



The Hutton's Shearwater Charitable Trust

August 2018, Issue 22, ISSN 1179-5646.

Newsletter

In this issue



Colony report
Page 2



Feature - Research results
Page 3



Hut repairs
Page 6

Ted's Talk

It has been a very busy period.

Richard Cuthbert has been out and done his survey work, and an outline of the results was given at a presentation of all the MPI funded "Earthquake Recovery" projects on June 27. The report from Richard highlighted several interesting things. We had more birds than we thought pre quake, about 300,000 breeding pairs, not 110,000. We lost about 12% of the colony land area to landslide, and about 30% of the breeding birds. So, post-quake we have about 200,000 pairs. We lost as many as we thought we had, and ended up with twice as many. Could have been a lot worse.

This year the Fly Safe went quite well, with no major crash-landing events (but with the second highest total of the last 5 years) the, though three successive nights did have a dozen or so birds each night, with several sets of volunteers out driving the streets picking up crashed birds.

DOC have completed repairs to the hut in the Kowhai colony, so Paul Scofield and his team can

now do the mark-resight program this spring. A big thanks to all who made that happen.

Te Rae o Atiu had 25 eggs this season, with 17 chicks fledging. All birds have left now, and the deck of our house is piled high with PIT recorders, many in need of disassembly and new boxes.

A visit from some the North Canterbury Forest and Bird was at exactly the right time to help bring all the recorders out of the colony and into our trailer. Their help was very much appreciated.

We had 4 Acorn trailcams in the colony this season, three pointed at occupied burrows and one at the "take-off ramp". On the 167th day of recordings we observed a mouse in one of the videos. Twelve days later a second video contained a mouse, 23 days after that a 3rd, and a 4th was recorded 4 days later, 2 nights before we removed all recording gear. That looks suspiciously like an exponential increase in the "predator free island" they now occupy.

(Cont. overleaf)



Ted's Talk (cont.)

We are working with DOC to design and implement a program to seriously reduce numbers – eradication would be nice, but not an absolute requirement.

An issue we have with the Acorn cameras is that it takes 3 seconds between triggering and video being recorded, so the vast majority of videos have nothing in them, whatever it was that triggered them having moved on seconds before. Frustrating, but still better than nothing.

This season has proven clearly to

me that while Geoff is definitely the prime reason we are aware of the birds, it is Lindsay Rowe, and the huge amount of time and energy he has put into fund raising, financial management, and developing and operating the science and monitoring, that we actually have the predator proof fence, and we know as much as we now do about these amazing birds. Thank you, Lindsay. Just the couple of hundred hours I have put into continuing the systems you developed has given me some appreciation for how much effort you must have put

into their development and operation over the last decade.

To all other trustees, and John, and the various researchers and educators, and funders and supporters. a big thank you for your ongoing efforts in all the many areas you are working on.

Ted Howard

Chair



Te Rae o Atiu - Colony Report

The 2017-18 season was our best ever at the Te Rae O Atiu colony. 25 eggs laid and 17 chicks fledged this season (70% survival – and all of the failures had at least one of the partners being a first year returning bird). Each chick received its Passive Integrated Transponder (PIT tag) and leg band on the 3rd of March.

A broken wire on one of the recording coils meant we only got data on the movement of 16 of those 17 chicks. Of those 16, birds, 15 went only to their own burrow, only one bird visiting the burrows of 2 other chicks prior to leaving the colony. One of these

chicks, the first hatched and heaviest (51) spent 16 days coming and going before leaving, the next longest was 12 days, 2 at 10 days, 1 at 9 days, 2 each at 8 and 7 days, 1 each at 6, 5 and 4 days, 3 at 3 days and 1 at 2 days before leaving.

The table below shows the birds from translocations and hatchings over the life of the colony – the last line being this year's birds.

This year we had our first chick back from 2014-15, and more significantly we had 5 of the 8 chicks hatched in 2013-14 return

to the colony. That is a great survival and return rate, and provided it continues, bodes well for the continued growth of the colony. It is also clear that the extra effort that went into selecting chicks for the 2013 translocation, to ensure that they were of a size that would mean that they stayed for at least 3 weeks, has paid off, with 30% of those chicks returning this year (not as good as the 62% from home grown chicks that year, but far better than any previous translocation – note no birds have ever been seen from the original translocation in 2005).

Season	Dead	Alive	Translocations		2008	2012	2013	Unknown	TROA Hatched					
			2006	2007					2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
2008-09	1	0	1						1	8	7	6	12	17
2009-10	5	3	4	3				1						
2010-11	2	4	2	1	2			1						
2011-12		11	5	3	2			1						
2012-13	1	21	5	6	10			0						
2013-14		34	6	8	18			2						
2014-15		31	5	9	14	1		2	0					
2015-16	2	60	5	8	16	13	15	3	1	1				
2016-17	1	62	6	7	15	7	24	3	1					
2017-18		73	5	8	13	7	30	3	1	5	1			

Te Rae o Atiu - Colony Report (cont.)

Some very good science done this year, with successful recovery of GPS and dive loggers from adults – we look forward to seeing that data soon. We also started a long term project, with some of this year's chicks being fitted with geolocators. We look forward to recovering about half of those in 4 years' time and finding out just

where our chicks go and when.

We did notice some mice appearing in some of the camera surveillance videos towards the end of the season, so we will do a trapping program starting very soon. Not exactly sure how they got in, and we do need to keep their numbers down, and remove

them if reasonably possible (they effectively have their own predator free island).

Preparations for the new season are now starting. The birds will soon be back.

Ted Howard – (taking over from Lindsay as monitoring officer, and geek in residence).

Feature - Post Earthquake Research Results

The Kaikōura Earthquake caused major damage to many areas, and initial observations of the mountain colonies of Tītī/Hutton's shearwaters showed some significant damage to these breeding colonies. Funding was obtained from the Ministry of Primary Industries (MPI) to establish exactly what the impact of the earthquake had

been, and what the implications were for the future of these populations. This research was carried out by Dr Richard Cuthbert during December 2017, with field assistance from DOC staff and Nicky McArthur from Puhi Peaks Station. Richard has recently completed the write up of this research, and findings are presented in the following

articles. The key areas of Richard's research included:

- Loss of colony area to landslides
- Pre & post earthquake population estimates
- Colony vulnerability
- Management implications

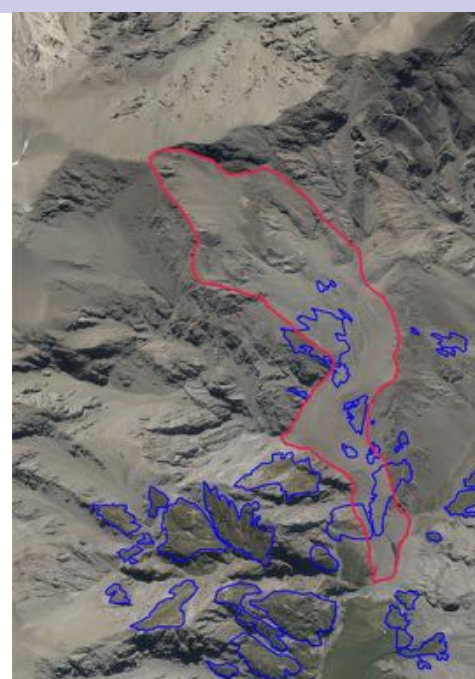
1. Landslide losses

While there was initially concern that landslide losses would be major, the release of high resolution aerial photography of the post-earthquake landscape and detailed observations on the ground using accurate GPS, (supplemented by helicopter flights in the most dangerous terrain) has shown that landslides swept away 12% of the combined total area of the Kowhai Valley and Shearwater Stream colonies. In the Kowhai about 13.3% was lost, or 7.4ha, while in Shearwater Stream only 1.9% was

lost or 0.13ha. While of course this is significant, it is not disastrous.

By far the biggest loss resulted from a massive slip on Mt Saunders, extending over 1.4km and filling the valley floor with up to 80 metres of gravel deposited in the lower reaches.

The photo shows the extent of the slip in red, with the blue outlining the extent of sub-colonies in the area. The blue areas within the red have been obliterated.



2. Population estimates

The core part of the research was to get an accurate picture of what had happened to the population after the earthquake. The methodology used to assess the population was first to define the extent of sub-colonies using accurate GPS on the ground, then plot the boundaries of each area on aerial photos using GIS software. Then, an assessment of burrow density was made using 4m x 4m quadrats. Not all burrows were occupied, so an allowance was made for the degree of occupancy using historical data collected over a number of years of research.

Measuring area and burrow density sounds straightforward, but it must be remembered that this is very difficult terrain and not all areas could be sampled. All of Shearwater Stream was considered too dangerous for on the ground work, as were a number of areas within the Kowhai colony. Helicopters were used to map these areas, and burrow density was calculated using averages from more accessible sites, with adjustments made for the different densities found in tussock (higher) and scrub habitats.

Initial calculations of colony area showed more than twice the area estimated by previous studies. This created some doubt as to the accuracy of the new measurements, so these figures were reviewed and checked.

There were a number of factors contributing to the new figures. Previous studies had mapped colony areas on to relatively low resolution aerial photography, and areas were measured directly from the photos. This study differed in that on the ground location was established using accurate GPS, and mapping was carried out using GIS software and much higher resolution aerial photography. This allowed far greater precision in mapping. Another key difference was that this study took into account the impact of slope on surface area. Burrow density was measured by surface area. If, for example, a 100m x 100m grid is placed on flat land the surface area is 1ha. But if the same grid is placed over steep land the surface area is much higher, about 30% more for the slopes present within the colonies (about 35 degrees).

With the benefit of this greater accuracy, new population estimates were calculated. One of the first population estimates in 1992 was 134,000 breeding pairs. With the benefit of more detailed burrow occupancy figures this figure was revised downwards to 106,000 pairs in 2002. This latest study calculated a pre-earthquake population of 312,600 pairs, almost three times greater than the previous estimate. It is important to be clear that this new estimate reflects much greater precision in measurement rather than a dramatic natural

increase in population. Following the 2016 earthquake with its destruction of breeding areas and reduction in burrow density, the current population is estimated at 191,550 breeding pairs.

Evidence in support of the dramatically higher pre-earthquake estimate comes from the mark-resight study carried out in 2014. This used completely different methodology, but resulted in an estimate within 6% of that reached by this study. This mark-resight exercise will be repeated in September this year, so we will be able to get a comparison of post-earthquake population.

This is a population loss of about 40% as a result of the earthquake, a very significant drop. The research estimated that it may take 20-25 years for the population to return to pre-earthquake levels. On the bright side, the current population estimate is close to double what was estimated by previous studies. While this is of little consolation to the birds which perished during the earthquake, it does provide more of a buffer against minor disasters than we previously thought.

As a result of this study, we now have accurate maps of all the sub-colonies, and a much clearer picture of the population pre and post earthquake. All in all, a sound basis for future monitoring and management.

3. Colony vulnerability

A concern following the earthquake was the possibility that landslides may have made some colony areas more accessible to animals such as pigs, deer, goats, and chamois. Improved access for pigs, in particular, could have resulted in

disastrous consequences for the colonies. Fortunately, exploration of the site boundaries at both colonies revealed that there was no change in accessibility to these animals. Richard noted an upward trend in deer numbers, and a

downward trend for kea.



4. Management implications

Richard made a number of recommendations for monitoring and future management of the mountain colonies of Tītī/Hutton's shearwater. It should be noted that these recommendations have yet to be discussed by the Trust, with the report having been only received recently.

- Monitor population size

and trends using burrow density combined with colony area, and the mark-resight methodologies

- Monitor breeding success within colonies and consider measuring adult survival
- Keep adjacent pig populations low and

maintain pig trap

- Reduce deer and goat numbers within the colonies, preferably with early season timing
- Dig starter burrows and set up speakers to attract birds into non burrowed areas adjacent to the Kowhai colony

Mountain colonies predator control

Throughout the season predator control operations were carried out by both DOC and the HSCT. The Trust was fortunate enough to be able to obtain funding from Environment Canterbury which allowed a higher level of control than most years. Pigs are always the highest priority because they are active predators of ground nesting birds, digging up burrows and eating the chicks. They are considered the reason for the huge retraction of the range of Tītī/Hutton's shearwater in the Seaward and Inland Kaikōura

Ranges. Goats are the most plentiful of the other four legged animals in and around the colonies, along with deer and an occasional chamois. This group are not predators, but trampling causes collapse of burrows. The deer in the photo are shown walking through good habitat.

In total nine flights were carried out, with a total of 159 animals being shot. These comprised 147 goats, 8 deer, and 4 pigs. Of these, 30 goats and 4 deer were shot from within the colonies, while the remainder came from nearby catchments. It is great to

have this number of animals out of the system. Heartfelt thanks to the ongoing support of DOC and ECan.



Photo: Richard Cuthbert

Research Hut Repair

A polypanel hut, high in the Kowhai river catchment provides essential accommodation for staff and HSCT volunteers when working in the remote area. The presence of a hut provides valuable shelter in this alpine zone and reduces the need for workers having to daily pack up tents and equipment up to avoid the kea damage.

During the 2016 earthquake the hut, which although undamaged, was shaken off its foundations. The attached porch was twisted out of shape. The hut site is a burrow free area on a slope at about 1200m above sea level, in the vicinity of the colonies.

Securing resources for this project proved challenging. The first step was to ensure that the engineering solutions were suitable in the post-earthquake situation and that any solutions were compliant with current building codes. This meant significantly increasing the specifications on many components. Factored into the costings was the need to fly a digger to site.

By the time the planning and financial approvals had been secured there was only a small window of weather opportunity before the site disappeared under snow for the winter and became inaccessible. The DOC team worked through their weekend and Anzac Day to complete the work within the financial year

and to squeeze into one of the last expected weather windows before winter set in.

Matt Flynn, team leader commented, "It has taken 18 months to secure the funding for this work due to the number of teams that had to be involved. We got told the funding was available on the Thursday and by the following Sunday morning we were into it." The team had been preparing for this eventuality including practicing with the post rammer for months before hand.

One critical issue identified was the contingency to secure the hut should the weather change and the staff have to leave without finishing the work. Wind gusts could result in it ending up on the valley floor, which would not have been an ideal scenario.

"We had to make things happen quickly as we only had this weather window then it would likely be too difficult and hazardous to undertake the work. We needed a well-planned Plan B; if the weather looked the slightest bit dodgy, we would have to strap everything down and go" said Matt Flynn.

Once on site, it was discovered that the hut was considerably heavier than expected as water had accumulated in the polystyrene lining of the walls. This meant the team needed additional resources including a number of posts to roll the hut

back to location. This required a further helicopter delivery mid-week.

The practice with the post rammer and the forward planning paid off. The team worked effectively sliding the hut off the broken foundations, replacing the piles and then rolling back into place and securing it, all in the tight timeframe.

There is further work required to complete the repairs, including the addition of a water proof roof to prevent further water ingress, but now that it is firmly back on solid foundations, these are less urgent and will be completed next spring. The hut is now secure and can be used for the planned spring mark-resight project.

Story and photos - DOC



Tītī/Hutton's shearwater 'Fallout' - by Trustee Lorna Deppe

Research published

The research on magnitude and characteristics of fallout events during the fledging season, carried out during 2016 in collaboration with the University of Canterbury, Encounter Kaikōura and the Department of Conservation, has been published in December 2017 ("Investigation of fallout events in Hutton's shearwaters (*Puffinus huttoni*) associated with artificial lighting." Notornis 2017, Vol. 64: 181-191).

It was found that the number of birds falling can vary considerably between years and that a potential driver for this could be whether poor visibility conditions like new moon or inclement weather conditions coincide with the time of peak fledging. This relationship will need further back up data but a significant effect of new moon with regards to an increase in fallout numbers could already be shown. The majority of recorded fallout occurred within Kaikōura township, and here accumulated along coastal roads like The Esplanade, Torquay Street and Beach Road. Indications are that this is related to high wattage light fixtures and overall light source densities, but also to the size of a brightly lit area along the otherwise dark coastline. With regards to mortality and population impacts due to fallout, we found that less than 1% of the number of annually

produced fledglings does actually crash on their maiden flight. Of those, about 80% survive due to rescue efforts. Main causes of death were roadkill, predation and collision.

If you want to read the full publication you can request a copy by emailing to admin@huttonsshearwater.org.nz or download it from our website <http://www.huttonsshearwater.org.nz/crash-landing-huttons-shearwater/>.

While we learned a lot through this research, there are more factors to investigate and assumptions to be backed up with more data. Hence, understanding and ultimately mitigating fallout is a work in progress and will continue to rely on Kaikōura's local community to assist in the collection on information around bird rescue.

Mitigating light pollution

Since 2015, the HSCT is liaising with the Kaikōura District Council (KDC) with regards to reducing the artificial light spill caused by street lighting in Kaikōura, mainly via submissions to annual and long-term plans, in the hope that this will lead to a reduction in birds crash landing. Conveniently, what has been found to be 'wildlife'- and as such 'seabird - friendly' lighting (downward directed LED fixtures with colour temperature 'candle' at <3000 Kelvin) also fits in with the national strategy to save

energy costs, and KDC had committed to replace outdated street lights with the latest LED technology. At the end of last year, representatives of the Trust have been invited to witness and discuss possible programming features at the new street light fixtures put in place in South Bay. Indications are that earthquake recovery funds will enable the replacement of a larger number of street lights in Kaikōura township, with particular aim at coastal roads which have been identified as fallout hotspots. The Trust is looking forward to fruitful future collaboration with KDC.

While this is good news, it is not only street lights which make up Kaikōura's bright light profile at night. Industrial, commercial as well as residential outdoor lighting and signage contributes significantly to the overall light spill observed. And as such it is down to everyone within the community to do their part by reducing outdoor lighting to a bare minimum during the Tītī/Hutton's shearwater breeding season (in particular September - November and March-April) and to consider implementing hooded and or dimmable warm coloured LED lights, where lights cannot be switched off altogether.

Tītī/Hutton's shearwater 'Fallout' (Cont.) - by Trustee Lorna

FlySafe 2018

The FlySafe event has always been a community project and effort, but in 2018, with active Trustees happening to be thin on the ground during the time of fledging, we were yet more reliant on the support from the Kaikōura community to assist in bird rescue and release procedures. We had wonderful feedback and engagement from various school groups and individual volunteers who were helping to check the boxes at the Hutton's Hub every day and release the birds. In addition, a big thank you goes out to DOC, namely Mike Morrissey, for the support received here.

Moreover, we were lucky to have had a couple of very dedicated 'nocturnal volunteers', who tirelessly patrolled the streets at night, picking up and recording fallen birds, oftentimes snatching



them away in front of a cat eyeing up a night time snack. Again, we like to thank everyone who helped out Hutton's during this time, but in particular Sabrina & Ben from Kaikōura Wildlife Rescue, Tracy from Encounter Kaikōura and Toni from Kaikōura Shuttles. You have been brilliant!

We also would like to thank NCTIR, who has engaged with the Trust and informed their workers on site along SH1 about the potential of fallout occurring in lit areas along the coast at night, and who subsequently picked up and rescued birds around their work sites.

This season's fallout tally came up to about 160 birds, of which 25 had been found dead or which had to be put down due to their injuries (thank you, Kaikōura Vets). It has been a blessing to have Sabrina's newly established wildlife rescue facilities in Kaikōura, which managed to recover and release several injured birds. As wildlife rescue (sadly) is a voluntary occupation here in New Zealand, please donate if you can to <https://givealittle.co.nz/cause/help4wildlife>.

Fallout in adult birds

It is only another month until we will prepare ourselves to welcome back our precious shearwaters for

another breeding season. As reported in our last newsletter, adult birds may crash land in and around Kaikōura, predominantly during September to November. We will as such relaunch last year's awareness campaign in due course and the "Hutton's Hub" on 115 Ludstone Road as the central drop-off point for rescued Tītī/Hutton's shearwaters will be open as soon as our birds return.



The Trust aims to monitor numbers of falling adult birds more closely in the future and as such will be asking once more for help from the Kaikōura community to report back on our rescue logs laid out at the Hutton's Hub or by emailing to admin@huttonsshearwater.org.nz

If you want to learn more about fallout of Hutton's shearwater in Kaikōura, and in particular how you can help, please visit our website:

<http://www.huttonsshearwater.org.nz/crash-landing-huttons-shearwater/>.