



CONSERVATION UPDATE

March 2020 to May 2020

Prepared by Jessica McKelson, Conservation Manager and Conservation team.

HIGHLIGHT – THREATENED SPECIES

Hooded Plovers

- It was a slow start to the Hooded plover breeding season with no chicks fledging before Christmas and it wasn't until the 17th February that three chicks successfully fledged from the north-west coast of the Island (two from Red Rocks and one from the 24/7 dog off leash beach at Graydens Road).
- It wasn't until late January that the Island saw a dramatic reduction in beach use by visitors and residents, giving the Hooded plovers breathing room to successfully fledge. A further 6 chicks fledged along the south coast beaches in mid-April, bringing the total number of fledglings for Phillip Island (Millowl's) 2019/20 breeding season to 9 - from 19 breeding pairs. This number of birds fledged per pair was therefore 0.474, a good result for the Island as a rate between 0.45 and 0.5 is needed to maintain a viable population.
- Towards the end of the season there was some interesting activity at the aptly named "Crazy Birds" beach. The Hooded plover parents at Crazy Birds hatched three chicks at about the same time that the pair at Forrest Caves (just around the corner) hatched two chicks. One of the Crazy Birds chicks was taken by a Pacific gull quite early on, but shortly after that, the Forrest Caves pair walked their two chicks west around the point to the eastern end of Crazy Birds beach. What happened next has not often been recorded for Hooded Plovers - one of the Crazy Birds chicks joined up with the Forrest Caves brood, the now brood of three in an event called brood amalgamation returned to Forrest Caves beach. This is a rare event, and only ever recorded once before on Phillip Island.
- Whilst COVID-19 gave the chicks a reprieve from summer beach crowds it stopped research activities for our interns, and all 'Hooded Plover Watch' volunteer activities were stopped including the Hooded Plover and Gull Count on the 21 April which was completed by Nature Parks staff. Despite volunteering being cut short by restrictions, we still recorded almost 750 volunteer hours this breeding season!



Photo 1 & 2 - Hooded Plover success

Eastern Barred Bandicoots

- This autumn we successfully monitored the Eastern Barred Bandicoot populations on (a) Churchill Island, (b) around Fishers Wetland on Phillip Island adjacent to Churchill Island and (c) on Summerland Peninsula.
- We caught 66 individuals on Churchill Island and 17 individuals in Fishers Wetland - 42 of which were cleanskins! The populations continue to do well. The number of individuals is similar to our last monitoring in September which indicates that there has been a good recovery on Churchill Island after 40 adults were collected for release to French island in October 2019.
- By the end of March more stringent COVID19 restrictions were in force, so our volunteers and external partners couldn't join us; including the Zoos Victoria vets who would normally come down to take blood samples for disease screening.
- On Summerland Peninsula we caught 40 individuals: 17 males and 23 females, of which 18 were new animals. This is a few more than previous sessions. Overall, individuals appeared to be in really healthy body condition. We also caught 6 of the original founders, still kicking 2½ years on.
- Eastern barred bandicoots continue to spread across the Summerland Peninsula, with dig surveys and sightings put them as far away as Kitty Miller Bay. The population on Phillip Island (Millowl) is now estimated at roughly 300 individuals – giving the State Government confidence that this species can successfully be removed from the “Extinct in the Wild” list – a huge achievement for everyone involved in this project and a major milestone in arresting species decline in Victoria.

Threatened Flora

- A Threatened Flora Recovery Plan is being finalised by the Conservation Department and focuses on the five flagship species presented in the Threatened Species Plan.
- These action plans will outline in-depth actions for recovering our target threatened flora on Phillip Island. The focus on flagship species is intended to provide overarching protection to the habitats they represent.
- The iconic Crimson berry, known to exist at only two locations on Phillip Island, is one of these flagship species. A study has been initiated on the population, aiming to establish what its key threats are, and how we can assist the population's growth.
- Significant grazing by Swamp wallabies was observed on camera traps – so a fence has been constructed around the plants to reduce this grazing pressure.
- Weeds such as gorse and thistles have been removed from the area in an effort to relieve pressure on the threatened Crimson berry.
- We are also investigating propagating the species at the Barb Martin Bushbank



Photo 1 – Crimson Berry. Photo 2 – Thomas Nixon, Threatened Species Officer putting up a fence to protect the threatened flora.

SHORT TAILED SHEARWATERS

The 2019 Short-tailed shearwater breeding season was extremely unusual. Normally, shearwaters are very predictable, arriving from their 15,000 kilometre migration from waters around Alaska at the end of September. This season started with the birds starting to arrive 10 -14 days later than normal, a significant delay for a migratory bird that has a very tight schedule to keep. And on top of that, the numbers returning to the colonies was only about 10% of what we might normally see. Interestingly, the birds that did return were in good condition, plus there weren't reports of birds washing up dead on beaches. It didn't look like a large mortality event was responsible for the low numbers.

In partnership with the Victorian Ornithological Research Group we continued to make regular visits to 180 artificial burrows nestled in one of the shearwater colonies so we could follow how successful the breeding season was for the 1.4 million birds returning to Phillip Island each year. Our monitoring has slowly built a more positive picture.

By early November, less than half the usual number were thought to have returned to the colonies, but numbers were increasing at each research visit. During mid-November, the shearwaters undertake a two week 'honeymoon' in which they fly down to feed in Antarctic waters before returning to lay a single, large egg in their sand dune burrows. Our researchers visited the colony after this honeymoon trip and were very surprised and pleased to find that many more birds had returned to lay their egg at the normal time and that the colony contained at least as many birds with eggs as in a normal year.

While this was great news, it still leaves many questions unanswered. Like - **what was going on with all those birds that arrived late?**

During the egg incubation phase, we normally deploy tiny trackers on some of the birds, which record the path the birds take on their foraging and migration trips. The data can be downloaded when they're taken off the bird, sometimes years later. This year we deployed another 20 trackers and recovered seven from previous years which may give us clues about the birds activities.

Shearwater eggs hatch in January and we returned in late February 2020 to inspect nests. We found that almost all of the eggs had hatched and the chicks were healthy and in good condition. Then our final nest check in mid-April, which is timed to be just before fledging, revealed that the season had been as good, if not better, than normal years. The adults had left and gone south towards Antarctica to feed up before their migration back to the Northern Hemisphere, though it was clear some of the chicks had recently been fed given their full, soft bellies, so perhaps there were a few adults still around visiting briefly at night. Some of the chicks at this stage were already emerging from their burrow to exercise their wing muscles in preparation for their maiden flight.

- The total number of chicks reaching fledging was more than last year, 40% of boxes this year compared with 30% last year. Survival of these chicks since hatching had been excellent, 72 of 73 hatchlings having survived to fledging.
- Not only that, their weights were very good (median = 785 g; range 365 g to a monstrous 1050 g), heavier than the same time last year when median was 730 g. Almost all chicks were in condition to eventually attempt migration.
- As they learn to fly and set off on their first migration, the fledglings may end up landing on the roads at night causing a hazard for not only the birds but drivers as well. So, each year Phillip Island Nature Parks partners with Bass Coast Shire Council, Regional Roads Victoria, SP Ausnet and the local community to assist the shearwaters' safe departure.
- The birds are known to flock to the San Remo bridge lights, so in conjunction with SP Ausnet, the bridge lights will be switched off as in previous years for up to 8-10 nights during the peak of departure. Since the inception of the Shearwater Rescue Patrol in 1999, thousands of birds have been saved from the roads as they attempt to fly.
- The Nature Parks will also implement several road safety initiatives including lowering speed limits on affected roads to 40km/h, placing electronic message boards, and installing a Regional Roads Victoria supplied mobile billboard to let motorists know that there may be shearwaters on the roads.

- This collaborative effort has recently been the focus of a global case study about the effects of Australia’s artificial light pollution on wildlife. Globally, artificial light is recognised as a growing threat to the conservation of wildlife and is increasing by around two per cent per year. A team of Nature Parks scientists contributed to the recently endorsed Light Pollution Guidelines for Wildlife including Marine Turtles, Seabirds and Migratory Shorebirds which raise awareness and provide a framework for assessing and managing these impacts to protect wildlife.
- Indications from the shearwater patrolling completed this fledging season was that the chicks departed on time with the peak around 1 May when we had favourable strong winds.
- All in all, it looks like we had a successful breeding season on Phillip Island this year, despite the very unusual start. There are still many unanswered questions. Our researchers are hoping that trackers deployed over the past few years will reveal when the birds returned on their migration and where they have spent their time before returning to the colonies. And in the longer term, this research into their breeding success at colonies and how changing global conditions are affecting this important ocean wanderer will help safeguard shearwaters and keep them returning to Phillip Island.



Photo 1 & 2 – STSW nest box and bird check-up.

AUSTRALIAN FUR SEALS

Results of the 2020 Annual SealSpotter Challenge

What was the challenge?

- To count as many pups and seals as we could in two weeks 02-16 April 2020.
- To engage Citizen Scientists from across the globe

Our two indicator sites, Seal Rocks, near Phillip Island in central Bass Strait and The Skerries, near Mallacoota close the Victorian border with New South Wales, were surveyed in the 2019 breeding season and counted during the “Annual SealSpotter Challenge”. We are now excited to present the results. To all who participated: thank you so much for your efforts.

This year we brought the date forward from June to April as an activity for the global community during these unprecedented times of social isolation caused by the Covid-19 pandemic. We sincerely hope that this conservation challenge gave you some joy at this time.

Summary of participation:

- 289 Citizen Scientists contributed to the counts
- Participants were from 37 countries
- All continents were represented, except Antarctica
- Users marked 281,197 seals in 14,289 images, a 40% increase on last year’s response.

Summary of results

- Citizen Scientists did a great job counting this year we had excellent replicate rates on each image, which helps with precision.
- Sometimes, a user might accidentally click “submit” before actually counting an image. We look for these unusual counts, and remove them from the data, then average the remaining replicates, and add all the images from a survey together to find the total.
- Comparing the last three years at Seal Rocks, the highest numbers were observed in 2017 (note we did not calculate adult-juvenile counts in 2017).
- Two surveys were performed at Seal Rocks (13 and 27 December 2019) and one at The Skerries (19 December 2019), unfortunately because of the devastating bushfires we were unable to fly the late December flight from Wingan Inlet over The Skerries.
- Collectively for the three surveys, users labelled 805 points as “entangled” seals. Not all of these will be entanglements, and many will be multiple counts of the same seal. We are currently validating these with likelihood scores (25, 50, 75, 100 % likelihoods) and determining a method for estimating the actual total number of entangled seals per survey.
- Using the pup count results, we have now identified that the peak pupping occurs around the 13 December at Seal Rocks.
- 95% confidence intervals are small (good) and best for adult- juveniles that are easier to count, this is a great indication that our method is working really well.

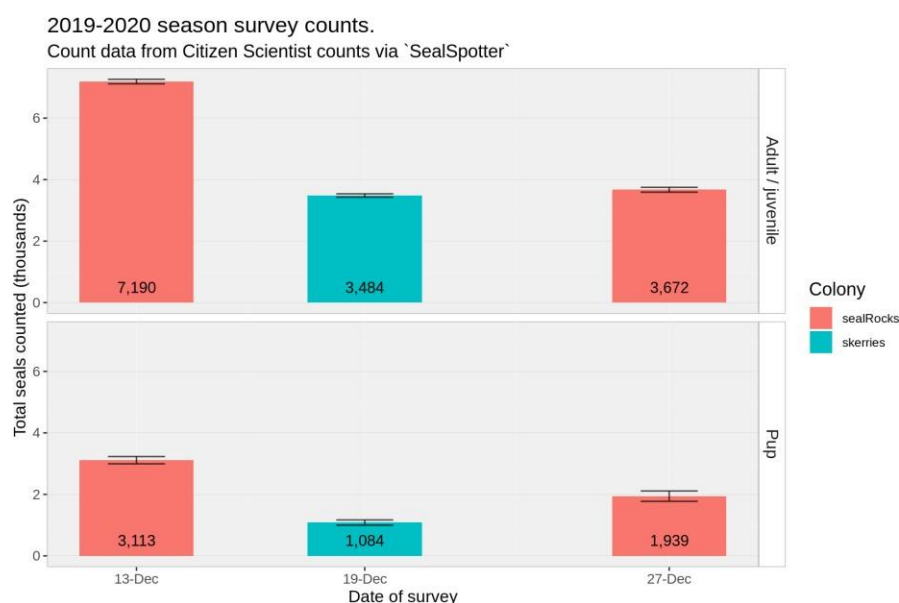


Figure 1. Citizen Scientist averaged counts for adult-juvenile (adult_juv, top) and pup (live + dead, bottom) Australian fur seals at Seal Rocks (red) and The Skerries (blue) for the 2019 breeding season counted during the 2020 SealSpotter Challenge in April. Error bars show 95% confidence intervals, calculated after extreme counts have been excluded.

Where to next for SealSpotter?

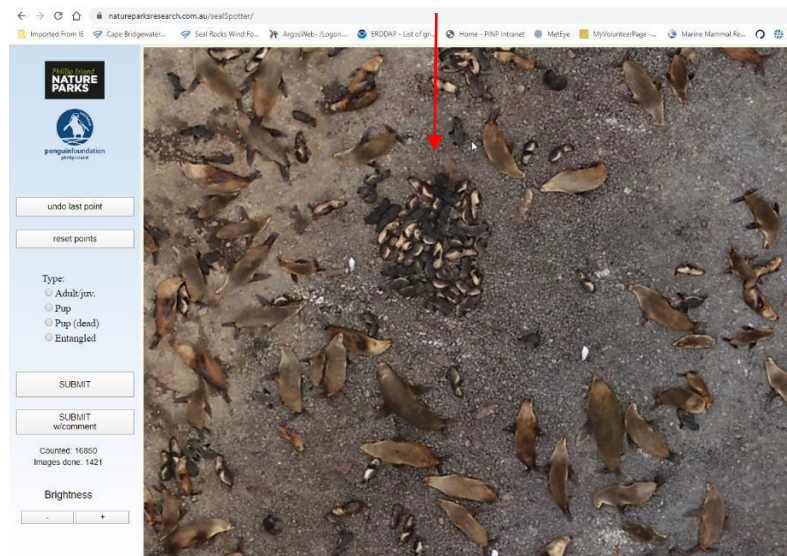
- We will be testing the best time to survey at The Skerries in the next breeding season.
- The use of SealSpotter to identify entanglements is being investigated and observations are being validated.
- It is clear to us that if we can improve the quality of the images, we will improve the pup counts and the precision of the count data, especially for Seal Rocks. We are exploring the possibilities of flying slightly lower over the colonies to achieve this, while remaining committed to avoiding any interference of the seals.

- We have loaded a couple of fresh surveys from Seal Rocks into the SealSpotter portal for the keen counters out there to improve our information on the peak numbers of pups born during the pupping season. Happy counting!

Recent research outcomes from SealSpotter

In collaboration with Monash University, final year students are using the images labelled by you to test whether computers can count the seals. This will not put you out of a job; the aim is to have machines help us focus the efforts of our Citizen Scientists better, so that we can reduce the workload while maintaining the quality of the counts.

Photo 1 - Check out that pup puddle!



PEST CONTROL

Feral Cats

- A total of 13 cats were trapped from the Ramsar Coastline and Newhaven Swamp bringing the total to 74 feral cats removed for the year across the Nature Parks.
- Our research technician Frank Gigliotti has taken the opportunity to enter historic data from the Nature Parks pest control program, into a new database. Having this in an electronic form will allow the conservation team to fully analyse the pest control program dating back to 1997. The data will allow the team to fill current knowledge gaps, better design and target pest animal programs and answer some questions such as:
 - Lure/bait preference and seasonal variation
 - Native fauna dispersal/activity pre and post fox eradication
 - Feral cat dispersal/activity pre and post fox eradication
 - Efficacy of current cage trap techniques
 - Non-target impact and welfare of current cage trap techniques

Meet 'Milly', our new Jagd Terrier pup who will be working along-side 'Marbee' (5-month old Border Terrier pup) to detect feral cats and support the protection of our native wildlife on Phillip Island. Both Milly and Marbee training program is progressing well so they can help us actively seek out cat scats to determine presence and be able to follow a cat scent to help rangers identify 'lay-up' areas and locate breeding dens.



Photo 1 – Milly & Photo 2 – Marbee

Rabbits

- In collaboration with Chantelle (Rabbit Project Officer with Bass Coast Landcare Network), rabbit baiting and warren destruction occurred across eastern parts of the Island with a marked reduction in rabbit densities at the majority of sites. A release of RHD K5 virus was released on the Summerland Peninsula to reduce the density of rabbits with further releases planned at Surf Beach and Fishers Wetland.

COASTAL AND WOODLAND MANAGEMENT

Woodlands & Fire Management

- With the fire danger period ending for Bass Coast on 16 March 2020, the Nature Parks made a quick start on fuel reduction with a series of small burn piles made up of woody weeds that were removed earlier in the year. There will be more piles to complete at the Koala Conservation Reserve, Churchill Island and Cape Woolamai to remove woody weeds and debris. No fuel reduction burns are planned for this autumn.
- New recycled plastic bollards have been installed at Oswin Roberts and Conservation Hill reserves where we are aiming to restrict public access to management vehicle tracks and therefore reduce risk to the public. The use of recycled plastic bollards is a great move away from the traditional treated pine option.
- Several Rangers and contractors have recently completed the Asset Protection Zones (APZ) work on Beresford Road in Cape Woolamai. The APZ involves lessening the available fuel loads of vegetation in a buffer zone 30 meters from adjacent landed owners in several areas of the park. Preparation for upcoming burn piles for Asset Protection Zone (APZ), this fuel reduction involves a series of small burn piles, also several piles of woody weeds to complete in the burn piles. Sites are located at Silver leaves, KCR, Churchill Island, Cape Woolamai and Conservation Hill.
- The fire access tracks in Summerland Estate have now been coded and street names have been removed. New maps will be established for management.

- Rangers have been clearing fallen trees and branches off tracks from recent strong winds in Oswin Roberts, Conservation Hill and Ventnor Koala Reserve and also cleaning up the damage caused by a stolen car driven down a beach access track at Silverleaves.
- Summerland Peninsula fire suppression actions include Conservation staff removing the vegetation on the Summerland Peninsula in order to strengthen strategic fire breaks throughout the reserve. Removal or 'thinning out' of shrubs and small trees along select roadsides will help reduce the intensity and rate of spread of a fire, if one were to start on the Summerland Peninsula.



Photo: Staff working off St Helens Rd at the Summerland Peninsula

- Die back in Oswin Roberts and other woodland areas on Phillip Island is a major threat to the future of these environments. There is not one treatment, however, we are trying to understand and manage what is occurring following scientific guidance. Current topics we are looking into include; no new recruitment due to over grazing from wildlife, changing vegetation due to changing environmental habitats, wattles under stress due to borers / insects, possible introduced pathogens, past management activities including previous planned burns and climate change are some of the questions we are looking into.



Photo- Staff have been clearing fallen trees and branches off tracks from recent strong winds in Oswin Roberts and Conservation Hill and Ventnor Koala Reserve.

- Part of our management of woodlands reserves is tree planting. This year we have planted over around 400 plants out of 1600 plants at Oswin Roberts. Each tree has large strong guard installed to prevent native wildlife from grazing and destroying the native habitat regeneration.



Photos- Conservation staff reallocations tree planting in Oswin Roberts.

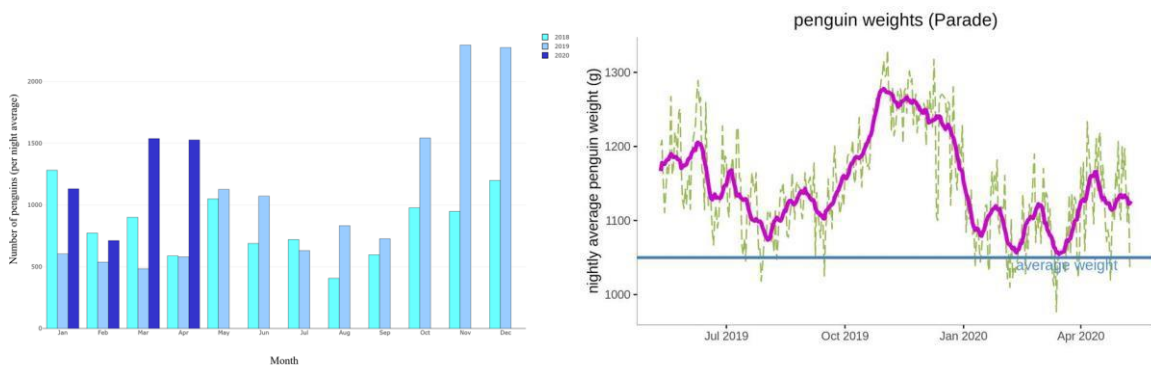
PENGUINS

The average number of penguins crossing the beach at the Penguin Parade in March 2020 was **1538 penguins/night**, three times higher than March 2019 (485 penguins/night) and 70% higher than March 2018. These many penguins are coming home just for the evening as the colony during the day is relatively quiet. A high number of penguins coming ashore suggests that penguins are feeding closer to Phillip Island. The ocean temperature is still warm, with a predicted development of a La Nina event, which is usually favourable for foraging fish – penguins' favourite food! Some penguins have been caught on our cameras collecting nesting material and eating shell grits. One female has even laid eggs. These all vital signs of the autumn breeding in on the way.

The once-a-year penguin quarantine during moult: lessons from the penguin world



April 2020 penguin numbers



- Staff have been fixing up some of the penguin pathways and assets, to enable them to return to their burrows easy without natural erosion impacting the access pathways.



Photo - The collapsing east wing of the weighbridge pathway in Radiotracking bay; before and after repairs by Research Technical staff.



Photo - The collapsing of the penguin path between the Penguin Parade viewing standings; before and after repairs by the Visitor Experience rangers.

KOALAS – BUSHFIRE RESPONSE

- The Nature Parks has a total of 13 koalas now at the Koala Conservation Reserve, all undergoing critical care. These are Mallacoota koalas, and working in partnership with Healesville Sanctuary, we have been able to provide them with the time, space and quality diet to recover from the bushfire catastrophe. It is planned that in Spring we will release these animals back to safe forest areas where they can be wild again. However, we did receive a permanent male koala named Roger, who is currently residing with two females that are chlamydia free. He had lost all his nails due to the fires and had severe burns. He is now on the mend and will live at our Reserve without stress into the near future.
- We have rewritten the safety protocols for cutting browse at the Westernport Water site in Bass, in response to the COVID19 pandemic. Cutting will continue and we are extremely grateful for their assistance in supplying koala feed.
- Preparations are underway for the planting season. We aim to add another 2000 Eucalypts into the woodland and plantation areas of the KCR.



Photo - Roger is the latest male to come to us from Healesville Sanctuary and is a bushfire victim on the road to recovery.

WILDLIFE REHABILITATION & MANAGEMENT

- Short-tailed shearwaters have been keeping rehab/rescue staff busy during April as the chicks learn to fly, ending up in strange and far flung places. Little penguins have also been regular visitors to the rehab centre with a one footed penguin 'stumpy' in for a short time to regain condition from the annual moult.
- At the moment we have one animal in care. A young female brushtail possum, who was found orphaned and is growing well.
- We name the possums that we have in care and per year they all start with the same letter of the alphabet. This year we're up to 'V'. Below is a photo of 'Vercua' who recently came out to see what the staff were doing when food was placed in her enclosure at the end of the day.



Photo – Vercua the Brush tail possum

VOLUNTEERS / STUDENTS

We celebrated National Volunteer Week in May. This week is an opportunity for us to show our appreciation to the millions of Volunteers who give their time to causes they are passionate about. This year's theme celebrates how volunteers change communities and change lives. This could not be more relevant in 2020, where we have seen volunteers in communities across Australia come together to support people and wildlife.

Since 17th of March, Nature Parks volunteers are playing their part by staying home to keep us all safe. Prior, this financial year we saw volunteers and Youth Wildlife Ambassadors contributed the following hours to support of our conservation work:

- 1,322.80 hours for revegetation, weed removal etc
- 788.82 hours in the Hooded Plover Watch program
- 860.82 hours in the Eastern barred bandicoot team
- 130.50 hours in other research, e.g. seal scat sorting
- 87.27 hours in the Surf Beach Sunderland Bay Coast Care Group
- 847.98 hours for wildlife rescue
- 62.49 hours for water monitoring

*Note Barb Martin Bushbank hours are yet to be inputted for the year.

An additional, 1248.75 hours were recorded with interns to our pest management, threatened species and wildlife clinic.



Photo - The Nature Parks volunteers are a super team and do so much to protect nature and wildlife. Thank you to all the volunteers at the Nature Parks who help us!

RESEARCH PUBLICATIONS

Boersma, P. D., P. G. Borboroglu, N. J. Gownaris, C. A. Bost, A. Chiaradia, S. Ellis, T. Schneider, P. J. Seddon, A. Simeone, P. N. Trathan, L. J. Waller and B. Wienecke (2020). "Applying science to pressing conservation needs for penguins." *Conservation Biology* **34**(1): 103-112. (published online 2019)

Cavallo, C; Chiaradia, A; Deagle, B; Hays, G; Jarman, S; McInnes, J; Ropert-Coudert, Y; Sánchez, S; Reina, R (2020). Quantifying prey availability using the foraging plasticity of a marine predator, the little penguin. *Functional Ecology*

Joly, N (2020) Effect of climate variability and climate change on top marine predators. MSc Thesis, University of Strasbourg (France). Supervisors: Claire Saroux, Andre Chiaradia

McCallum, C. (2020) Current and future time of breeding and success under increasing ocean temperature for an inshore seabird. Honours thesis, Monash University. Supervisors: Richard Reina, Andre Chiaradia

Meyer, X., A. J. J. MacIntosh, A. Chiaradia, A. Kato, F. Ramírez, C. Sueur and Y. Ropert-Coudert (2020). "Oceanic thermal structure mediates dive sequences in a foraging seabird." *Ecology and Evolution*

Adriaanse, K., Lynch, M., Firestone, S., Rendall, A., Sutherland, D. R., Hufschmid, J., and Traub, R. (in press). Comparison of the modified agglutination test and real-time PCR for detection of *Toxoplasma gondii* exposure in feral cats from Phillip Island, Australia, and risk factors associated with infection. *International Journal for Parasitology: Parasites and Wildlife*.

Halstead, L. M., Sutherland, D. R., Valentine, L. E., Coetsee, A. L., Rendall, A. R., and Ritchie, E. G. (2020). Digging up the dirt: quantifying the effects on soil of a translocated ecosystem engineer *Austral Ecology* **45**, 97-108. doi: 10.1111/aec.12833.

Ritchie, E. G., Coetsee, A. L., Rendall, A. R., Sutherland, D. R., and Valentine, L. E. (2020). One little bandicoot can dig up an elephant's worth of soil a year – and our ecosystem loves it. *The Conversation*.

Fromant A, Schumann N, Dann P, Cherel Y, Arnould JPY. 2020. Trophic niches of a seabird assemblage in Bass Strait, south-eastern Australia. PeerJ 8: e8700 <http://doi.org/10.7717/peerj.8700>.

GRANTS

- WWF Australia approved a grant to build two new large pens, to complete the final transition of koala recovery before release back to the wild in Spring. These large pens are the approximate size of our current koala boardwalks and will be facilities that can be used in the event of catastrophic events for wildlife. Approximate time of delivery is late June/July.
- DELWP have approved a grant to help support the rehabilitation, rescue and release of native wildlife. The grant has been able to assist the team in supplying all the tools and equipment for the new bushfire koala victims, food, veterinary and improving our emergency management tools in the incident there is an oil spill.



**Photo 1 – Annie & Photo 2 – Abigail
Both recent koalas that are recovering from the bushfires**