Pied Stilt Monitoring Project – Washpool Lagoon, Aldinga, South Australia.

July 2019

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Sharing our Shores with Coastal Wildlife Project

BirdLife Australia supported by the Adelaide and Mount Lofty Ranges Natural Resources Management Board.

Pied Stilt juvenile at the Washpool May 2017 (photo: Aidan Bradford)

Contents

Background to the Pied Stilt Monitoring Program at the Washpool

The Sharing our Shores with Coastal Wildlife transitions the learnings from the previous Samphire Coast Icon Project with regards to coastal habitat conservation and community stewardship across the Adelaide and Mt Lofty Ranges Natural Resources Management (AMLR NRM) region. Key initiatives of the project are to conserve and rehabilitate coastal habitats, shorebird and seabird populations, and help coordinate strategic efforts across agencies, local government, community and industry to better conserve and protect the priority habitats of the AMLR NRM. It is a collaborative project between Natural Resources Adelaide and Mount Lofty Ranges and BirdLife Australia. BirdLife Australia host the project staff and the staff and project are funded through the AMLR NRM Board.

The Sharing our Shores with Coastal Wildlife project will aim to maintain community and local government momentum achieved through the Samphire Coast Icon Project and broaden outreach from the northern AMLR coastal region to other priority coastal bird habitats in the region such as the Willunga Basin and Fleurieu Peninsula. It will also expand the focus to include targeted conservation of seabirds such as the vulnerable Fairy Tern. One such project in the Willunga Basin is the Pied Stilt Monitoring Project at the Washpool Lagoon.

Aims of the Washpool Lagoon Pied Stilt Monitoring project:

- To engage local volunteers to monitor the abundance and distribution of Pied Stilts at the Washpool Lagoon.
- Establish if Pied Stilts are breeding at the Washpool Lagoon, map nesting sites, monitor breeding success and threats to breeding success.
- Use the above information to guide water flow management and revegetation plans at the Washpool Lagoon.
- Raise awareness within the community of the importance of the Washpool Lagoon and the bird species that rely upon it.
- Mitigate threats to Pied Stilt breeding success where possible.

Summary of key points from data analysis for Birdata records at the Washpool Lagoon from 1995 to May 2019:

- 149 Pied Stilt records at the Washpool during the above time period.
- 134 Pied stilt records based on unique survey dates.
- The greatest number of Pied Stilt records made in Birdata was in 2018 (42 records), reflecting an increased survey effort by volunteers.
- The greatest number of Pied Stilt observed at the Washpool was 70 in 2009, followed by 45 in 2011, and 43 in 2018. Maximum numbers of Pied Stilt recorded between June and November are in the 40's. Ashton's report on Birds at the Washpool Lagoon from 1978 to 2000 (2001:152) notes records of "up to 80 [Pied Stilt] yearly coming within a week of significant water appearing". Based on this information, there has been a decline in the maximum numbers of Pied Stilt observed at the Washpool from 1978 to 2019.
- Pied Stilt are present at the Washpool from May through to December (one sighting in February 2017), with the peak months being August to November.
- The majority of Pied Stilt sightings have been on the northern side of Button Road.
- There were 13 survey point locations recorded during the period of January 2017 to June 2019 (A to L), refer to Figure 7 for the map of these locations.
- Approximately 70% of all records at the Washpool include Pied Stilt observations.

- Pied Stilt breeding data:
    - One record of a Pied Stilt nest on 17/10/2004,
    - One sighting of Pied Stilt chicks on 6/11/2015,
    - Two records of recently fledged young in Birdata (21/8/2016 and 9/2/2017),
    - Four records of juvenile Pied Stilts (one in 2017, three in 2018).
    - 13 records of 'nonspecific breeding activity'.

The Washpool Lagoon

The Washpool Lagoon at Aldinga Beach is one of very few remaining coastal freshwater and estuarine lagoon systems along the Adelaide metropolitan coast (Durant 2008). Refer to Appendices 1 and 2 for maps of the site. It provides valuable habitat for many species of waterbirds and has been listed in the Directory of Important Wetlands in Australia (QED Pty Ltd *et al*, 2007). The Washpool supports 52 water bird species and 6 migratory species, 11 South Australian listed species and 4 federally listed species (Purnell, 2017). Coleman (2018) notes that the variety of macroinvertebrates in the Washpool have widespread appeal to birds and that "the microcrustaceans are utilized by shorebirds, especially the stilts and avocets". The Pied Stilt visit the Washpool during months where there is water in the lagoon, and have also been known to breed at the Washpool.

The Washpool is also of considerable spiritual and cultural significance to the Kaurna People and the wider Aboriginal community. Natural Resources Adelaide and Mount Lofty Ranges have recognised a priority to protect and rehabilitate the samphire ecosystem at the Washpool (2013, AMLR Strategic Plan), and it is recognised as a significant area in the Metropolitan Adelaide and Northern Coastal Action Plan for the habitat and biodiversity values it provides (Caton et al, 2009). The City of Onkaparinga has a priority to "protect and enhance biodiversity within their local Council area. As such, there has been co-investment within the site into weed control and rehabilitation the City of Onkaparinga." (Milne 2016:5).

NR AMLR have commissioned two recent reports "Washpool Lagoon Vegetation Mapping and Survey 2016" (Milne 2016) and "Aldinga Washpool & Blue Lagoon Revegetation Plan" (EBS Ecology 2018) to guide on-ground actions. Appendices 1 and 2 show the land tenure of the Washpool Lagoon, and the vegetation mapping in 2016.

Pied Stilt (formerly known as Black-winged Stilt) population trends and conservation

"Black-winged Stilt has a wide range, including Australia, Central and South America, Africa, southern and south-eastern Asia and parts of North America and Eurasia. More locally it also occurs through Indonesia, New Guinea, the Solomon Islands, the Philippines and New Zealand. Although widespread on the Australian mainland, it is an uncommon visitor to Tasmania" (BirdLife Australia website). Pied Stilts are a resident shorebird and the Australian population is considered Secure. However between 1979 and 2008 there has been a 12% decline in resident species within Gulf St Vincent (Close 2008). Close (2008) also states that certain resident species, including Pied Silts, have declined greatly with Red-necked Avocet numbers declining by 96%. As a result, monitoring is recommended to detect local population declines, potential threats and to monitor breeding success where possible. Purnell (2018:46) states that "the Shorebird Population Monitoring Program has recognised declines in both resident and migratory birds throughout south-eastern Australia (Gosbell & Clemens 2006; R. Fuller, unpublished data), and recommends that threats to local shorebird habitats must be identified and managed".

Purnell (2018: 61) makes the following comments regarding the Washpool Lagoon and recommendations to maximise conservation values for shorebirds. "It is a seasonal coastal wetland lagoon that has been highly modified as a result of artificial changes to water levels and drainage patterns. As with the wader ponds in Magazine Rd the shallow depth of the Washpool Lagoon means it has a low capacity to retain water but fills rapidly with direct rainfall. The Washpool Lagoon wetland would be enhanced by damping the current peaks in flow. Reducing the size and prolonging the duration of inflows would reduce the probability of dry periods in winter and spring and increase the probability of flooding persisting into November and December. Any changes in water regime must allow the system to dry out in summer and autumn to maintain the vegetation structure and salinity balance of the current ecosystem (Ecological Associates, 2003). A Silver Sands Catchment Stormwater Management Plan is being developed by the City of Onkaparinga. This will outline environmental flow proposals and costing for actions to manage water in the Washpool and Aldinga Scrub. If revegetation is to occur, consideration should be made to allow for planting design that can optimise waterfowl and shorebird use especially maintaining open roost areas, maintaining distances of any overstory or tall shrub layers away from lagoon and lagoon edges and establishing conditions and undertaking treatments that will encouraging saltmarsh restoration which is a low lying habitat which can be utilised by shorebirds should be integrated into landscape design (Ecological Associates, 2003)."

The following link provides useful information on breeding behaviour of the Pied Stilt in NZ
http://www.nzbirdsonline.org.nz/species/pied-stilt

Shorebird Monitoring at the Washpool Lagoon

The Washpool Lagoon is now one of the Shorebird 2020 monitoring sites. Jean Tucker, a local resident and BirdLife Australia volunteer has been monitoring the Washpool Lagoon as part of the Shorebird 2020 program and entering all data observed onto the Shorebird 2020 section of Birdata (BirdLife Australia's web-based data portal), with assistance from volunteers Julie Burgher and Coral Lanthois. All data analysed in this report below is provided through BirdLife Australia's Birdata.

The following list of bird surveys at the Washpool Lagoon has been taken from the AWASSH website (http://www.aldingawashpool.net/index.php/docs-tbl?limitstart=0) and information from the first two reports are included in the data analysis component of this report.

- Habitat use by waterbirds at the Washpool wetland, Aldinga, 1999-2000 (2001) A report prepared by G. Carpenter on behalf of Friends of Aldinga Scrub and completed in 2001 – a survey of plant and habitat use by water birds frequenting the Washpool over the 1999-2000 seasons.
- SA Ornithologist 2001 - Birds of the Washpool. SA Ornithologist - Volume 33 Part 8 November 2001 - Colin B Ashton. An extract from the South Australian Ornithologist (Journal of Association) of November 2001 in which the author, Colin Ashton, describes the birds of the Washpool identified over the period 1978 to 2000. Some 103 species were sighted in total with 92 native species among them.
- Washpool bird survey - August 2015. Short update birdlist at Washpool - Jeffrey Crocker August 2015A brief rundown of birds that visited the Washpool in August 2015.

Community support at the Washpool Lagoon

Community support for the Washpool Lagoon is strong and key to its conservation into the future. There has been significant community support for the conservation of the Washpool for many years and more recently The Aldinga Washpool and Silver Sands Heritage committee (AWASSH) has formed. The group received AMLR NRM grant funds through the NRM Community Action Grants scheme (2015-16) to run a community forum in 2017 and establish a website. The forum was extremely successful with 109 people attending. There were a number of fantastic talks from expert, videos of which are on the website:

http://www.aldingawashpool.net/index.php/2017

AWASSH are also advocating for the inclusion of the Washpool into the Aldinga Scrub Conservation Park.

The Washpool Working Group established in September 2018, with representatives from Kaurna, State and Local Government and a number of community groups. This group also organised and ran the Washpool Open Day on 5th May 2019. The Sharing our Shores with Coastal Wildlife team was present on the day to share information about the birds of the Washpool. AMLR NRM's "Flock Oz" project was also on display.

Pied Stilt Data analysis 1995-2019 at the Washpool Lagoon

The following data analysis focuses on all records in Birdata (BirdLife Australia's web-based data portal) at the Washpool Lagoon from 1995 to 2019. Thanks to the wonderful dedication of volunteers we have this data available to analyse and further our understanding of Pied Stilt at the Washpool Lagoon. Survey effort increased in spring 2017 by volunteer Jean Tucker with assistance from Julie Burgher and Coral Lanthois. As such there is a focus on the data collected from January 2017 to May 2019 further into the report.

Analysis by Year

- **Number of Pied Stilt records and maximum number of Pied Stilt from 1995 to 2019.**

There are 149 records which include sightings of Pied Stilt from September 1995 to May 2019 at the Washpool. Some records have two survey points within the Washpool on the same day, however the survey time between each is less than an hour and by the same observer, so they are considered unique records and not double counts. However, the number of records of Pied Stilt based on unique survey dates is 134.

Figure 1 shows the spread of the 149 Pied Stilt records between 1995 and 2019. Between 1995 and 2008 there were less than 5 records per year of Pied Stilt, however between 2009 and 2017 the number of Pied Stilt records increased to nearly 15 surveys in some years. It was 2018 that the maximum number of records of Pied Stilt were recorded in Birdata (42).

Figures 2 show the greatest number of Pied Stilt observed at the Washpool was 70 in 2009, followed by 45 in 2011, and 43 in 2018. 24 of the 149 records did not have numbers of Pied Stilt recorded as indicated in Figure 2. Except for the one sighting of 70 Pied Stilt, the next highest number of Pied Stilt observed is in the 40's. Perhaps this is the general carrying capacity of the Washpool in recent years, however further observations and data collection is necessary to back this. Ashton's report on Birds at the Washpool Lagoon from 1978 to 2000 (2001:152) notes that "up to 80 yearly coming within a week of significant water appearing". It would be useful to incorporate Ashton's data from 1978 to 2000 to show population trends from 1978 to 2019 as it is obvious from recent data that 80 birds are no longer seen at a time at the Washpool. Aston's data is included in the Birdata records analysed in this report but the data is only available for the years of 1998 and 1999.

Figure 1 shows the spread of the 149 records of Pied Stilt between 1995-2019 at the Washpool.

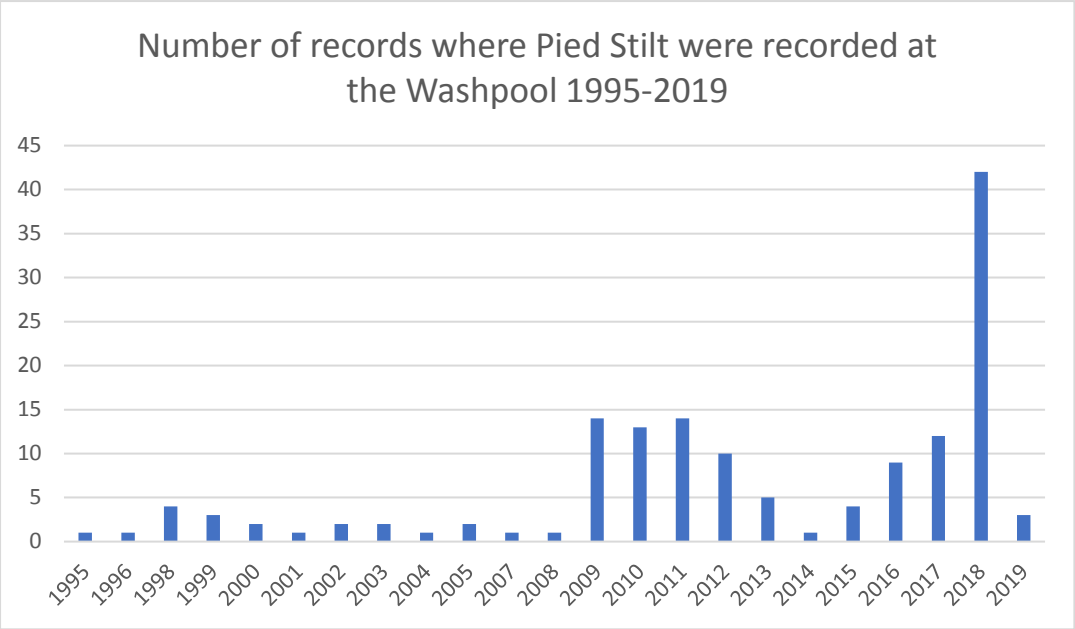
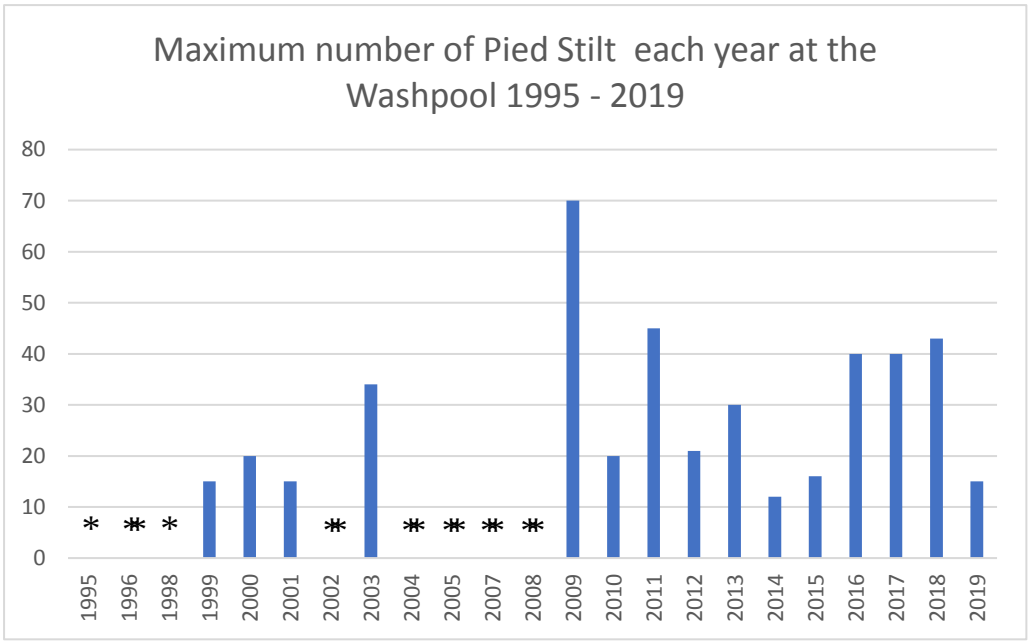
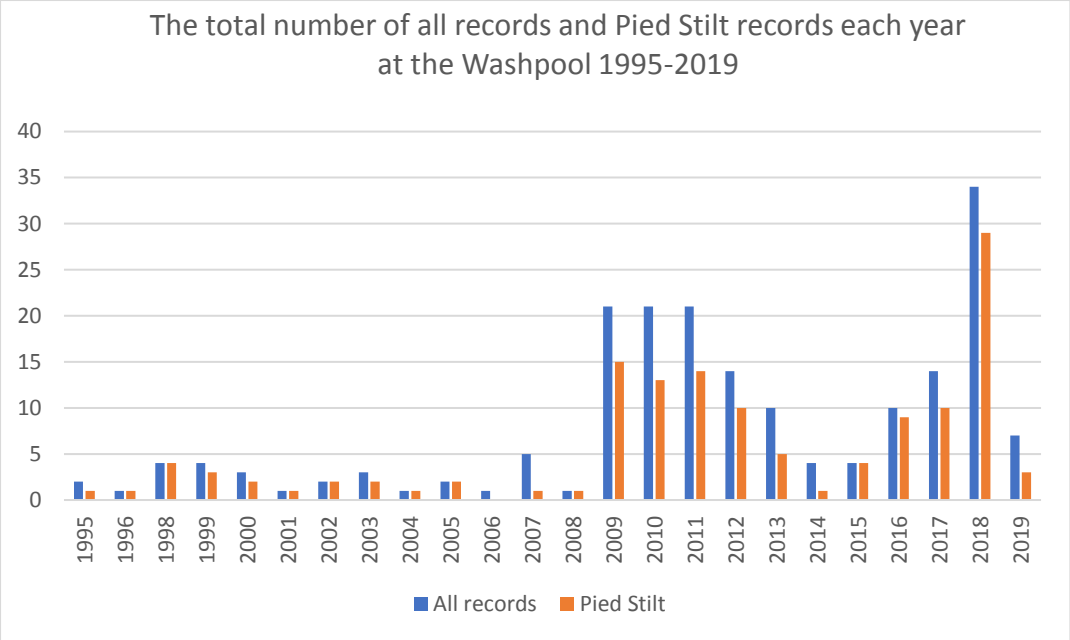


Figure 2 shows the maximum number of Pied Stilt observed each year from 1995 to 2019 at the Washpool. The asterisks represent years where surveys did not record the number of Pied Stilt observed (only presence).



Not all records at the Washpool since 1995 contain sightings of Pied Stilt. There are 190 general bird records (including those without Pied Stilt observed), 134 of these records include sightings of Pied Stilt (figures based on unique date records). As such approximately 70% of all records contained sightings of Pied Stilts. Figure 3 shows this information broken down by year.

Figure 3 shows the number of all records (based on unique survey dates) each year at the Washpool. Columns in blue represent the total number of all records (general bird species records including those records without Pied Stilt), and the orange column represents the number of records where Pied Stilt were observed.



Analysis by Month

Figure 4 shows the maximum number of Pied Stilt observed per month across all years (1995 to 2019). This does show a trend that PS are most likely to be observed from May to December at the Washpool, which is logical when you consider Pied Stilt are most likely to visit the Washpool during months of higher rainfall. Similar maximum numbers of Pied Stilt are observed from June to November (around 40), with one exception of one record of 70 in July 2009. Pied Stilt numbers start to drop off in December as the water recedes at the Washpool. Figure 5 shows the average number of Pied Stilt observed per month across all years (1995 to 2019), showing the peak months to be August through to November. The 6 Pied Stilt recorded in February is based on one survey only (n=1). There are no surveys which include sightings of Pied Stilt in January, March and April as indicated by the asterisks in Figures 4 and 5.

Figure 4 shows the maximum number of Pied Stilt observed in each month at the Washpool from 1995 to 2019. The asterisks indicates months where there are no surveys which include sightings of Pied Stilt.

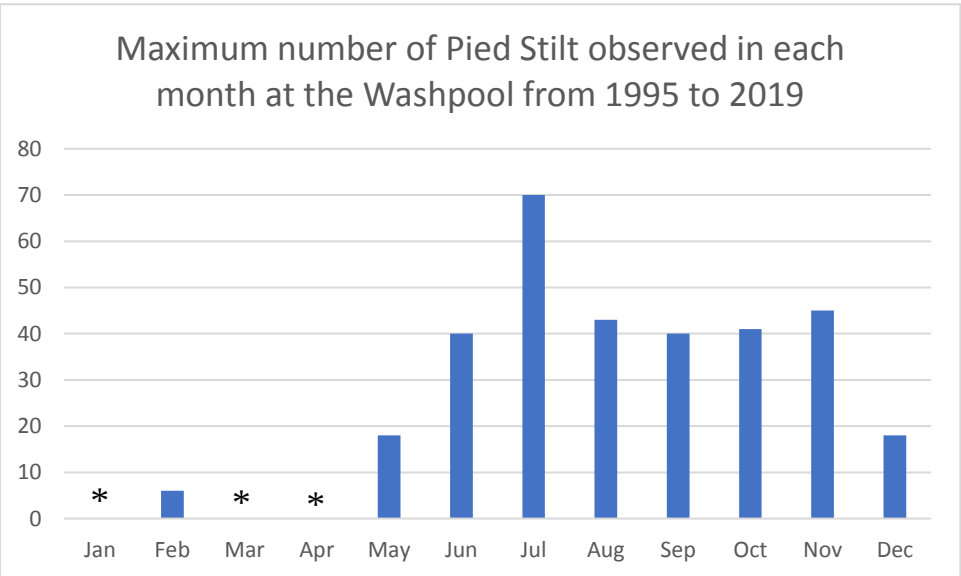
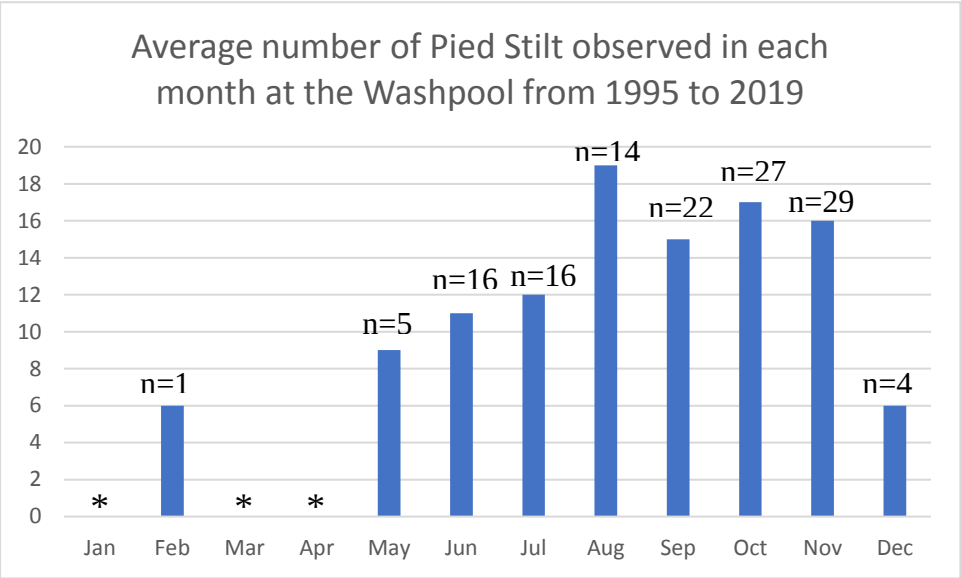
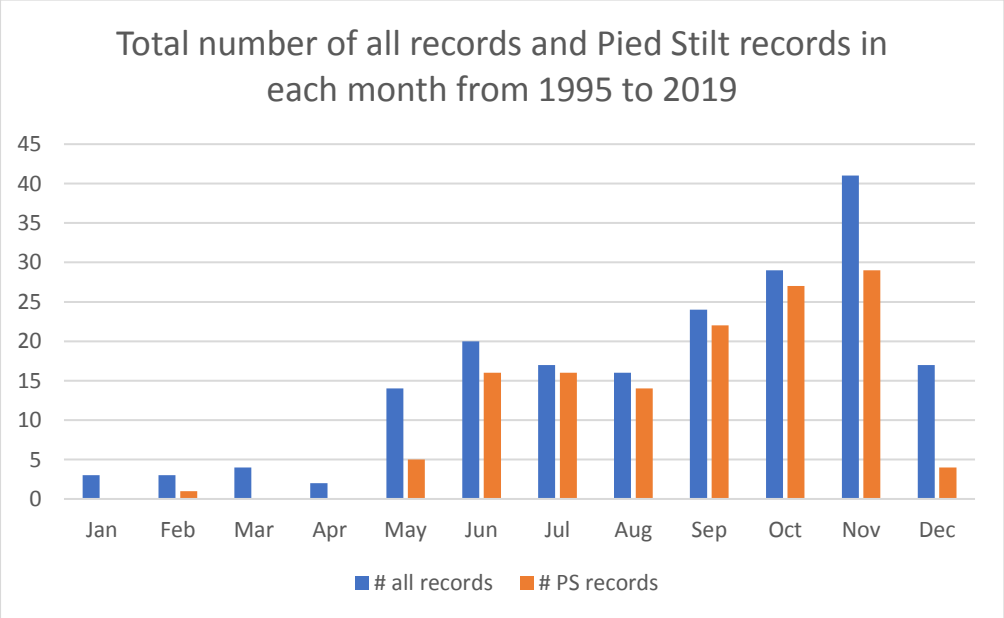


Figure 5 shows the average number of Pied Stilt observed per month across all years (1995 to 2019). The asterisks indicate months where there are no surveys which include sightings of Pied Stilt. The sample size or number of records (n=) is indicated above each column.



Surveys were undertaken in January, March and April during which Pied Stilt were not observed (Figure 6). This confirms that the lack of Pied Stilts observations in these months does not represent a gap in monitoring data, rather it most likely reflects the dry environmental conditions. Interestingly however, on the one occasion that Pied Stilt are observed in February (6 Pied Stilt), the observer noted the presence of recent fledglings (see further information in breeding information section below). Perhaps adults/nest/chicks were not visible in surveys prior to this. If it weren't for this observation of recent fledglings, it would be assumed that the 6 Pied Stilt observed in February might have been attracted to the site as a result of a summer rain event.

Figure 6 shows the total number of all records (in blue) and the total number of Pied Stilt records (in orange) in each month across all years from 1995 to 2019.



January 2017 to June 2019

In Spring 2017 there was a focus placed on undertaking more surveys of the Washpool to determine Pied Stilt presence/absence, numbers and potential breeding. This was undertaken primarily by volunteer Jean Tucker, and with assistance from volunteers Julie Burgher and Coral Lanthois. Other records have been made by other volunteers too. As such the data analysis in this section of the report has focused primarily on January 2017 to June 2019. 57 records were made in Birdata in this period (42 unique date records). Mostly under Shorebird 2020 surveys within 200m of a survey point.

There were 13 survey point locations recorded during the period of January 2017 to June 2019 (A to L) – refer to Figure 7. The majority of sightings were observed on the northern side of Button Road. The maximum number of surveys undertaken was 17 at location E, and the minimum number of surveys undertaken (one each) were at locations C, D, G, H, I, and J (refer to Figure 8).

Figure 7. 13 survey point locations (A to L) (Jan 2017 to June 2019)

Figure 8. Number of Pied Stilt records collected in each survey location (2017 to June 2019)

The maximum number of Pied Stilt observed at the Washpool in total on one day was 43 on 27/8/2018 (37 on the northern side of Button Road at D and 6 on the southern side at L. Survey time was 20 minutes apart, and by the same observer, so it is assumed that it is not a double count). Figure 9 shows the maximum number of Pied Stilt recorded at each of the survey location points. The maximum was 40 Pied Stilt seen at J on 7/11/2017.

Figure 9. Maximum number of Pied Stilt observed at the survey locations (2017 to June 2019)

Table 1 summarises the details for each of the 57 records between January 2017 and June 2019. Where there were two surveys conducted on one day (in different locations) the maximum time difference between surveys undertaken at each location is one hour (most under 30 minutes), and by the same observer, so it is assumed that the numbers are not a double count. There is one instance where 2 observers visited on the same day (7/10/17) and one observer recorded 2 survey point locations with a total number of 25 Pied Stilt observed. The second observer similarly observed 25 Pied Stilt later not long after.

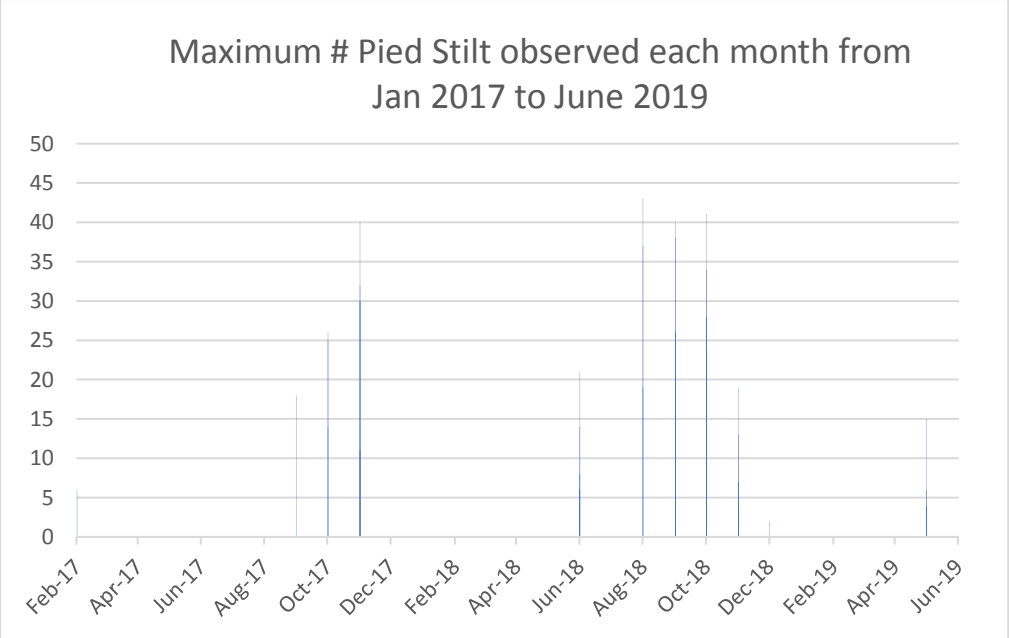
Table 1. Survey date, location name, coordinates and number of Pied Stilt observed. Where there were two surveys conducted on one day (in different location) the maximum time difference between surveys undertaken at each site is one hour (most under 30 minutes) so it is assumed they are the maximum count for the Washpool at that point in time.

Date	Survey location Name	Latitude	Longitude	# Pied Stilt observed
9/02/2017	E	-35.3189	138.4511	6
5/09/2017	E	-35.3189	138.4511	18
7/10/2017	B	-35.3192	138.4513	19
7/10/2017	B	-35.3192	138.4513	6
7/10/2017	E	-35.3189	138.4511	25
16/10/2017	E	-35.3189	138.4511	14
29/10/2017	E	-35.3189	138.4511	26
1/11/2017	E	-35.3189	138.4514	30
3/11/2017	C	-35.319	138.4521	32
6/11/2017	E	-35.3189	138.4511	30
7/11/2017	J	-35.3178	138.4517	40
14/11/2017	B	-35.3192	138.4513	11
17/06/2018	L	-35.3169	138.4525	21
24/06/2018	E	-35.3189	138.4511	8
25/06/2018	B	-35.3192	138.4513	6
30/06/2018	F	-35.3187	138.45	14
15/08/2018	A	-35.3193	138.4514	2
15/08/2018	K	-35.3176	138.4511	17
26/08/2018	A	-35.3193	138.4514	4
26/08/2018	K	-35.3176	138.4511	33
27/08/2018	D	-35.319	138.4512	6
27/08/2018	L	-35.3169	138.4525	37
8/09/2018	E	-35.3189	138.4511	6
9/09/2018	B	-35.3192	138.4513	10
9/09/2018	L	-35.3169	138.4525	30
16/09/2018	B	-35.3192	138.4513	7
16/09/2018	L	-35.3169	138.4525	19
18/09/2018	I	-35.3178	138.4503	20
26/09/2018	B	-35.3192	138.4513	4
27/09/2018	L	-35.3169	138.4525	38
1/10/2018	F	-35.3187	138.45	4
1/10/2018	L	-35.3169	138.4525	20
8/10/2018	B	-35.3192	138.4513	2
8/10/2018	L	-35.3169	138.4525	32
14/10/2018	E	-35.3189	138.4511	19

16/10/2018	B	-35.3192	138.4513	2
16/10/2018	L	-35.3169	138.4525	26
18/10/2018	E	-35.3189	138.4511	13
18/10/2018	F	-35.3187	138.45	28
21/10/2018	E	-35.3189	138.4511	14
22/10/2018	E	-35.3189	138.4511	16
29/10/2018	B	-35.3192	138.4513	2
29/10/2018	L	-35.3169	138.4525	19
31/10/2018	B	-35.3192	138.4513	12
2/11/2018	H	-35.3185	138.4511	3
2/11/2018	L	-35.3169	138.4525	4
5/11/2018	G	-35.3186	138.4509	3
5/11/2018	L	-35.3169	138.4525	10
8/11/2018	E	-35.3189	138.4511	19
16/11/2018	L	-35.3169	138.4525	2
24/11/2018	B	-35.3192	138.4513	2
24/11/2018	E	-35.3189	138.4511	2
28/11/2018	B	-35.3192	138.4513	2
17/12/2018	B	-35.3192	138.4513	2
19/05/2019	E	-35.3189	138.4511	6
20/05/2019	L	-35.3169	138.4525	15
25/05/2019	E	-35.3189	138.4511	4

The maximum number of Pied Stilt are recorded in November 2017 (40) and August 2018 (43) as seen in Figure 10.

Figure 10. Maximum number of Pied Stilt observed each month from January 2017 to June 2019.



Pied Stilt breeding observations (1995 to 2019)

There are 13 Pied Stilt records which include “nonspecific breeding activity”. Only one of these 13 records, on 17/10/2004, included notes: “1st sign of breeding for black winged stilt sitting on nest (but is doubtful that attempt succeeded because it was a lone nest, water was evaporating, I have never seen chicks or Juv. at any time)”. The only records of Pied Stilt either side of this record are in November 2003 and October 2005 and as such do not help to complete the picture. The survey point for this record is shown on Figure 11 (coordinates are -35.31667/138.45). It is not known whether this is the actual location of the nest as it is a 500m search survey type with other species also recorded at this location. It would be worth keeping an eye on these drainage channels for potential Pied Stilt nesting in future however.

Figure 11. Survey point location (yellow pin) on 17/10/2004 which recorded a Pied Stilt nest. It is not known whether this is the actual location of the nest as it is a 500m search survey type.

Pied Stilt chicks were observed and photographed on 6/11/2015 by a long-term resident and photographer Bob Caddell (Figures 12 and 13). The observation was of 2 or 3 families all seen in one location along the edge of the lagoon on the northern side of Button Road, close adjacent to Button Road, and just west of the dam (the dam is just to the east of Location C – Figure 7). The water was gone and the observer did not need to leave the car to see the Pied Stilt.

Figure 12. Photo of Pied Stilt adult and chicks at the Washpool, 6/11/2015 (photos: Bob Caddell). Photo source https://www.aldingawashpool.net/photos

Figure 13. Photo of a Pied Stilt chick at the Washpool, 6/11/2015 (photos: Bob Caddell). Photo source https://www.aldingawashpool.net/photos

Two sightings of recently fledged young have been recorded in Birdata on 21/8/2016 (16 Pied Stilt observed) and 9/2/2017 (6 Pied Stilt observed) both at Location E, and both records are from the same observer. In both cases it is not clear how many recent fledglings were observed amongst the total number of observed Pied Stilts. Surveys either side of 21/8/16 do not confirm any breeding activity,

and surveys either side of 9/2/17 do not record any observations of Pied Stilt. If Pied Stilt were incubating eggs or brooding chicks prior to the 9/2/17 visit perhaps they were not visible.

Observations of juvenile/immature birds have also been made in Birdata:

- 9/9/18: one juvenile with black around eye and brownish back,
- 27/9/18: two juveniles observed,
- 26/8/2018: "2 Pied Stilts, 1 immature and 1 juvenile in the channels north side. 4 Pied Stilts large lagoon north side near Button Rd. 27 Pied Stilts including more juveniles/immature spread out over a wide area in the North of the large lagoon" (see Figures 14, 15 and 16), and
- 5/6/2017: a juvenile Pied Stilt (this record is not yet recorded in Birdata) (Figure 17).
- 4/5/2017: a juvenile Pied Stilt (photo record the Washpool Lagoon website by Aidan Bradford)

Figure 14. Juvenile Pied Stilt at the Washpool on 26/8/2018 (photo: Julie Burgher)

Figure 15. One-legged juvenile Pied Stilt at the Washpool on 26/8/2018 (photo: Julie Burgher)

Figure 16. Pied Stilt adults and juveniles at the Washpool on 26/8/2018 (photo: Julie Burgher)

Figure 17. Juvenile Pied Stilt at the Washpool on 05/06/17 (photo: Julie Burgher)

In Carpenter's report *Habitat use by waterbirds at the Washpool wetland, Aldinga, 1999-2000* (2001:9) it states that "the Black-winged Stilt was reported as breeding by Ashton (1996) with up to 15 nests in 1983-5 but no nests were found on the current survey".

Ashton's report on Birds at the Washpool Lagoon from 1978 to 2000 (2001:152) notes that "up to 80 yearly coming within a week of significant water appearing. Bred in 4 years with 15 nests in 1983-85 on samphire judged high enough to be above the maximal filling potential of the Washpool, though once early in brooding when eggs were inundated for seven days, brooding resumed with successful hatching of 4 young. Breeding ceased after flattening of samphire by one day's car parking for a beach event. It was resumed 10 years later when samphire had sufficiently regrown (3 nests in 1995). However the Washpool dries out in most years before juveniles appear to be ready to leave with parents. One juvenile seen with adults at a dam 0.5km distant". Ashton's data is included in the Birdata records analysed in this report but the data is only available for the years of 1998 and 1999 where no breeding was recorded. The data source is from Atlas Record Forms.

Banded Stilt have also been recorded at the Washpool, see Figure 18.

Figure 18. Banded Stilt at the Washpool, 12/12/2018 (photo: Jean Tucker)

Threats

Dogs have been observed off leash through the Washpool and recorded in Birdata. It is the random movement of dogs off-leash that cause birds to leave their nests or send their chicks into hiding sooner and more frequently than if a dog is on lead. This disturbance can cause eggs and chicks to be exposed to the elements and predation, and it will reduce the foraging time available to chicks. This is particularly the case with ground and beach nesting birds.

Foxes are also present, indicated by a photo on the Aldinga Washpool website 5/11/2015 (coincidentally taken the day before the Pied Stilt chicks were observed on 6/11/2015).

Aerial predators such as Kestrels, Black-shouldered Kites etc are also present on a regular basis at the Washpool.

Purnell (2018) lists the following as threats to shorebirds in Gulf St Vincent and are also relevant to the Washpool Lagoon:

- Human-induced habitat loss or degradation (including coastal development, altered hydrological regimes and climate change variability and change).
- Human disturbance.
- Invasive species.
- Human-induced mortality or breeding failure.
- Pollution.
- The hydrological regime is very important at the Washpool in maintaining shorebird numbers and diversity.

Recommendations

- Encourage continued monitoring and entry of the following information into Birdata:
    - all birds species,
    - Pied Stilt numbers, location, breeding behaviour,
    - threats,
    - monitoring during dry months (Jan to April) to ensure Pied Stilt presence/absence is recorded (regularity of visits for Pied Stilt monitoring during dry months could be reduced however).
- Recruit additional volunteers to join the Shorebird program to monitor at the Washpool and enter data into Birdata. Events such as the Washpool Lagoon Open Day are good ways to recruit more volunteers.
- Contact volunteers for further information on the 'recent fledglings' observed.
- Where there are photos of Pied Stilt in the Washpool Lagoon website, check if they are entered as records in Birdata, if not, seek permission from photographer to enter data and photo.
- Investigate the possibility of accessing Ashton's Pied Stilt 1978-2000 data to provide long-term population and breeding trends from 1978 to 2019.
- Incorporate analysis of rainfall patterns from 1978 to 2019 and other variables in conjunction with Pied Stilt population trends.
- Ongoing invertebrate monitoring at the Washpool (e.g. Coleman 2018 prepared for the AMLR NRM Board) is recommended to ensure water quality and food availability is suitable for ongoing support of Pied Stilt populations and breeding at the site.
- Maintain presence on the Washpool Working Group to ensure that any future plans or changes to the Washpool incorporate the needs of the birds that utilise the site including Pied Stilt.

Figure 19. "The Flock" set up at the bird viewing station on the Washpool Open Day, May 5 2019 (photo Emma Stephens).

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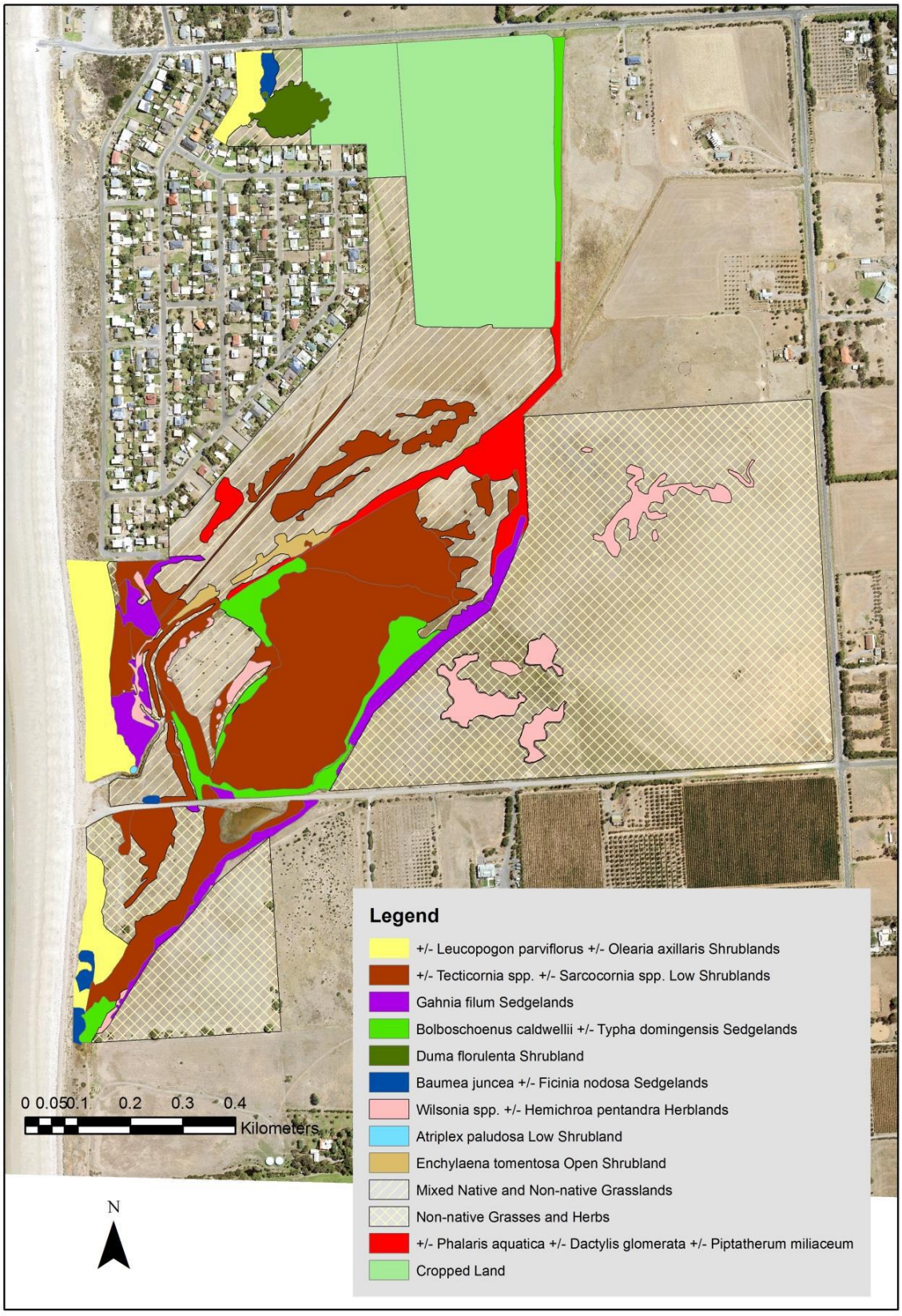
Appendix 1 Land ownership at the Washpool Lagoon (Milne 2016: 8)

Appendix 2 Vegetation association mapping 2016 (Milne 2016:11)



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