



A message from Bec and Ross

So here we go, the 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.
- 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.

For those keen to keep assisting with additional survey counts, we have kept the portal open and loaded some new images. Additional surveys add to our understanding of the peak of pup births to help us perform future surveys at the best time for the most precise data. For those who prefer a brief burst of intensity, we look forward to our next collaboration during the 2021 SealSpotter Challenge.

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.

COLLABORATORS WITH IMAGE COUNTS > 1,000

Shakira, 1939
Naomi W, 1939
Terri H, 1939
Karina S, 1939
Diana H, 1050
Donna, 1020

Summary of results

- Citizen Scientists did a great job counting this year (Figures 1 & 2).
- 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 Dec, 2019) and one at The Skerries (19 Dec 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 Dec 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.

2019-2020 season survey counts.

Count data from Citizen Scientist counts via `SealSpotter`

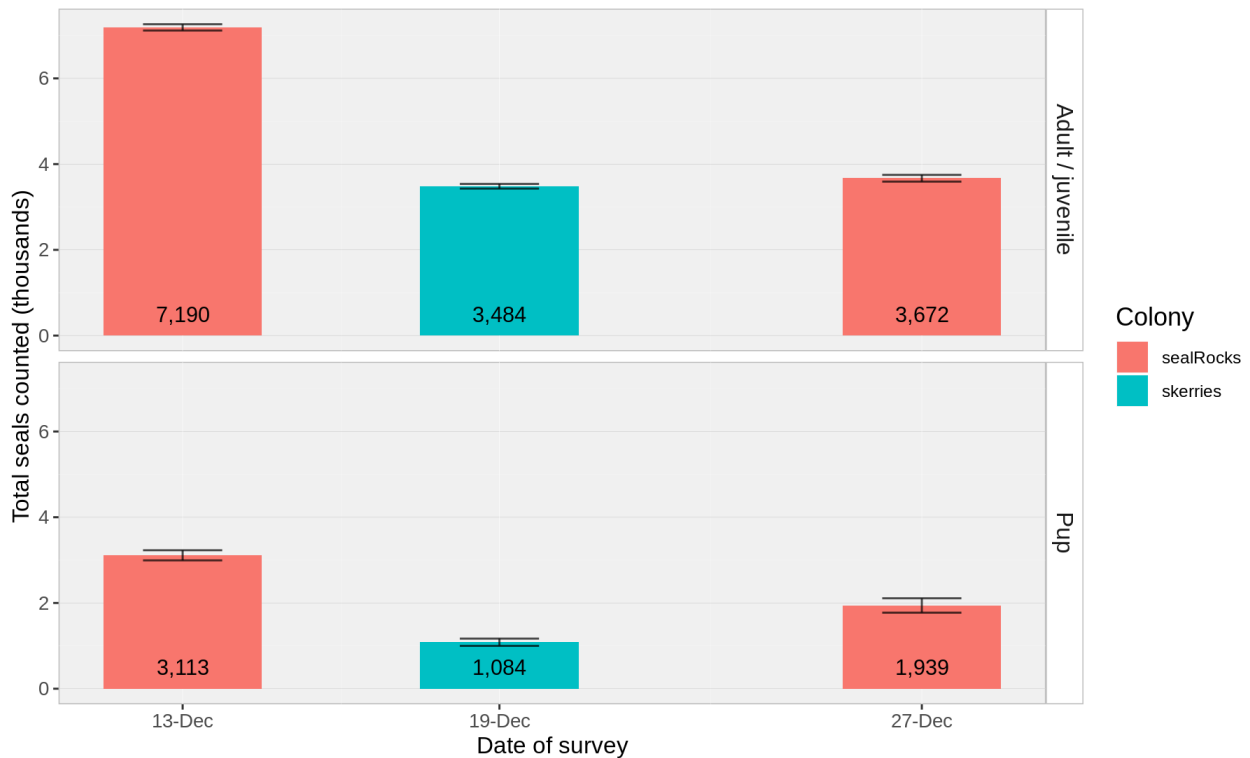


Figure 1. Citizen Scientist averaged counts for adult-juvenile (adult_juv, top) and pup (live + dead, bottom) Australian fur seals at Seal Rocks (red) and The Skerries (blue) for the 2019 breeding season counted during the 2020 SealSpotter Challenge in April. Error bars show 95% confidence intervals,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

Seal Rocks survey counts.

Count data from Citizen Scientist counts via `SealSpotter`

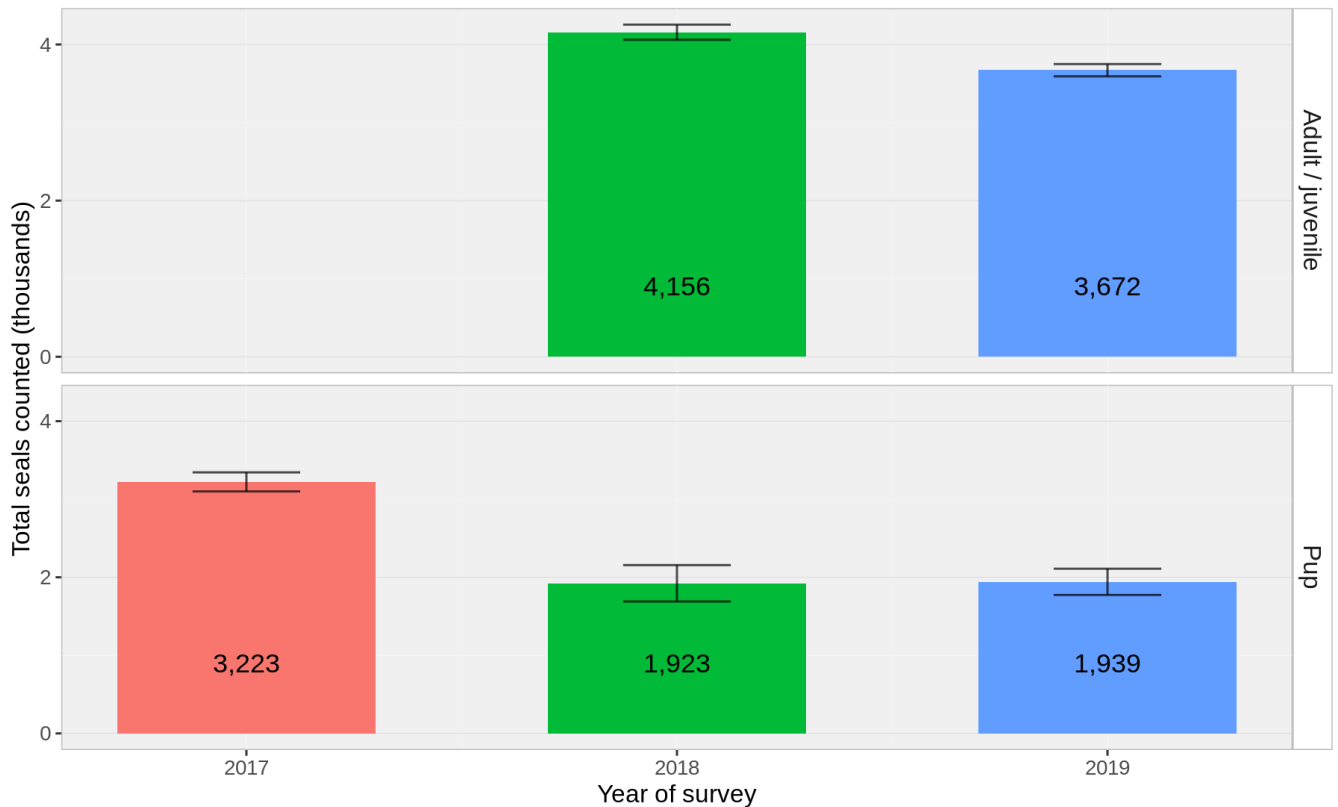


Figure 2. Comparison of Citizen Scientist counts for adult-juvenile (adult_juv, top) and pup (live + dead, bottom) Australian fur seals at Seal Rocks over three breeding seasons (2017, 2018 and 2019). Error bars show 95% confidence intervals, calculated after extreme counts have been excluded.

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!

What are the Australian fur seals up to at the moment?



The pups have grown a lot and are moulting from their lanugo coat to their juvenile waterproof coat playing in the water. Females are leaving the colonies to find food and returning when they can to feed their pups. Hard work – always lactating, always pregnant and foraging too.

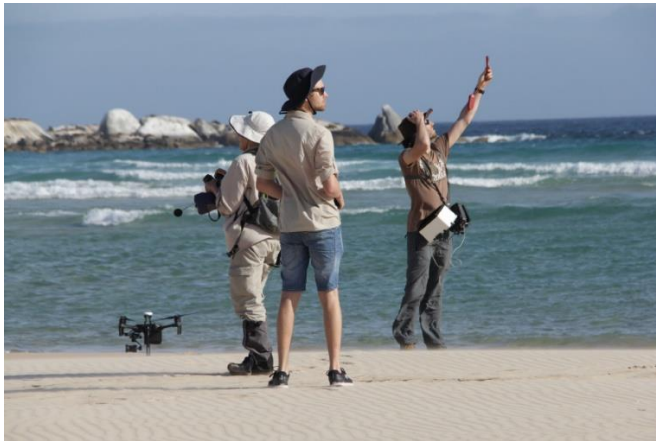
Remember – when you see a fur seal ashore, they aren't lazy, they are tired. Give them a wide berth and let them sleep.

Recent research outcomes from SealSpotter

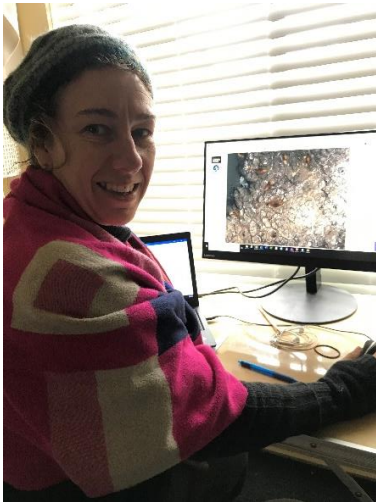
In collaboration with Monash University, final year students are using the images labelled by you to test whether computers can count the seals. This will not put you out of a job; the aim is to have machines help us focus the efforts of our Citizen Scientists better, so that we can reduce the workload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

Thank you again for all your hard work. Please stay safe and continue counting if you want to, the portal is open. See you next year for the “Annual SealSpotter Challenge, June 8-23 2021.

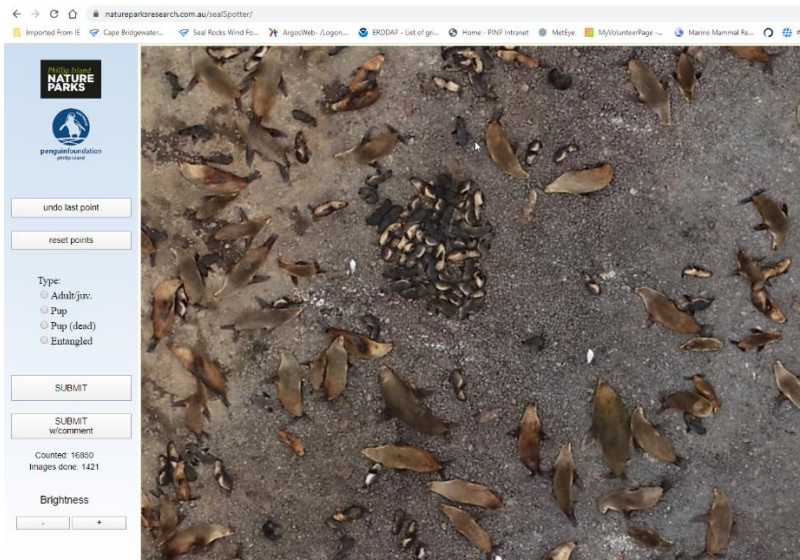
Bec and Ross ☺, Conservation Department, Phillip Island Nature Parks



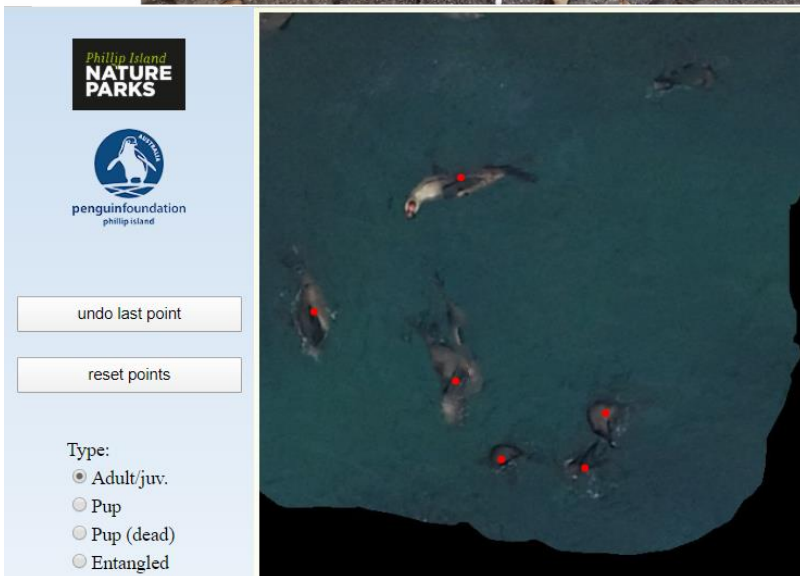
(Left) Testing the wind and looking for sea eagles and other birds before flying over The Skerries (L-R: Wendy Elsner, Ben Viola and Ross Holmberg). (Right) Flying the Matrice to Seal Rocks.



(Left) Bec at home counting seals on SealSpotter, (centre) *New-born pup cuddles at The Skerries*, (right) *entangled seal (blue dot) at Seal Rocks*.



Check out that pup puddle: a favourite SealSpotter image of Seal Rocks from Bec



Awesome time to take the photo – that seal has her mouth open!!