

# Survey of New Zealand sea lion pups at Port Pegasus, Stewart Island

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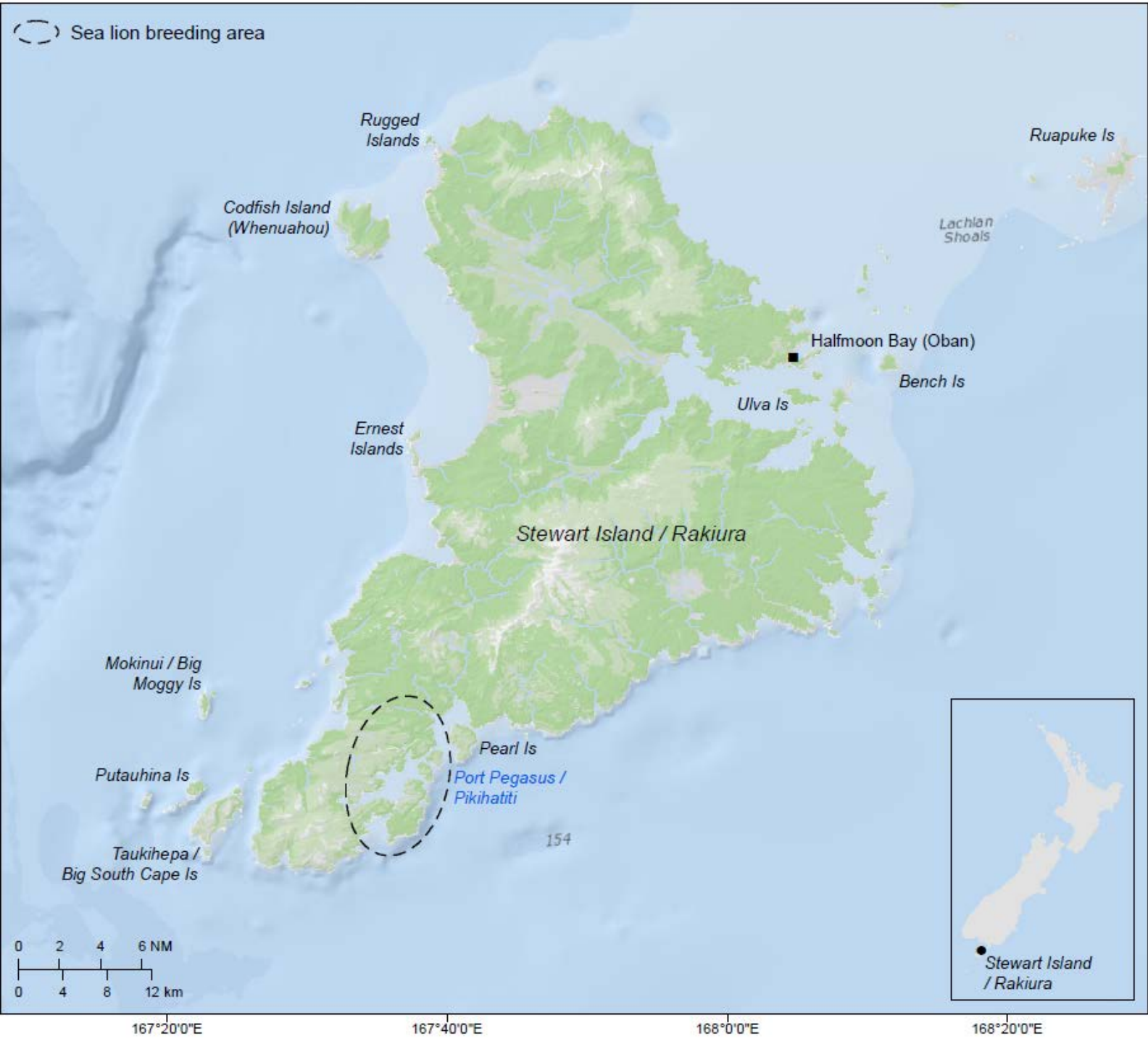
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# Outline

- Why do a pilot study?
- The methods
- What did we find?
- More questions than answers?
- Recommendations



○ Sea lion breeding area



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# Why do a pilot study?

- Auckland Islands comparability
- Early mortality
- Disease

We wanted to

- See if the pups could be found in January
- Test new technology for finding sea lions
- Screen for disease, and
- Understand potential causes of death







Departed Bluff on the Tiama – 20 January 2016  
Arrived Port Pegasus  
Started searching – 21 January 2016









# The Methods

- Dinghy search for haul-out sites
- Land-based search following tracks
- Land-based search of suitable area
- Additional methods if pups found
- Collection of samples
- Necropsy





Fig 1: Map of the primary search region, Port Pegasus, Stewart Island.







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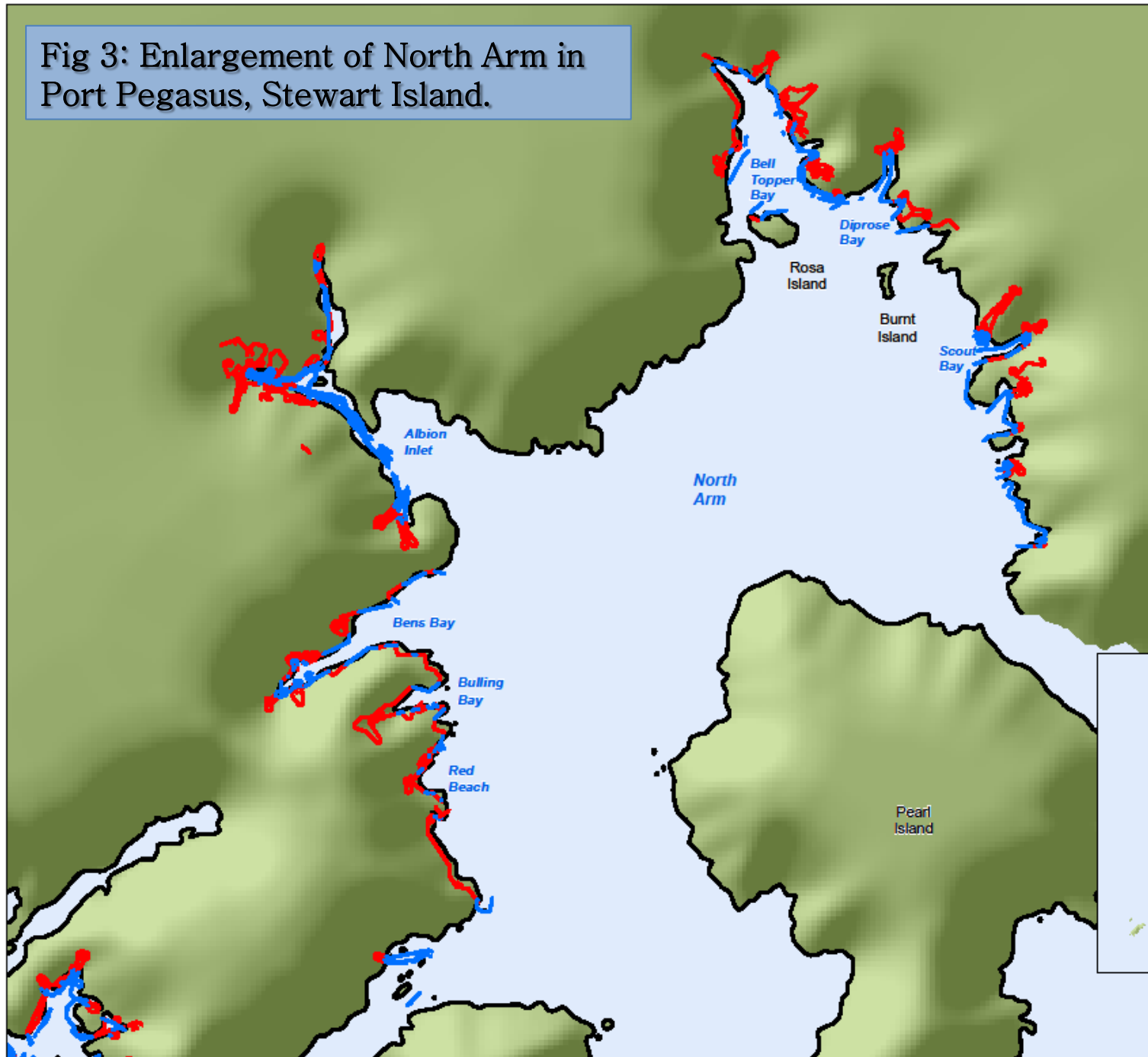


Fig 2: Map showing area searched in Port Pegasus, Stewart Island.



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Fig 3: Enlargement of North Arm in Port Pegasus, Stewart Island.

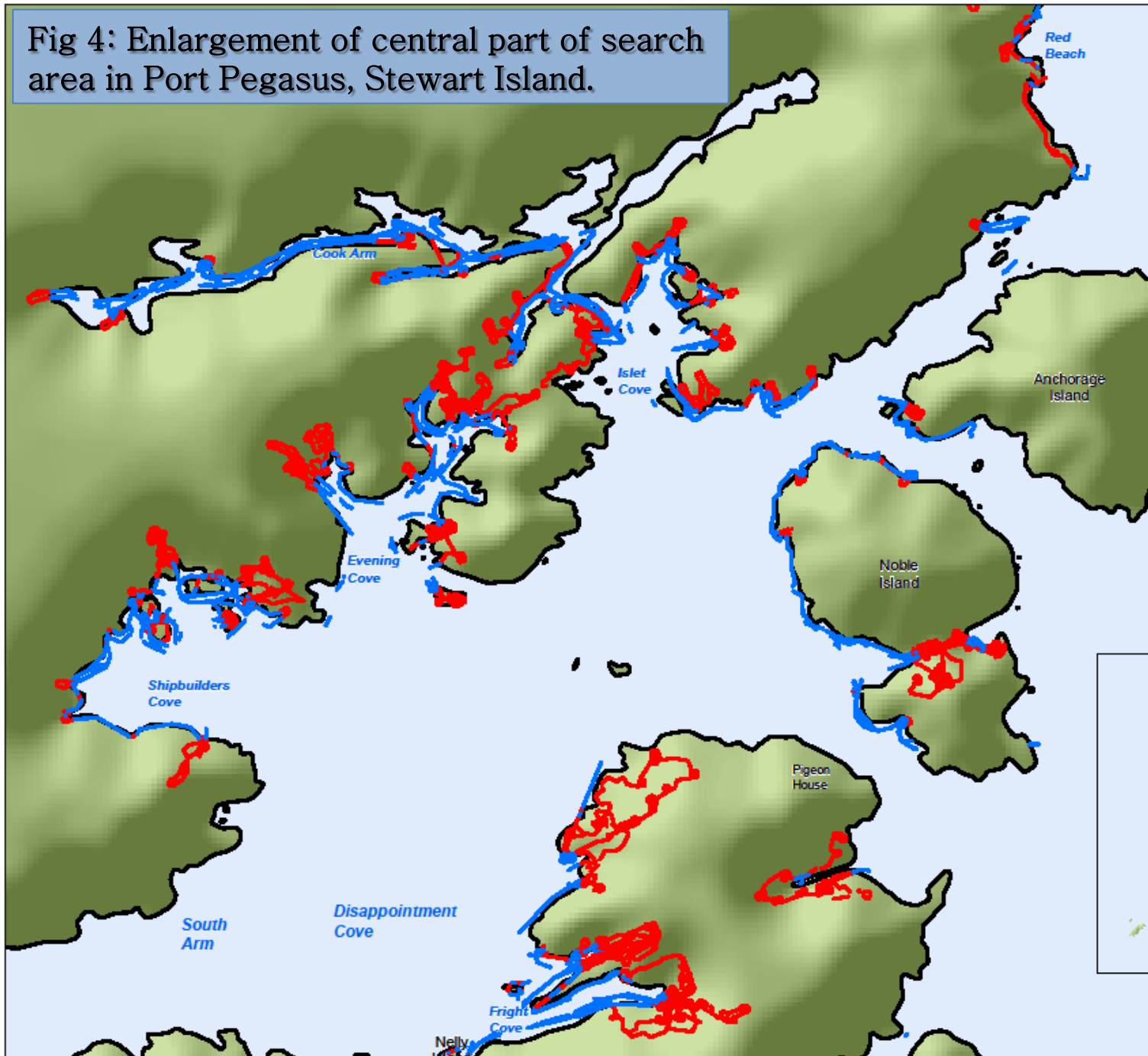


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Fig 4: Enlargement of central part of search area in Port Pegasus, Stewart Island.



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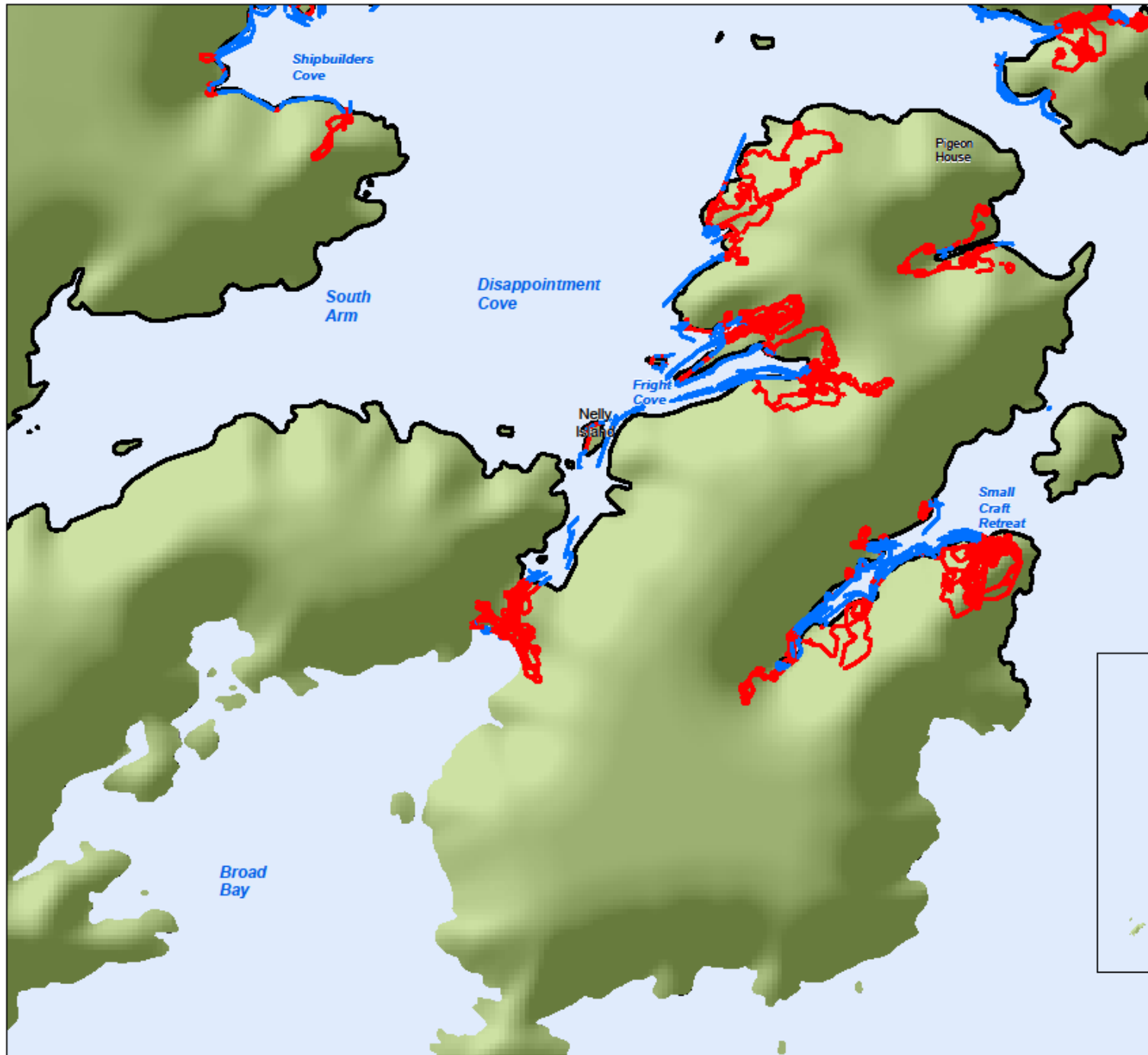


Fig 5:  
Enlargement of  
South Arm, Port  
Pegasus,  
Stewart Island.

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# Table 1: Activity and search area

Date	Activity	Area
21-Jan-16	Search	Pigeonhouse and Fright Cove
22-Jan-16	Search and stopped at both hunters huts	Disappointment, Communicating Coves, area between Fright Cove and Pigeonhouse
23-Jan-16	Search and stopped at both hunters huts	Islet Cove and Cooks Arm
24-Jan-16	Search	Albion Inlet, Bens Bay, Bulling Bay and Red beach
25-Jan-16	Search	Small Craft Retreat
26-Jan-16	Search and change over	Noble Island
27 Jan 2016	Search	Shipbuilders and Evening Cove
28 Jan 2016	Search	Scout, Diprose Bay, Bell Topper and Albion
29 Jan 2016	Search	Pigeonhouse, Fright Cove, Disappointment/ Communicating Cove
30 Jan 2016	Search and check in with hunters	Noble Island, Cooks Arm
31 Jan 2016	Search	Small Craft Retreat and other bay
1 Feb 2016	Search and transit to Bluff	Shipbuilders and Evening Cove, South Arm/Sylvan Cove









# What did we find?

- Approximately 41 sea lions
- 5 tag resights
- 3 pups, one tagged
- Samples collected
- Necropsy conducted





## Table 2: Tag resights in Port Pegasus

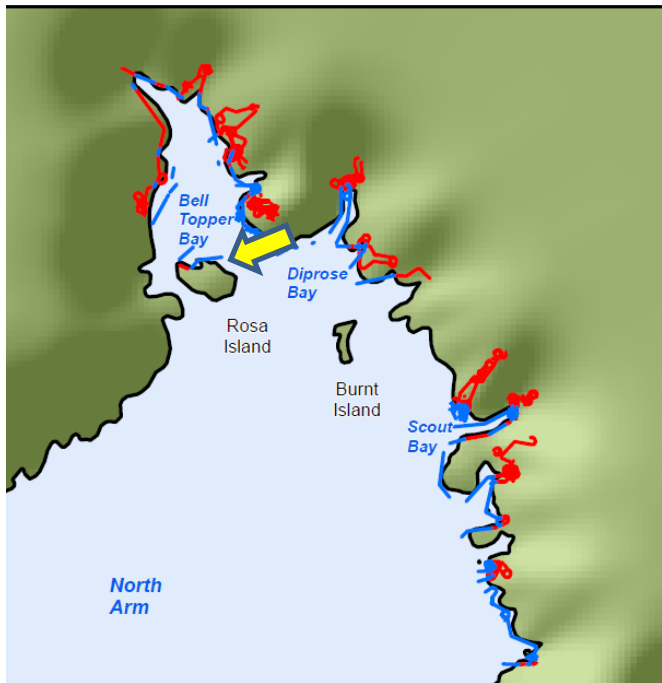
Date	Location	Age / Sex	Tag #	Tag Colour /Shape	Number of tags	Year tagged
24-Jan-16	Small Craft Retreat	Yearling female	V529	YC	nr	2015
27-Jan-16	Dryad Island	Juvenile female	nr - couldn't read	YC	RFFO - 1	
29-Jan-16	Fright Cove	Juvenile female	P408	YC	RFFO - 1	2014
30-Jan-16	Noble Island Sheathknife Beach	Adult female	H817	GC	LFFO - 1	2013
30-Jan-16	Noble Island Sheathknife Beach	Juvenile male	P427	YC	RFFO - 1	2014





# Table 3: Pup tagged off the coast of Rosa Island.

Date	Location	Age / Sex	Tag #	Tag Colour /Shape	Number of tags
28-Jan-16	Off Rosa Island	Pup/Male	M740	RC	2



### Legend

- Land search
- Dinghy search



# Table 4: Faecal, and soil samples for *Klebsiella* screening

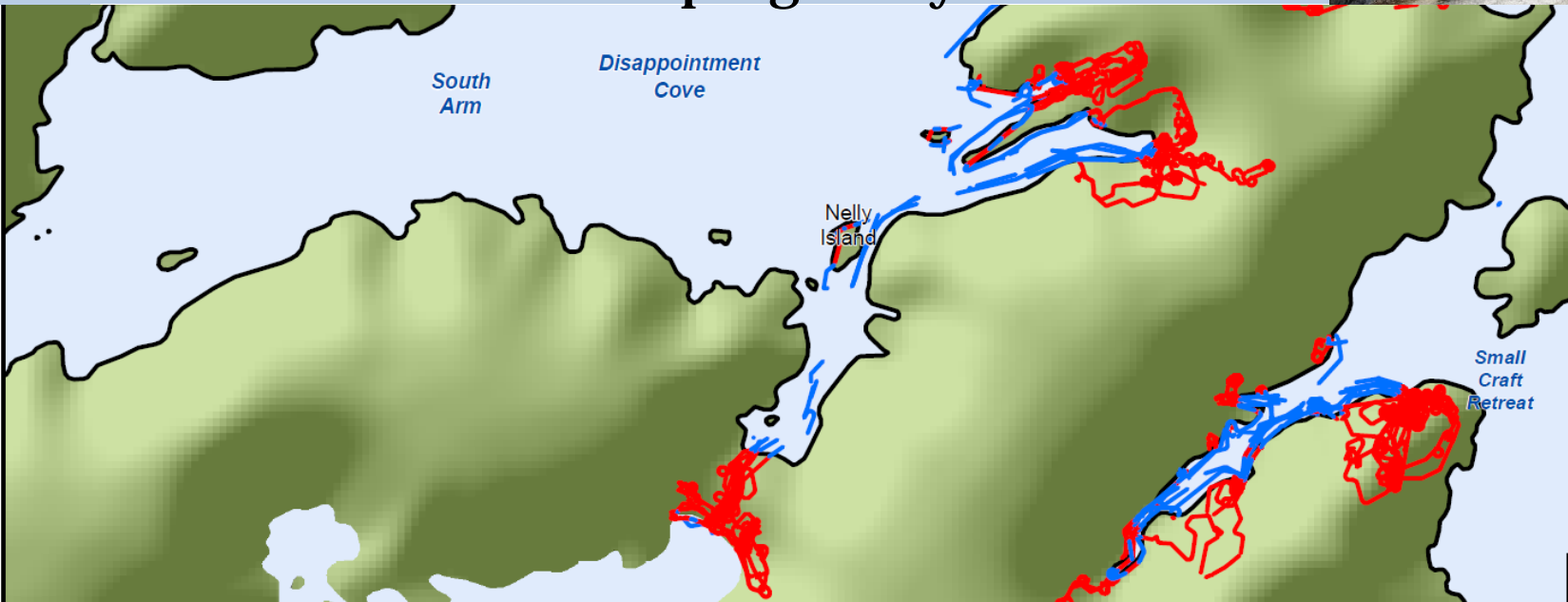


Date collected	Sample	Location	Individual
24/01/2016	faecal swab	Albion Inlet	AM
26/01/2016	faecal swab	Noble Island South Beach	SAM
26/01/2016	faecal swab	Noble Island North Beach	AF
27/01/2016	faecal swab	Dryad Island	JF, YC RFFO
29/01/2016	faecal swab	Fright Cove	unknown yearling female
29/01/2016	faecal swab	Disappointment Cove track	JF
29/01/2016	faecal swab	Fright Cove	unknown
31/01/2016	faecal swab	Cove SE of Pigeon House, near beach	unknown
31/01/2016	faecal swab	Cove SE of Pigeon House, near beach	unknown
31/01/2016	soil sample	SE of Pigeon House	n/a
31/01/2016	soil swab	SE of Pigeon House	n/a
1/02/2016	faecal swab	Shipbuilder's Cove	unknown
1/02/2016	faecal swab	Evening Cove	unknown
1/02/2016	faecal swab	Dryad Island	JF
1/02/2016	soil sample	Dryad Island	n/a
1/02/2016	faecal swab	Sylvan Cove	unknown



# Necropsy

- 22 Jan 2016
- Communicating Coves
- Adult female NZSL
- Decomposed
- 4-6 days old
- Blubber cysts
- No evidence of recent pregnancy





# Thermal Imaging



Thermal Imager Pulsar Quantum HD19s

## Pulsar Quantum HD19s Thermal Imager



- Effective at detecting Adults and subadults in forest

## Pulsar Quantum XD38s

**Best all-round thermal imager with extended distance performance whilst maintaining a good field-of-view.**



- Less useful for sea-based RIB scans
- Effective with small birds in the bush
- Could be better with higher concentrations of sea lions/different set up

## Optimum viewing performance of Pulsar Quantum XD38s:

- Detect object 1.7 x 0.5m @ 950 metres
- Detect human @ ≤1350 metres
- Detect stags, cattle etc @ >1500 metres.

# More questions than answers

- Thermal cameras useful in forest on dry days
- Aerial survey with cameras could work?
- Canopy thickness vs low density of sea lions
- Low numbers of pups – **where are they?**
- March 2016 found 31 pups
- 2/3 pups seen were swimming with AF
  - Really well hidden
  - In areas not searched, or
  - **Born in other areas and move in Feb/Mar**
- Similar to behaviour seen on AI and Otago



# Recommendations

- Use of thermal cameras would require a different methodology
- In lieu of intensive monitoring, pup count in March, or
- Mid-late Feb workable as an earlier time period
- Consideration of other methods to determine pupping sites
- Other critical habitat for sea lions on Stewart Island







# Acknowledgements

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