggs)				
Waitpinga Beach (east)	13/12/19	Nest (with eggs) (nest found failed; egg pecked at by Magpie/Raven; albumin and yolk still wet, so relatively fresh depredation)	3	1		
Waitpinga Beach (east)	14/01/20	Nest (with eggs)	4	2		
Waitpinga Beach (east)	17/01/20	Failed since last visit (unknown)	4			
Yilki	13/08/19	Scrape (no eggs)				KV Right (Orange) & VH Left (Orange)
Yilki	14/08/19	Scrape (no eggs)				
Yilki	15/08/19	Scrape (no eggs)				
Yilki	17/08/19	Scrape (no eggs)				

Site	Date	Nesting stage	Attempt #	egg #	chick #	band ID
Yilki	21/08/19	Scrape (no eggs)				
Yilki	23/08/19	Nest (with eggs)	1	1		
Yilki	25/08/19	Nest (with eggs); second egg confirmed	1	2		
Yilki	27/08/19	Nest (with eggs); third egg confirmed	1	3		
Yilki	01/09/19	Nest (with eggs)	1	3		
Yilki	03/09/19	Failed since last visit (suspect fox/cat; prints around nest)	1			
Yilki	12/09/19	Nest (with eggs)	2	1		
Yilki	15/09/19	Nest (with eggs); second egg confirmed	2	2		
Yilki	17/09/19	Nest (with eggs); third egg confirmed	2	3		
Yilki	14/10/19	Nest (with eggs)	2	unchecked		
Yilki	15/10/19	Chicks sighted	2		3	
Yilki	21/10/19	Chicks sighted (two chicks failed; one unknown; one seen taken by magpie)	2		1	
Yilki	18/11/19	Fledged	2		1	
Yilki	18/11/19	Birds sighted; adults mating				
Yilki	19/11/19	Scrape (no eggs)				
Yilki	23/11/19	Scrape (no eggs)				
Yilki	24/11/19	Scrape (no eggs)				
Yilki	25/11/19	Nest (with eggs)	3	1		
Yilki	27/11/19	Nest (with eggs); second egg confirmed	3	2		
Yilki	30/11/19	Nest (with eggs); third egg confirmed	3	3		
Yilki	01/12/19	Failed since last visit (unknown)	3			
Yilki	08/12/19	Scrape (no eggs)				
Yilki	09/12/19	Nest (with eggs)	4	1		
Yilki	12/12/19	Nest (with eggs); second egg confirmed	4	2		
Yilki	14/12/19	Nest (with eggs); third egg confirmed	4	3		
Yilki	20/12/19	Nest (with eggs)	4	unchecked		
Yilki	21/12/19	Failed since last visit (suspect fox, prints through nest)	4			

Site	Date	Nesting stage	Attempt #	egg #	chick #	band ID
Yilki	01/01/20	Nest (with eggs)	5	2		
Yilki	03/01/20	Nest (with eggs); third egg confirmed	5	3		
Yilki	10/01/20	Nest (with eggs)	5	unchecked		
Yilki	11/01/20	Failed since last visit (suspect cat; prints around nest. Depredation occurred between 6am and 3pm)	5			
Inman River Outlet	11/09/19	Nest (with eggs)	1	2		RR Right (Orange) & unb
Inman River Outlet	15/09/19	Nest (with eggs); third egg confirmed	1	3		
Inman River Outlet	18/09/19	Nest (with eggs)	1			
Inman River Outlet	19/09/19	Failed since last visit (suspect raven)				
Inman River Outlet	27/09/2019	Nest (with eggs)	2	1		
Inman River Outlet	28/09/19	Nest (with eggs); second egg confirmed	2	2		
Inman River Outlet	30/09/19	Nest (with eggs); third egg confirmed	2	3		
Inman River Outlet	26/10/19	Nest (with eggs)	2	unchecked		
Inman River Outlet	29/10/19	Chicks sighted	2		3	
Inman River Outlet	30/10/19	Suspect chicks failed	2			
Inman River Outlet	31/10/19	Suspect chicks failed	2			
Inman River Outlet	01/11/19	Failed since last visit (unknown)	2			
Inman River Outlet	07/11/19	Scrape (no eggs)				
Inman River Outlet	11/11/19	Nest (with eggs)	3	1		
Inman River Outlet	13/11/19	Nest (with eggs); second egg confirmed	3	2		
Inman River Outlet	15/11/19	Nest (with eggs); third egg confirmed	3	3		
Inman River Outlet	24/11/19	Nest (with eggs)	3	unchecked		
Inman River Outlet	26/11/19	Failed since last visit (suspect fox/cat/dog; prints all around the nest)	3			
Inman River Outlet	15/12/19	Scrape (no eggs)				
Inman River Outlet	18/12/19	Nest (with eggs)	4	1		
Inman River Outlet	19/12/19	Nest (with eggs); second egg confirmed	4	2		
Inman River Outlet	21/12/19	Nest (with eggs); third egg confirmed	4	3		

Site	Date	Nesting stage	Attempt #	egg #	chick #	band ID
Inman River Outlet	31/12/19	Nest (with eggs)	4	unchecked		
Inman River Outlet	01/01/20	Failed since last visit (suspect fox)	4			
Inman River Outlet	08/01/20	Scrape (no eggs)				
Inman River Outlet	09/01/20	Scrape (no eggs)				
Inman River Outlet	12/01/20	Nest (with eggs)	5	1		
Inman River Outlet	15/01/20	Nest (with eggs)	5	1		
Inman River Outlet	17/01/20	Failed since last visit (suspect Magpie/Raven)	5			
Inman River Outlet	25/01/20	Nest (with eggs)	6	1		
Inman River Outlet	28/01/20	Nest (with eggs); second egg confirmed	6	2		
Inman River Outlet	28/01/20	Nest (with eggs)	6	2		
Inman River Outlet	29/01/20	Failed since last visit (unknown)	6			
Victor Central	21/08/19	Nest (with eggs)	1	1		PX Right (White) & unb
Victor Central	22/08/19	Nest (with eggs); second egg confirmed	1	2		
Victor Central	17/09/19	Nest (with eggs); third egg confirmed	1	3		
Victor Central	21/09/19	Nest (with eggs)	1	unchecked		
Victor Central	24/09/19	Chicks sighted	1		3	
Victor Central	24/09/19	Chicks sighted (silver gull seen harassing adults, adults aggressive towards gull)	1		3	
Victor Central	25/09/19	Suspect chicks failed (suspect silver gull from yesterday took chicks)	1			
Victor Central	27/09/19	Failed since last visit (suspect silver gull)	1			
Victor Central	01/10/19	Scrape (no eggs)				
Victor Central	6/10/19	Nest (with eggs)	2	2		
Victor Central	10/10/19	Nest (with eggs); third egg confirmed	2	3		
Victor Central	24/10/19	Nest (with eggs)	2	unchecked		
Victor Central	25/10/19	Failed since last visit (suspect raven)	2			
Victor Central	21/12/19	Scrape (no eggs)				
		<i>PX Right (White) & unb moved to Olivers Reef</i>				

Site	Date	Nesting stage	Attempt #	egg #	chick #	band ID
Olivers Reef	04/11/19	Scrape (no eggs)				PX Right (White) & unb
Olivers Reef	05/11/19	Nest (with eggs)	3	1		
Olivers Reef	06/11/19	Nest (with eggs); second egg confirmed	3	2		
Olivers Reef	08/11/19	Nest (with eggs); third egg confirmed	3	3		
Olivers Reef	02/12/19	Nest (with eggs); one egg failed (nest washed over; one egg gone)	3	2		
Olivers Reef	05/12/19	Nest (with eggs)	3	2		
Olivers Reef	07/12/19	Chicks sighted	3		2	
Olivers Reef	13/12/19	Chicks sighted	3		2	
Olivers Reef	14/12/19	Suspect chicks failed (unknown; fox prints within fenced area)	3			
Olivers Reef	14/12/19	Failed since last visit (unknown)	3			
Olivers Reef	18/12/19	Scrape (no eggs)				
Olivers Reef	24/12/19	Scrape (no eggs)				
		<i>PX Right (White) & unb moved to Hindmarsh River Mouth</i>				
Hindmarsh River Mouth	28/12/19	(PX & unb moved to Hindmarsh) Nest (with eggs)	4	2		PX Right (White) & unb
Hindmarsh River Mouth	30/12/19	Nest (with eggs); third egg confirmed	4	3		
Hindmarsh River Mouth	26/01/20	Nest (with eggs)	4	unchecked		
Hindmarsh River Mouth	27/01/20	Chicks sighted	4		3	
Hindmarsh River Mouth	13/02/20	Chicks sighted; one chick injured (unknown cause, limping)	4		3	
Hindmarsh River Mouth	16/02/20	Chicks sighted; injured chick appears to have been abandoned	4		3	
Hindmarsh River Mouth	16/02/20	Chicks sighted; injured chick failed (killed by intruding hooded plover - witnessed by volunteers)	4		2	
Hindmarsh River Mouth	24/02/20	Chicks sighted	4		2	
Hindmarsh River Mouth	25/02/20	Chicks sighted (one chick failed; unknown, dog prints within fenced area)	4		1	
Hindmarsh River Mouth	02/03/20	Fledged	4		1	

Site	Date	Nesting stage	Attempt #	egg #	chick #	band ID
Watsons Gap	14/08/19	Nest (with eggs)	1	2		BX Left (Orange) & unb
Watsons Gap	28/08/19	Nest (with eggs)	1	unchecked		
Watsons Gap	29/08/19	Failed since last visit (suspect fox; prints at nest)	1			
Watsons Gap	04/09/19	Scrape (no eggs)				
Watsons Gap	07/09/19	Nest (with eggs)	2	1		
Watsons Gap	09/09/19	Nest (with eggs); second egg confirmed	2	2		
Watsons Gap	11/09/19	Nest (with eggs); third egg confirmed	2	3		
Watsons Gap	08/10/19	Nest (with eggs)	2	unchecked		
Watsons Gap	09/10/19	Chicks sighted	2		3	
Watsons Gap	09/10/19	Chicks sighted	2		3	
Watsons Gap	10/10/19	Suspect chicks failed (fox prints inside fenced area)	2			
Watsons Gap	12/10/19	Failed since last visit (suspect fox; prints all through fenced site/near chick shelters)	2			
Watsons Gap	12/10/19	Scrape (no eggs)				
Watsons Gap	20/10/19	Scrape (no eggs)				
Watsons Gap	21/10/19	Nest (with eggs)	3	1		
Watsons Gap	22/10/19	Nest (with eggs); second egg confirmed	3	2		
Watsons Gap	25/10/19	Nest (with eggs); third egg confirmed	3	3		
Watsons Gap	31/10/19	Nest (with eggs)	3	unchecked		
Watsons Gap	01/11/19	Failed since last visit (unknown)	3			
Watsons Gap	09/11/19	Nest (with eggs)	4	1		
Watsons Gap	12/11/19	Nest (with eggs); second egg confirmed	4	2		
Watsons Gap	14/11/19	Nest (with eggs); third egg confirmed	4	3		
Watsons Gap	02/12/19	Nest (with eggs)	4	unchecked		
Watsons Gap	07/12/19	Failed since last visit (suspect fox; prints lead to nest)	4			
Watsons Gap	17/12/19	Nest (with eggs)	5	1		
Watsons Gap	19/12/19	Nest (with eggs); second egg confirmed	5	2		
Watsons Gap	20/12/19	Failed since last visit (suspect fox)	5			

Site	Date	Nesting stage	Attempt #	egg #	chick #	band ID
Watsons Gap	27/12/19	Scrape (no eggs)				
Watsons Gap	01/01/20	Scrape (no eggs)				
Watsons Gap	15/01/20	Scrape (no eggs)				
Watsons Gap	24/01/20	Scrape (no eggs)				
Watsons Gap	08/02/20	Scrape (no eggs)				
Watsons Gap	11/02/20	Scrape (no eggs)				
Bashams Beach	26/08/19	Nest (with eggs)	1	2		unb & unb
Bashams Beach	29/08/19	Nest (with eggs); third egg confirmed	1	3		
Bashams Beach	05/09/19	Nest (with eggs)	1	unchecked		
Bashams Beach	10/09/19	Failed since last visit (unknown)				
Bashams Beach	11/09/19	Scrape (no eggs)				
Bashams Beach	14/09/19	Nest (with eggs)	2	1		
Bashams Beach	19/09/19	Nest (with eggs); third egg confirmed	2	3		
Bashams Beach	16/10/19	Nest (with eggs)	2	unchecked		
Bashams Beach	17/10/19	Chicks sighted	2		2	
Bashams Beach	20/10/19	Chicks sighted; moved 700m from hatching site (Shell beach), to Bashams main beach	2		2	
Bashams Beach	18/11/19	Chicks sighted	2		2	
Bashams Beach	21/11/19	Fledged	2		2	
Bashams Beach	05/12/19	Scrape (no eggs)				
Bashams Beach	07/12/19	Nest (with eggs)	3	1		
Bashams Beach	11/12/19	Nest (with eggs); second egg confirmed	3	2		
Bashams Beach	13/12/19	Nest (with eggs); third egg confirmed	3	3		
Bashams Beach	09/01/20	Nest (with eggs)	3	unchecked		
Bashams Beach	10/01/20	Chicks sighted	3		3	
Bashams Beach	11/01/20	Chicks sighted (one chick failed; unknown; birds moved 1km from hatching site to main Bashams Beach)	3		2	
Bashams Beach	23/01/20	Chicks sighted (one chick failed; unknown)	3		1	

Site	Date	Nesting stage	Attempt #	egg #	chick #	band ID
Bashams Beach	09/02/20	Chicks sighted	3		1	
Bashams Beach	14/02/20	Fledged (flagged JM Right (White))	3		1	
Middleton Beach West	27/08/19	Nest (with eggs)	1	3		UE Right (Orange) & metal only (assumed SA)
Middleton Beach West	26/09/19	Nest (with eggs)	1	3		
Middleton Beach West	26/09/19	Chicks sighted	1		3	
Middleton Beach West	30/09/19	Chicks sighted (one chick failed; unknown)	1		2	
Middleton Beach West	23/10/19	Chicks sighted	1		2	
Middleton Beach West	26/10/19	Chicks sighted (one chick failed; unknown)	1		1	
Middleton Beach West	01/11/19	Fledged	1		1	
Middleton Beach West	11/11/19	Scrape (no eggs)				
Middleton Beach West	13/11/19	Scrape (no eggs)				
Middleton Beach West	15/11/19	Scrape (no eggs)				
Middleton Beach West	17/11/19	Nest (with eggs)	2	1		
Middleton Beach West	20/11/19	Nest (with eggs); second egg confirmed	2	2		
Middleton Beach West	03/12/19	Nest (with eggs)	2	2		
Middleton Beach West	04/12/19	Failed since last visit (suspect fox; prints leading to nest)	2			
Middleton Beach West	17/12/19	Suspect nest				
Middleton Beach West	19/12/19	Nest (with eggs)	3	2		
Middleton Beach West	19/12/19	Nest (with eggs); third egg confirmed	3	3		
Middleton Beach West	21/12/19	Nest (with eggs); eggs buried after extreme wind on 44 degree day. Adults had attempted to recover eggs	3	Unchecked		
Middleton Beach West	22/12/19	Nest (with eggs); adults incubating nest, recovered eggs	3	3		
Middleton Beach West	17/01/20	Nest (with eggs); due to hatch	3			
Middleton Beach West	22/01/20	Nest (with eggs); overdue by 5 days	3			
Middleton Beach West	23/01/20	Failed since last visit (unviable eggs; missing from nest, suspect washed out by tide)	3			
Middleton Beach East	17/10/19	Nest (with eggs)	1	3		YV Right (White) & unb

Site	Date	Nesting stage	Attempt #	egg #	chick #	band ID
Middleton Beach East	19/10/19	Nest (with eggs); tide had reached the nest, adults continued incubating	1	3		
Middleton Beach East	02/11/19	Nest (with eggs); suspect abandoned, no incubation	1	3		
Middleton Beach East	03/11/19	Nest (with eggs); eggs becoming buried in sand	1	3		
Middleton Beach East	05/11/19	Nest (with eggs); incubation resumed	1	unchecked		
Middleton Beach East	10/11/19	Failed (abandoned) plus NEW scrape (no eggs)	1			
Middleton Beach East	11/11/19	Failed plus NEW scrape (no eggs); adults attending both abandoned nest and scrape, but no incubation	1			
Middleton Beach East	12/11/19	Failed (abandoned nest now buried in sand) plus NEW scrape (no eggs); scrape well maintained	1			
Middleton Beach East	13/11/19	Failed since last visit (abandoned nest; eggs all washed out. New scrape washed out too)	1			
Middleton Beach East	15/11/19	Scrape (no eggs)				
Middleton Beach East	18/11/19	Scrape (no eggs)				
Middleton Beach East	21/11/19	Scrape (no eggs)				
Middleton Beach East	25/11/19	Scrape (no eggs)				
Middleton Beach East	30/11/19	Scrape (no eggs)				
Middleton Beach East	09/12/19	Scrape (no eggs)				
Middleton Beach East	11/12/19	Scrape (no eggs)				
Middleton Beach East	15/12/19	Scrape (no eggs)				
Middleton Beach East	16/12/19	Scrape (no eggs)				

Flagging

In total, 146, birds have been banded as part of BirdLife Australia's research program in South Australia since 2012. On the Fleurieu, 71 birds have been given engraved leg flags (Table 5). AMLR NRM has provided funding for greater investment in flagging of birds on the Fleurieu, and in combination with the high reporting of resightings, we are able to gain great insight into the demographics of this population.

We rely on reporting of flag sightings in order to build a 'history' for each flagged individual and learn about their movements, breeding partner/s and longevity. Due to loss of birds, partner swaps and new pairs taking up new territories, there were five pairs consisting of two unbanded birds on the Fleurieu Peninsula this season: Moana Beach, Carrickalinga North, Tunkalilla East, Sheepies Beach, Bashams Beach. The flag status of Yankalilla River Mouth, Carrickalinga Rotunda, and Port Stanvac were unknown this season. It is recommended that if pairs return to these sites next season, leg flags are read monthly as a minimum to confirm the pairs on territory. It is important to continuously check the flags of the pairs throughout the season, as partner swaps can be quick and can occur any time during the breeding season. At Hallett Cove in 2018/2019, UV (Orange) disappeared whilst a nest was active and the remaining unbanded bird had a new partner within days.

Birds are targeted for banding for a range of reasons including: where both adults of a breeding pair are unbanded, where we are uncertain whether a pair uses two spatially separated sites, juveniles due to being of known age, and fledglings to explore dispersal and survival rates post-dispersal. Not all birds need to be banded. We use this information to help answer ecological questions about the birds, such as:

- Is it the same pair coming back to a territory?
- Is one pair using 'multiple' territories?
- How far do the fledglings and juveniles disperse?
- How old are the birds when they breed?
- Is there a bias towards male/female survivorship?
- How long do the birds live?

While BirdLife Australia's Banding program has been going since 2012, it is still too early to report on the longevity of the flagged Hooded Plovers, as birds can live for 10-20 years, and the banding data for the Fleurieu Peninsula is still relatively recent. We do however have valuable data about movements, partnerships, and mortality.

Through the banding, we were able to confirm that JT (White) utilises Snapper Point and Port Willunga South. Previously, it was suspected that Aldinga North and Snapper Point were the same pair.

JZ (White) and an unbanded bird nested at both Ballaparudda and Callawonga this season. Previously, the pair had been unbanded, but it appears that one of the unbanded birds has disappeared this season and JZ (White) established on this territory. JZ (White) is a fledgling from Lands End in February 2016 and had his first nesting attempt last season at Yankalilla River Mouth where he successfully fledged one chick. This season at Ballaparudda and Callawonga, JZ (White) again, successfully fledged one chick.

The sibling of JZ (White) is ZW (White) and she was located last season (2018/19) nesting successfully at Island Beach on Kangaroo Island, producing one fledgling. Unfortunately at the start of the breeding season, ZW (White) was found dead on Island Beach. A necropsy was performed, but due to the damage freezing can cause to the specimen, what may have caused death was inconclusive. As ZW (White) was flagged as a fledgling, we know she was four years old when she died.

Similarly, YB (White) fledged in March 2016 from Waitpinga Beach (East) and in 2016/17 season, while only 8 months old, YB (White) nested at Tunkalilla East and successfully fledged one chick. This is one of the earliest breeding ages for Hooded Plovers. The earliest on record is seven months for a female on the Bellarine Peninsula in Victoria. During 2017/18 and 2018/19 seasons, YB (White) remained at Tunkalilla East and produced a further five fledglings. This season, YB (White) was never sighted and an unbanded pair were sighted at Tunkalilla East. YB (White) is four years old, and had produced six fledglings, and is considered missing.

The disappearance of YB (White) from Tunkalilla East, is the eighth Hooded Plover from Tunkalilla to go missing (possibly dead) from Tunkalilla. Over seven seasons of monitoring flagged birds at Tunkalilla, ST (Orange), KW (Orange), WE (Orange), UB (Orange), LA (Orange), DK (Orange), MT (Orange), and now YB (White) have either been found dead on the beach (LA (Orange) was found dead in 2016/17), or not sighted again. None of these birds have been sighted on Kangaroo Island, or anywhere else within South Australia. These are just the birds we are able to confirm, as we cannot know if an unbanded bird is the same one returning to a territory each season.

PD (Orange) which fledged from Waitpinga Beach East in February 2014 nested at Carrickalinga North in 2016/17, 2017/2018 and 2018/19 with no fledglings produced. This season, PD (Orange) was not on Carrickalinga North territory and was not sighted at all during the season. An unbanded pair nested at Carrickalinga North.

One of the longest histories we can compile for a flagged bird on the Fleurieu Peninsula is for EV (Orange), which was banded in January 2013 at Parsons beach. We know EV (Orange) is at least seven years old, as it was already an adult when it was flagged. This individual has been on Parsons Beach since flagging, except in 2014/2015, where it nested with KP (Orange) at Waitpinga West beach. In 2015/16, KP (Orange) and EV (Orange) divorced, and EV (Orange) was found back on Parsons Beach with an unbanded partner, while KP (Orange) stayed at Waitpinga. During last season (2018/19), EV (Orange) successfully fledged young for the first time (2 fledged at Parsons Beach). This season, EV (Orange) had two nesting attempts at Parsons Beach, but in early June, was found dead on the beach by a bird watcher. A necropsy has been performed, and preliminary results show no visible cause of death.

Another interesting set of movements detected due to flagging were of PX (White) this season. PX (White) used Victor Central, Hindmarsh River Mouth and Oliver's Reef, treating these three sites as one large territory. PX Right (white) displaced YV (White), which previously nested at Oliver's Reef/Hindmarsh River Mouth, to a new territory, Middleton Beach East. Where according to observations, it nested once and then was found intruding in neighbouring pairs territories for the remainder of the season.

Other sightings of note were of flocks of up to 18 Hooded Plovers at West Lakes Shore of metropolitan Adelaide during May and June, including flagged birds XS (White) a Seacliff nesting adult, MR (White) a Hallett Cove/West Beach nesting adult, YL (White) fledged from Seacliff in February 2019, and RV (Orange) a fledgling from Carrickalinga Rotunda in February 2016 and breeding at Maslin Beach.

BirdLife Australia's current priorities for banding are to band at least one bird from the breeding pairs where both members are unbanded (listed above). In addition, the unbanded pair Tunkalilla East, considering this is the only pair unbanded on this beach and monitoring can be difficult due to intruding pairs. Given the high number of Hooded Plovers which disappear from that site, it is important to be able to identify individuals on this beach to detect any further changes and to seek to understand these. Priority fledglings for flagging include any from the western coastline of the Fleurieu, that is from Shelley Beach (Lady Bay) to Seacliff, as we have mostly flagged fledglings from the southern Fleurieu Peninsula to date (partly related to the higher productivity of these beaches, e.g. Tunkalilla).



Photo: Susanne Nikolajsen: Hooded Plover flock at West Lakes Shore, Samphire Coast

Table 5. A summary of leg flagged Hooded Plovers captured and banded on the Fleurieu Peninsula to June 2020. All birds were captured by licensed and permitted banders (Grainne Maguire, Terry Dennis, Meg Cullen, Kasun Ekanayake, and Emma Stephens). The bird's partner, parent or sibling at the time of banding is displayed.

Beach	Date	Age	Sex	Right tarsus	Right tibia	Left tibia	Partner/parent/sibling Flag
Myponga Beach	8/05/12	Adult	Female	metal	EY (orange)		
Maslin Beach	8/05/12	Adult	Female	metal	MX (orange)		
Watsons Gap	18/01/13	Adult	Female	metal	AU (orange)		Partner: BX (orange)
Parsons Beach (far SW end)	18/01/13	Adult	Female	metal	CL (orange)		Partner: EV (orange)
Waitpinga Beach (E end)	18/01/13	Adult	Female	metal	KJ (orange)		
Parsons Beach (far SW end)	18/01/13	Adult	Male	metal		EV (orange)	Partner: CL (orange)
Tunkalilla Beach 3rd house East	19/01/13	Juvenile	Male	metal	DK (orange)		Sibling: EM (orange)
Tunkalilla Beach 3rd house East	19/01/13	Juvenile	Male	metal	EM (orange)		Sibling: DK (orange)
Watsons Gap estuary	20/01/13	Adult	Male	metal		BX (orange)	Partner: AU (orange)
Carrickalinga estuary	21/01/13	Adult	Male	metal	CK (orange)		
Carrickalinga estuary	21/01/13	Adult		metal		LP (orange)	
Snapper Point (Pt Willunga end)	22/01/13	Adult	Male	metal	HV (orange)		
Carrickalinga North (N end)	22/01/13	Adult	Likely female	metal	NA (orange)		Suspect partner: AR (orange)
Carrickalinga North (N end)	22/01/13	Adult	Male	metal		AR (orange)	Suspect partner NA (orange)
Carrickalinga (toilet block)	27/09/13	Subadult	Male	metal	DJ (orange)		
Lady Bay Shelley Beach	27/09/13	Adult		metal	SB (orange)		Partner: LD (orange)
Carrickalinga Pitmans leap access	27/09/13	Adult	Male	metal	SS (orange)		Partner: CK (orange)
Lady Bay Shelley Beach	27/09/13	Adult		metal		LD (orange)	Partner: SB (orange)
Inman River outlet	13/11/13	Adult		metal	KV (orange)		
Bashams Beach	13/11/13	Adult	Male	metal		SA (orange)	
Tunkalilla Western estuary	14/11/13	Adult	Male	metal	KW (orange)		

Beach	Date	Age	Sex	Right tarsus	Right tibia	Left tibia	Partner/parent/sibling Flag
Tunkalilla far West	14/11/13	Adult	Female	metal	LA (orange)		
Tunkalilla creek/3rd house East	14/11/13	Adult		metal	ST (orange)		
Tunkalilla mid-west estuary	14/11/13	Adult	Male	metal		MT (orange)	Partner: ME (orange)
Callawonga Beach	10/02/14	Chick (25 days)		metal	KP (orange)		
Waitpinga Beach East	10/02/14	Chick (30 days)		metal	PD (orange)		Parent: KJ (orange). Sibling: PR (orange)
Waitpinga Beach East	10/02/14	Chick (30 days)		metal	PR (orange)		Parent: KJ (orange). Sibling: PD (orange)
Waitpinga Beach West	25/02/14	Juvenile	Female	metal	TZ (orange)		
Waitpinga Beach West	25/02/14	Juvenile	Male	metal	YN (orange)		
Waitpinga Beach West	26/02/14	Juvenile	Male	metal	HX (orange)		
Waitpinga Beach West	26/02/14	Juvenile	Female	metal	UE (orange)		
Tunkalilla far West	28/04/14	Adult	Male	metal	UB (orange)		Partner: LA (orange)
Port Willunga North	29/08/14	Adult	Female	metal		DP (orange)	Partner: LP (orange)
Ochre cove, Maslins Beach	16/10/14	Chick	Male	metal	SR (orange)		Parents: TJ (orange) & NA (orange)
Ochre cove, Maslins Beach	16/10/14	Adult	Male	metal	TJ (orange)		Partner: NA (orange)
Tunkalilla Beach mid-west estuary	17/10/14	Adult	Female	metal	ME (orange)		Partner: MT (orange)
Tunkalilla Beach Western estuary	17/10/14	Adult	Female	metal		WE (orange)	Partner: KW (orange)
Waitpinga East	21/01/15	Chick		metal	RR (orange)		
Heysen East - Tunkalilla Beach	25/03/15	Chick	Female	metal	HT (orange)		
Myponga Beach	21/08/15	Adult		metal		US (orange)	Partner: EY (orange)
Lands End	24/11/15	Juvenile		metal	EW (orange)		Parent: JW (orange)
Lands End	24/11/15	Adult		metal	JW (orange)		
Normanville North/Carrickalinga Sands	28/11/15	Juvenile		metal	MV (orange)		

Beach	Date	Age	Sex	Right tarsus	Right tibia	Left tibia	Partner/parent/sibling Flag
Myponga Beach	28/11/15	Juvenile		metal	UV (orange)		Parents: EY (orange) and US (orange)
Carrickalinga North/rotunda	23/02/16	Juvenile	Female	metal	RV (orange)		Parent: LP (orange)
Yilki	29/02/16	Juvenile	Female	metal	VH (white)		Parents: KV (orange) and VH (orange)
Lands End	29/02/16	Juvenile	Female	metal	ZW (white)		Parent: JW (orange). Sibling: JZ (White)
Lands End	29/02/16	Juvenile	Male	metal		JZ (white)	Parent: JW (orange). Sibling: ZW (White)
Yilki	29/02/16	Adult	Female	metal		VH (orange)	
Waitpinga Beach East	23/03/16	Juvenile	Male	metal		YB (white)	Parent: KP (orange)
Kent Reserve, Victor Harbor	6/03/17	Juvenile		metal	DT (white)		Parent: RR (orange)
Yilki	6/03/17	Juvenile	Male	metal	JY (white)		
Yilki	6/03/17	Juvenile		metal	YV (white)		Parents: VH (orange) & KV (orange)
Port Stanvac	12/02/18	Adult	Female	metal	ES (white)		Partner: AR (orange)
Waitpinga East	13/03/18	Adult		metal	UA (white)		
Hindmarsh River Mouth	20/03/18	Adult	Male	metal	PX (white)		
Tunkalilla Beach	4/04/18	Juvenile	Male	metal	TK (white)		Parent: YB (white)
Seacliff	10/09/18	Adult		metal	XS (white)		
Parsons Beach	4/01/2019	Fledgling	Male	metal	PR (white)		Parent: EV (orange). Sibling: PT (White)
Parsons Beach	4/01/2019	Fledgling	Female	metal		PT (white)	Parent: EV (orange). Sibling: PR (white)
Normanville South	11/02/2019	Adult		metal	NC (white)		
Seacliff	11/02/2019	Fledgling	Male	metal	YL (white)		Parent: XS (white)

Beach	Date	Age	Sex	Right tarsus	Right tibia	Left tibia	Partner/parent/sibling Flag
Snapper Point	30/04/2019	Adult		metal	JT (white)		
Hallett Cove	3/09/2019	Adult		metal	MR (white)		
Maslin Beach	5/12/2019	Fledgling		metal	KZ (white)		Parent: NA (Orange)
Seacliff	10/12/2019	Fledgling		metal	CV (White)		Parent: XS (White). Sibling: JR (White)
Seacliff	10/12/2019	Fledgling		metal		JR (White)	Parent: XS (White). Sibling: CV (White)
Bashams Beach	17/02/2020	Adult		metal	MA (White)		Partner: MS (White)
Bashams Beach	17/02/2020	Adult		metal		MS (White)	Partner: MA (White)
Bashams Beach	17/02/2020	Fledgling		metal	JM (White)		Parents: MS (White) & MA (White)
Hindmarsh River Mouth	11/03/2020	Fledgling		metal	HC (White)		Parent: PX (White)



Photo: Sue and Ash Read: Juvenile JR Left (White) fledged from Seacliff, observed at Snapper Point

Breeding Site Management

Of the 82 confirmed nests on the Fleurieu Peninsula, 61 (74.4%) nests had some form of management (Table 6). Some sites were more remote than others, and at the time deemed not at high risk of human impacts, so active management on the beach was limited. No management occurred at 21 (25.6%) sites, all of which were remote sites. One nest (1.2%) was signed only at the access point (Watsons Gap) and one nest didn't have any management installed, but the pair did nest behind an already established permanent fence (1.2%) on shingle bank out of public view at Moana. The remaining 59 (72%) nests had rope fences and signs as a minimum (with either signs at access, signs at nest or a combination of both). Of the 32 nests that hatched, 27 (84.4%) had rope fencing with either temporary signs at the access or signs at the nest site.

Of the 13 attempts that successfully produced fledglings, four sites (30.8%) had no management due to remoteness (Ballaparudda/Callawonga, Sheepies Beach, Tunkalilla Midway and Tunkalilla West), and all other fledged nests (69.2%) had a minimum of signs at the nest and a rope fence.

Five sites; Seacliff, Hindmarsh River Mouth, Oliver's Reef, Port Willunga South and Middleton Beach West, engaged volunteers to act as site guardians to assist with the protection of the chicks and educate beach users due to the high volume of beach users during the chick phase. Seacliff also had wardens during the egg stage, to assist with the high traffic levels at that site. Chick shelters were used at Maslin Beach, West Beach, Seacliff, Port Willunga, Moana, Normanville South and Watsons Gap to provide extra refuge for the chicks to hide in when threatened, as there is minimal shelter on those beaches for chicks to hide from predators and recreational users. Chick banners were used at Port Willunga, Moana, Sellicks Beach, West Beach, Maslin Beach and Port Willunga South. Chick banners are used in high recreational use areas to increase awareness of chicks on the beach and are useful for vehicle and horse beaches so approaching vehicles/horse riders can see the large banner from quite a distance away and slow on the approach.

There were additional managements to mitigate key threats that were also implemented, some of these were initiated by the local councils to increase awareness and protection at sites. These included specific dog regulation signage within The City of Onkaparinga, Alexandrina Council, City of Victor Harbor, District Council of Yankalilla and the City of

Holdfast Bay. The City of Onkaparinga and City of Holdfast Bay also used digital signage in the carparks at Moana Beach, Port Willunga, Port Willunga South and Seacliff.

A remote camera was used at Watsons Gap to try and determine the main cause of nest failure, this nest hatched, but a fox was seen in the site overnight, visiting several times searching through the nest/chick area and the next day the chicks were not sighted. A nest camera is recommended for Inman River Outlet given the high level of nest failure at this site over multiple years.



Photo: BirdLife Australia: Remote Camera Images from Watsons Gap. Top: Hooded Plover Chick. Below: Fox

Table 6. Summary of management across sites during the 2019/20 breeding season for each nesting attempt.

Site/Territory	date nest found	Hatched?	Fledged?	Management
Hallett Cove	3/09/2019	N	N	Sign Access Temporary, Sign Nest, Rope fence
West Beach	18/10/2019	Y	N	Sign Access Temporary, Sign Nest, Banners, Rope fence, Shelters
Seacliff	23/08/2019	N	N	Sign Access Temporary, Sign Nest, Rope fence, Wardens, Council sign - dogs on leads next 200 metres, Council digital signage in carpark
Seacliff	24/09/2019	Y	Y	Sign Access Temporary, Sign Nest, Rope fence, Shelters, Wardens, Council sign - dogs on leads next 200 metres, Council digital signage in carpark
Moana Beach	4/09/2019	N	N	Permanent Fence
Moana Beach	26/09/2019	Y	N	Sign Access Temporary, Sign Nest, Rope fence, Banners, Leash dog 200m council sign, Council car parking restriction signs
Moana Beach	18/11/2019	Y	N	Sign Access Temporary, Sign Nest, Rope fence, Banners, Shelters, Leash dog 200m council sign; Council digital signage in carpark
Ochre Cove, Maslins	7/08/2019	N	N	Sign Access Temporary, Sign Nest, Rope fence
Ochre Cove, Maslins	29/08/2019	N	N	Sign Access Temporary, Sign Nest, Rope fence
Ochre Cove, Maslins	18/09/2019	Y	Y	Sign Access Temporary, Sign Nest, Rope fence
Ochre Cove, Maslins	26/12/2019	N	N	Sign Access Temporary, Sign Nest, Rope fence
Maslin Beach	9/09/2019	Y	N	Sign Access Temporary, Sign Nest, Rope fence, Banners, Shelters
Maslin Beach	25/10/2019	Y	N	Sign Access Temporary, Sign Nest, Rope fence, Banners, Shelters, Leash dog 200m council sign
Maslin Beach	12/12/2019	N	N	Sign Access Temporary, Sign Nest, Rope fence, Banners, Shelters, Digital signage in carpark
Port Willunga	17/08/2019	Y	N	Sign Access Temporary, Sign Nest, Rope fence, Banners, Leash dog 200m council sign
Port Willunga	14/10/2019	Y	N	Sign Access Temporary, Sign Nest, Rope fence, Banners, Shelters, Leash dog 200m council sign; Council digital signage in carpark
Port Willunga	27/11/2019	Y	N	Sign Access Temporary, Sign Nest, Rope fence, Banners, Shelters, Leash dog 200m council sign
Port Willunga South	2/11/2019	Y	Y	Sign Access Temporary, Sign Nest, Rope fence, Banners, Shelters, Wardens, Leash dog 200m council sign, Council digital signage in carpark

Site/Territory	date nest found	Hatched?	Fledged?	Management
Snapper Point	26/08/2019	N	N	Sign Access Temporary, Sign Nest, Rope fence
Snapper Point	21/09/2019	N	N	Sign Access Temporary, Sign Nest, Rope fence
Sellicks Beach	24/10/2019	Y	N	Sign Access Temporary, Sign Nest, Rope fence, banners, Leash dog 200m council sign
Sellicks Beach	12/12/2019	N	N	Sign Nest, Rope fence, Banners, Leash dog 200m council sign
Myponga	23/09/2019	Y	N	Sign Access Temporary, Sign Nest, Rope fence, Council sign leash dogs
Carrickalinga North	14/10/2019	Y	N	Sign Access Temporary, Sign Nest, Rope fence, Council sign leash dogs
Carrickalinga Rotunda	27/10/2019	Y	N	Sign Access Temporary, Sign Nest, Rope fence, Council sign leash dogs
Carrickalinga Rotunda	23/12/2019	N	N	Sign Access Temporary, Sign Nest, Rope fence, Council sign leash dogs
Normanville South	30/08/2019	N	N	Sign Access Temporary, Sign Nest, Rope fence, Council sign leash dogs
Normanville South	26/09/2019	Y	N	Sign Access Temporary, Sign Nest, Rope fence, Council sign leash dogs
Normanville South	14/11/2019	Y	N	Sign Access Temporary, Sign Nest, Rope fence, Shelters, Council sign leash dogs
Normanville South	7/01/2020	N	N	Sign Access Temporary, Sign Nest, Rope fence, Shelters, Council sign leash dogs
Yankalilla river mouth	24/12/2019	N	N	Sign Nest, Rope fence, Council sign leash dogs
Shelley Beach (lady bay)	31/08/2019	N	N	Sign Nest, Rope fence
Shelley Beach (lady bay)	26/09/2019	N	N	Sign Nest, Rope fence
Shelley Beach (lady bay)	23/12/2019	Y	Y	Sign Access Temporary, Sign Nest, Rope fence
Tunkalilla West	9/10/2019	N	N	None
Tunkalilla West	19/12/2019	Y	Y	None
Tunkalilla Midway	11/09/2019	N	N	None
Tunkalilla Midway	9/10/2019	N	N	None
Tunkalilla Midway	4/11/2019	N	N	None
Tunkalilla Midway	28/11/2019	N	N	None
Tunkalilla Midway	7/01/2020	Y	Y	None
Tunkalilla East	4/11/2019	N	N	None
Tunkalilla East	19/12/2019	N	N	None
Tunkalilla East	15/01/2020	N	N	None
Tunkalilla East	5/02/2020	N	N	None

Site/Territory	date nest found	Hatched?	Fledged?	Management
Ballaparudda	27/11/2019	N	N	None
Ballaparudda	12/12/2019	Y	Y	None
Sheepies Beach	18/10/2019	Y	N	None
Sheepies Beach	14/01/2020	Y	Y	None
Parsons Beach	21/09/2019	N	N	None
Parsons Beach	23/10/2019	N	N	None
Waitpinga Beach (east)	26/09/2019	N	N	Sign Access Temporary, Sign Nest, Rope fence (fences aren't normally placed here; increased number of salmon fishers increased threat to this nest)
Waitpinga Beach (east)	10/11/2019	N	N	None
Waitpinga Beach (east)	13/12/2019	N	N	None
Waitpinga Beach (east)	14/01/2020	N	N	None
Yilki	23/08/2019	N	N	Sign Nest, Rope fence
Yilki	12/09/2019	Y	Y	Sign Nest, Rope fence
Yilki	25/11/2019	N	N	Sign Access Temporary, Sign Nest, Rope fence
Yilki	9/12/2019	N	N	Sign Access Temporary, Sign Nest, Rope fence
Yilki	1/01/2020	N	N	Sign Access Temporary, Sign Nest, Rope fence
Inman River Outlet	11/09/2019	N	N	Sign Access Temporary, Sign Nest, Rope fence, Council Bylaw Sign
Inman River Outlet	27/09/2019	Y	N	Sign Access Temporary, Sign Nest, Rope fence, Council Bylaw Sign
Inman River Outlet	11/11/2019	N	N	Sign Access Temporary, Sign Nest, Rope fence, Council Bylaw Sign
Inman River Outlet	18/12/2019	N	N	Sign Access Temporary, Sign Nest, Rope fence, Council Bylaw Sign
Inman River Outlet	12/01/2020	N	N	Sign Access Temporary, Sign Nest, Rope fence, Council Bylaw Sign
Inman River Outlet	25/01/2020	N	N	Sign Access Temporary, Sign Nest, Rope fence, Council Bylaw Sign
Victor Central	21/08/2019	Y	N	Sign Access Temporary, Sign Nest, Rope fence, Council Bylaw Sign
Victor Central	6/10/2019	N	N	Sign Access Temporary, Sign Nest, Rope fence, Council Bylaw Sign
Hindmarsh River Mouth	28/12/2019	Y	Y	Sign Access Temporary, Sign Nest, Rope fence, Wardens, Council Bylaw Sign
Olivers Reef	5/11/2019	Y	N	Sign Access Temporary, Sign Nest, Rope fence, Wardens, Council Bylaw Sign
Watsons Gap	14/08/2019	N	N	Sign Access Temporary

Site/Territory	date nest found	Hatched?	Fledged?	Management
Watsons Gap	7/09/2019	Y	N	Sign Access Temporary, Sign Nest, Rope fence, Shelters, Council Bylaw Sign, Remote sensing camera
Watsons Gap	21/10/2019	N	N	Sign Access Temporary, Sign Nest, Rope fence, Council Bylaw Sign
Watsons Gap	9/11/2019	N	N	Sign Access Temporary, Sign Nest, Rope fence, Council Bylaw Sign
Watsons Gap	17/12/2019	N	N	None
Bashams Beach	26/08/2019	N	N	Sign Access Temporary, Sign Nest, Rope fence, Council Bylaw Sign
Bashams Beach	14/09/2019	Y	Y	Sign Access Temporary, Sign Nest, Rope fence, Council Bylaw Sign
Bashams Beach	7/12/2019	Y	Y	Sign Access Temporary, Sign Nest, Rope fence, Council Bylaw Sign
Middleton Beach West	27/08/2019	Y	Y	Sign Access Temporary, Sign Nest, Rope fence, Wardens, Council Bylaw Sign
Middleton Beach West	17/11/2019	N	N	Sign Access Temporary, Sign Nest, Rope fence, Council Bylaw Sign
Middleton Beach West	19/12/2019	N	N	Sign Access Temporary, Sign Nest, Rope fence, Council Bylaw Sign
Middleton Beach East	17/10/2019	N	N	Sign Access Temporary, Sign Nest, Rope fence, Council Bylaw Sign

Management and Awareness Raising activities during 2019/20

In the 2019/20 breeding season, the following activities were carried out:

Management

- Chick wardening occurred at selected high threat sites.
- Temporary fencing and signage around nests and chicks.
- Temporary signs communicating nest failure or chick hatching success.
- Multiple councils implemented signage related to recent bylaws changes to manage dogs around breeding sites.
 - Given the pair bred in the vehicle-accessible section of Moana beach, City of Onkaparinga installed new signage in the 2019/20 season stating "Please do not drive past this point" at Moana, and new dog signage at a number of sites stating "Please leash your dog for the next 200m". Education packs were supplied to the Council's rangers for each of the patrol cars.
 - City of Marion have developed a sign to install at all access points to notify people that dogs must be on leash.
- Alexandrina Council and NRM staff carried out searches for fox dens at Watsons Gap in response to reports of a problem fox. The NRM engaged a contractor to set a trap locally which was unsuccessful.
- Emma Stephens and Wendy White met with each Council to discuss the start of the season and go through the new 2018/19 Council Report Cards.
 - City of Victor Harbor compliance staff undertook targeted site visits at Hindmarsh River outlet and the Inman River outlet, handing out dog leads and brochures.
 - DC Yankalilla provide regular, nearly daily visits to most beaches from Shelley Beach to Carrickalinga North, regularly educating beach-goers and handing out pamphlets and dog leads.
 - City of Holdfast Bay funded a beach-specific inspector for one season over the 2019/20. Part of this role, approximately 25%, was be dedicated to the Hooded Plover breeding zone and increasing compliance rates.
- Wendy White in her role as coordinator sent weekly email updates to relevant councils (that have more than one pair) with breeding updates, permission for fencing and highlighting any key issues. Councils included: City of Onkaparinga, DC Yankalilla, City of Victor Harbor, and Alexandrina Council.

- Sue and Ash Read continuously met with Onkaparinga Council Staff and Rangers throughout the season

Awareness raising activities:

- Start of Season meeting for all Volunteers and Management Training workshop in September
- Volunteer Regional Coordinators assisted with many of the events for the season and provided ongoing mentoring of new volunteers after workshops.
- Hooded Plover Training Workshop to recruit and train new volunteers at Victor Harbor
- Hooded Plover Training Workshop to recruit and train new volunteers at Maslin Beach



- Hooded Plover Walk'n'Talk events aimed at participants who attended workshop to increase engagement and recruitment. Undertaken at Victor Harbor and Snapper Point
- SA Museum Citizen Science Spotlight School Holiday Program aimed at school aged children
- Hooded Plover capture and flagging undertaken
- Are You a Plover Lover – event as part of Encounter Marine Park, Park of the Month event, Snapper Point
- Dogs' Breakfast at West Beach to engage the community as the pair from Hallett Cove moved to West Beach. City of Charles Sturt Council staff attended.
- Hooded Plover Training Workshop to recruit and train new volunteers at Seacliff in December

- Online Hooded Plover training sessions from BirdLife Australia National Office, x2 in November
- Online My Beach Bird Data Portal Training Workshop from BirdLife National Office in October
- National Hooded Plover Regional Coordinators meeting, online zoom session
- Hooded Plover End of Season Debrief (VRC), online zoom session
- Hooded Plover End of Season Debrief with all volunteers, with over 50 participants. Presentations by Emma Stephens and Renee Mead, BirdLife Australia, Tony Flaherty, Natural Resources Adelaide and Mount Lofty Ranges, and Volunteer Regional Coordinators; John Cobb, Ligita Bligzina, Sue and Ash Read, and David and Sue Thorn, Wendy White
- Beach activity with Aldinga Beach Children's Centre at Port Willunga South
- Onkaparinga Mayor, Erin Thompson undertook site visit with VRC's and Volunteers at Maslin Beach and following correspondence with Mayor after Moana chick death.

Photo: provided by Sue and Ash Read: Mayor Erin Thompson and Volunteers



- Weekly updates via Triple Z Community Radio Program and interview with Anne Crow on Tribe FM Community Radio
- Brochures distributed brochures to dog obedience schools within the Fleurieu Onkaparinga Beaches region
- Brochures distributed brochures to Moana caravan parks, following the new pair discovery at Moana Beach
- South Coast Environment Centre had a Shop front display featuring the Hooded Plover

- Port Elliot Show stall with kids activities, education and awareness raising
- Monthly Radio interviews for Victor Harbor and Goolwa
- Stall at Meet the Machines at Wigley Reserve, Glenelg
- Festival of Nature information stall and kids activities, Yankalilla
- Display at Yankalilla Show and Port Elliot Shows with badge making for kids
- Information sessions/Dog's Breakfasts at Port Willunga South, Olivers' Reef, Carrickalinga and Hindmarsh River Mouth
- Presentation on Hooded Plovers to Friends of Onkaparinga National Park
- City of Onkaparinga Facebook campaign to 'name' the Hooded Plover Pair at Port Willunga, which has flagged birds DP Left (Orange) and HV Right (Orange). Winning names were 'Daphne' and 'Harvey'



Acknowledgements

A huge thank you to all of the amazing volunteers who participate in Hooded Plover monitoring. Every contribution adds to our knowledge of these threatened species and assists us in improving and adapting the recovery program. Fleurieu Peninsula volunteers should be especially proud as you record lots of detail in your observations, enter these religiously and as a whole, have one of the highest quality data sets, and have kept this consistency for many years now. Well done!

Big thanks to the Volunteer Regional Coordinators: John Cobb and Ligita Blizna (Fleurieu Metro), Sue and Ash Read (Fleurieu North) Wendy White (Fleurieu Central) and David and Sue Thorn for their dedication in coordinating the Volunteers and nest site protection on Fleurieu South.

Wendy White, as usual has done a tremendous job of being the Fleurieu-wide volunteer coordinator, and the staff (Matt Endacott, Caroline Taylor, Kristy Watson, Corey Jackson, Tony Flaherty and the Communications Team) from Natural Resources Adelaide and Mount Lofty Ranges continued to provide invaluable support to volunteers and land managers.

This season for the third year, the AMLR NRM Board funded the Sharing our Shores with Coastal Wildlife positions held by Emma Stephens and Aleisa Lamanna, adding a further layer of support to the program, and it is terrific to have Emma Stephens' extensive knowledge of the Fleurieu Hooded Plovers remain. Special thanks to the councils and rangers involved in protecting nesting sites and supporting the project and its volunteers: City of Onkaparinga, District Council of Yankalilla, DEW (Newland Head Conservation Park - National Parks and Wildlife SA), City of Victor Harbor, Alexandrina Council, City of Holdfast Bay, City of Marion, and City of Charles Sturt.

A special thanks to the Normanville Natural Resource Centre Coordinator and the South Coast Environment Centre for their amazing displays and information noticeboards, and to volunteers for assisting with awareness raising events.

This project is supported by the Adelaide and Mount Lofty Ranges Natural Resources Management Board, through funding from the Australian Government's National Landcare Program and the NRM Levy.