Hunter Bird Observers Club
Affiliated with BirdLife Australia

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Shorebird Habitat Restoration in the Hunter Estuary

2017 Report to HBOC Committee

Since 2003, members of Hunter Bird Observers Club (HBOC) have maintained a constant volunteer effort with various restoration works in the Hunter Estuary. These projects all focus on shorebird habitat and the project sites have been chosen for their strategic importance to the birds. Project sites exist at Stockton Sandspit, Ash Island (Milham Pond, Phoenix Flats, Wader West, Wader Pond and Swan Pond) and a collection of remote sites (Smith Island, Sandy Island, Fullerton Cove Beach and Dyke Pond #4) within the estaury.

This report aims to highlight the successes of our efforts over the 2017 year and also discuss some of the challenges for the future.

Currently the combined projects cover over 150 hectares of the Hunter Wetlands National Park and since early 2003, more than 8,600 hours of volunteer effort has been accrued in these endeavours. The combined volunteer effort in 2017 across all the projects amounted to just over 700 hours of willing contribution.

Figure 1. Restoration of shorebird habitats at strategic sites over the breadth of the Hunter Wetlands National Park

Threatened Species Recovery Fund (TSRF 06)

The latest addition to the list of HBOC projects was given a booster start by some funding from the Federal Government via the Threatened Species Recovery Fund. This project is dealing with mostly roosting habitat at remote sites around the Fullerton Cove area and the Critically Endangered Far Eastern Curlew is the flagship species. The sites include Smith Island, Sandy Island, Fullerton Cove Beach and Dyke Pond #4 and total 35ha of saltmarsh and associated beaches. The prime effort at these sites is to initially reduce the amount of invasive mangroves and the subsequent seedling recruitement but some other weed species treatment is also targetted.

Funding of $20,000 was granted and made available by early May but essential ground works by volunteers had already begun once it was clear that the funding had been approved. Additional funds through two Club raffles have added a further $1,109 to help with extra activities.

Site Establishment

Prior to implementing any site works it was necessary to carry out various site inspections to establish logistics of accessing these remote sites. Investigating proposed landing sites, navigation of sand bars and reefs, launching areas for different water craft and experiencing different conditions (tides, winds, swell etc) while travelling to the sites were high on the list. This work was successfully carried out during January and February (4 outings) while also setting up photo points on all the beaches and determining shorebird survey protocols. During March, two vegetation monitoring quadrats were established on the Smith Island Marsh and photo points installed on the Sandy Island Marsh. Every thing was now ready for the commencement of site works.

Site Works

Bush regeration crews from Toolijooa (engaged contractor) kicked-off the works in May with two days of work on Smith Island. With the use of chain saws and various hand tools the team quickly became efficient at the task and made good inroads. The designated saltmarsh area on Smith Island was already taking on a more open look. Another four contractor days in July was used to completely clear the smaller area on Sandy Island, make a great start on Dyke Pond #4, as well as continue with the Smith Island effort. Two more contractor days in August completed the inital primary treatment on Smith Island.

Image 1. Contractors using chain saws in the initial treatment of mangroves.

Two final contractor days scheduled for April or May 2018 will be used to tidy up some fussy areas and make final primary treatment to the Sandy Island and Smith Island marshes. These works will also complete the majority of the funding.

Intrepid Landcare

The inclusion of a young and energetic crew of Intrepid Landcare people has proved to be an added bonus to this project. A component of the funding does include engagement of people in the community not necessarily involved in the HBOC projects. Two Intrepid events were organised for 2017 and after the great success that they were, another two events are planned for 2018.

These events have introduced shorebird issues to 14 young people (university student age), gave them a sense of adventure (kayak paddle to the sites) and provided them with some instruction on habitat restoration. The main focus for these events were the two beaches on Smith Island where invading mangroves were compromising the shorebird roosts.

Image 2. Enthusiastic people taking on the mangroves on Smith Island Beach

Intrepid events in 2018 will deal with follow-up treatment over these beaches as well as the marshes that lay directly behind.

Shorebird Montoring

Regular high tide counts of shorebirds, once established, have continued on a twice monthly basis. Access by kayak has proved to be a very efficient method and these outings have also been utilised for additional exploring of shorebird roosts.

To date the best results have occurred on the beaches of Smith Island with regular sightings of Common Greenshank (maximum 5 birds) being the staple. The beach at Sandy Island is yet to produce a single sighting. Saltmarsh counts regularly contain combinations of White Ibis, White-faced Heron and Great Egret with no migratory shorebirds yet to appear.

Image 3. Some Black-winged Stilt were discovered using the Smith Island Beach as a high-tide roost on one occasion.

The installation of a surveillance camera (5th July 2017) overlooking a section of the Smith Island Marsh continues to monitor that space 24 hours per day and so far has confirmed the regular presence of the ibis, heron and egret species mentioned earlier. It is hoped that if Far Eastern Curlew (or any other shorebird for that matter) does use the space then that moment will be captured. Regular swapping of the camera memory card and occasional battery changes are managed in conjunction with the high-tide shorebird counts.

Image 4. White Ibis are regularly captured on the surveillance camera.

Vegetation Monitoring

Initial baseline data has been collected for the two quadrats located within the Smith Island Marsh. This was carried out in March 2017 and it is planned to repeat this process each March to assess the rate of mangrove recruitment. From recent observations it is likely that minimal recruitment will occur each year.

Vegetation baseline data - March 2017		
	SMQ#1	**SMQ#2**
Salt Couch	95%	96%
Dead Timber	1%	3%
Mud	4%	1%
Grey Mangrove	50 emergent plants from 0.6m to 1.2m in height.	24 emergent plants from 0.8m to 3.0m in height.

Project summary

This funded project has been implemented successfully and at this stage all the deliverable actions have been met. Over the course of this current season and subsequent seasons it is hoped that greater use of the restored areas by shorebirds will become evident through the continuing monitoring process.

Funded Site Works Progress	
Site	Percentage complete (initial primary treatment)
Smith Island	75%
Sandy island	100%
Dyke Pond #4	80%
Fullerton Cove Beach	0%
Overall	**78%**

Project expenditure to end of December 2017			
Effort	Hours	In-kind equivalent (rounded)	Funded costs
Volunteer	352	$18,300	
NPWS	43.3	$2,250	
NPWS services (boat/equipment hire)		$1,240	
Contractor (Toolijooa, Kayak hire)	257.5		$15,554.80
Purchased items			$1,180.75
Totals	**652.8**	**$21,790**	**$16,735.55**

Image 5. The Smith Island marshes had been devalued as potential shorebird roosts by Grey Mangroves scattered throughout the area.

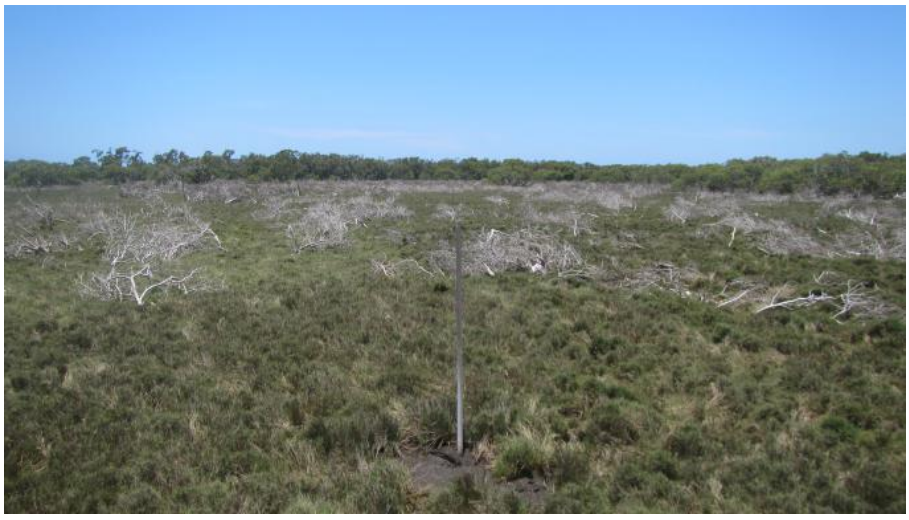


Image 6. Felling and subsequent breakdown of the timber creates an inviting open space.

Ash Island

The main focus over the Ash Island sites is the treatment of mangrove seedlings. Since all the primary felling of the trees several years ago it is soley the detailed picking of each subsequent season's seedlings that form the bulk of the work. The combined aggregate of almost 114 hectares was covered this year in the staggeringly short time of 39.2 hours.

Image 7. "Here's one!" Mangrove seedlings were far and few between.

Site Works

Two days on site during January proved the entire Area E (98.49 ha) clear of mangroves. One visit accounted for Wader West and Wader Pond and the second for Swan Pond. Work included a follow-up sweep along the bank of Wader Creek that had been cleared of mangroves by the coal industry sponsored effort. Some plants had been cut too high and subsequently re-spouted. The entire area was completed in the amazing record time of a combined 5.4 hours.

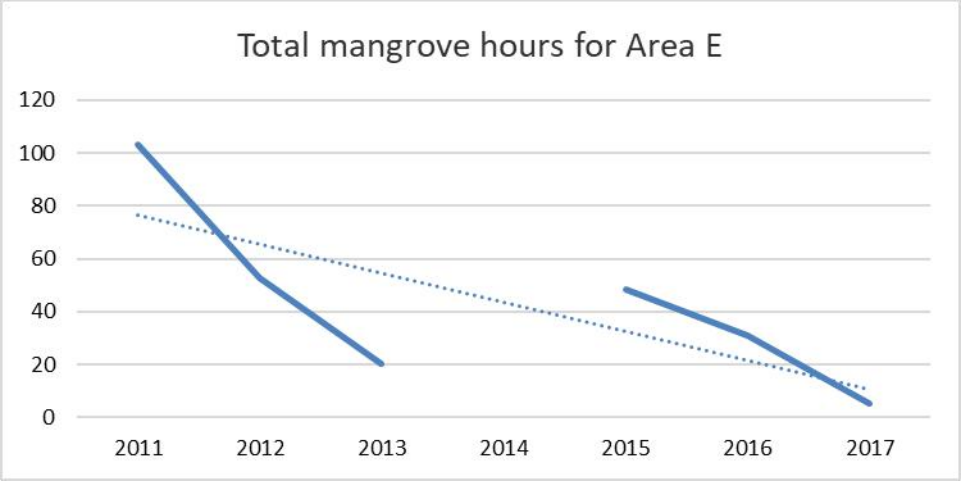


Figure 2. The effort required in Area E on Ash Island continues to fall.

An opportunity in February to make a start at Milham Pond was then taken and over the course of just two days a great amount of ground was covered. After completing the vegetation surveys in the three quadrats established at Milham Pond there was enough time to complete all of Zone A, B and C plus a flying start on Zone V3. It was obvious that a low level of mangrove recruitment had taken place and that the clean up effort was not about to be too onerous. In fact it was ultimately proven to be the least effected in any previous season and at only two small patches did the seedlings sprout in any real density. Three more days in March completed the entire Milham Pond and Phoenix Flats area (15.38 ha) and just like Area E was in record time.

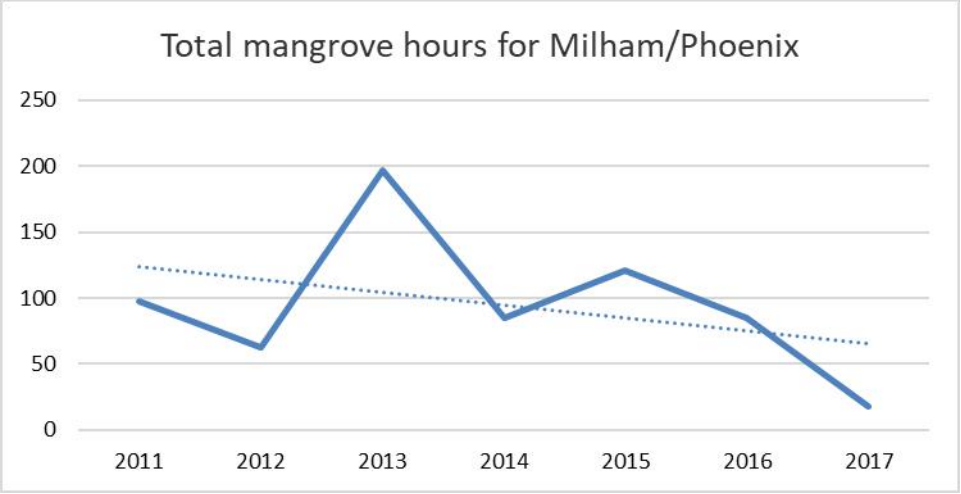


Figure 3. Record low effort also at Milham Pond.

A final inspection walk over the entire Milham Pond and Phoenix Flats area completed this year's effort.

Vegetation Monitoring

Each year the recruitment of mangrove seedlings and saltmarsh vegetation is measured in an attempt to monitor the success of the project. Three established quadrats measuring 10m x 10m are cleared of mangrove seedlings and a count is recorded. This was carried out in February along with an inspection of the overall site.

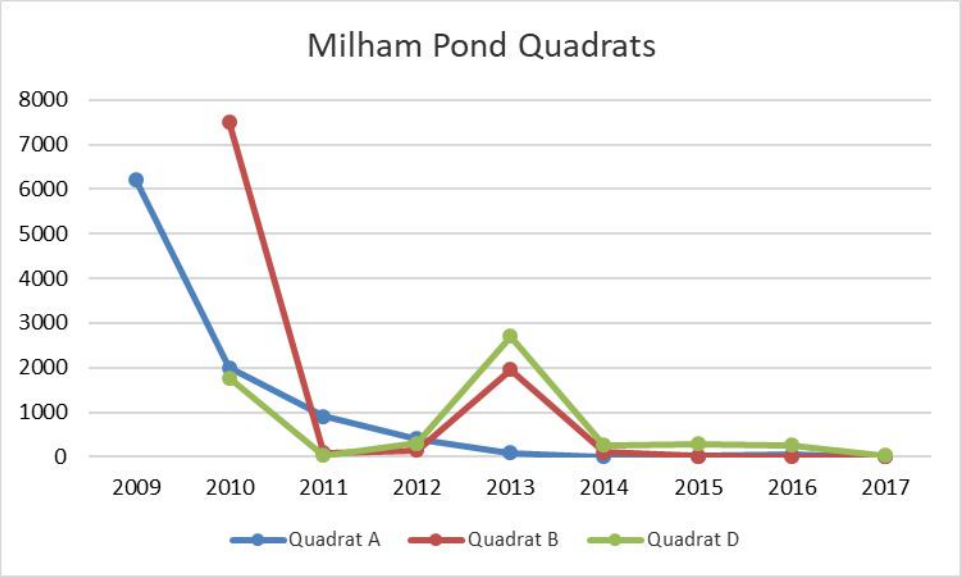


Figure 4. Seedling numbers encountered within the quadrats have become minimal of late.

Since the spike in 2013 it appears that the various control measures designed to limit the number of mangrove seeds entering the Milham Pond system are having a positive effect. Casting an eye over the place it was obvious that generally the entire site was only slightly infested with mangrove seedlings compared to previous years. Only two small patches (each about 2m x 2m) displayed any density at all. Those patches were near the Mid-way Fence area on the Neville's Nook side; a traditionally heavy area. Upstream of Mid-way Fence, seedlings were very sparse and isolated; downstream they appeared more evenly distributed but lightly scattered. The entire Milhams Pond and Phoenix Flats area was the least effected by mangrove seedlings yet encountered.

Seedlings did not appear in a dense band along the grass/mud flat margins as in previous years but rather evenly distributed across the entire width of the grassy edges. There was an almost total lack of seedlings out on the mud flats.

It was clear that tides had pushed up right across the grassy areas with tidal wrack deposited along the extreme outer limits of the saltmarsh and large patches of muddied saltmarsh appeared mostly along the south-west side. Deposition of silts have occurred in these places.

At the other end of the spectrum, measures of saltmarsh recruitment continue to increase slowly. Within the measuring area of Quadrat D, the establishment of Triglochin striata (2.5%) and the Sporobolus virginicus (96.5%) continues to take up the vast majority of the space. The remaining 1% being the mangrove seedlings.

Outside the quadrats, the spread of saltmarsh along all the edges of Milham Pond continues to increase and saltmarsh vegetation continues to fill out an area near the confluence of the major streams. This cannot be accurately measured but by comparing recent and previous photos it is quite apparent.

Image 8. Twelve months after the primary clearing of mangroves, salt couch was barely covering this quadrat.

Image 9. Salt couch has progressed well beyond the quadrat over the last 6 years.

Mangrove Propagule Exclusion Devices (MPEDs)

In mid-July it was noticed that an early flush of mangrove seeds had ripened as new season seeds appeared in many places in the estuary. Time to go and repair the MPEDs before the influx got too heavy. All the MPEDs were made good during a visit in late July as well as fixing the disconnected boom that had come adrift last year.

Image 10. A repaired MPED ready to do it's job.

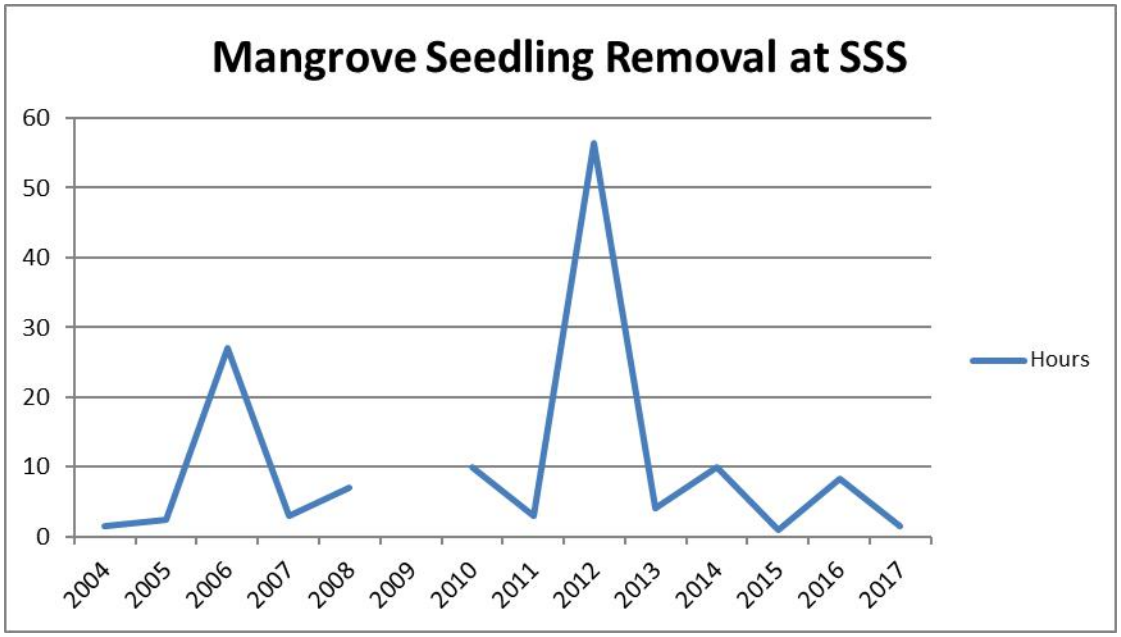
Image 11. One week later and it is working a treat.

Stockton Sandspit

This site is the most visible to the general public and probably one of the most visited. Restoration work at this site takes on several facets but the underlying focus is that of maintaning a shorebird roost. The volunteer effort here over the past twelve months amounted to 311 hours on this 4ha site.

Mangroves

Since 2002, when the primary treatment of the invading mangroves was carried out, follow-up seedling removal has taken place. Generally this activity takes place in January over a low-tide period and for some time now has not presented much of a challenge at all.



Over the course of a few hours, the entire area was be covered by carrying out systematic sweeps. Once completed, the remainder of the January effort focussed on weeding the marshes.

Clean Up Australia Day

Another relatively easy challenge was this year's Clean Up which demanded a minimal effort and only resulted in 14 bags of rubbish. This was not because the community has cleaned up its act but rather the result of a business house adopting Stockton Sandspit for their own Clean Up in the previous week. This may or may not happen again.

Image 12. All done by smoko!

Subsequent visits in March concentrated on weeding the Entrance Drive margins of Chinese Violet that breaks out from time to time. This aspect had not been addressed for a few years so it wasn't surprising that 11 bags of the biomass was ultimately removed from site.

TAFE

Another enthusiastic group of TAFE students decended upon the place in May to assess the health of the wetland and have fun carrying out some restoration. The main task presented to this group was to cut back the *Acacia sophorae longifolia* that was starting to creep across the lagoon margins. Roosting shorebirds require a friendly open space to feel secure and managing any tall vegetation is high on the list of priorities. With the native shrubs, this is not a regular undertaking but an important one just the same.

Image 13. Naturally seeding native shrubs can cause problems for roosting shorebirds.

Image 14. Wide open spaces are required for any roost to be viable.

The remainder of May was spent chasing out the bitou from the Entrance Drive edges and chipping out the tall weeds over the roost.

The Shelly

The creation of shelly sand has been the greatest challenge since 2003 but we have persisted. The 2017 effort spanned across June and July and involved 11 days of work. Ably assisted by CVA Better Earth Teams all the vegetation over a large area of Big Island and The Shelly was reduced as much as

possible in the first phase of the process. This is the most arduous component but the days are disrupted by “essential” shorebird observations to keep a sense of purpose and interest.

Image 15. Better Earth Team making good progress with The Shelly.

The second phase of the process was carried out by NPWS field officers as they have done for several years now. A rotary hoe was driven over the Big Island section to ‘fluff up’ the sand in preparation of the final phase, raking the sand free of vegetative matter. This raking effort was also undertaken by the Better Earth Team.

Image 16. Final raking of sand taking place on Big Island with some general weeding of marsh margins in the background.

The creation of shelly sand out on The Shelly no longer presents itself as a completely viable option; the work these days is certainly unsustainable. Over the past few years the invasion of couch grass has affected a growing amount of the treated area and this couch is impossible to address by hand weeding. As a result, the usefulness of these areas as potential shelly sand has quickly diminished.

A strategy for the future has emerged however. It is still within our reach to prepare Big Island and margins of The Shelly as we have done in the past. Also, a section of The Shelly (about 25% of the oringinal area) that lies adjacent to the margins can be sustainably treated for the time being. All the grass affected areas now should be regularly cleared of woody weeds and tall grasses such as Marram and Rhodes Grass. The relentless process of plant invasion is prevailing and reducing the area we can influence.

Ground Nesting Birds

Our ground-nesting birds continued to have poor breeding success during 2017 and as the amount of available open sand continues to reduce this is hardly a surprising result.

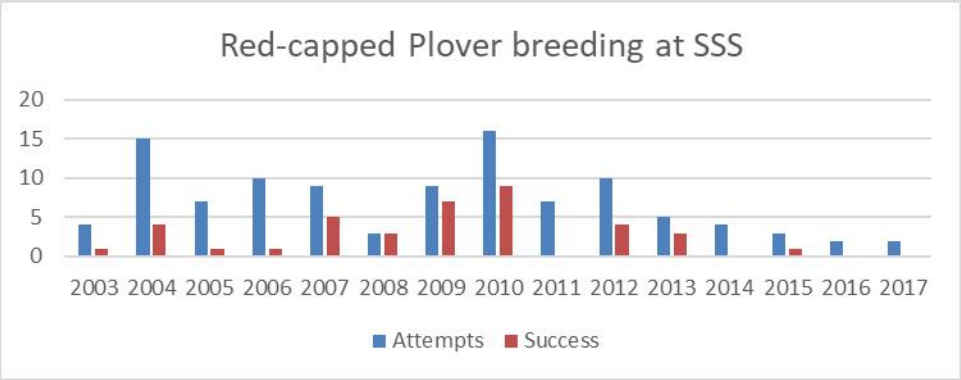


Figure 5. Red-capped Plover breeding attempts have almost ceased.

Red-capped Plover breeding appeared to be strong at Stockton Sandpit from 2007 through to 2013. This does coincide with the re-grading work that was carried out to allow the expansion of saltmarsh. Initially this work resulted in a vast amount of open sand ideal for nesting sites but as the invasion of saltmarsh within the tidal affected zone and the incursion of couch within those areas above it, the opportunities for nesting have diminished. The frequency of finding Red-capped Plover at Stockton Sandspit at any time of the year has also greatly reduced; the place in general doesn't suit them too well at all.

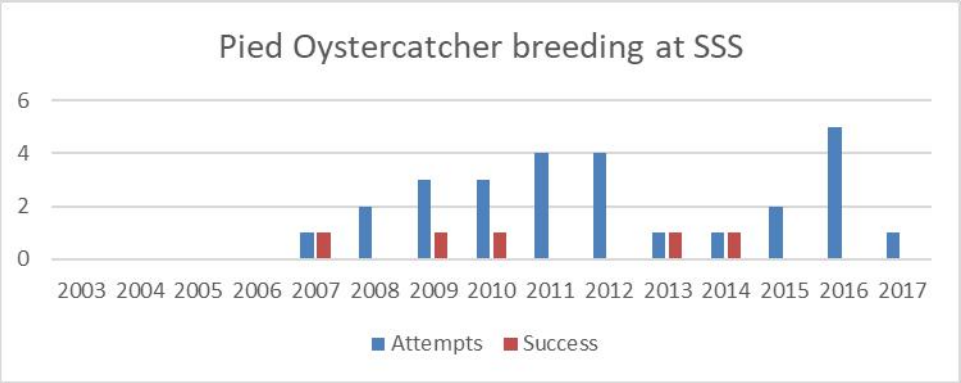


Figure 6. Pied Oystercatcher breeding has always been a bit hit and miss.

With regards the “resident pair” of Pied Oystercatcher it is more difficult to understand what is affecting their lives. The area they prefer to nest, Big Island, remains a viable space and its restoration each year continues to be a sustainable prospect. Also this pair continue to jealously guard their terrotory throughout the year so the low number of breeding attempts over the 2017 season remains a mystery. Other threats to these birds such as human disturbance and terrestrial predators remain of course, but not at any discernable iincrease at all.

Image 17. Predators such as the fox remain a problem for ground-nesting types as well as birds in general.

The Marshes

All other visits to the sandspit continue the general weeding work over the greater saltmarsh areas and within those sedge marsh margins around the lagoon. These areas are proven healthy systems and facilitate roosting and feeding opportunities for hundreds of shorebirds and other wading types. The effort to maintain these areas is minimal these days and completely sustainable.

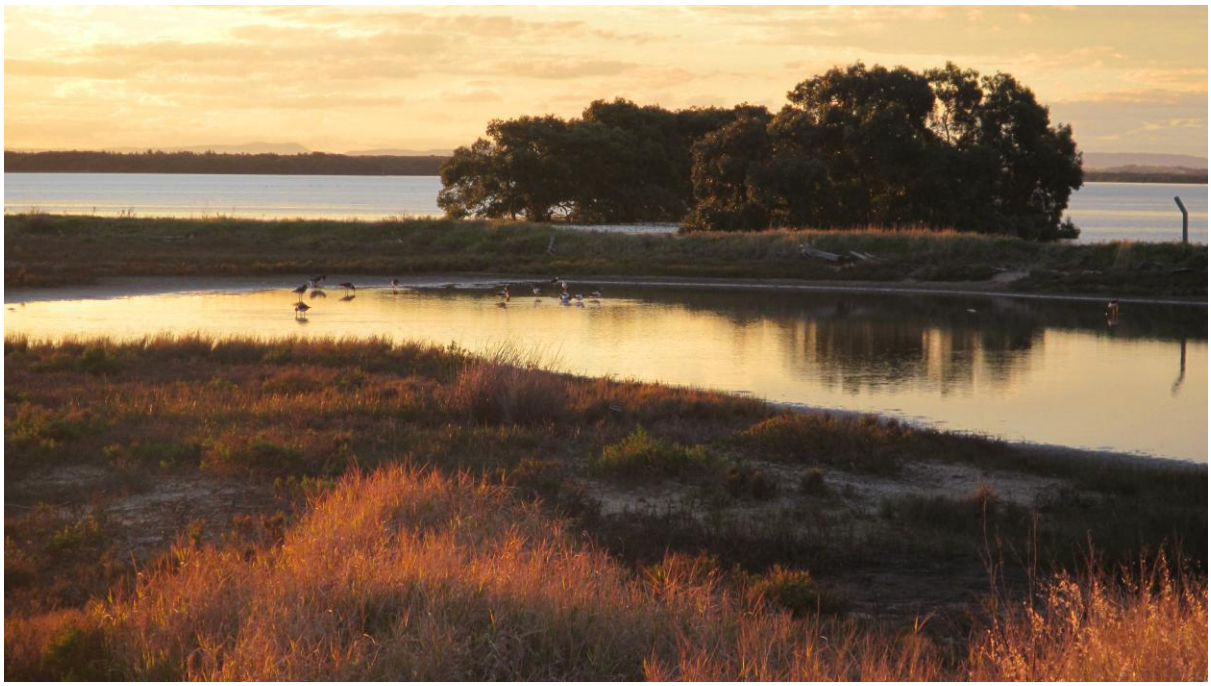


Image 18. Shorebirds enjoying healthy habitat.

Acknowledgements

These estuary projects continue to succeed because of the input of many people with a common interest in estuary health and shorebird habitat restoration.

All the works planning and implementation are the result of enduring partnerships that provide the organisational structure to make it all happen. The contributions of NSW National Parks and Wildlife Service, Kooragang Wetlands Rehabilitation Project and Hunter Bird Observers Club are ceasless and much appreciated.

Many thanks to all those individuals that have volunteered their time and effort in the field and gone home with a feeling of achievement and some sense of the issues confronting our shorebirds. Your efforts are certainly appreciated by those dear creatures that require safe roosting opportunities.

Particular acknowledgement is due to Boyd Carney (NPWS) for his constant availability and interest in the estuary. The in-kind service provided by NPWS through his support has proved to be crucial at times.

Two young leaders that I am obliged to make mention of here are Ben Ellis (Intrepid Landcare) and Sam Desforges (CVA). Both these gentlemen have more than ably lead their respective teams to achieve more than expected.

Tom Clarke

Project Coordinator HBOC

December 2017