Monitoring Hooded Plovers on the Fleurieu Peninsula:
Distribution, breeding success and management in the 2017/2018 season

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Government of South Australia
Adelaide and Mount Lofty Ranges
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Contents

Photo: Kerri Bartley. Seacliff adults and fledgling

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 5 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 parent birds try 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 been funded over the years by the Australian Government's Natural Heritage Trust, Caring for our Country and National Landcare Programs, The State Government of Victoria, several NRM Boards throughout South Australia and CMAs throughout Victoria, The NSW Environmental Trust, and various philanthropic trusts and donors including the Hugh D. T. Williamson Foundation and the Letcombe Foundation.

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 and to evaluate and adapt best practice for Hooded Plover recovery
   - Education to shape sustainable beach use behaviours
2. Protect and restore critical habitat so that the current distribution is maintained and protected
3. Develop tools, resources, capacity and supportive policy to ensure long-term sustainability and consistent delivery of recovery actions

On the Fleurieu Peninsula, our aims are specifically to:

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

i. Monitor the breeding status of all known pairs on the Fleurieu Peninsula during the breeding months (August-March). Seek to maintain monitoring of these sites over at least 5 years for a comparison of site-based threat profiles and to quantify improvements in breeding success related to management;

ii. For sites where we have been collecting threat data, seek to assess changes in the occurrence and severity of threats over time and the impact of threats on breeding outcomes;

iii. Carry out on-ground management of vulnerable breeding sites following management directions outlined in 'A practical guide to managing beach-nesting birds in Australia';

iv. Investigate the effectiveness of nest site protection (does management work) and make modifications for subsequent seasons. Managements need to adapt to local site and beach user specifications;

v. Use nest cameras at sites where nests repeatedly fail to detect and identify nest predators and to determine nest fates. This is done following strict protocols and to a limited degree to avoid any potential for training predators to associate cameras with nests;

vi. Band a sample of Hooded Plovers on the Fleurieu Peninsula and maintain resighting database so as to track movements, dispersal and document survival rates and site fidelity. This will lead to better knowledge about 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 and contribute to a collaborative study of population genetics carried out by Museums Victoria, Deakin University and BirdLife Australia, and;

vii. Engage communities in Hooded Plover conservation via organised events or activities such as the biennial count; scope viewing; dogs' breakfasts; school visits; craft stalls. Awareness raising and opportunities to participate are carried out with the aim of changing beach user behaviours to promote coexistence and long-term sustainable beach use.

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

i. Maintain a distribution map and database of location of breeding pairs of Hooded Plovers;

ii. Estimate population numbers of Hooded Plovers in an eastern mainland census every two years (e.g. November 2016, November 2018);
iii. At the time of each biennial count, assess the threats to each pair in a snapshot assessment and any management in place to alleviate these threats, and;
iv. Assess occurrence of threats at breeding sites from data collected during the biennial count and map sites according to threat status.

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 volunteers and land managers in monitoring and recovery actions for the Hooded Plover;
iii. Hold regular meetings, workshops, 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. Maintain and adapt the online MyBeachBird portal to support data collection, viewing and extraction;
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, planning and decision makers to ensure threats to Hooded Plovers and their habitat are acknowledged, and managed accordingly.

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 Coast, Marine and Estuary managers and officers coordinate and support the project and volunteers, and local council and Department of Environment, Water and Natural Resources (DEWNR) staff assist with nest protection responses.

- 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 DEWNR. 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.

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, Water and Natural Resources, councils, community and the Natural Resources Management Board. Many of these actions and priorities however, would now need updating due to the considerable advances in research and knowledge of South Australian Hooded Plover sites, threats and actions since 2006.

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.

An overview of the 2017/2018 Breeding Season

As a part of BirdLife Australia's Beach-nesting Birds Project, monitoring of breeding Hooded Plover pairs via the MyBeachBird portal occurred on the Fleurieu Peninsula, Yorke Peninsula, Eyre Peninsula, Kangaroo Island and South East 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 across each NRM region.

The volunteers of the Fleurieu Peninsula once again showed tremendous effort in entering their sightings into the portal with a total of 2,158 data records entered into the online data portal during the 2017/2018 season. This is a very slight, but insignificant, decrease in entries (88 fewer entries, 4%) from the previous season. Nine data portal user accounts were responsible for 1,395 (65%) 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. For the additional 35% of sites, data is collected by a larger number of volunteers (51 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 85% of the data portal entries received from across South Australia, and 24% of all Victorian and South Australian data (entered as of the 18th April 2018), 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 Coast and Marine NRM team.

Volunteer investment in monitoring alone is calculated as a minimum of 1,128 hours, which is an underestimate as many data entries did not record duration of site visits, and these calculations do not include travel times to and from sites, and time invested in data entry post-visit. Special mention to David and Sue Thorn, clocking up to 165 hours of hooded plover monitoring.

There were 47 sites that were checked by volunteers over the breeding season. Figures 1-4 provide an overview of sites monitored, including the presence of birds and nesting activity at sites during the season. Of these 47 sites, 27 sites had pairs on territory, and 13 sites had birds sighted, either individuals, flocks or non-nesting pairs (no breeding detected). The remaining seven sites, had no birds sighted for the season, but are still checked as they were historically occupied. A breakdown of the number of data portal entries for each site, and the volunteers who monitored sites can be found in Table 1.

Hooded Plovers were not observed during the 2017/18 season at: Christies Beach, Deep Creek Conservation Park/Blowhole beach, Tunkalilla Mid-west Gully, Tunkalilla 1st Alcove far east, Southport, O'Sullivans beach, and Moana Beach South. The sites where Hooded Plovers were observed, but were either individuals, or flocks, or non-breeding pairs were: Carrickalinga South, Goolwa Beach, Hindmarsh River Mouth, Maslin Beach, Moana Beach, Morgans Beach, Normanville North, Silver Sands, Snapper Point, Trig Point, Waitpinga Beach west, Waitpinga Estuary and Yankalilla River Mouth. Coolawang and Callawonga are not included in this report, as these sites weren't visited during the 2017/18 season. Coolawang last had a pair on territory in 2014/2015, but no nests were recorded during that season. Callawonga had a nesting pair during the 2016/2017 season.

Lands End and Parsons Beach both had a pair each, regularly present on territory but no nests were detected here. Nests at Lands End can be inherently difficult to find, although severe storm surges caused a loss of suitable nesting habitat. The entire beach lost approximately one metre of sand in July/August due to storm impacts and remained a rocky beach until March. This would have severely impacted the availability of nesting habitat for the season.

It should be noted that the number of pairs occupying Tunkalilla beach is three, so two historical territories Tunkalilla *far west* and *western estuary*, have become occupied by one pair and are referred to as Tunkalilla *west* throughout this report. Similarly, Tunkalilla *creek/3rd house east* and *Heysen east* are reported as Tunkalilla *east*, and Tunkalilla *mid-west estuary* and *first house east* are referred to as Tunkalilla *midway*.

In the 2017/18, there were a number of territory changes and several new sites arose, these include:

- It is likely that the pairs at Olivers Reef and Victor Central were the same pair, but considering all birds reported using these sites are unbanded, confirmation is required. Banding at this location is a priority for the Fleurieu Peninsula, to be able to confirm how these sites are being used, and to better manage the use of these sites.
- The pair at Lands End were both unbanded. JW was never seen throughout the entire season. JW has held that territory with an unbanded bird since it was banded in the 2015/2016 season.

- A new pair were sighted nesting at Hallett Cove. UV and unbanded successfully fledged a chick here, which is tremendous given this is the first record of that site ever being used.
- Tunkalilla Midway had a pair change. ME (female) was sighted nesting with an unbanded bird, while it was once partnered with MT. MT has held this territory since it was flagged in the 2013/2014 season. ME was flagged the following season in 2014/2015.
- After LA was found deceased during the last breeding season (2016/2017), this season, EW has moved into the territory with an unbanded adult (possibly LA's old partner).

Photo: Sue and Ash Read. Orange UV and fledgling at Hallett Cove

Figure 1: Sites that were monitored during the 2017/18 breeding season on the northern coast of Fleurieu Peninsula and the number of nesting attempts per site.

Figure 2: Sites that were monitored during the 2017/18 breeding season on the south west coast of Fleurieu Peninsula and the number of nesting attempts per site.

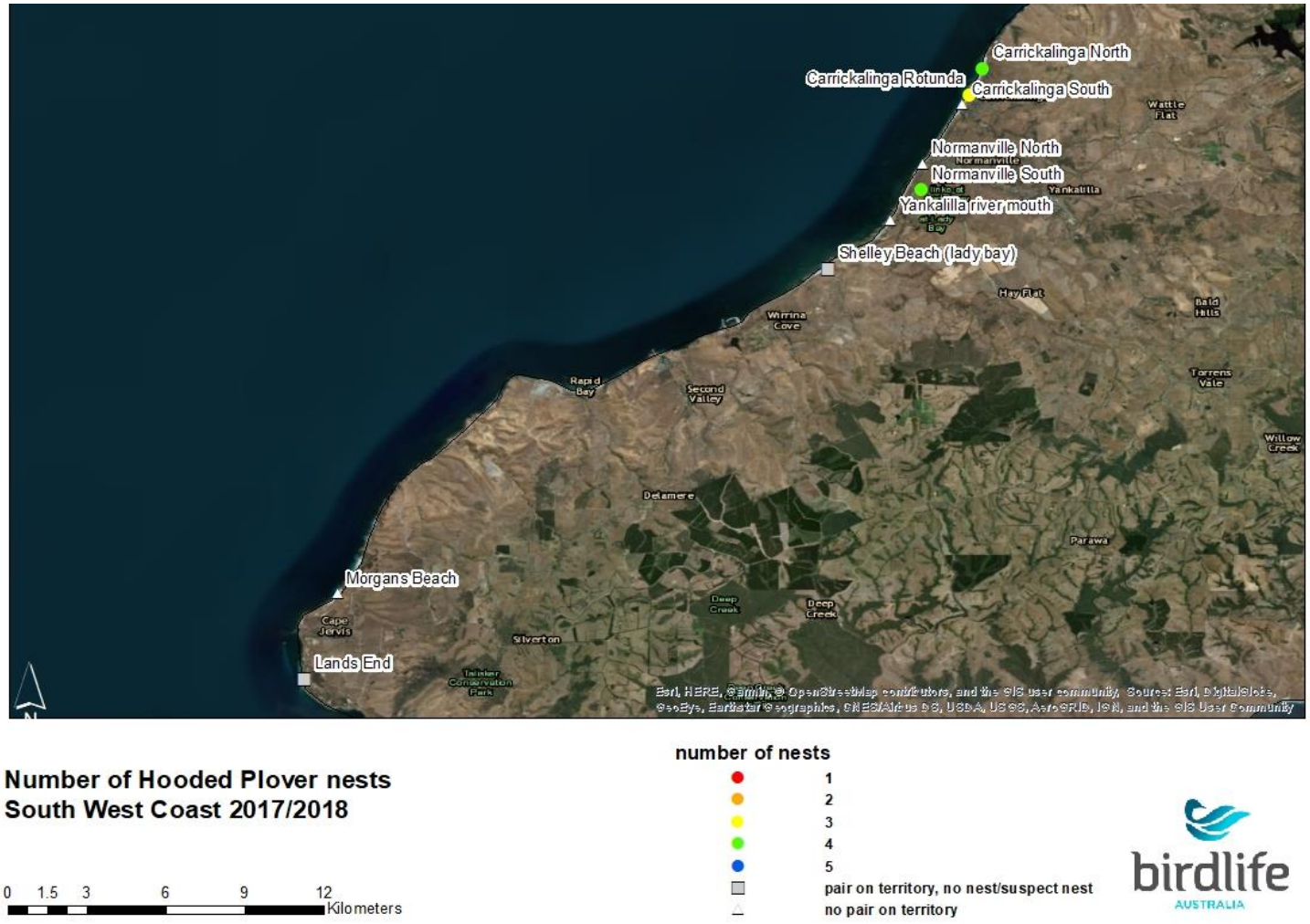

Figure 3: Sites that were monitored during the 2017/18 breeding season on the southern coast of Fleurieu Peninsula and the number of nesting attempts per site.

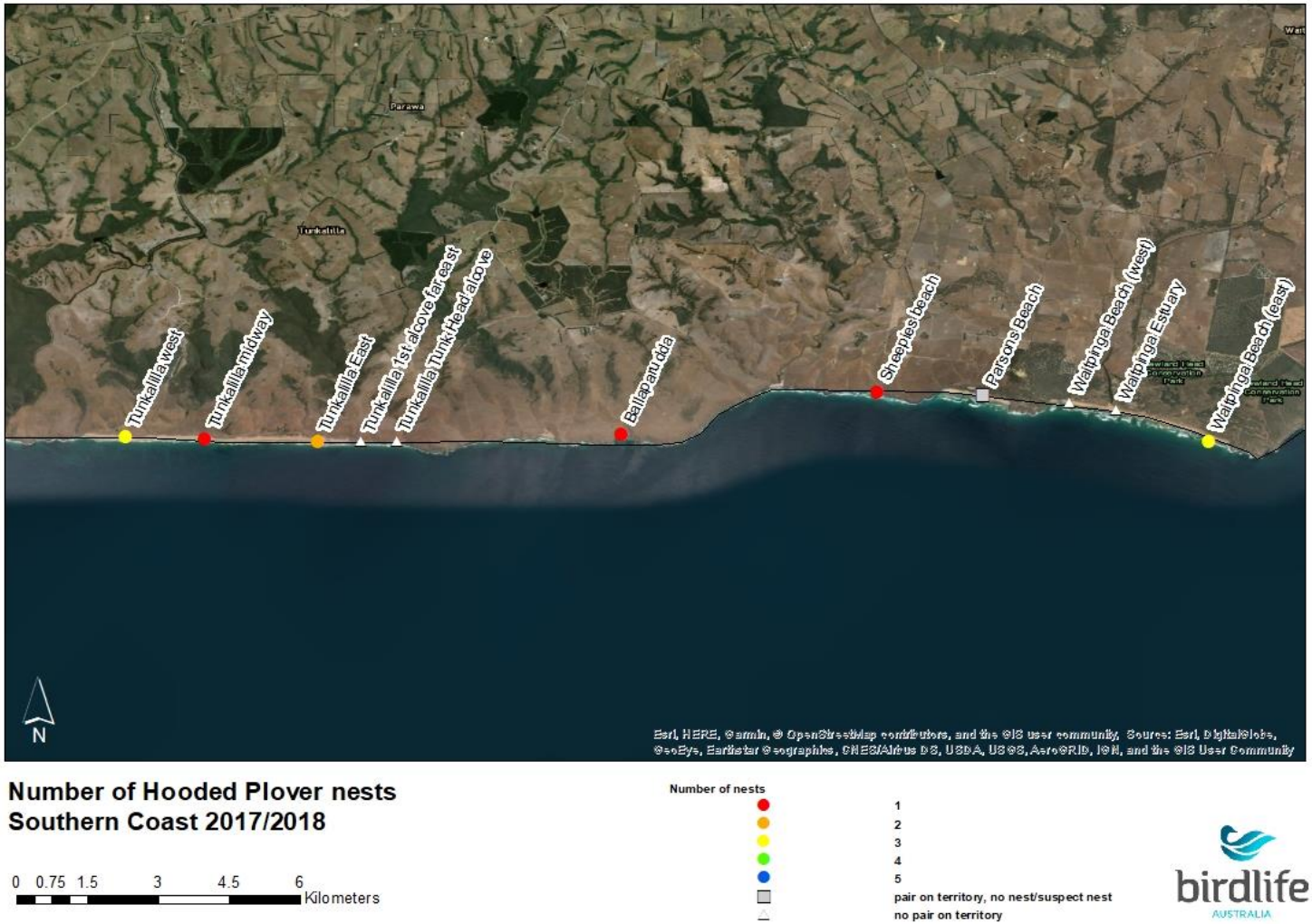

Figure 4: Sites that were monitored during the 2017/18 breeding season on the southern east coastline of Fleurieu Peninsula and the number of nesting attempts per site.

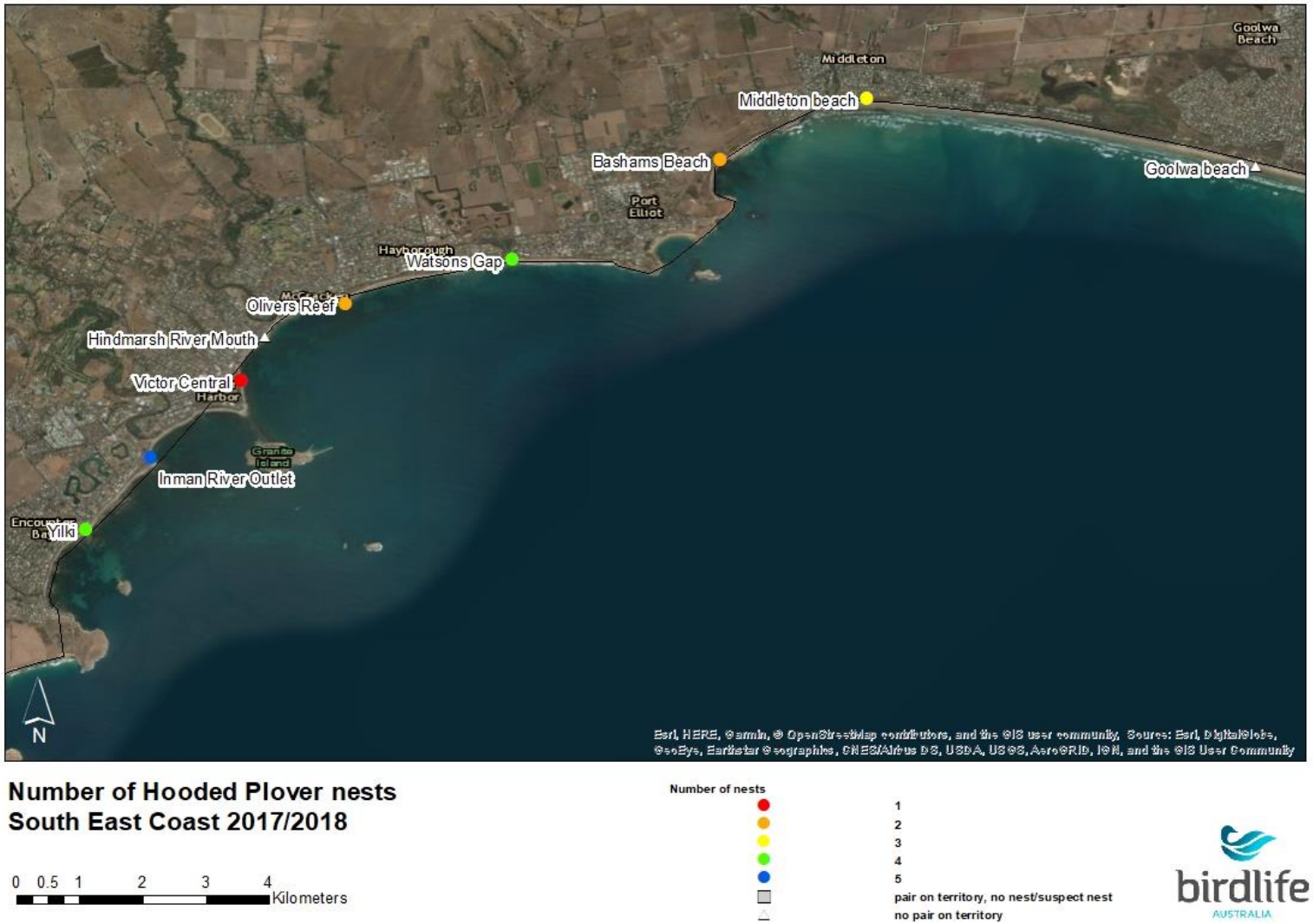

Table 1. Number of portal entries and coverage across the breeding season at sites on the Fleurieu Peninsula during the 2017/18 breeding season. Portal entries are the number of entries entered via the online data portal. Grey cells represent sites where no birds were sighted during the breeding season. Apricot cells represent sites where no breeding occurred, but instead there were sightings of single adults, juveniles or flocks. Blue cells represent sites where a pair were on territory regularly but no nests were detected.

Site/Territory	Portal entries	Main monitor/s	Additional observers
Aldinga Nth (Aldinga Beach Rd)	71	Sue and Ashley Read, Dudley Corbett	Neville Hudson, Mary-Ann Van Trigt
Aldinga South	34	Dudley Corbett	Sue and Ash Read, Neville Hudson
Ballaparudda	2	Rob Brinsley, David and Sue Thorn	
Bashams Beach	47	Debbie Prestwood, David and Sue Thorn	Win Syson, Rob Brinsley, Richard Edwards, Ross Brittain and Jeanette Diment
Carrickalinga Estuary	2	Mike Heard, Corey Jackson	
Carrickalinga North	63	Anthea and Rick Williams	Wendy White, Caroline Weatherstone, Jacqui Salkeld, Mike Heard
Carrickalinga South	15	Caroline Weatherstone, Sondra Bywater	Wendy White, Anthea and Rick Williams
Christies Beach	1	Petra Henke	
Deep Creek CP Blowhole beach	1	Corey Jackson	
Goolwa beach	4	Rob Brinsley, David and Sue Thorn	
Hallett Cove	54	John Cobb, Sue and Ash Read	
Hindmarsh River Mouth	22	Richard Edwards	David and Sue Thorn, Debbie Prestwood, Dean Cutten, Aleisa Lamanna, Emma Stephens, Corey Jackson
Inman River Outlet	118	David and Sue Thorn, Richard Edwards	Ross Brittain and Janette Diment, Debbie Prestwood, Wendy White, Kim O'Connor
Lands End	12	Michael Rumsewicz, Rhonda Smith	David and Sue Thorn
Maslin Beach	18	Graham and Jan Thomas	Sue and Ash Read, Karin Riederer
Middleton beach	100	Debbie Prestwood, David and Sue Thorn	Rob Brinsley, Gayl Males, Win Syson, Keith Jones, Karin Riederer
Moana Beach	5	Kim O'Connor, Angela Parker	
Moana Beach South	22	Kim O'Connor, Angela Parker	Sue and Ash Read, John Cobb
Morgans beach	4	Corey Jackson, Wendy White, Michael Rumsewicz	
Myponga Beach	32	Anthea and Rick Williams	Wendy White, Neville Hudson, Caroline Weatherstone, Maxine Agnew
Normanville North	21	Joy Whellum	Caroline Weatherstone, Anthea and Rick Williams
Normanville South	172	Joy Whellum, Maxine	Caroline Weatherstone,

Site/Territory	Portal entries	Main monitor/s	Additional observers
		Agnew, Anthea and Rick Williams, Wendy White	John Cobb
Ochre Cove, Maslins	207	Graham and Jan Thomas, Karin Reiderer, Sue and Ash Read, Kim O'Connor	John Cobb
Olivers Reef	129	David and Sue Thorn, Richard Edwards	Gayl Males, Debbie Prestwood
O'Sullivans Beach	1	Petra Hanke	
Parsons Beach	14	Dean Cutten, Rob Brinsley	David and Sue Thorn
Port Stanvac	43	Justin Sanders	Tony Flaherty, Emma Stephens, Aleisa Lamanna
Port Willunga	94	Sue and Ash Read	Faye Lush and Joyce West, Kim O'Connor, Cathryn Brownlee
Seacliff	231	Ligita Bligzna, John Cobb, Lynda Yates, Stevie Austin, Kerri Bartley, Alice Everitt	Mary-Ann Van Trigt, Julie Siebentritt, Kirsty Darlaston
Sheepies beach	12	Dean Cutten, Rob Brinsley	
Shelley Beach (lady bay)	24	Peta Kruse, Anthea and Rick Williams	
Silver Sands	12	Dudley Corbett, Neville Hudson	
Snapper Point	23	Sue and Ash Read, Neville Hudson	Angela Parker, Aleisa Lamanna, Tony Flaherty, Dudley Corbett, Emma Stephens, Kasun Ekanayake
Southport	7	Angela Parker	Petra Hanke, John Cobb
Trig point	2	Corey Jackson, Sue and Ash Read	
Tunkalila Base/mid-West gully	12	Rob Brinsley, Emma Rowe	
Tunkalilla 1st alcove far east	6	Emma Rowe, Rob Brinsley	
Tunkalilla East	13	Rob Brinsley, Emma Rowe	Michael Rumsewicz, David and Sue Thorn, Aleisa Lamanna, Emma Stephens, Corey Jackson
Tunkaililla Midway	14	Rob Brinsley, Emma Rowe	Michael Rumsewicz, David and Sue Thorn
Tunkalilla West	13	Rob Brinsley, Emma Rowe	Michael Rumsewicz
Tunkalilla Tunk Head alcove	1	Emma Rowe	
Victor Central	48	Gayl Males, Debbie Prestwood, David and Sue Thorn, Richard Edwards	Ross Brittain and Janette Diment, Lesley and Grant Westbrook, Gary Jackson
Waitpinga Beach (east)	20	David and Sue Thorn	Rob Brinsley, Emma Rowe, Emma Stephens, Corey Jackson
Waitpinga Beach (west)	12	Rob Brinsley, David and Sue Thorn	Emma Rowe
Waitpinga Estuary	13	Rob Brinsley, David and Sue Thorn	Win Syson, Emma Rowe
Watsons Gap	118	Debbie Prestwood, Win Syson	David and Sue Thorn, Kerry Bartley, Rob Brinsley, Richard Edwards, Corey Jackson, Gayl Males
Yankalilla river mouth	16	Robert Flett	Corey Jackson
Yilki	142	David and Sue Thorn, Lesley and Grant Westbrook	Richard Edwards, Debbie Prestwood, Ross Brittain and Janette Diment, Elizabeth Steele-Collins, Emma Rowe, Sandra

Site/Territory	Portal entries	Main monitor/s	Additional observers
			Caballero, Gayl Males, Renee Mead

In the 2017/18 breeding season there were 59 Hooded Plover nesting attempts by 27 breeding pairs on the Fleurieu Peninsula. Note, there is suspicion that the pair that nested at Olivers Reef and Hindmarsh River are the same pair, but as this is not confirmed, they have been counted separately. This was the highest number of nests recorded since monitoring began and likely relates to the highest number of pairs that have bred on the Fleurieu in a given season (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 nine breeding seasons.

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

Eighteen fledglings were produced in the 2016/17 breeding season, which was an extra two fledglings than the previous season, and now the second highest result ever in the nine seasons of monitoring (Table 2). Chick survival rate was just below average at 34.6% (average 35.9 ± 1.2%). The approximate benchmark for fledgling production to maintain population viability over time is set at 0.40 – 0.50 fledglings per pair per season. In 2017/18, the Fleurieu has yet again exceeded this benchmark and this is an identical result as for last season, with 0.67 fledglings per pair. The highest fledging success ever recorded is from the 2015/16 season where there were 0.90 fledglings per pair. The lowest was 0.45 in the 2012/2013 season. In addition to using this as a benchmark to measure success we also want to see variation in the pairs responsible for this fledgling production to maintain genetic variation. This is discussed further below.

Figures 5 to 7 provide a geographic overview of successes and failures, 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 in late-August, at Ochre Cove (20th), Inman River (26th), Yilki (26th), and Olivers Reef (31st). All of these early attempts failed. Olivers Reef failed the day after the clutch was complete (all three eggs were laid), and Ochre Cove managed to incubate the eggs until the day of hatching, when the eggs disappeared. Breeding slowed after January, with the last nest recorded in early February at Tunkalilla East, which resulted in two fledglings in mid-March. Waitpinga beach (east) also had chicks in February, with one fledging in early March. The only other breeding during February was at Middleton beach, where the remaining chick was taken into care after an avian predator had attacked it, but did not survive.

Six pairs had only one nesting attempt for the entire season (22%), where in 2016/2017 season, 12 pairs (48%) only had only one nesting attempt. 26% of pairs (7) had two nesting attempts, 22% (6 pairs) had three attempts, 15% (4 pairs) had four, and the pair at Inman River had five nesting attempts. As mentioned earlier, the pairs at Lands End and Parsons beach were territorial all season but had no nesting attempts. Shelley Beach (Lady Bay) was the only pair to have a suspected nest for the season. They have been counted as a breeding pair in this report, as they were showing typical behaviours of nesting and chicks, although no nest or chicks were found.

Of the 59 confirmed nests that were monitored, 61% (36 nests) failed during the egg stage. 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. At times, there is evidence around the nest that enables us to suspect what may have happened. In 2017/2018, 72.2% of nests (26) failed to unknown causes. Of these unknown causes, 23.1% (6) nests were suspected depredated by a raven or avian predator. The first nest of the Seacliff pair were suspected avian predator, due to the beak marks in the destroyed eggs. Another 23.6% (6) of unknown nests were suspected as fox depredation, with Myponga and Watsons Gap failures having fox prints leading to the nest site. A previous study by Mead et al (2012), showed that foxes often

investigate nesting sites after a depredation event by a different predator. Similarly, a camera on a nest at Tunkalilla years ago revealed that the pair experienced an extreme heat spell where the eggs ultimately failed and were abandoned – this nest was then visited by a fox days after abandonment. Thus there can be fox prints at the nest, but in fact, in some cases, another predator had already been there first and eaten the eggs (e.g. a magpie). 25% (9) of failed nests were due to the tide (Ballaparudda, Carrickalings North, Normanville South, Oliver's Reef, Port Willunga, Tunkalilla midway and west, Waitpinga Beach (east) and Yilki. The only other recorded cause of failure was abandonment (2.8%, 1 nest), which occurred at Tunkalilla west due to an unknown cause.

Photo: Kerri Bartley. Broken Hooded Plover egg at Seacliff. Markings are indicative of avian predator

Figure 5: Nesting failure on the Fleurieu Peninsula during the 2017/18 season.

Hooded Plover nest failure for the 2017/2018 season

failed nests

0 4.75 9.5 19 28.5 38
Kilometers

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Figure 6: Hatched nests on the Fleurieu Peninsula during the 2017/18 season.

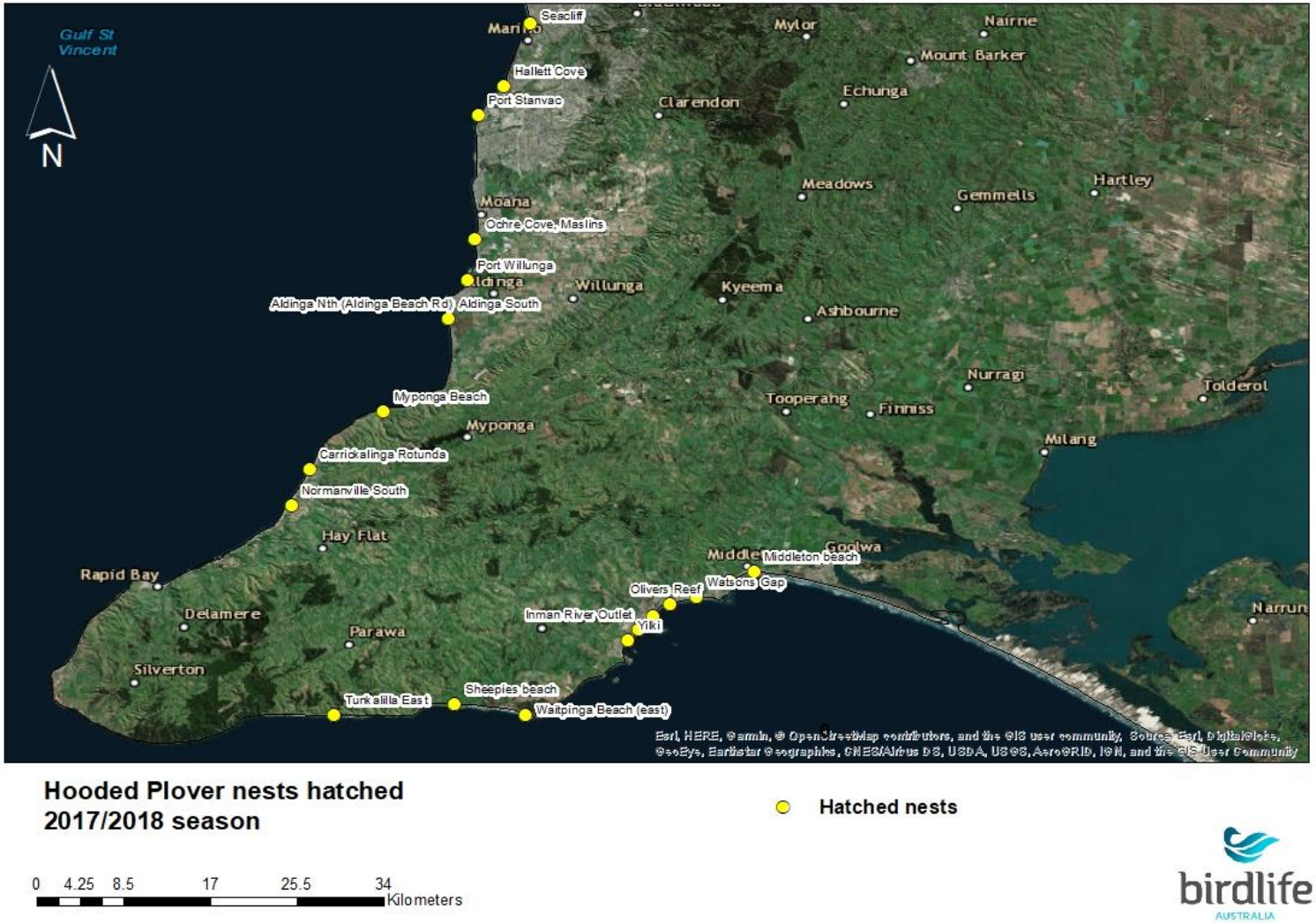

Figure 7: Fledged nests on the Fleurieu Peninsula during the 2017/18 season.

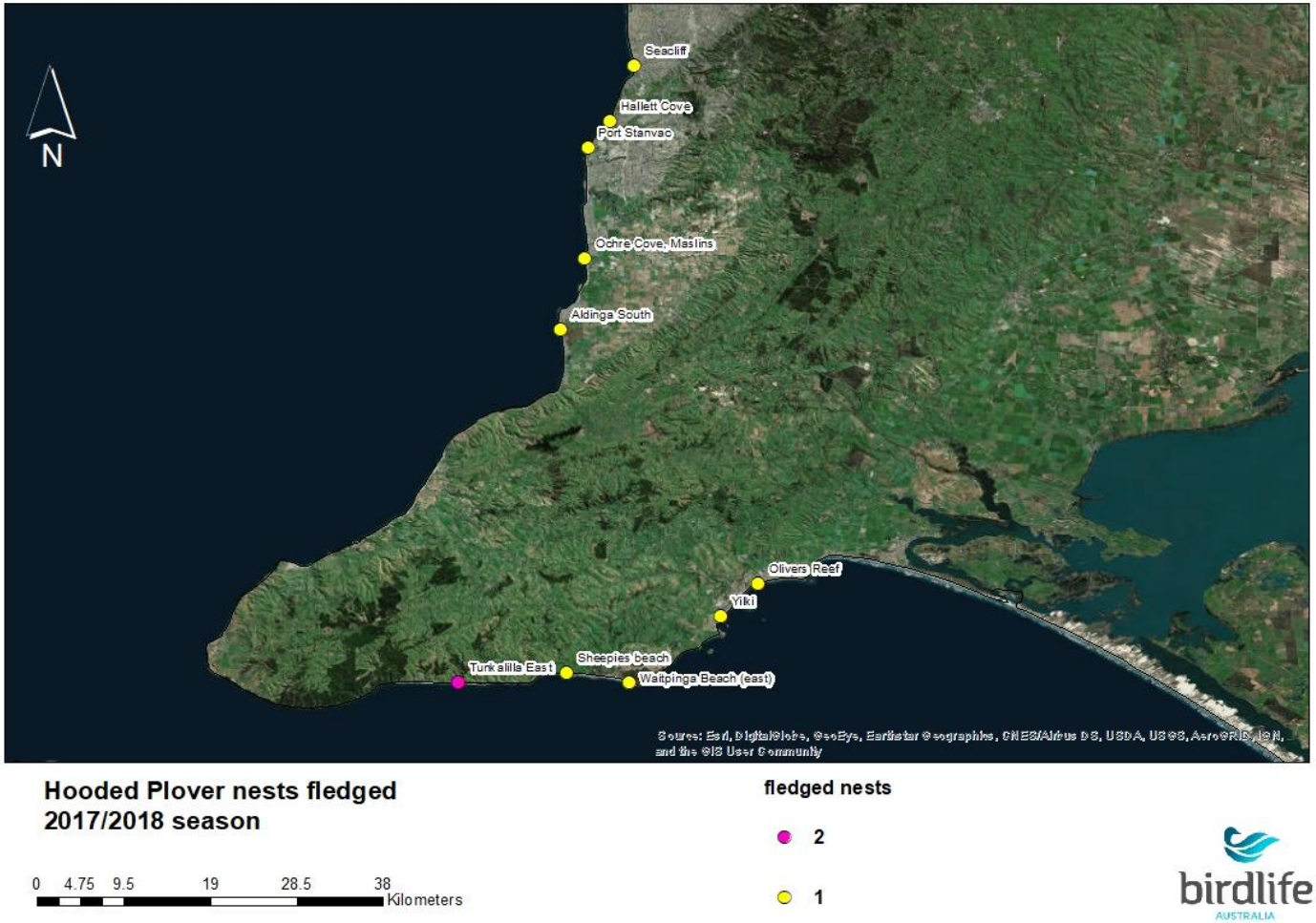

Table 3. Summary of nests, number of nests that failed, hatched and fledged, and total number of eggs, chicks observed and chicks that fledged from each site monitored in the 2017/18 breeding season. * refers to a suspected nest/chicks, which have been calculated separately, as these were never confirmed. ^ refers to atypical protection at industrial site.

Site	Pair ID	# Nests	# nests fail egg stage	# nests hatch	# nests fledge	# eggs	# chick obsv.	# fledglings
Aldinga North	unb & unb	3	2	1	0	8	3	0
Aldinga South	SR & unb	1	0	1	0	3	2	1
Ballaparudda	unb & unb	1	1	0	0	2	0	0
Bashams Beach	unb & unb	2	1	1	0	4	1	0
Carrickalinga Nth	PD & unb	4	4	0	0	9	0	0
Carrickalinga Rotunda	LP & unb	3	2	1	0	6	2	0
Hallett Cove	UV & unb	1	0	1	1	3	1	1
Inman River	RR & unb	5	4	1	0	13	1	0
Lands End	unb & unb	0	0	0	0	0	0	0
Middleton beach	UE & SA	3	1	2	0	9	3	0
Myponga Beach	EY & US	3	2	1		7	2	0
Normanville Sth	unb & unb	4	2	2	0	10	5	0
Ochre Cove, Maslins	NA & unb	2	1	1	1	5	3	1
Olivers Reef	unb & unb	2	1	1	1	6	2	1
Parsons Beach	EV & unb	0	0	0	0	0	0	0
Port Stanvac^	AR & unb	2	1	1	1	5	3	2
Port Willunga	DP & HV	2	1	1	0	4	2	0
Seacliff	unb & unb	2	1	1	1	6	3	1
Sheepies beach	unb & unb	1	0	1	1	3	2	2
Shelley Beach (lady bay)	SB & unb	1*	0*	1*	0*	3*	3*	0*
Tunkalilla East	YB & unb	2	0	2	2	5	5	4
Tunkalilla West	EW & unb	3	3	0	0	8	0	0
Tunkalilla Mid	ME & unb	1	1	0	0	3	0	
Victor Central	unb & unb	1	0	1	0	3	3	0
Waitpinga Beach (east)	unb & unb	3	2	1	1	7	3	2
Watsons Gap	BX & unb	4	3	1	0	12	3	0
Yilki	KV & VH	4	3	1	1	12	3	3
Total (with suspect nests)		**60**	**37**	**24**	**10**	**156**	**55**	**18**
Total confirmed		**59**	**36**	**23**	**10**	**153**	**52**	**18**

There were 23 nests confirmed as hatched (39%), and one suspected hatched nest at Shelley Beach (Lady Bay) where the adults were seen doing a broken wing display and calling, which is indicative of chick/s present. Of the 23 confirmed hatched nests, eleven of these nests successfully fledged chicks (47.8% of hatched nests fledged). Of the chicks observed (52 confirmed chicks), 18 fledged (34.6%), and as mentioned above, this is just below average.

The 18 fledglings produced this season were from ten pairs of Hooded Plovers, with one pair producing fledglings from two separate nesting attempts. The pairs were: Aldinga South (1 fledgling), Hallett Cove (1 fledgling), Ochre Cove (1 fledgling), Olivers Reef (1 fledgling), Port Stanvac (2 fledglings), Seacliff (1 fledgling), Sheepies Beach (2 fledglings), Waitpinga Beach East (2 fledglings), Yilki (3 fledglings), and Tunkalilla east (4 fledglings: two each from two nesting attempts). There was a suspected fledgling from Tunkalilla midway, but due to limited monitoring (due to no longer having access through the locked gate to this site), we were unable to collect enough evidence to confirm this fledgling/juvenile came from this pair. The chick at Aldinga South was originally recorded as 'failed' on day 36, however we have counted this chick as a fledgling because it is common for the young to disperse immediately after fledging, and there were no other indications that fledging would have been delayed (e.g. the chick was the size it should have been at this age). This is consistent with past decision making on what to include as a fledged chick, based on reaching day 35 and being adult-sized. Only a handful of birds of many hundreds monitored do not fledge by day 35, and sightings of them in flight are very rare.

Photo: Kerri Bartley. Fledgling at Seacliff wing stretching and foraging

Overall an egg had an 11.8% chance of fledging (18 fledglings from 153 confirmed eggs) (last season 2016/2017 it was an 11.3% chance). A nest had an 18.6% chance of fledging at least one chick (11 nests out of a total of 59 confirmed nests; compared to 16.1% in 2016/2017). Chick survival was lower than the previous season, with 34.6% of chicks fledging this season, compared to 41.0% of chicks surviving to fledging last season.

The causes of chick failure were predominately unknown, but we were able to confirm five chick failures, one taken by tide, and four depredation events of chicks.

The chick at Middleton was suspected as being attacked by an avian predator. lt was seven days old when it was found on the beach by two ladies walking along. This chick was taken home by the ladies who tried to call around and find out who to hand it in to. It took hours before they found the appropriate people to contact, Goolwa Wildlife and Welfare, who then contacted Elizabeth to let her know. The poor chick spent all of these hours exposed to the cold and without food. Goolwa Wildlife and Welfare cared for it overnight and it was showing positive signs by the morning, where it was then taken to Adelaide for expert veterinarian care. It did not survive. The veterinarian reported that it had a broken leg and suggested that it was attacked by an avian predator (likely gull) attempting to grab the chick. The lesson to take from this is that we need to have information on signs about who to call in the event of an emergency, and also access to bird specialist vets based closer to southern Fleurieu sites.

A dog was seen taking a 3-4 day old chick at Victor Central. The Volunteers observed an off-leash dog enter the fenced area, actively chase the adult hooded plovers, then grab one of the three chicks in its mouth. This happened in the presence of volunteers and a National Parks Ranger and several volunteers. On the same day, but later in the evening, one of the remaining Victor Harbor chicks (there were two left) was also attacked and killed by an off-leash dog, observed by a member of the public and reported to volunteers. At this same site, the remaining chick survived until 9 days old, where it was taken by the tide. The waves were crashing against the sea wall, and some signs were washed out (some were rescued by volunteers), chick shelters were inundated and birds were sighted on the bitumen path against the bowling green wall. Last sighting of the chick was at 7am on the 30th October, and then the tides came over the site, and the chick wasn't sighted, at 1pm, 4pm and 5:30pm.

Photo: Debbie Prestwood. Victor Central adult Hooded Plover with three chicks, two were killed by off leash dogs and the third taken by tide.

There was a third dog attack this season, with a 3-4 day old chick at Ochre Cove being grabbed by an off leash dog (the chick was dropped once the dog was startled/distracted), somehow this chick managed to survive the initial impact. One chick went missing (unknown) at age 8-9 days, the second went missing at 21-22 days, and the remaining chick fledged. We will never know which of these three chicks was the one that was caught by the off-leash dog.

Three suspected causes of chick failure were due to Gulls (Silver Gull; Carrickalinga Rotunda, and Pacific Gull; Inman River Mouth). At Carrackalinga Rotunda, one of the chicks was suspected to be taken by a silver gull as the adults were being heavily harassed, and indeed the second chick was then observed being taken by a silver gull two days later. The Inman River Mouth chick was seen falling over twice, and the Pacific Gulls were relentlessly harassing the adult Hooded Plovers the day prior to the chick possibly being injured. The chick was not sighted after it was last observed repeatedly falling over.

Photo: Debbie Prestwood. Adult Hooded Plover showing aggression to Silver Gull at Watsons Gap

The Port Willunga chick was found dead on the beach, just below the high tide line, by a beach user. The volunteers were contacted, and went to investigate, where the chick was confirmed dead and had extensive injuries around the abdomen which seem to indicate death by trauma (a necropsy will be carried out to confirm this). All other chick failures were attributed to unknown causes (71.4%, 20 chicks).

Photo: Kerri Bartley. Seacliff adult Hooded Plovers and three chicks

Table 5. Detailed summary of nest progress for each site according to data entered in the MyBeachBird data portal and sent to BirdLife Australia for the 2017/18 breeding season. * denotes where an egg/nest number is assumed as they were never sighted.

Site	Date	Nesting stage	Attempt #	egg #	chick #	band ID
Aldinga Nth (Aldinga Beach Rd)	7/09/2017	Nest (with eggs)	1	3		unb & unb
Aldinga Nth (Aldinga Beach Rd)	5/10/2017	Chicks sighted	1		3	unb & unb
Aldinga Nth (Aldinga Beach Rd)	3/11/2017	Failed since last visit (unknown)	1			unb & unb
Aldinga Nth (Aldinga Beach Rd)	17/11/2017	Nest (with eggs)	2	3		unb & unb
Aldinga Nth (Aldinga Beach Rd)	13/12/2017	Failed since last visit (unknown)	2			unb & unb
Aldinga Nth (Aldinga Beach Rd)	29/12/2017	Nest (with eggs)	3	2		unb & unb
Aldinga Nth (Aldinga Beach Rd)	10/01/2018	Failed since last visit (unknown)	3			unb & unb
Aldinga South	29/09/2017	Nest (with eggs)	1	3		SR orange, unb
Aldinga South	19/10/2017	Chicks sighted	1		2	SR orange, unb
Aldinga South	26/10/2017	One chick failed (unknown). One remaining.	1		1	SR orange, unb
Aldinga South	27/11/2017	Fledged (x1) chick. Chick last seen day 35, at fledging age, likely left territory as soon as could fly (not uncommon)	1			SR orange, unb
Ballaparudda	6/02/2018	Nest (with eggs)	1	2		unb & unb
Ballaparudda	16/02/2018	Failed since last visit (tide)	1			unb & unb
Bashams Beach	22/11/2017	Nest (with eggs)	1	3		unb & unb
Bashams Beach	17/12/2017	Chicks sighted	1		1	unb & unb
Bashams Beach	9/01/2018	Failed since last visit (unknown)	1			unb & unb
Bashams Beach	22/01/2018	Scrape (no eggs)				unb & unb
Bashams Beach	23/01/2018	Nest (with eggs)	2	1		unb & unb
Bashams Beach	28/01/2018	Failed since last visit (unknown)	2			unb & unb
Carrickalinga North	16/09/2017	Scrape (no eggs)	1			PD orange, unb
Carrickalinga North	29/09/2017	Nest (with eggs)	1	1		PD orange, unb
Carrickalinga North	2/10/2017	second egg from clutch laid	1	2		PD orange, unb
Carrickalinga North	6/10/2017	Failed since last visit (unknown)	1			PD orange, unb
Carrickalinga North	18/10/2017	Nest (with eggs)	2	2		PD orange, unb
Carrickalinga North	31/10/2017	Failed since last visit (tide)	2			PD orange, unb
Carrickalinga North	8/11/2017	Nest (with eggs)	3	1		PD orange, unb
Carrickalinga North	10/11/2017	Single egg failed since last visit (unknown)	3			PD orange, unb

Site	Date	Nesting stage	Attempt #	egg #	chick #	band ID
Carrickalinga North	14/11/2017	Two eggs found. Birds are laying final 2 eggs of a 3 egg clutch in a new spot.	3	2		PD orange, unb
Carrickalinga North	4/12/2017	Failed since last visit (suspect raven, prints next to nest)	3			PD orange, unb
Carrickalinga North	15/12/2017	Scrape (no eggs)				PD orange, unb
Carrickalinga North	28/12/2017	Nest (with eggs)	4	1		PD orange, unb
Carrickalinga North	29/12/2017	Second egg from clutch laid	4	2		PD orange, unb
Carrickalinga North	4/01/2018	Failed since last visit (unknown)	4			PD orange, unb
Carrickalinga Rotunda	28/09/2017	Nest (with eggs)	1	3		LP orange, unb
Carrickalinga Rotunda	30/09/2017	Failed since last visit (unknown)	1			LP orange, unb
Carrickalinga Rotunda	3/10/2017	Scrape (no eggs)				LP orange, unb
Carrickalinga Rotunda	8/11/2017	Nest (with eggs)	2	1		LP orange, unb
Carrickalinga Rotunda	10/11/2017	Failed since last visit (unknown)	2			LP orange, unb
Carrickalinga Rotunda	15/12/2017	Nest (with eggs)	3	2		LP orange, unb
Carrickalinga Rotunda	11/01/2018	One chick sighted	3		1	LP orange, unb
Carrickalinga Rotunda	12/01/2018	second chick sighted	3		2	LP orange, unb
Carrickalinga Rotunda	14/01/2018	One chick failed (suspect silver gull, as adults were being attacked by gulls). One remaining	3		1	LP orange, unb
Carrickalinga Rotunda	16/01/2018	Chick failed. Seen taken by a silver gull.	3			LP orange, unb
Carrickalinga South	birds sighted, not used for nesting					
Christies Beach	no birds sighted					
Deep Creek CP Blowhole beach	no birds sighted					
Goolwa beach	birds sighted, not used for nesting					
Hallett Cove	26/11/2017	Nest (with eggs)	1	3		UV orange, unb
Hallett Cove	2/12/2017	One egg missing (likely hatched this day)	1	2		UV orange, unb
Hallett Cove	5/12/2017	Chick first sighted. Two remaining eggs abandoned.	1		1	UV orange, unb
Hallett Cove	8/01/2018	Fledged x1	1		1	UV orange, unb
Hindmarsh River Mouth	not used for nesting					
Inman River Outlet	14/08/2017	Scrape (no eggs)				RR orange, unb

Site	Date	Nesting stage	Attempt #	egg #	chick #	band ID
Inman River Outlet	26/08/2017	Nest (with eggs)	1	3		RR orange, unb
Inman River Outlet	28/08/2017	Failed since last visit (suspect raven: prints 10-30cm)	1			RR orange, unb
Inman River Outlet	2/10/2017	Scrape (no eggs)				RR orange, unb
Inman River Outlet	3/10/2017	Scrape (no eggs)				RR orange, unb
Inman River Outlet	6/10/2017	Nest (with eggs)	2	2		RR orange, unb
Inman River Outlet	13/10/2017	Failed since last visit (unknown)				RR orange, unb
Inman River Outlet	16/10/2017	Scrape (no eggs)				RR orange, unb
Inman River Outlet	18/10/2017	Nest (with eggs)	3	1		RR orange, unb
Inman River Outlet	23/10/2017	previous egg failed (suspect raven: prints 10-30cm)	3			RR orange, unb
Inman River Outlet	23/10/2017	second egg from clutch laid	3	1		RR orange, unb
Inman River Outlet	25/10/2017	Failed since last visit (unknown)	3			RR orange, unb
Inman River Outlet	27/10/2017	Scrape (no eggs)				RR orange, unb
Inman River Outlet	30/10/2017	Nest (with eggs)	4	1		RR orange, unb
Inman River Outlet	1/11/2017	second egg laid	4	2		RR orange, unb
Inman River Outlet	4/11/2017	third egg laid	4	3		RR orange, unb
Inman River Outlet	12/11/2017	Failed since last visit (suspect Raven; prints 30cm-1m)	4			RR orange, unb
Inman River Outlet	21/11/2017	Scrape (no eggs)				RR orange, unb
Inman River Outlet	26/11/2017	Nest (with eggs)	5	1		RR orange, unb
Inman River Outlet	30/11/2017	First egg of clutch failed since last visit (fence vandalised at this time)	5			RR orange, unb
Inman River Outlet	2/12/2017	second egg from clutch laid	5	1		RR orange, unb
Inman River Outlet	8/12/2017	third egg of clutch laid 2m away from second egg. Second egg abandoned.	5	2		RR orange, unb
Inman River Outlet	13/12/2017	incubating only one egg	5	1		RR orange, unb
Inman River Outlet	5/01/2018	Chick sighted	5		1	RR orange, unb
Inman River Outlet	9/01/2018	Chicks sighted. Chick observed (through binoculars) falling over twice.	5		1	RR orange, unb
Inman River Outlet	10/01/2018	Failed since last visit (unknown; suspect pacific gull)	5			RR orange, unb

Site	Date	Nesting stage	Attempt #	egg #	chick #	band ID
Inman River Outlet	16/01/2018	Scrape (no eggs)				RR orange, unb
Inman River Outlet	17/01/2018	Scrape (no eggs)				RR orange, unb
Inman River Outlet	18/01/2018	Scrape (no eggs)				RR orange, unb
Inman River Outlet	19/01/2018	Scrape (no eggs)				RR orange, unb
Inman River Outlet	20/01/2018	Scrape (no eggs)				RR orange, unb
Inman River Outlet	21/01/2018	Scrape (no eggs)				RR orange, unb
Lands End	pair on territory, but not used for nesting. This beach had approximately 1m depth of sand removed from tidal surges in July/August - remained a rocky beach until March. Area unsuitable for nesting.					unb &unb
Maslin Beach	not used for nesting					
Middleton beach	9/10/2017	Nest (with eggs)	1	3		UE & SA orange
Middleton beach	31/10/2017	Chicks sighted	1		1	UE & SA orange
Middleton beach	26/11/2017	Failed since last visit (unknown, failed over schoolies weekend)	1			UE & SA orange
Middleton beach	28/11/2017	mating/scrape making				UE & SA orange
Middleton beach	4/12/2017	Scrape (no eggs)				UE & SA orange
Middleton beach	5/12/2017	Scrape (no eggs)				UE & SA orange
Middleton beach	5/12/2017	Scrape (no eggs)				UE & SA orange
Middleton beach	17/12/2017	Nest (with eggs)	2	3		UE & SA orange
Middleton beach	28/12/2017	Failed since last visit (unknown). Scrape (no eggs) found.	2			UE & SA orange
Middleton beach	31/12/2017	Suspect nest				UE & SA orange
Middleton beach	7/01/2018	Nest (with eggs)	3	3		UE & SA orange
Middleton beach	31/01/2018	one chick hatched. Adult still incubating remaining eggs	3		1	UE & SA orange
Middleton beach	1/02/2018	second chick sighted	3		2	UE & SA orange
Middleton beach	2/02/2018	One chick failed (unknown). One remaining	3		1	UE & SA orange
Middleton beach	8/02/2018	Chicks failed. Taken into care with broken leg. Probable cause of death to chick was being attacked by avian predator (likely gull)	3			UE & SA orange
Moana Beach	birds seen, not used for nesting					
Moana Beach South	no birds sighted					

Site	Date	Nesting stage	Attempt #	egg #	chick #	band ID
Morgans beach Fleurieu	birds seen, not used for nesting					
Myponga Beach	7/10/2017	Nest (with eggs)	1	3		EY & US orange
Myponga Beach	18/10/2017	Failed since last visit (suspect fox)	1			EY & US orange
Myponga Beach	31/10/2017	Nest (with eggs)	2	2		EY & US orange
Myponga Beach	2/11/2017	Failed since last visit (unknown)	2			EY & US orange
Myponga Beach	18/11/2017	Nest (with eggs)	3	2		EY & US orange
Myponga Beach	17/12/2017	Chicks sighted	3		1	EY & US orange
Myponga Beach	19/12/2017	second chick sighted	3		2	EY & US orange
Myponga Beach	21/12/2017	Failed since last visit (unknown, high winds and tides in days prior)	3			EY & US orange
Normanville North	birds sighted, not used for nesting					
Normanville South	12/09/2017	Suspect nest				unb & unb
Normanville South	13/09/2017	Suspect nest				unb & unb
Normanville South	13/09/2017	Suspect nest				unb & unb
Normanville South	14/09/2017	Nest (with eggs)	1	3		unb & unb
Normanville South	24/09/2017	Failed since last visit (tide)	1			unb & unb
Normanville South	29/09/2017	Scrape (no eggs)				unb & unb
Normanville South	1/10/2017	Scrape (no eggs)				unb & unb
Normanville South	4/10/2017	Nest (with eggs)	2	1		unb & unb
Normanville South	5/10/2017	Failed since last visit (suspect raven)	2			unb & unb
Normanville South	13/10/2017	Scrape (no eggs)				unb & unb
Normanville South	14/10/2017	Scrape (no eggs)				unb & unb
Normanville South	16/10/2017	Nest (with eggs)	3	2		unb & unb
Normanville South	17/10/2017	Third egg laid	3	3		unb & unb
Normanville South	14/11/2017	Chicks sighted	3		1	unb & unb
Normanville South	14/11/2017	second chick sighted	3		2	unb & unb
Normanville South	15/11/2017	third chick sighted	3		3	unb & unb
Normanville South	16/11/2017	one chick failed (unknown). Two remain.	3		2	unb & unb
Normanville South	21/11/2017	second chick failed (unknown). One remains	3		1	unb & unb
Normanville South	8/12/2017	Failed since last visit (unknown)	3			unb & unb
Normanville South	22/12/2017	Nest (with eggs)	4	2		unb & unb
Normanville South	24/12/2017	Third egg laid	4	3		unb & unb

Site	Date	Nesting stage	Attempt #	egg #	chick #	band ID
Normanville South	23/01/2018	Chicks sighted	4		2	unb & unb
Normanville South	31/01/2018	failed since last visit (unknown)	4			unb & unb
Ochre Cove, Maslins	14/08/2017	Scrape (no eggs)				NA orange, unb
Ochre Cove, Maslins	16/08/2017	Scrape (no eggs)				NA orange, unb
Ochre Cove, Maslins	18/08/2017	Scrape (no eggs)				NA orange, unb
Ochre Cove, Maslins	20/08/2017	Nest (with eggs)	1	2		NA orange, unb
Ochre Cove, Maslins	18/09/2017	Failed since last visit (unknown, failed when due to hatch)	1			NA orange, unb
Ochre Cove, Maslins	1/10/2017	Suspect nest				NA orange, unb
Ochre Cove, Maslins	1/10/2017	Suspect nest				NA orange, unb
Ochre Cove, Maslins	2/10/2017	Suspect nest				NA orange, unb
Ochre Cove, Maslins	3/10/2017	Suspect nest				NA orange, unb
Ochre Cove, Maslins	3/10/2017	Nest (with eggs)	2	3		NA orange, unb
Ochre Cove, Maslins	29/10/2017	Chicks sighted	2		3	NA orange, unb
Ochre Cove, Maslins	1/11/2017	One dog picked up a chick but dropped it when disrupted. Chick survived incident.	2		3	NA orange, unb
Ochre Cove, Maslins	6/11/2017	one chick failed (unknown). Two remain	2		2	NA orange, unb
Ochre Cove, Maslins	19/11/2017	second chick failed (unknown). One remains	2		1	NA orange, unb
Ochre Cove, Maslins	7/12/2017	Fledged x1	2		1	NA orange, unb
Ochre Cove, Maslins	28/12/2017	Scrape (no eggs)				NA orange, unb
Olivers Reef	26/08/2017	Scrape (no eggs)	1			unb & unb
Olivers Reef	30/08/2017	Scrape (no eggs)	1			unb & unb
Olivers Reef	31/08/2017	Nest (with eggs)	1	1		unb & unb
Olivers Reef	2/09/2017	Second egg laid	1	2		unb & unb
Olivers Reef	5/09/2017	Third egg laid	1	3		unb & unb
Olivers Reef	6/09/2017	Failed since last visit (tide)	1			unb & unb
Olivers Reef	7/11/2017	Scrape (no eggs) - 5 scrapes				
Olivers Reef	11/11/2017	Scrape (no eggs) - 5 scrapes	None			unb & unb
Olivers Reef	13/11/2017	Nest (with eggs)	2	1		unb & unb
Olivers Reef	16/11/2017	Second egg laid	2	2		unb & unb
Olivers Reef	17/11/2017	Third egg laid	2	3		unb & unb
Olivers Reef	16/12/2017	Chicks sighted (1 egg failed to hatch)	2		2	unb & unb

Site	Date	Nesting stage	Attempt #	egg #	chick #	band ID
Olivers Reef	26/12/2017	One chick failed. (unknown) One remains	2		1	unb & unb
Olivers Reef	21/01/2018	Fledged x1	2		1	unb & unb
Olivers Reef	8/02/2018	Scrape (no eggs)				
OSullivans Beach	no birds sighted					
Parsons Beach	birds sighted, not used for nesting					
Port Stanvac	2/09/2017	Scrape (no eggs)				AR orange, unb
Port Stanvac	21/09/2017	Nest (with eggs)	1	2		AR orange, unb
Port Stanvac	29/09/2017	Failed since last visit (unknown)	1			AR orange, unb
Port Stanvac	30/09/2017	Scrape (no eggs)				AR orange, unb
Port Stanvac	19/10/2017	Suspect nest				AR orange, unb
Port Stanvac	20/10/2017	Nest (with eggs)	2	3		AR orange, unb
Port Stanvac	9/11/2017	Chicks sighted	2		3	AR orange, unb
Port Stanvac	18/11/2017	One chick failed (unknown). Two remain	2		2	AR orange, unb
Port Stanvac	13/01/2018	Fledged x2	2		2	AR orange, unb
Port Willunga	28/08/2017	Scrape (no eggs)				DP & HV orange
Port Willunga	30/08/2017	Scrape (no eggs)				DP & HV orange
Port Willunga	11/09/2017	Scrape (no eggs)				DP & HV orange
Port Willunga	13/09/2017	Nest (with eggs)	1	1		DP & HV orange
Port Willunga	16/09/2017	Second egg laid	1	2		DP & HV orange
Port Willunga	25/09/2017	Failed since last visit (tide)	1			DP & HV orange
Port Willunga	28/09/2017	Scrape (no eggs)				DP & HV orange
Port Willunga	6/10/2017	Nest (with eggs)	2	2		DP & HV orange
Port Willunga	3/11/2017	Chicks sighted	2		2	DP & HV orange
Port Willunga	11/11/2017	One chick failed (unknown). One remains	2		1	DP & HV orange
Port Willunga	22/11/2017	Failed since last visit (Chick found dead with bloodied abdomen, likely trauma, to be necropsied).	2			DP & HV orange
Port Willunga	4/12/2017	Scrape (no eggs)				DP & HV orange
Port Willunga	6/12/2017	Scrape (no eggs)				DP & HV orange
Port Willunga	8/12/2017	Scrape (no eggs)				DP & HV orange
Port Willunga	10/12/2017	Scrape (no eggs)				DP & HV orange
Seacliff	6/09/2017	Nest (with eggs)	1	2		unb & unb

Site	Date	Nesting stage	Attempt #	egg #	chick #	band ID
Seacliff	14/09/2017	Third egg confirmed	1	3		unb & unb
Seacliff	9/10/2017	Failed since last visit (Suspect magpie or raven: 1 egg missing, 2 other eggs were broken with peck holes, with remains of chicks visible and contents still wet).	1			unb & unb
Seacliff	25/10/2017	Nest (with eggs)	2	2		unb & unb
Seacliff	27/10/2017	Third egg confirmed	2	3		unb & unb
Seacliff	25/11/2017	Chicks sighted	2		3	unb & unb
Seacliff	9/12/2017	One chick failed. Unknown. Two remain	2		2	unb & unb
Seacliff	20/12/2017	Second chick failed (unknown). One remains	2		1	unb & unb
Seacliff	3/01/2018	Fledged x1	2		1	unb & unb
Sheepies beach	5/12/2017	Nest (with eggs)	1	3		unb & unb
Sheepies beach	21/12/2017	Failed since last visit. *note: chicks had hatched, just not sighted.*	1			unb & unb
Sheepies beach	28/12/2017	Chicks sighted	1		2	unb & unb
Sheepies beach	14/01/2018	Fledged x2	1		2	unb & unb
Shelley Beach (lady bay)	28/11/2017	Suspect chicks (adults doing broken wing distraction displays and calling)	1	3*	3*	SB orange, unb
Shelley Beach (lady bay)	5/12/2017	Suspect chicks failed	1			SB orange, unb
Silver Sands	birds sighted, not used for nesting					
Snapper Point	birds sighted, not used for nesting					
Southport	no birds sighted					
Trig point	birds sighted, not used for nesting					
Tunkalila Base/mid-West gully	no birds sighted					
Tunkalilla 1st alcove far east	no birds sighted					
Tunkalilla east	26/09/2017	Scrape (no eggs)				YB white, unb
Tunkalilla east	13/10/2017	Birds sighted				YB white, unb
Tunkalilla east	13/10/2017	Assume scrape failed (unknown)				YB white, unb
Tunkalilla east	26/10/2017	Nest (with eggs)	1	3		YB white, unb
Tunkalilla east	16/11/2017	Chicks sighted	1		3	YB white, unb
Tunkalilla east	8/12/2017	Suspect chicks failed *(note: chicks didn't fail,*	1			YB white, unb

Site	Date	Nesting stage	Attempt #	egg #	chick #	band ID
		adults did a very good job of hiding chicks, and not displaying 'typical' behaviours)				
Tunkalilla east	20/12/2017	Fledged x2	1		2	YB white, unb
Tunkalilla east	31/01/2018	Nest (with eggs)	2	2		YB white, unb
Tunkalilla east	6/02/2018	Nest (with eggs)	2	2		YB white, unb
Tunkalilla east	21/02/2018	Chicks sighted	2		2	YB white, unb
Tunkalilla east	28/02/2018	Chicks sighted	2		2	YB white, unb
Tunkalilla east	14/03/2018	Fledged x2	2		2	YB white, unb
Tunkalilla east	4/04/2018	Fledgling captured and banded TK White	2			YB white, unb
Tunkalilla west	26/10/2017	Nest (with eggs)	1	3		EW orange, unb
Tunkalilla west	16/11/2017	Failed since last visit (unknown)	1			EW orange, unb
Tunkalilla west	8/12/2017	Birds sighted				EW orange, unb
Tunkalilla west	20/12/2017	Nest (with eggs)	2	3		EW orange, unb
Tunkalilla west	29/12/2017	Failed since last visit (abandoned)	2			EW orange, unb
Tunkalilla west	31/01/2018	Nest (with eggs)	3	2		EW orange, unb
Tunkalilla west	21/02/2018	Failed since last visit (tide)	3			EW orange, unb
Tunkalilla midway	26/09/2017	Scrape (no eggs)				ME orange, unb
Tunkalilla midway	13/10/2017	Nest (with eggs)	1	3		ME orange, unb
Tunkalilla midway	26/10/2017	Failed since last visit (tide)	1			ME orange, unb
Tunkalilla midway	31/01/2018	Juvenile sighted. *Note, cannot be counted in data as confirmed fledgling, as not enough conclusive information prior to this to confirm fledgling/juvenile origin. Access through the locked gate is required for adequate monitoring*			1	ME orange, unb
Victor Central	18/09/2017	Nest (with eggs)	1	1		unb & unb
Victor Central	20/09/2017	Second egg confirmed	1	2		unb & unb
Victor Central	24/09/2017	Third egg confirmed	1	3		unb & unb
Victor Central	21/10/2017	Chicks sighted	1		3	unb & unb
Victor Central	24/10/2017	One chick failed. One chick observed killed by off leash dog. Two chicks remaining.	1		2	unb & unb
Victor Central	24/10/2017	Second chick failed (another dog off leash	1		1	unb & unb

Site	Date	Nesting stage	Attempt #	egg #	chick #	band ID
		seen attacking chick). One remains				
Victor Central	30/10/2017	Suspect chicks failed	1			unb & unb
Victor Central	30/10/2017	Chicks sighted	1		1	unb & unb
Victor Central	30/10/2017	Suspect chicks failed	1			unb & unb
Victor Central	30/10/2017	Failed since last visit (tide)	1			unb & unb
Waitpinga Beach (east)	2/11/2017	Nest (with eggs)	1	1		unb & unb
Waitpinga Beach (east)	5/11/2017	Second egg confirmed	1	2		unb & unb
Waitpinga Beach (east)	15/11/2017	Failed since last visit (suspect fox)	1			unb & unb
Waitpinga Beach (east)	26/11/2017	Nest (with eggs)	2	2		unb & unb
Waitpinga Beach (east)	28/12/2017	Failed since last visit (tide)	2			unb & unb
Waitpinga Beach (east)	15/01/2018	Nest (with eggs)	3	3		unb & unb
Waitpinga Beach (east)	29/01/2018	Chicks sighted	3		3	unb & unb
Waitpinga Beach (east)	5/02/2018	One chick failed. (unknown) Two remain	3		2	unb & unb
Waitpinga Beach (east)	2/03/2018	Fledged x2	3		2	unb & unb
Waitpinga Beach (east)	13/03/2018	Adult flagged UA White				UA white & unb
Waitpinga Beach (west)	birds sighted, not used for nesting					
Waitpinga Estuary	birds sighted, not used for nesting					
Watsons Gap	6/10/2017	Nest (with eggs)	1	1		BX orange, unb
Watsons Gap	9/10/2017	Second egg confirmed	1	2		BX orange, unb
Watsons Gap	11/10/2017	Third egg confirmed	1	3		BX orange, unb
Watsons Gap	8/11/2017	Chicks sighted	1		3	BX orange, unb
Watsons Gap	24/11/2017	Two chicks failed (unknown). One remains	1		1	BX orange, unb
Watsons Gap	25/11/2017	Failed since last visit (unknown. Silver Gulls foraging an hour before chick went missing)	1			BX orange, unb
Watsons Gap	1/12/2017	Scrape (no eggs)				BX orange, unb
Watsons Gap	1/12/2017	Scrape (no eggs)				BX orange, unb
Watsons Gap	1/12/2017	Scrape (no eggs)				BX orange, unb
Watsons Gap	1/12/2017	Scrape (no eggs)				BX orange, unb
Watsons Gap	4/12/2017	Scrape (no eggs)				BX orange, unb
Watsons Gap	5/12/2017	Scrape (no eggs)				BX orange, unb
Watsons Gap	11/12/2017	Nest (with eggs)	2	3		BX orange, unb
Watsons Gap	17/12/2017	Failed since last visit (suspect fox). Birds	2			BX orange, unb

Site	Date	Nesting stage	Attempt #	egg #	chick #	band ID
		sighted mating				
Watsons Gap	18/12/2017	Scrape (no eggs)				BX orange, unb
Watsons Gap	18/12/2017	Scrape (no eggs)				BX orange, unb
Watsons Gap	26/12/2017	Nest (with eggs)	3	3		BX orange, unb
Watsons Gap	31/12/2017	Failed since last visit (suspect fox)	3			BX orange, unb
Watsons Gap	20/01/2018	Nest (with eggs)	4	3		BX orange, unb
Watsons Gap	22/01/2018	Failed since last visit (suspect fox)	4			BX orange, unb
Yankalilla river mouth	birds sighted, not used for nesting					
Yilki	9/08/2017	Birds sighted				KV orange, VH white
Yilki	26/08/2017	Nest (with eggs)	1	3		KV orange, VH white
Yilki	4/09/2017	Failed since last visit (tide)	1			KV orange, VH white
Yilki	16/09/2017	Nest (with eggs)	2	3		KV orange, VH white
Yilki	2/10/2017	Failed since last visit (unknown)	2			KV orange, VH white
Yilki	9/10/2017	Nest (with eggs)	3	1		KV orange, VH white
Yilki	11/10/2017	Second egg confirmed	3	2		KV orange, VH white
Yilki	12/10/2017	Third egg confirmed	3	2		KV orange, VH white
Yilki	30/10/2017	Failed since last visit (tide)	3			KV orange, VH white
Yilki	31/10/2017	Scrape (no eggs)				KV orange, VH white
Yilki	3/11/2017	Scrape (no eggs)				KV orange, VH white
Yilki	8/11/2017	Scrape (no eggs)				KV orange, VH white
Yilki	9/11/2017	Nest (with eggs)	4	1		KV orange, VH white
Yilki	12/11/2017	Second egg confirmed	4	2		KV orange,VH white
Yilki	14/11/2017	Third egg confirmed	4	3		KV orange, VH white
Yilki	11/12/2017	Chicks sighted	4	3	3	KV orange, VH white
Yilki	17/01/2018	Fledged x3	4		3	KV orange, VH white

Flagging

In total, 114 birds have been banded as part of BirdLife Australia's research program in South Australia since 2012. On the Fleurieu, 57 birds have been given engraved leg flags, eleven of these are white engraved flags and 46 orange engraved flags. 32 were flagged as adults, 1 as a subadult, 18 as fledglings/juveniles and 8 as flightless chicks (Table 6).

We rely on reporting of these birds once they have been flagged in order to build up 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 ten completely unbanded pairs on the Fleurieu Peninsula this season, they are: Aldinga North, Ballaparrudda, Bashams Beach, Lands End, Normanville South, Olivers Reef, Seacliff, Sheepies Beach, Victor Central, Waitpinga Beach (east). After the breeding season, one of the Waitpinga Beach (east) adults was captured and banded UA white.

Banding only occurs at priority sites, such as a site where both adults of a breeding pair are unbanded, and fledglings. 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?

Photo: Richard Edwards. YV and newly flagged PX at Hindmarsh River Mouth

BirdLife Australia's priorities for banding are to band at least one of the pair from each of the nine unbanded pairs as listed above. The highest priority are the pairs at Victor Central/Oliver's Reef to determine if this is indeed the same pair, and the pair at Seacliff, to find out more about this pair's movements in the non-breeding season. In terms of fledglings, our priorities are for fledglings 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).

At Lands End, JW has not being sighted at all this season and an unbanded bird has moved into this territory, so both adults are unbanded. If any sightings of JW occur, please contact BirdLife Australia, as we would like to distinguish between divorce or potential mortality of JW.

Some other interesting sightings for this season have been the movements of EW Orange, and UV Orange. EW was flagged at Lands End as a fledgling in 2015/2016. During the 2016/2017 season, EW was a 'floater', most commonly observed at Carrickalinga and Tunkalilla sites. This season, 2017/2018, EW has taken over the territory of LA (found dead last season) at Tunkalilla. EW managed to have three nests, all of which failed, but this is its first season of breeding.

UV was flagged at a similar time to the above EW, as a fledgling in the 2015/2016 season at Myponga. Interestingly, UV and EW were sighted together in the season before they established their own territories (2016/2017), in the same flocks at Middleton Beach (seen 3 times together) and Hindmarsh River (seen together once).

UV was a 'floater' during the 2016/2017 season, moving between Hindmarsh River, Yilki and Olivers Reef. This season, UV has taken up territory and started breeding. UV has partnered with an unbanded bird and they have established a completely new territory at Hallett Cove. For their first ever recorded nesting attempt, UV and unbanded fledged a chick this season!

One very important sighting was of ZW White. ZW White was a fledging from Lands End (parents were JW and unb), during the 2015/2016 breeding season. Note: JW from Lands end had two separate clutches that fledged in the 2015/2016 season (clutch one: EW Orange fledged, clutch two: ZW White and JZ White fledged). ZW had not been sighted at all this season on the Fleurieu Peninsula, and was only sighted once during the 2016/2017 season (September at Carrickalinga Rotunda in a flock of 5). Only recently, ZW White has been found, located on Island Beach on Kangaroo Island, which is a significant sighting, and further confirms that there is movement between the Fleurieu Peninsula and Kangaroo Island.

Photo: Jean Turner. Hooded Plover "ZW White" foraging at Island Beach, Kangaroo Island

Last season, we reported the serious concern of loss of six known birds from Tunkalilla beach, from 2013 to 2017. As of last season, none of the missing birds have been resighted (LA is an exception, as we found its body on the beach while it still had chicks). This season, yet another adult bird has gone missing. The only pair that had remained consistent since the 2013/2014 season was MT and ME. This season, ME was partnered with an unbanded bird. No sightings of MT have been recorded on the Fleurieu, Kangaroo Island, the Coorong or South East South Australia – or in any of our datasets for the 2017/2018 season since the 19th April 2017, when it was last sighted. There appears to be a growing list of known birds going missing from Tunkalilla and this rings alarm bells. It is imperative that access through the locked gate be provided to volunteers next season to ensure we can adequately monitor this site, to try to determine what is occurring so that we can act to prevent future loss. There are not many sources of mortality known for adults, but the potential for disease is one that triggers concern and needs to be detected quickly. Only regular monitoring will enable us to find the bodies of deceased birds while they are still in relatively good condition for necropsy. This loss is unprecedented and has not been detected on any of the regularly monitored beaches in both South Australia and Victoria.

Table 6. A summary of leg flagged Hooded Plovers captured and banded on the Fleurieu Peninsula to June 2018. All birds were captured by licensed and permitted banders (Grainne Maguire, Terry Dennis, Meg Cullen 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	Notes on breeding status	Partner or parent
Myponga Beach	8/05/12	Adult	Female	metal	EY (orange)		Non-breeding	Partner unbanded
Maslin Beach	8/05/12	Adult	Female	metal	MX (orange)		Non-breeding	Partner unbanded
Watsons Gap	18/01/13	Adult	Female	metal	AU (orange)		with recently fledged chick	Partner unbanded (on 20/1/13 banded as BX)
Parsons Beach (far SW end)	18/01/13	Adult	Female	metal	CL (orange)		Not nesting	Partner EV
Waitpinga Beach (E end)	18/01/13	Adult	Female	metal	KJ (orange)		Not nesting	Partner unbanded
Parsons Beach (far SW end)	18/01/13	Adult		metal		EV (orange)	Not nesting	Partner CL
Tunkalilla Beach 3rd house East	19/01/13	Juvenile	Male	metal	DK (orange)		1 of 3 chicks that fledged from Western end	Sibling of EM
Tunkalilla Beach 3rd house East	19/01/13	Juvenile	Male	metal	EM (orange)		1 of 3 chicks that fledged from Western end	Sibling of DK
Watsons Gap estuary	20/01/13	Adult		metal		BX (orange)	With recently fledged chick (7 days ago)	Partner AU
Carrickalinga estuary	21/01/13	Adult	Male	metal	CK (orange)		no nesting	Unknown, caught with LP
Carrickalinga estuary	21/01/13	Adult		metal		LP (orange)	With 2 other adults, aggression, no nesting	Unknown, caught with CK
Snapper Point (Pt Willunga end)	22/01/13	Adult	Male	metal	HV (orange)		Port Willunga pair, not nesting	Partner unbanded
Carrickalinga North (N end)	22/01/13	Adult		metal	NA (orange)		not nesting	Suspect partner AR
Carrickalinga North (N end)	22/01/13	Adult	Male	metal		AR (orange)	not nesting	Suspect partner NA
Carrickalinga (toilet block)	27/09/13	Subadult	Male	metal	DJ (orange)		Alone	
Lady Bay Shelley Beach	27/09/13	Adult		metal	SB (orange)		not nesting	Partner LD
Carrickalinga Pitmans leap access	27/09/13	Adult	Male	metal	SS (orange)		not nesting, with 1 other bird	Partner CK
Lady Bay Shelley Beach	27/09/13	Adult		metal		LD (orange)	not nesting	Partner SB
Inman River outlet	13/11/13	Adult		metal	KV (orange)		mating, no scrapes found	Partner unbanded

Beach	Date	Age	Sex	Right tarsus	Right tibia	Left tibia	Notes on breeding status	Partner or parent
Bashams Beach	13/11/13	Adult	Male	metal		SA (orange)	lone bird, no partner seen for months	
Tunkalilla Western estuary	14/11/13	Adult		metal	KW (orange)		fresh scrapes	Partner unbanded
Tunkalilla far West	14/11/13	Adult	Female	metal	LA (orange)		new nest, recently laid, 3 eggs	Partner unbanded
Tunkalilla creek/3rd house East	14/11/13	Adult		metal	ST (orange)		lone bird, suspect nest	
Tunkalilla mid-west estuary	14/11/13	Adult		metal		MT (orange)	new nest, 2 eggs, due to hatch late Nov/early Dec	Partner unbanded
Callawonga Beach	10/02/14	Chick		metal	KP (orange)		25 days old	
Waitpinga Beach East	10/02/14	Chick		metal	PD (orange)		30 days old	Parents KJ and unbanded
Waitpinga Beach East	10/02/14	Chick		metal	PR (orange)		30 days old	Parents KJ and unbanded
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'
Port Willunga North	29/08/14	Adult		metal		DP (orange)		With LP at time of banding
Ochre cove, Maslins Beach	16/10/14	Chick	Male	metal	SR (orange)			Parents TJ and NA
Ochre cove, Maslins Beach	16/10/14	Adult	Male	metal	TJ (orange)		Chicks	Partner NA
Tunkalilla Beach mid-west estuary	17/10/14	Adult	Female	metal	ME (orange)		On territory	Partner MT
Tunkalilla Beach Western estuary	17/10/14	Adult	Female	metal		WE (orange)	Scrape no eggs	Partner KW
Waitpinga East	21/01/15	Chick		metal	RR (orange)			
Heyson East - Tunkalilla Beach	25/03/15	Chick	Female	metal	HT (orange)			
Myponga Beach	21/08/15	Adult	Male	metal		US (orange)		Partner of EY
Lands End	24/11/15	Juvenile		metal	EW (orange)			Parents JW and unb
Lands End	24/11/15	Adult		metal	JW (orange)		Fledgling chick	Partner unbanded

Beach	Date	Age	Sex	Right tarsus	Right tibia	Left tibia	Notes on breeding status	Partner or parent
Normanville North/Carrickalinga Sands	28/11/15	Juvenile		metal	MV (orange)			One parent unbanded
Myponga Beach	28/11/15	Juvenile		metal	UV (orange)			Parents EY and US
Carrickalinga North/rotunda	23/02/16	Juvenile	Female	metal	RV (orange)			Parents LP and unbanded
Yilki	29/02/16	Juvenile	Female	metal	VH (white)			Parents KV and VH (orange)
Lands End	29/02/16	Juvenile	Female	metal	ZW (white)			Parents JW and unbanded
Lands End	29/02/16	Juvenile	Male	metal		JZ (white)		Parents JW and unbanded
Yilki	29/02/16	Adult		metal		VH (orange)	Fledgling chick	Parent of VH (white)
Waitpinga Beach East	23/03/16	Juvenile	Male	metal		YB (white)		Parents KP and unbanded
Kent Reserve, Victor Harbor	6/03/17	Juvenile		metal	DT (white)			RR and unb
Yilki	6/03/17	Juvenile		metal	JY (white)			
Yilki	6/03/17	Juvenile		metal	YV (white)			Parents: VH (orange) and KV (orange)
Port Stanvac	12/02/18	Adult	Female	metal	ES (white)		Had 2 fledglings	Partner: AR (orange)
Waitpinga East	13/03/18	Adult		metal	UA (white)		Recently fledged 2 chicks	Partner: unbanded
Hindmarsh River Mouth	20/03/18	Adult		metal	PX (white)		Recently fledged 1 chick	Partner: unbanded
Tunkalilla Beach	4/04/18	Juvenile		metal	TK (white)		One of two fledglings	Parent: YB (white) and unbanded

Breeding Site Management

Of the 59 confirmed nests on the Fleurieu Peninsula, 47 nests had some form of management (Table 8). 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. Five nests had signs at the access or signs at the nest only, with the remaining 42 having rope fences and signs (with either sign at access, sign at nest or both). Of the 23 nests that hatched, 19 had rope fencing with either temporary signs at the access or signs at the nest site. Twelve sites had banners, four sites had engaged volunteers who acted as site guardians/wardens (Carrickalinga Rotunda, Seacliff, Victor Central and Yilki) and another four sites had chick shelters (Middleton, Seacliff, Victor Central and Watsons Gap).

Of the 11 sites that successfully produced fledglings, three sites had no management due to remoteness (Tunkalilla east had two fledged nests, and Waitpinga Beach east had one fledged nest), one site had temporary signs at the access point only (Sheepies), while all other sites (Aldinga South, Yilki, Seacliff, Ochre Cove, Olivers Reef and Hallett Cove) had a minimum of fencing and signage (both temporary access signs and signs on the beach near the nest). Four of these sites also had banners (Yilki, Seacliff, Olivers Reef and Hallett Cove). Two sites engaged volunteers to act as site guardians to assist with the protection of the chicks and educate beach users: these were at high threat sites Seacliff and Yilki. Chick shelters were also used at Seacliff to provide extra refuge for the chicks to hide in when threatened, as there is minimal shelter on the beach for chicks to hide from predators and recreational users. While Port Stanvac had a rope fence, temporary signage at access and signs at the nest, this site is closed to the public and this was mainly to ensure workers kept clear of the area.

Port Stanvac has no public access and given its past breeding success, several Exxon-Mobil staff were trained to monitor the nesting behaviours of the Hooded Plover, implement management where required and record sightings in the MyBeachBird Data Portal. It is fantastic that this site successfully produced two fledglings this season. After the completion of the wharf demolition, the future of the site is uncertain, with the site proposed to be opened to the public. BirdLife and the land managers need to ensure that this pair of Hooded Plovers are considered in future proposals of land usage at this site and how to best protect this pair from disturbance.

Table 8. Summary of management across sites during the 2017/18 breeding season. An asterisk denotes nests/chicks that were never located, but suspected, and here an assumption of the number of eggs and chicks was made (based on the average of clutch size).

site/territory	date found	# eggs	date chick sighted	chicks obsv	# fledge	cause of failure	management
Aldinga Nth (Aldinga Beach Rd)	7/09/17	3	5/10/17	3		Unknown chick	Sign Access Temporary, Sign Nest, Banners, Rope fence
Aldinga Nth (Aldinga Beach Rd)	17/11/17	3				Unknown	Sign Access Temporary, Sign Nest, Rope fence
Aldinga Nth (Aldinga Beach Rd)	29/12/17	2				Unknown	Sign Access Temporary, Sign Nest, Rope fence
Aldinga South	29/09/17	3	19/10/17	2	1		Sign Access Temporary, Sign Nest, Rope fence, Other (Bollards, temporary no parking signs)
Ballaparudda	6/02/18	2				Tide	Sign Access Temporary
Bashams Beach	22/11/17	3	17/12/17	1		Unknown chick	Sign Access Temporary, Sign Nest, Rope fence, Other
Bashams Beach	23/01/18	1				Unknown	Sign Access Temporary, Sign Nest, Rope fence, Other
Carrickalinga North	29/09/17	2				Unknown (kangaroo prints through nest site)	Sign Access Temporary, Sign Nest, Rope fence
Carrickalinga North	18/10/17	2				Tide	Sign Nest, Rope fence
Carrickalinga North	8/11/17	3				Suspect Raven	Sign Nest, Rope fence
Carrickalinga North	28/12/17	2				Unknown	Sign Nest, Rope fence
Carrickalinga Rotunda	28/09/17	3				Unknown	Sign Nest
Carrickalinga Rotunda	8/11/17	1				Unknown	None
Carrickalinga Rotunda	15/12/17	2	11/01/18	2		Chick seen taken by Silver Gull	Sign Access Temporary, Sign Nest, Banners, Rope fence, Wardens
Hallett Cove	26/11/17	3	5/12/17	1	1		Sign Access Temporary, Sign Nest, Banners, Rope fence
Inman River Outlet	26/08/17	3				Suspect Raven (prints 10-30cm)	None
Inman River Outlet	6/10/17	2				Unknown	Sign Access Temporary, Sign Nest, Rope fence

site/territory	date found	# eggs	date chick sighted	chicks obsv	# fledge	cause of failure	management
Inman River Outlet	18/10/17	2				Unknown	Sign Access Temporary, Sign Nest, Rope fence
Inman River Outlet	30/10/17	3				Suspect raven	Sign Access Temporary, Sign Nest, Rope fence
Inman River Outlet	26/11/17	3	5/01/18	1		Suspect chick attacked by Pacific Gull. Chick viewed falling over twice before going missing	Sign Access Temporary, Sign Nest, Rope fence, Other
Middleton beach	9/10/17	3	31/10/17	1		Unknown chick. Failed over 'Schoolies' weekend	Sign Access Temporary, Sign Nest, Rope fence, Schoolies signs installed
Middleton beach	17/12/17	3				Unknown	Sign Access Temporary, Sign Nest, Rope fence
Middleton beach	7/01/18	3	31/01/18	2		Suspect avian predator, gull. Chick recovered injured (broken leg) late on 07/02/18 by Goolwa Wildlife Welfare & taken by them to Adelaide 08/02/18 where it did not survive.	Sign Access Temporary, Banners, Rope fence, Shelters, Other
Myponga Beach	7/10/17	3				Suspect fox: fresh fox prints leading up to, in and away from nest.	Sign Access Temporary, Sign Nest, Rope fence
Myponga Beach	31/10/17	2				Suspect fox (prints <10cm)	None
Myponga Beach	18/11/17	2	17/12/17	2		Unknown chick	Sign Nest, Banners, Rope fence
Normanville South	14/09/17	3				Tide	Sign Nest, Rope fence
Normanville South	4/10/17	1				Suspect raven	None

site/territory	date found	# eggs	date chick sighted	chicks obsv	# fledge	cause of failure	management
						(ravens hanging around day before)	
Normanville South	16/10/17	3	14/11/17	3		Unknown chick	Sign Access Temporary, Sign Nest, Rope fence
Normanville South	22/12/17	3	23/01/18	2		Unknown chick	Sign Access Temporary, Sign Nest, Rope Fence, Banners
Ochre Cove, Maslins	20/08/17	2				Unknown. Failed when due to hatch	Sign Access Temporary, Sign Nest, Rope fence
Ochre Cove, Maslins	3/10/17	3	29/10/17	3	1		Sign Access Temporary, Sign Nest, Banners (one banner was stolen), Rope fence, Other
Olivers Reef	31/08/17	3				Tide	None
Olivers Reef	13/11/17	3	16/12/17	2	1		Sign Nest, Sign Access Temporary, Banners, Rope fence, Banners, Other (Council Sign Dogs on leash 24/7)
Port Stanvac	21/09/17	2				Unknown	Site closed to the public, Sign Access Temporary, Sign Nest, Rope fence
Port Stanvac	20/10/17	3	9/11/17	3	2		Site closed to the public, Sign Access Temporary, Sign Nest, Rope fence
Port Willunga	13/09/17	2				Tide	Sign Access Temporary, Sign Nest, Rope fence
Port Willunga	6/10/17	2	3/11/17	2		Chick found dead. Suspect trauma due to severe injuries. Necropsy to confirm.	Sign Access Temporary, Sign Nest, Banners, Rope fence
Seacliff	6/09/17	3				Suspect avian predator; Magpie/Raven: eggs broken with 'pecked holes'	Sign Access Temporary, Sign Nest, Banners, Rope fence
Seacliff	25/10/17	3	25/11/17	3	1		Sign Access Temporary, Sign Nest, Banners, Rope fence, Shelters, Wardens
Sheepies beach	5/12/17	3	28/12/17	2	2		Sign Access Temporary
Shelley Beach (lady bay)	28/11/17	3*		3*		Unknown	None

site/territory	date found	# eggs	date chick sighted	chicks obsv	# fledge	cause of failure	management
Tunkalilla west	26/10/17	3				Unknown	None
Tunkalilla west	20/12/17	3				Abandoned	None
Tunkalilla west	31/01/18	2				Tide	none
Tunkalilla mid	13/10/17	3				Tide	none
Tunkalilla east	26/10/17	3	16/11/17	3	2		None
Tunkalilla east	31/01/18	2	21/02/18	2	2		None
Victor Central	18/09/17	3	21/10/17	3		Two chicks killed by off leash dogs on separate occasions (on same day). Third chick taken by tide	Sign Access Temporary, Sign Nest, Rope fence, Shelters, Wardens
Waitpinga Beach (east)	2/11/17	2				Suspect fox	Sign Access Temporary
Waitpinga Beach (east)	26/11/17	2				Tide	None
Waitpinga Beach (east)	15/01/18	3	29/01/18	3	2		None
Watsons Gap	6/10/17	3	8/11/17	3		Unknown chick	Sign Access Temporary, Sign Nest, Banners, Rope fence, Shelters
Watsons Gap	11/12/17	3				Suspect fox	Sign Access Temporary, Sign Nest, Rope fence
Watsons Gap	26/12/17	3				Suspect fox: tracks going to nest	Sign Access Temporary, Sign Nest, Rope fence
Watsons Gap	20/01/18	3				Suspect fox: tracks going to nest	Sign Access Temporary, Sign Nest, Rope fence
Yilki	26/08/17	3				Tide	Sign Access Temporary, Sign Nest, Rope fence
Yilki	16/09/17	3				Unknown	Sign Access Temporary, Sign Nest, Rope fence
Yilki	9/10/17	3				Unknown	Sign Access Temporary, Sign Nest, Banners, Rope fence, Wardens, New Council By-Law sign
Yilki	9/11/17	3	11/12/17	3	3		Sign Access Temporary, Sign Nest, Banners, Rope fence, Wardens

Threats to breeding pairs

Of the 2,158 data entries in the MyBeachBird portal, 86.0% (1,856) had some threat data entered. This is higher than the 80.1% from last season, which is to be commended. There are two separate threat assessments that can be completed in the data portal, one that records observed threats and one that records prints/tracks present during the visit. Prints/tracks can offer insight in to threats that are more difficult to detect, infrequent or nocturnal for example. Preferably, both threat assessments are completed so that we don't overlook difficult to detect threats and can account for temporal variation in threat detection (time of day and season). This enables us to better estimate the prevalence and intensity of threats the birds experience (i.e. you may visit the beach and see one person at the time of your visit, but the beach may have evidence of recent high visitation by high number of human footprints).

Full threat assessments (which include observational and print data), accounted for 72% (1,553 assessments) of all data entered into the portal. There were 303 portal entries which had observational data only (no print data completed), which is lower than last season, which is an improvement. The aim is to get 100% full threat assessments completed for each data entry, and we're on the trajectory to achieving this, with improvements occurring each season.

In some cases, observations for two distinct pairs/territories were included in the same portal entry. Where possible, the sites have been separated to use the appropriate threat data for each specific site, but in other cases, this data could not be used, as the threat assessment was combined to cover two separate sites and we cannot assume these threats were evenly spread across the two sites.

Any sites which had fewer than 15 threat assessments were not included in the threat analysis below because we are cautious about describing threats at a site without a high sample of observations. Preferably, sites should have a minimum of 28 full threat assessments to obtain a robust dataset that accounts for temporal variation, only 17 sites met this requirement. We have used 15 as the minimum required number of threat assessments to allow for as much data to be used as possible. By doing this, we were able to add six sites to the threat assessments. Sites not included in threat analyses and the number of assessments completed are: Ballaparrudda (2), Carrickalinga Estuary (2), Carrickalinga South (7), Deep Creek CP Blowhole Beach (1), Goolwa Beach (4), Lands

End (4), Maslin Beach (7), Moana Beach (4), Morgans beach (2), Normanville North (9), O'Sullivans beach (1), Parsons beach (14), Sheepies (12), Silver Sands (12), Southport (6), Trig Point (2), Tunkalilla Base/mid-west gully (12), Tunkalilla 1st alcove east (6), Tunkalilla East (13), Tunkalilla Midway (13), Tunkalilla West (13), Tunkalilla head alcove (1), Waitpinga Beach (west) (12), Waitpinga Estuary (13), Yankalilla River Mouth (7).

Of the above sites, of the most concern is the limited number of threat assessments at Tunkalilla. This is by no means related to volunteer effort but instead to the loss of access through the locked gate (for 3 seasons now) which previously enabled more frequent monitoring. This site is at the base of an incredibly steep hill and the beach is over 5km long. For volunteers to access this site as frequently as they did during the 2017/18 season is to be commended as it is physically demanding. BirdLife Australia will continue to work with the AMLR NRM to try to negotiate access through the locked gate because it is critical to achieving the desired monitoring frequency, thus enabling assessment of threats at the site. This is particularly relevant given our concerns about the loss of adults from this site, which is unprecedented. Any changes in the threat environment need to be detected early so that we can act to mitigate these. This is particularly important as this site was historically responsible for the majority of fledglings produced on the Fleurieu Peninsula and deemed one of the most important for the region.

Hallett Cove, Myponga Beach, Normanville South, Port Stanvac, Seacliff, Victor Central and Watsons Gap have been included in the analyses as much as possible, as these sites contained limited assessments of print data. For example, Normanville South had 138 assessments of observed threats, and only 85 (61.6%) contained full threat assessments including prints. Rather than lose that data (38.4% of threat data for Normanville South), we have included them where possible, and some tables/data below will have explanations as to where and how this data has been used.

The sites with the highest number of full threat assessments received were: Ochre Cove Maslins (191), Olivers Reef (127), Inman River Outlet (113) and Yilki (112).

The threat data entered into the data portal assists BirdLife Australia with targeted management for each beach. Hooded Plovers and their beach habitats have a variety of threats and by gathering sufficient information on the threats at each site, we can assess whether human-based threats are the most dominant and can even determine the main

user groups, and target awareness raising activities to that particular user group. The data that is collected from this citizen science project has enabled us to learn about ongoing trends and adapt our management over time. Having sound data also means we can influence policy. The Hooded Plover (eastern subspecies) was listed under the EPBC Act (1999) in November 2014, and this was largely due to the body of research and monitoring that has occurred in the past decade. We need to continue collecting this data in order to make successful long-term conservation management decisions.

The most prevalent threats at sites on the Fleurieu Peninsula for the 2017/2018 season were people, dogs, silver gulls, and pacific gulls (Table 9), which were also the top threats in 2015/16 and 2016/2017. From 2009, when detailed monitoring began on the Fleurieu Peninsula, the presence of people on beaches has been recorded more than any other threat type, which is the same as last season and unsurprising given most of South Australia's population resides within the AMLR region.

Last season (2016/2017), there was a shift in the prevalence of dogs off leash and on leash, with dogs on leash being more frequently observed for the first time since monitoring began. The disparity was small 31.4% (455) dogs on leash and 30.5% (442) of dogs off leash present during visits. This was a promising sign, however unfortunately this season (2017/18), the data shows that the numbers of dogs off leash are once again higher than dogs on leash, with dogs off leash accounting for 39.3% (607) of all dogs sighted, and on leash dogs accounting for 33.8% (523).

Ravens have increased in their prevalence, with 6.2% (85) of visits detecting their presence. Last season, ravens were only recorded in 3.2% (43) of visits. Normanville South had an increase in prevalence in ravens, so that it is a priority to continue to record all threats, taking special notice of raven numbers, to try to track further increases, particularly as one nest was suspected of failing to ravens this season.

Stock were not recorded in any of the threat assessments this season, however stock were detected at Tunkalilla, which was not included in the analysis.

Table 9. Proportion of visits where threats were observed (this includes evidence of tracks unless specified). * represents a different data set: Proportion of visits present from partial threat assessments (observations and prints, and observation only, n=1,546)

Threat	**Prop. visits present from full threat assessments (observations and prints, n=1,375) except where marked with ***
Human beach use (footprints &/or sightings)*	94.7% (1302)*
Dog use (footprints &/or sightings)*	79.5% (1229)*
Humans sighted (no prints)*	70.1% (1084)
Silver Gulls	69.4% (954)
Dogs sighted*	54.5% (843)
Dogs off lead*	39.3% (607)
Dogs on lead*	33.8% (523)
Pacific gulls	25.2% (346)
Foxes (prints)	15.6% (214)
Vehicles (all types, including sightings &/or tracks)*	9.9% (136)
Magpies	9.2% (127)
Ravens	6.2% (85)
Permitted vehicle sighted	3.5% (48)
Birds of prey	3.5% (48)
Horses (sightings &/or prints)	1.5% (20)
Non-permitted vehicle sighted	0.2% (3)

Table 10 provides a summary of the proportion of sites where each threat type was detected. Of the sites included in the analysis, dogs and people were recorded at every site. Silver Gulls and Pacific Gulls were recorded at all but one site each (Port Stanvac and Shelley Beach, respectively). Dogs off leash were found at 91.3% of sites (21 sites), and dogs on leash were found at 87% of sites (20 sites).

Table 10. Proportion of sites where threats were observed (sites are named in abbreviated form). Tracks and prints are included as evidence of threats, unless categorised separately. These records are from full threat assessments completed only. *****permitted vehicle includes *management vehicles* at sites where driving on the beach is not allowed.

Threat	**Prop sites present (23)**	**Detected at:**	**Not detected at:**
People	100% (23)	All sites	
Dogs	100% (23)	All sites	
Silver Gull	95.7% (22)		Port Stanvac
Pacific Gull	95.7% (22)		Shelley Beach
Dogs off	91.3% (21)		Port Stanvac, Waitpinga East
Dogs on	87.0% (20)		Port Stanvac, Shelley Beach, Waitpinga East
Magpie	82.6% (19)		Aldinga Sth, Carrickalinga Nth, Shelley Beach, Victor Central
Vehicles	73.9% (17)		
Raven	60.9% (14)		Aldinga Nth, Aldinga Sth, Olivers Reef, Port Stanvac, Shelley Beach, Snapper Point, Victor Central, Watsons Gap,Yilki
Bird of Prey	56.5% (13)		Aldinga Sth, Bashams, Carrickalinga Nth, Hindmarsh, Inman, Moana Sth, Myponga, Normanville Sth, Port Stanvac, Victor Central
Fox prints	39.1% (9)	Aldinga Nth, Inman, Myponga, Ochre Cove, Olivers Reef, Port Stanvac, Port Willunga, Waitpinga East, Watsons Gap	
Permitted vehicle*	30.4% (7)	Aldinga Nth, Aldinga Sth, Middleton, Moana Sth, Myponga, Normanville Sth, Seacliff	
Horses	8.7% (2)	Aldinga Sth, Normanville Sth	
Illegal vehicle	4.3% (1)	Normanville Sth	

The recreational activities that people were observed participating in at sites is summarised in Table 11. The most frequently recorded recreational activity was walking/jogging, followed by dog walking, and sitting/sunbaking. Sitting/sunbaking has overtaken surfing/swimming as the third highest recreational use of the beach for the 2017/2018 season. Recreational activities have shifted in relative frequency since last season, with observations of vehicles on beaches decreasing from 12.4% in the 2015/2016 season to 2.9% in 2016/2017, and this season in 2017/2018, this has dropped again to 1.9%. Walking/jogging has increased in frequency by 3.3%, while dog walking had this biggest increase in frequency, increasing by 4.9% since the 2016/2017 season. Interestingly, the frequency of surfers/swimmers recorded has decreased by 4.8%, and the frequency of people sitting/sunbaking has remained similar (0.2% increase) since the 2016/2017 season. The use of the beaches on the Fleurieu Peninsula

is only increasing, with 12,631 people recorded using the beaches this season. Last season, there were 9,654 people recorded using the beaches. This is an increase of 30.8% for a similar effort of monitoring between seasons.

Table 12 provides a site by site summary of prevalence of potential threats and the most common user groups, which allows us to target our management responses/education at sites (e.g. fox control, dogs breakfasts). Some sites have a high percentage of static recreational users, such as anglers and people sitting/sunbaking (Myponga and Waitpinga Beach (east), while most other sites are dominated by mobile recreationalists, such as walkers and dog walkers.

Table 11. The main activities people were observed using the beaches for. In total, there were 9,426 (74.6%) people at the water's edge, 3,068 (24.3%) on the beach, 45 (0.4%) observed inside signed/fenced areas and 92 (0.7%) in the dune. Note, threats recorded in the dune at Victor Central were on the footpath behind the nest, but still had similar impacts to people in the dune, as the Hooded Plovers would flush off the nest whenever anyone used this pathway.

Human recreational activity (of 12,631 people observed)	**% intensity**
Walking/jogging	41.8% (5,277)
Dog walking	31.9% (4,024)
Sitting/sunbaking	12.0% (1,517)
Surfing/swimming	7.2% (905)
Playing games	3.7% (471)
Driving	1.9% (246)
Fishing	1.4% (179)
Horse riding	0.1% (12)

Table 12. The prevalence of potential threats to Hooded Plover at sites monitored. Prevalence refers to how frequently the threat was observed (number times observed/number visits). Threat prevalence is categorised as heavy, moderate, sparse or rare according to the percentage of times recorded. Common activity is derived from observations of the most frequently observed recreational activities at sites. Note, Hallett Cove, Myponga Beach, Normanville South, Port Stanvac, Seacliff and Watsons Gap will have only a percentage of print data included, due to partial completion of threat assessments

Site (number of threat assessments)	**Heavy threats (>50%)**	**Moderate threats (20-50)**	**Sparse threats (<20%)**	**Rare threats (<6%)**	**Common activity (Percent intensity)**
Aldinga Nth (Aldinga Beach Rd) (71)	People, dogs, dogs off, silver gulls	Dogs on, pacific gulls	Birds of prey	Vehicles, fox, magpies	Dog walking (63.1%), walking (29.9%)

Site (number of threat assessments)	Heavy threats (>50%)	Moderate threats (20-50)	Sparse threats (<20%)	Rare threats (<6%)	Common activity (Percent intensity)
Aldinga South (34)	People, dogs, vehicles, dogs off	Dogs on, silver gulls, horses	Pacific gulls		Dog walking (42.5%), walkers (30.7%), permitted vehicle (18.9%)
Bashams Beach (40)	People, silver gulls, dogs	Dogs on, dogs off, pacific gulls	Magpies	Vehicles, ravens	Walking (58%), Dog walkers (28.3%)
Carrickalinga North (50)	People, dogs	Dogs off, silver gulls, ravens	Dogs on	Pacific gulls	Surfers/swimmers (30.3%), sunbakers/sitting (27.4%), walkers (26.2%)
Carrickalinga Rotunda (54)	People, dogs	Dogs off, silver gulls, dogs on, ravens	Pacific gulls, vehicles	Magpies, birds of prey	Walkers (41.3%), Dog walkers (16%)
Hallett Cove (52)	Silver gulls, people, dogs	Pacific gulls, dogs on, dogs off		Ravens, birds of prey, vehicles, magpies	Walkers (50.6%), Dog walkers (28.4%)
Hindmarsh River Mouth (21)	People, silver gulls, dogs, dogs off	Dogs on, pacific gulls	Ravens	Magpies	Walkers (32.8%), Playing games (31.3%), dog walkers (28.1%)
Inman River Outlet (117)	People, dogs, silver gulls	Pacific gulls, dogs on, dogs off	Magpies, ravens	Vehicles, fox	Dog walkers (43.2%), walkers (36.5%)
Middleton Beach (94)	People, silver gulls, dogs, dogs on	Dogs off, pacific gulls		Vehicles, ravens, magpies, birds of prey	Walkers (37.4%), surfers/swimmers (29.9%), dog walkers (24.2%)
Moana Beach South (20)	Dogs, People, silver gulls, dogs on, dogs off	Vehicles, pacific gulls	Magpies	Ravens	Walkers (34.8%), surfers/swimmers (22.5%)
Myponga (28)	People, silver gulls, dogs	Vehicles, dogs off	Dogs on, fox, pacific gulls	Ravens, magpies, birds of prey	Sunbakers/sitting (27.5%), walkers (23.9%), dog walkers (19.3)
Normanville South (138)	People, dogs, silver gulls	Vehicles, dogs off, dogs on, ravens	Horses, pacific gulls	Magpies	Walkers (29.3%), sunbakers/sitting (21.1%)
Ochre Cove, Maslins (205)	Silver gulls, fox, people, dogs	Pacific gulls, magpies	Dogs off	Dogs on, birds of prey, vehicles, ravens	Walkers (43.5%), dog walkers (27.8%)
Olivers Reef (128)	People, dogs, silver		Birds of prey	Pacific gulls, fox, vehicles,	Walkers (46.3%), dog walkers

Site (number of threat assessments)	Heavy threats (>50%)	Moderate threats (20-50)	Sparse threats (<20%)	Rare threats (<6%)	Common activity (Percent intensity)
	gulls, dogs off, dogs on			magpies	(40.6%)
Port Stanvac (23)	Fox	Pacific gulls	Magpies	Dogs, people	Walkers (100%)
Port Willunga (93)	People, dogs, dogs off	Dogs on, silver gulls	Fox, pacific gulls, magpies, birds of prey	Ravens	Dog walkers (52.1%), walkers (35.1%)
Seacliff (122)	People, dogs, dogs on, silver gulls, dogs off	Pacific gulls, vehicles	Magpies	Ravens, birds of prey	Walkers (48%), dog walkers (33.9%)
Shelly Beach (Lady Bay) (17)	Dogs, people	Dogs off	Silver gulls	Vehicles, birds of prey	Walkers (73.7%), sunbakers/sitting (8.8%)
Snapper Point (23)	People, dogs, silver gulls, dogs off	Dogs on, pacific gulls	Birds of prey	Magpies	Walkers (36.8%), dog walkers (10.5%)
Victor Central (44)	People, dogs, silver gulls	Dogs on, pacific gulls	Dogs off	Vehicles, magpies	Walkers (56.3%), dog walkers (30.4%)
Waitpinga Beach (east) (20)	People, fox, silver gulls, people	Ravens, magpies		Dogs	Fishers (57.7%), walkers (42.3%)
Watsons Gap (102)	People	Silver gulls	Pacific gulls, magpies, dogs on, dogs off	Fox, birds of prey, vehicles	Walkers (49.4%), dog walkers (23.3%), surfers/swimmers (17.8%)
Yilki (131)	People, dogs, silver gulls, dogs on	Pacific gulls, dogs off	Magpies	Vehicles, birds of prey	Dog walkers (51.9%), walkers (44%)

Table 13 provides the average number of people and dogs sighted, both off and on lead. Similar to last year, Seacliff beach had the highest average number of people and highest average number of dogs (on leash and off leash), which is unsurprising given this is a metropolitan beach. Moana Beach South also had a high number of people present on average. Port Willunga had the second highest average of dogs off leash, followed by Hindmarsh River Mouth, Aldinga South and Moana Beach South.

Seacliff and Port Willunga are all under the current regulations of 'Dogs on Leash 10am-8pm,' yet these are the sites with the highest average of dogs off leash.

Only five sites had on average more on-leash than off-leash dogs: Inman River Mouth, Middleton, Seacliff, Victor Central and Yilki. The latter three sites also happen to have been sites that were wardened during the chick phase, which is known to improve leashing rates.

Table 13. Mean (± standard error) number of people and dogs on and off leash observed at sites.

Site (number of assessments)	Number of people	Number dogs on lead	Number dogs off lead
Aldinga Nth (Aldinga Beach Rd)	3.33 ± 0.41	0.49 ± 0.11	1.80 ± 0.22
Aldinga South	5.61 ± 0.71	0.91 ± 0.21	2.73 ± 0.40
Bashams Beach	4.06 ± 0.68	0.74 ± 0.21	0.82 ± 0.25
Carrickalinga North	7.04 ± 2.09	0.29 ± 0.13	0.91 ± 0.26
Carrickalinga Rotunda	13.22 ± 2.51	0.83 ± 0.21	1.39 ± 0.30
Hallett Cove	3.12 ± 0.59	0.33 ± 0.08	0.37 ± 0.10
Hindmarsh River Mouth	9.14 ± 3.16	0.43 ± 0.15	2.90 ± 0.65
Inman River Outlet	2.40 ± 0.32	0.63 ± 0.15	0.46 ± 0.08
Middleton beach	7.57 ± 1.28	1.16 ± 0.20	0.77 ± 0.15
Moana Beach South	30.32 ± 11.34	1.95 ± 0.85	2.42 ± 0.51
Myponga Beach	3.71 ± 0.90	0.29 ± 0.16	0.36 ± 0.14
Normanville South	7.67 ± 0.99	0.51 ± 0.11	0.59 ± 0.08
Ochre Cove, Maslins	1.09 ± 0.41	0.07 ± 0.02	0.25 ± 0.08
Olivers Reef	7.36 ± 0.62	1.77 ± 0.21	1.77 ± 0.24
Port Stanvac	0.09 ± 0.09	0.00 ± 0.00	0.00 ± 0.00
Port Willunga	10.20 ± 1.63	0.59 ± 0.15	4.46 ± 0.45
Seacliff	39.50 ± 6.42	7.00 ± 1.21	4.77 ± 0.89
Shelley Beach (lady bay)	3.35 ± 1.27	0.00 ± 0.00	0.35 ± 0.17
Snapper Point	3.80 ± 0.73	0.65 ± 0.25	2.15 ± 0.49
Victor Central	2.34 ± 0.61	0.50 ± 0.14	0.20 ± 0.07
Waitpinga Beach (east)	1.44 ± 0.58	0.00 ± 0.00	0.00 ± 0.00
Watsons Gap	1.76 ± 0.46	0.16 ± 0.05	0.17 ± 0.05
Yilki	5.23 ± 0.80	2.04 ± 0.30	0.94 ± 0.20

Site Management and Awareness Raising activities during 2017/18

In the 2017/18 breeding season, the following activities were carried out:

Site Management

Photo: David Thorn.
City of Victor Harbor signs

- 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.
- Schoolies signs at specific sites.

Photo: Lisa Kirwan.
Alexandrina Council signs

- City of Victor Harbor reviewed their dog by-laws and installed signs that state "You are entering a designated Hooded Plover nesting site – all dogs must be on leash"
- Alexandrina Council implemented their dog signs, after also undergoing a dog by-law review "Dogs on leash at all times within 50m of signed breeding area"
- District Council of Yankalilla have selected stretches of beach that are on-leash during day light saving months. Many of these correlate with stretches of beach where Hoodies nest.
- New Council involved in nest and chick protection, the City of Marion assisted in the protection of the new Hooded Plover pair at Hallett Cove.

Volunteer and Community Engagement


Photo: Sue Read. Sellicks Beach workshop

- BirdLife Australia ran a training workshop on the 10th September at Sellicks Beach to recruit new volunteers and refresher training for current volunteers. The field trip component took place at Aldinga North to view nesting Hooded Plovers. 27 participants attended.
- BirdLife Australia's Kasun Ekanayake hosted the VRC meeting at start of season at Normanville Surf Lifesaving Club in September 2017
- Beach Detectives Day at Snapper Pt in July 2017. It was organised by the NRM for the Onkaparinga region and Sue and Ash Read had Hooded Plover models on display at the entrance to the beach and presented a talk prior


Photo: Sue Read.
Beach Detectives Day

to setting up the scope on the beach for 30-40 participants to have a look through the scope to view the Hooded Plovers

- Wendy White and Normanville Natural Resource Centre volunteers had a stall at the Yankalilla Show in September with a Hooded Plover display and gave away 80 Hooded Plover bags and participants made 20 badges
- Port Elliot Show in October with Wendy White and Gayl Males from Normanville and South Coast Environment Centre setting up a display and raised awareness of Hooded Plovers to show attendees
- Information session in October and November with Kerri Bartley, Wendy White and Hooded Plover Volunteers at Seacliff Beach, with "pup cakes" for dogs and giveaways to the beach users. A scope was set up at the November session so that members of the public could view the Hooded Plovers on the nest.
- Two stalls at the Angus Neil Reserve Twilight Markets, information stall and kids activity table. Talked to local residents who were all very interested in the local Hooded Plovers. Participants to coordinate the stalls were: Ligita Bligzna, John Cobb, Linda Yates, Alice Everett, Stevie Austin, Gerry Carne, Kerri Bartley (AMLR NRM/City of Holdfast Bay) and Mike Hemus (City of Holdfast Bay).

Photo: Kerri Bartley. Stevie and Ligita at the Seacliff Twilight Market

- Dog's Breakfast/Information Stall at Carrickalinga in January as part of the DEWNR Marine Park of the Month. Rick and Anthea Williams and Wendy White were busy talking to dog owners and handing out 'pup cakes.'
- Dog's Breakfast/Information Stall at Victor Harbor (Kent River/Inman River Outlet) in January as part of the DEWNR Encounter Marine Park of the Month. Wendy White handed out 'pup cakes' and some locals were lucky enough to spot the chick through the spotting scope and listened to a ten-minute information talk. Sharing our Shores with Coastal Wildlife staff also attended the event.
- Sharing our Shores with Coastal Wildlife staff also ran a pop up shorebirds event at Snapper Point as part of DEWNR Encounter Marine Park of the Month.

- Dog's Breakfast/Information Stall at Oliver's Reef with Wendy White, David and Sue Thorn and Richard Edwards handing out 'pup cakes,' chatting to the beach users to raise awareness of the four-week old chick at the site.
- Middleton beach Information session in February: Wendy White, David and Sue Thorn and Debbie Prestwood handed out 'pup cakes,' chatted to lots of dog walkers about the local Hooded Plovers.
- Wendy White attended Encounter Bay and Beaches meeting, and gave a report on the Hooded Plovers
- End of Season event for all Hooded Plover volunteers was held at the Victor Harbor Yacht Club in May 2018. Presentations were given by Emma Stephens, Wendy White, Kerri Bartley, Ash Read, Elizabeth Steele-Collins and Graham Thomas. 35 people were in attendance.


Photo: Emma Stephens. End of Season event

- Emma Stephens and Aleisa Lamanna (BirdLife Australia/NRM Sharing our Shores with Coastal Wildlife project) visited Port Stanvac, Waitpinga East, Hindmarsh River Mouth and Tunkalilla in February, March and April and captured and banded four Hooded Plovers.
- BirdLife Australia conducted a banding trip in September for Red-capped Plovers on the Samphire Coast with an experienced banding team: Laura Tan, Kristal Kostoglou, Kasun Ekanayake, Stephen Johnson and assistance from Aleisa Lamanna.
- Normanville Natural Resource Centre Coordinator and the Victor Harbor Natural Resources Centre had informative window displays and information noticeboards that were regularly updated to inform locals and visitors about how the birds were doing.

Photo: Gayl Males. South Coast Environment Centre Hooded Plover display

Media Engagement

- Media on dog attacks killing Hooded Plover chicks at Victor Harbor, the below article appeared in the Victor Harbor Times on 2nd November 2017.

BY **EMMALIE BALNAVES-GALE**

Region

FLEURIEU beach-goers are being urged to leash their pets after two endangered Hooded Plover chicks were killed by off-leash dogs within 24 hours last week.

The flightless and vulnerable young were both attacked from inside their protected zone near the Victor Harbor Bowling Club on Monday, October 23.

Birdlife Australia volunteer Gary Jackson was observing a hoodie pair with their two-day-old chicks when the first attack occurred.

"I was very distressed by what I had observed, it happened so quickly, the dog bounded onto the beach and went straight for the birds and the chick didn't have a chance," he said. "For volunteers and council staff, months of hard work were undone in literally seconds."

Birdlife Australia, the Adelaide and Mount Lofty Ranges Natural Resources Board and hundreds of local volunteers have been working for more than a decade to halt the decline of the species.

Project officer Dr Grainne Maguire said killing a threatened species was in breach of wildlife protection laws and dog owners could face serious penalties.

"Beachgoers must obey the prevailing rules and regulations, particularly the leashing laws, as they are in place to ensure these deaths are prevented," she said.

"Sadly, the chances of an egg hatching and then a chick surviving to the age at which they can fly, a mere 35 days, are so low (less than three per cent), that chick death is considered the major driver of decline of the species."

Ranger in Charge of the Fleurieu and Willunga Basin Paul Unsworth said it was shocking and unacceptable that not one, but two, chicks were killed in one day.

"There are less than 50 individual plovers left on the Fleurieu Peninsula.... for the future of this species, we implore all dog owners to familiarise themselves with the areas where the birds nest and always ensure their dogs are on a lead," he said.

Volunteer regional coordinator Elizabeth Steele-Collins said the Hooded Plovers along the Encounter Bay coastline needed about five per cent of the total beach frontage in order to breed.

"We aren't asking dog walkers to avoid this five per cent, instead, all we're asking is that when they are near the fenced and/or signed areas, that they put their dogs on a lead," she said.

City of Victor Harbor Mayor Graham Philp said council inspectors had increased patrols around the nesting sites.

"Council by-laws require dogs to be under effective control by means of a leash where signs and fencing designate a Hooded Plover nest," he said. "Additionally, dogs are required to be under effective control on all beaches in the council area between 10am and 8pm during daylight savings time. Failure to comply with these requirements can result in an expiation of $187.50."

VULNERABLE: Two Hooded Plover chicks, part of an endangered species that has fallen victim to attacks by off-leash dogs at Victor Harbor recently. **Photo: Supplied.**

- Radio interviews with ABC and 5AA by Kerri Bartley
- The Seacliff pair appeared on the weather section of the Channel 7 news (Kerri Bartley and Ligita Bligzna)
- The Hooded Plover and Natural Resources Adelaide and Mount Lofty Ranges Facebook pages posted regular updates
- Seacliff Hooded Plovers featured on Totally Wild episode which aired on Saturday 9th June 2018. Kerri Bartley, and Ligita Bligzna were interviewed for this piece and the story appears at the 16 minute mark: https://tenplay.com.au/channel-eleven/totally-wild/season-25/episode-60

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 for many years now. Well done!

Big thanks to the Volunteer Regional Coordinators: Sue and Ash Read, Wendy White and Elizabeth Steele-Collins for their efforts on the Fleurieu Peninsula, and special thanks also to Gayl Male and David and Sue Thorn for assisting Elizabeth with regional coordination. Wendy White did an amazing job of being Fleurieu-wide volunteer coordinator, and the staff (Kerri Bartley, Corey Jackson and Tony Flaherty) from Natural Resources Adelaide and Mount Lofty Ranges continued to provide invaluable support to volunteers and land managers. This season for the first time, 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 back. 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 and City of Marion. It was particularly fantastic that City of Holdfast Bay and City of Marion went to every effort for the two new pairs on Adelaide's metro beaches, which was no doubt the reason why these pairs were able to have success this season. Special thanks to Exxon-Mobil staff at Port Stanvac for their dedication to monitoring and site protection.

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

Special commendation to City of Victor Harbor and Alexandrina Council for their new signage to improve uptake by the community of the new dog bylaws.