



Department of Conservation
Te Papa Atawhai



Fisheries New Zealand

Tini a Tangaroa



Te Rūnanga o NGĀI TAHU

**New Zealand Sea Lion / Rāpoka Threat Management Plan
Forum and Advisory Group Meeting 2018
Report and Recommendations**

23 and 24 May 2018

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New Zealand Sea Lion / Rāpoka Threat Management Plan Forum and Advisory Group Key Outcomes 2018

- Forum and Advisory Group (AG) members request that documents and presentations are circulated in advance, at least three days before the hui.
- Engagement and communication between DOC/ Fisheries New Zealand and several members of the Forum and Advisory Group needs to improve and be more frequent.
- A dedicated NZ sea lion Liaison Officer is still considered necessary by the Forum and the Advisory Group.
- Forum and AG members should be made aware of meetings and technical working groups related to sea lions.
- DOC website as a single point of information was recommended, including links to Fisheries New Zealand and Conservation Service Programme webpages.
- Consideration be given to adjusting the nature, timing and frequency of the NSZL meetings to assist with information flow and ensure adequate input to each annual plan.

Forum - Wednesday 23 May 2018

Te Rau Aroha Marae whānau pōwhiri Forum members to the Marae. Kai was shared before the hui started. The whānau offered the Whareniui for hosting the Forum.

Neil Gilbert (Constantia Consulting Ltd.) was confirmed as the independent chair for the Forum 2018. The Chair reminded attendees of the Term of References (ToR) that were shared by email in advance of the Forum. The ToR were accepted.

A presentation reviewed the New Zealand Sea Lion Threat Management Plan (NZSL TMP) vision, goals and workstream to remind attendees of the purpose of the actions undertaken in the last year. A brief evaluation of those actions and progress within the NZSL TMP context was presented, including Stewart Island population had reached breeding colony status, and the employment of a NZ sea lion liaison officer, as a critical issue to work on.

Sea lion pups born in 2017/18

Otago and Southland

18 pups were recorded in Otago and Southland. Some of usual threats in the inlets include cars on mudflats, sea lions on private land, and rubbish. Managing pups in a pool near the Otago Peninsula road and duck shooting nearby were threats of particular concern this year. New sea lion warning roading signs and additional rules in place for dog owners exercising dogs on some beaches are now available.

Comment/Action: sharing information with Forum members in advance has been requested.

Sub-Antarctic islands

Research teams travelled to the subantarctic islands (Auckland and Campbell). The objectives were mark-recapture of pups, double flipper tagging and daily counts of dead/alive pups. Although the pup count at the Auckland Islands (1,792) pups was slightly lower than in 2017, (1,965), but pup production has been consistently over 2009 pup count. The team on Campbell Island also monitored pup numbers and collected information about mortality from pups falling into muddy holes. The number of pups has increased since 2014/15, when 696 pups were born. 734 pups were born in 2017/2018 and a significant reduction in pup mortality was recorded, 23% this season compared to 58% in 2014/2015.

Comment/Action: When NZSL TMP information is shared, links to Conservation Service Programme (CSP) reports related to NZ sea lions should be included.

Rakiura/Stewart Island

Pup counts in the area started in 2011 and the significant increase in number of pups tagged each year is partially a consequence of the increase in search effort, as the NZSL are spread in the forest, not aggregated on a beach. In 2017/2018, 55 new pups were recorded in Port Pegasus (Rakiura). Management issues include: the number of encounters of NZ sea lions with tourists because Halfmoon bay is part of a popular track; there are may be increasing interactions between sea lions with fish farms and recreational water users in the future if the population continues to grow. DOC Rakiura have worked on a video to show what 'to do' and 'not to do' around sea lions.

Comment/Action: Continue to support / facilitate advocacy work / sharing knowledge and relationships with Massey University, Auckland Zoo, and treaty partners.

Comment/Action: It was noted that re-sightings identified females from other locations (tagged on the Auckland Islands).

Pup mortality from natural holes at Campbell Island

Risk Factors observed: bogs between 30-500 cm of mud and vegetation loss around, steep sides, so reduced ability of pups to get out. Slippery mud channels just over 1m where pups get stuck; cliff where pups fall off and bare dirt areas where colonies wear away vegetation.

The options presented considered sustainable materials to minimise its environmental impact. Some solutions proposed:

- building up mud channels with locally-sourced rocks;
- installing hessian bags (like blocks, wrapped in jute matting / hessian) as building/climbing blocks. Harvested seeds could be mixed in the top hessian bag to assist with regeneration of native plants;
- Timber ladders are already known to work well, and non-treated/native timbers can be considered;
- placing coir logs in channels;
- placing matting on edges of channels for friction resistance e.g. woven jute mats;
- preparing hand cut channels for bog drainage;
- installing fencing along cliffs or preparing hessian bag fences, or hedging cliff tops;
- translocating pups.

Comment/Action: any fence or barrier might be used by sea lions e.g. to trap females.

Comment/Action: the GPS tracking information collected by the research team in Campbell Island would support the trial programme for these options. GPS tracking information will be provided on the website.

Activities and engagement in Otago and Southland

The New Zealand Sea Lion Trust area of work covers from Waitaki River to Waipapa point, and their budget is around \$4,000 a year. All members are volunteers.

NZSLT reported on issues regarding the trial with Allflex tags, noting that they are very difficult to read (small numbers) and tag loss was high. NZSL Trust do not recommend their future use. NZSLT also commented about the lack of standard Trovan tag readers, that are shared with DOC-Otago.

The warm summer increased the number of beach users. Volunteers were present at beaches every weekend to minimise interaction between visitors and NZSL pups; fences were installed to keep pups off the road; calls from DOC were attended; a Wild Life Response network has been developed.

NZSL Trust and others share frustration about the absence of a NZ Sea Lion Community Liaison Officer, a number of actions can't be developed due to the lack of capacity. NZSL Trust commented that increasing communication with DOC is necessary, as well as additional engagement in the yearly planning.

Comment/Action: Trovan scanners have been sent to Australia for repair, microchips (pit tags) will be still used, but transition to new flipper tags needs to be explored.

Comment/Action: the new DOC budget bid resourcing may allow for a liaison officer, that will probably be a multi-species officer (yellow eyed penguin), instead of only NZ sea lions. Several Forum expressed their disappointment with this option and noted there is enough work for a dedicated sea lion officer and considered that having a multi species approach would be too much for one person.

Comment/Action: A member of the Fourm suggested the creation of a local TAG group to draw in land owners, tourism interests and territorial authorities in order to progress local land-based issues faced on the mainland. This is the purpose of the Forum, but additional engagement effort is required.

Mātauranga Project

An overview of the importance of mātauranga Māori reminded the forum that everything is intrinsically linked through whakapapa connections. The relationship with rāpoka/whakahao previously included a number of uses, such as a source of mahinga kai, and all parts of the sea lion were utilised (meat for food, bones for tools and accessories).

The Conservation Act 1987 includes a legislative provision to be interpreted and administered so as to give effect to the principles of the Treaty of Waitangi (Section 4). The Ngāi Tahu Claim Settlement Act 1998 has a number of provisions relating to taonga species. Taonga species are plants, animals or birds that have a significant cultural value to Ngāi Tahu. The Treaty partnership with Ngāi Tahu is woven throughout the New Zealand sea lion / rāpoka Threat Management Plan document and mātauranga is included across the four workstreams.

Ngāi Tahu want to be able to maintain and enhance their connections with rāpoka/whakahao, to achieve NZSL TMP goals and continue to be involved in the work and decision-making process, as a Treaty partner of the NZSL TMP.

Comment/Action: the Mātauranga project is drafted and will be shared with whānau, hapū and iwi to confirm the draft contains the necessary information. It was also highlighted the importance of this project being reflected with adequate funding and time for the contractor and that value is gained for whānau from this project.

Comment/Action: -range of names used for sea lions rāpoka isn't Tahu dialect (however, this will likely look into further with mātauranga project.

Comment/Action: there is current interaction with sea lions around Titi Islands. Ngai Tahu have interest to know what their involvement look like.

Comment/Action: whānau (ranging from tamariki to kaumātua) don't get enough access to the land to be with the whakahou (Ngāi Tahu name for sea lions). Ngāi Tahu people should be more involved and be on the land doing the mahi. They need to know about taonga species as they live with them in their environment – having the connection.

Disease Research: 2016-2018 summary

A summary of the presentation from Sarah Michael (Massey University PhD student) outlined the disease research activities undertaken in the last two summer seasons. Disease research was conducted at Sandy Bay (Enderby, Auckland Islands) between 9 December 2017 to 3 March 2018.

The Enderby research team collected sea lion oral and rectal swabs and other biological samples. There was an extra team member focused on sea lion tag re-sighting which enabled the team to increase the amount of tag re-sight data collected. In addition, 51 pup necropsies (autopsies on dead pups) were undertaken. Samples are currently being analysed, but provisional graphs have been created showing the initial diagnosis of the causes of mortality.

While the results are pending further analysis, there are some preliminary indications that pups treated with Ivermectin (an antiparasitic (worm) treatment) were less likely to die from *Klebsiella*.

2017/2018 Fisheries New Zealand update

Fisheries New Zealand shared with the Forum and AG the research projects underway, research planned for 2018/2019, and an update on the SQU6T Operational Plan.

2018/19 fieldwork and beyond

DOC presented the project proposals for the following year. DOC acknowledged the lack of time for this key session and for discussing each project individually.

The projects were presented in three sections:

- Projects that were decided in the 2017 Forum/AG
- Ongoing or approved projects, such as annual monitoring of breeding sites
- Potential projects not yet confirmed for discussion in the 2018 Forum and AG.

Forum stakeholders had the opportunity to allocate points among the different workstream projects to weight them according to criteria. Project rankings were subsequently reviewed in the AG.

This part of the day was planned for providing technical details about each project, that would be later discussed and rated by the Forum. The time available didn't allow sufficient consideration of each project and there was not additional discussion.

Comment/Action: A draft projects proposal will be shared by email with Forum and AG members for their review and comments.

Communication and Engagement Plan

A presentation on options for increasing the frequency and efficiency of communication and engagement with stakeholders was delivered. Stakeholders will be surveyed about their preferred method of communication via email. Some stakeholders have not engaged with the sea lion work (such as private land owners, District and Regional Councils) and additional effort to engage with them needs to be made.

The presentation also included the key factors to consider when research proposals are provided to the NZSL TMP, reiterating that the previously agreed context is the Quantitative Risk Assessment and the Threat Management Plan. Any research proposal needs to be reviewed by the relevant existing DOC and Fisheries New Zealand technical working groups, to be aligned with existing processes.

Advisory Group: Thursday 24 May 2018

Neil Gilbert (Constantia Consulting Ltd.) was accepted as the independent chair for the Advisory Group 2018. The Chair reminded attendees of the Term of References (ToR) that were shared by email in advance with the Advisory Group. The ToR were accepted as they were.

Changes in the Agenda were accepted, so as to allow more time for discussion.

2017/2018 NZSL TMP highlights and sea lion pup number updates were provided. DOC noted the new breeding colony status of Stewart Island

Comment/Action: question about where sea lions could establish at a beach site (colonial breeding harems) as there are not many sandy beaches in Port Pegasus. In March 2018, it was noted that around 22 female sea lions and pups were aggregated at various beach sites.

Comment/Action: question about information available from other breeding seasons at Stewart Island. Research was conducted once in January 2016, but it was not the ideal time because females move pups to Port Pegasus between the end of January and February.

Comment/Action: good dialogue needs to continue with fish farmers as there have been conflict issues in the past with fur seals at other fish farming sites. The increasing number of sea lions may become an issue (sea lions breaking into cages).

Discussions took place around the timing, duration and planning of research projects at Campbell Island. It was noted that trips have been planned consistently with previous fieldwork projects in the area.

Comment/Action: links to the presentations on work undertaken in 2018 on Campbell Island will be provided to stakeholders.

A summary of the presentation of possible solutions to pups falling into holes was shared.

Comment/Action: a report on risks and hazards regarding possible solutions for mitigating holes and cliffs at Campbell Island will be shared with forum and AG members.

Comment/Action: the costs associated with potential solutions needs to be explored and decision-making processes clarified.

Drones for sea lions and wildlife

A trial project for flying drones as another method for fieldwork was undertaken. Drones were experimentally used at Campbell Island, as an example of a remote location and the presence of sea lions and other wildlife. A 3D digital image developed from the drone video was presented.

Negative interactions with seabirds were observed to be low and sea lions did not appear to react to the drone presence (although few were present at the sites flown). An experienced drone pilot is recommended if further drone work is undertaken in such areas and conditions.

After this presentation, the table '2018/2019 Proposals, Forum input and AG Comments' (Appendix III) was discussed. The AG examined each project and comments were recorded. The information gathered in the AG in combination with the outcomes from the Forum will

form a draft plan for the 2019 workstream. Recognising there was not enough time for this session to complete prioritisation, the draft workplan will be circulated to stakeholders for additional feedback prior to confirming a workplan for 2018/19.

Appendix I: Forum Agenda

Attendees (organisations): DOC (National office, Murihiku, Rakiura, Dunedin), Fisheries New Zealand, Te Rūnanga o Ngāi Tahu staff and Ngāi Tahu whānau, Forest and Bird (National, Regional), NZSL Trust, Auckland Zoo, fishing industry (Fisheries Inshore New Zealand, Deep Water Group), land owner (the Catlins are), Futon Hoggan.

Meeting: New Zealand sea lion/rāpoka Forum
Date: 23rd May 2018
Time: 11:00 am to 5:30 pm
Venue: Te Rau Aroha Marae, 12 Bradshaw Street, Bluff 9814
Chair: Neil Gilbert

Purpose

The Forum facilitates discussion between regional representatives, DOC and MPI. Discussions will focus on concerns and potential actions around the South Island/Te Waipounamu and Stewart Island/Rakiura.

DOC and MPI officials and a technical expert will provide updates to the New Zealand sea lion/rāpoka Forum to inform discussions on prioritising resources and research in future.

Outcomes

To discuss and prioritise recovery actions under the New Zealand Sea Lion/Rāpoka Threat Management Plan (NZSL TMP) for the South Island/Te Waipounamu and Stewart Island/Rakiura over the next 12 months.

Agenda

- 11:00 am Powhiri**
- 11:45 pm Sharing of kai (lunch)**
- 12:30 pm Karakia**
Confirmation of Neil Gilbert as chair and review of group Terms of Reference
- 12:40 am Updates**
- 1. Highlights of one year of NZSL TMP** (DOC-Conservation House, Enrique Pardo)
 - 2. 2017/2018 NZSL pup counts:** Otago and Southland (DOC-Otago/Southland, Jim Fyfe), Auckland Islands and Campbell Island (DOC-Conservation House, Laura Boren)
 - 3. Stewart Island: a new breeding colony** (DOC-Rakiura, Phred Dobbins)
 - 4. Strategies to reduce pup mortality from natural holes at Campbell Island** (Fulton Hogan, Reuben Saathof)
- 2:10 pm 2017/2018 Rāpoka projects update**
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1. **Otago peninsula:** activities and engagement (NZSL Trust, Jordana Whyte)
 2. **Mātauranga project** (Te Rūnanga o Ngāi Tahu , Rata Rodgers)
 3. **Disease Research:** 2016-2018 summary of two field seasons and overall project (DOC-Conservation House, Laura Boren)
- 3:00 pm** **2017/2018 Fisheries NZ update** (Fisheries NZ, Tiffany Bock)
4. **Research underway**
 5. **Squid Technical Advisory Group Update**
 6. **2018/19 Planned research**
- 3:30 pm** **Tea break**
- 3:40 pm** **2018/2019 Engagement and research projects priorities**
7. **2018/19 fieldwork and beyond** (DOC-Conservation House / Fisheries NZ, Enrique Pardo/Laura Boren)
 8. **Engagement strategy:** communication and contributions to the NZSL TMP (DOC-Conservation House, Enrique Pardo)
- 5:00 pm** **Any other business**
- 5:10 pm** **Review of actions and recommendations to Advisory Group** (Neil Gilbert)
- 5:30 pm** **Karakia and end of the hui**
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Appendix II: Advisory Group Agenda

Attendees (organisations): DOC (National office, Murihiku, Rakiura, Dunedin), Fisheries New Zealand, Te Rūnanga o Ngāi Tahu staff and Ngāi Tahu whānau, and Bird (National, Regional), NZSL Trust, fishing industry (inshore, Deep Water Group), other interest parties (Te Ohu Kaimoana and Bruce Roberson), Futon Hogan.

Updated on 23/05/2018

Meeting: New Zealand sea lion/rāpoka Advisory Group
Date: 24th May 2018
Time: 09:30 am to 4:10 pm
Venue: Te Rau Aroha Marae, 12 Bradshaw Street, Bluff 9814
Chair: Neil Gilbert

Purpose

The Advisory Group is comprised of national representatives and advisors. Discussions will focus on larger-scale issues and management of the sea lion population as a whole.

DOC and MPI officials and a technical expert will provide updates to the New Zealand sea lion/rāpoka Advisory Group to inform discussions on prioritising resources and research in future.

Outcomes

To prioritise recovery actions under the New Zealand Sea Lion/Rāpoka Threat Management Plan (NZSL TMP) for population growth at the subantarctic islands and across the species range over the next 12 months.

Agenda

9:30 am Powhiri and sharing of kai

9:55 pm Karakia

Confirmation of Neil Gilbert as chair and review of Terms of Reference

Proposed change of agenda

10:00 am **Brief Updates** – the following will be summarised versions of talks already provided to the Forum. Advice and key points from the forum will be picked up against relevant agenda items.

1. **Highlights of one year of NZSL TMP** (DOC-Conservation House)
2. **2017/2018 NZSL pup counts:**
 - a) Otago and Southland (DOC-Otago/Southland),
 - b) Stewart Island (DOC-Rakiura)
 - c) Auckland Islands and Campbell Island (DOC-Conservation House)

3. Strategies to reduce pup mortality from natural holes at Campbell Island
(Fulton Hogan)

- 11:00 am** **2017/2018 Rāpoka projects update**
- 4. Disease Research:** 2016-2018 summary of two field seasons and overall project (DOC-Conservation House)
 - 5. Mātauranga project** (Te Rūnanga o Ngāi Tahu)
- 11:30 am** **2017/2018 MPI update** (Fisheries NZ)
- 6. Research underway**
 - 7. Squid Technical Advisory Group Update**
 - 8. 2018/19 Planned research**
- 12:15 pm** **Lunch**
- 1:00 pm** **9. Campbell Island:** use of drones for sea lions and wildlife (Deep Water Group Ltd).
- 2018/2019 Engagement and research projects priorities**
- 10. 2018/19 fieldwork and beyond** – review of prioritisation of projects by the Forum
 - 11. Engagement strategy:** communication and contributions to the NZSL TMP (DOC-Conservation House)
- 3:30 pm** **Any other business**
- 3:40 pm** **Review of actions and recommendations** (Chair)
- 4:10 pm** **Karakia and end of the hui**
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Appendix III: 2018/2019 Proposals, Forum Prioritisation Score and AG Comments

2018/2019 proposals			
Workstream	Action proposes	Forum*	Comments
Engagement	Tourism protocol/workshop	2.23	Part of the broader engagement campaign
	Suitable habitats for sea lions - mapping and restoration	2.68	Projects for identifying suitable mainland areas for sea lions to inhabit. Restoration - looking forward. Providing access to potentially suitable habitats for the sea lions. Land owner engagement / council engagement, current and future. May need research support.
	Mainland tag subgroup		Advisory Group recommendation, suggestion for co-partnership.
Direct Mitigation	Trial and implement solutions for pup mortality from natural holes at Campbell Island (Operation Endurance)	3.18	Concern raised for risk of drawing funds away from other projects. A need to look at costs and prioritising the funds. This work could be undertaken in conjunction with other high priority projects. This financial year we need a focus on exploring and trialling these solutions. Concern raised for the timeframe of these trials.
	Export Campbell success to Dundas Island	1.21	
Targeted Research	Additional research on New Zealand sea lion colony at Rakiura	3	Focus around Pegasus however not excluding other areas. Including Titi Islands.
	NZ sea lion tag transition, trial research	3.77	NZSL Trust group wish to be involved in tag Technical Advisory Group. Speak with Allflex Re: issues with tags.
	Research on <i>Klebsiella</i> presence in Campbell Island	1.08	Teams that go to Campbell Island miss the <i>Klebsiella</i> peak. Should there be an emphasis on monitoring for <i>Klebsiella</i> later in the season to be more comparable with AI? Environmental assessment of <i>Klebsiella</i> on Campbell Is e.g. collection of soil samples for testing.
	Searching for new colonies Auckland Islands	0.77	More options of observations may open up through pest eradication - could overlap this with this work.
	Foraging behaviour in Campbell Island (future seasons)	2.23	We need to gather more information in this area - can we link in with other projects? This info could lead in to work by Fisheries New Zealand. Circulate paper from UTAS.
	Female body condition and age structure in Auckland Islands. Potential GPS tags (future seasons)	3.04	A need to also collect updated information on diet and female body condition to compare to historical sample studies that are being done.

	Samples collection: scat, DNA.	0.7	Link this to the above. Current data is mostly around summer - look for opportunities around other projects to conduct research other times of the year. Suggestion to approach Chris L alas.
Evaluation	Re-sightings in all locations:		Ideally, we would want resightings at all locations.
	o Auckland Islands	2.71	2 – Auckland Islands + it has been done in previous years.
	o Campbell Island/Motu Ihupuku	1.93	1 - 2nd biggest population - highest pup mortality.
	o South Island/Te Waipounamu	1.86	4
	o Stewart Island/Rakiura	2.18	3 - logistically easier to access / organise.
	Chips implantation in all locations (Trovan)		Chips important as tags can come off or wear away. Chips valuable for longevity. Look for option to switch to a different chip.
	o Auckland Islands	0.32	
	o Campbell Island/Motu Ihupuku	0.64	
	o South Island/Te Waipounamu	1.5	
	o Stewart Island/Rakiura	1.43	

* Forum stakeholders had the opportunity to allocate points among the different workstream projects to weight them according to criteria. Project rankings were subsequently reviewed in the AG.

As the time available didn't allow sufficient consideration of each project and there was not additional discussion. An action was follow: *a draft projects proposal will be shared by email with Forum and AG members for their review and comments.*

Appendix IV: New Zealand sea lion Threat Management Plan - Workstreams and proposals

	Engagement	Direct mitigation	Targeted research	Evaluation
Purpose	<i>Coordinating and implementing an engagement campaign that facilitates a positive and accepted expansion of the range of sea lions.</i>	<i>Actions to reduce the impacts of key threats to sea lions are determined annually.</i>	<i>To address key threats to sea lions applied research will be determined annually.</i>	<i>To evaluate progress against the NZSL TMP objectives, monitoring of the sea lion breeding population is required.</i>
2017/2018 Actions	<ul style="list-style-type: none"> Establish the New Zealand sea lion/rāpoka Forum and Advisory Group Establish a New Zealand sea lion community liaison officer to coordinate and implement a recovery strategy for South Island/Te Waipounamu sea lions. Develop the broader engagement campaign 	<ul style="list-style-type: none"> 'Planks for Pups' programme at the Auckland Islands is maintained and expanded upon Develop a strategy to reduce pup mortality from natural holes at Campbell Island Establish a Technical Advisory Group to review the SQU6T Operational Plan 	<ul style="list-style-type: none"> Complete second season of disease research programme on the Auckland Islands Female sea lion nutritional stress and diet studies Research into the demographic parameters for at-risk marine mammals as identified by the marine mammal risk assessment (sea lions) Analysis of New Zealand sea lion tracking data to estimate overlap with fisheries Review of the potential impacts of aquaculture on sea lions, with relevance to Port Pegasus sea lion ecology 	<p>2017/2018 Monitoring, including tagging, pup counts and tag re-sights, will occur at:</p> <ul style="list-style-type: none"> Auckland Islands Campbell Island/Motu Ihupuku South Island/Te Waipounamu Stewart Island/Rakiura
2018/2019 Ongoing / approved projects	<ul style="list-style-type: none"> New Zealand sea lion/rāpoka Forum and Advisory Group Establish a New Zealand sea lion community liaison officer to coordinate and implement a recovery strategy for South Island/Te Waipounamu sea lions. Broader engagement campaign 	<ul style="list-style-type: none"> Technical Advisory Group to inform the SQU6T Operational Plan Desktop estimation of New Zealand sea lion cryptic mortality in trawls using SLEDs (PMM2018-09, Jan 19) Opportunistic engagement and protocols: set-nets, duck shooting. 	<ul style="list-style-type: none"> Analysis of New Zealand sea lion tracking data to estimate overlap with fisheries (PRO2017-10) Factors affecting NZ sea lion pup survival (PRO2017-08C) Analysis of pinniped behaviour in trawl nets with exclusion devices, (using available data) Female sea lion nutritional stress and diet studies (CSP indirect effects project) 	<ul style="list-style-type: none"> 2018/2019 Monitoring, including tagging, pup counts and tag re-sights, will occur at: <ul style="list-style-type: none"> Auckland Islands Campbell Island/Motu Ihupuku South Island/Te Waipounamu Stewart Island/Rakiura Update Auckland Islands NZ sea lion demographic population model (PMM2018-10)

<p>2018/2019 proposals</p>	<ul style="list-style-type: none"> • Tourism protocol/workshop • suitable habitats for sea lions - mapping and restoration 	<ul style="list-style-type: none"> • Trail and implement solutions for pup mortality from natural holes at Campbell Island (operation endurance) • Export Campbell success to Dundas Island 	<ul style="list-style-type: none"> • Additional research on New Zealand sea lion colony at Rakiura • NZ sea lion tag transition, trial research • Research on Klebsiella presence in Campbell Island • Searching for new colonies Auckland Islands • Foraging behaviour in Campbell Island (future seasons) • Female body conditions and age structure in Auckland Islands. Potential GPS tags (future seasons) • Samples collection: scat, DNA. 	<ul style="list-style-type: none"> • Re-sightings in all locations <ul style="list-style-type: none"> ○ Auckland Islands ○ Campbell Island/Motu Ihupuku ○ South Island/Te Waipounamu ○ Stewart Island/Rakiura • Chips implantation in all locations (Trovan) <ul style="list-style-type: none"> ○ Auckland Islands ○ Campbell Island/Motu Ihupuku ○ South Island/Te Waipounamu ○ Stewart Island/Rakiura
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