Sea Spurge *(Euphorbia paralias)*

Annual Operational Report

2016/17

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Prepared for: Ministry of Primary Industries Contact for Services *16738 Sea spurge (Euphorbia paralias) eradication response at Aotea, Waikato.* September 2013

1.1 Introduction

Sea spurge was discovered on the north side of Aotea harbour entrance about 3km down ocean beach in 2012. The infestation was on private land in a remote location and is the only known site in New Zealand.

Sea spurge seeds are able to float on the ocean currents and the only known sea spurge site has probably come about by seed floating over from Australia.

In Australia Sea spurge was first found in Western Australia and is now found throughout south-east Australia coastline, including Tasmania and the island of Bass Strait. Also in recent years it has been colonising the beaches of New South Wales south coast. Sea spurge is an invasive coastal dune pest plant originally from Europe. It is believed to have come to Australia in ballast water from ships. Being a dune shrub that forms dense stands in the foredune and backdune, displacing native plants and changing patterns of sand movement. It poses a serious threat to the New Zealand dune system.

A working group has been set up to collaboratively manage and eradicate sea spurge. This group is led by Ministry of Primary Industries (MPI) and includes the Waikato Regional Council (WRC) and Department of Conservation (DOC). The plan is to maintain the infestation site at zero density to exhaust the seed bank and prevent further seed production. Being a very dynamic environment the risk of erosion and movement of materials from the site up down the coast is high. Therefore the coastline roughly 15km either side of the infestation site is monitored for more infestations.

Photo 1. Ben Elliot near the original infestation near Aotea Harbour, April 2017

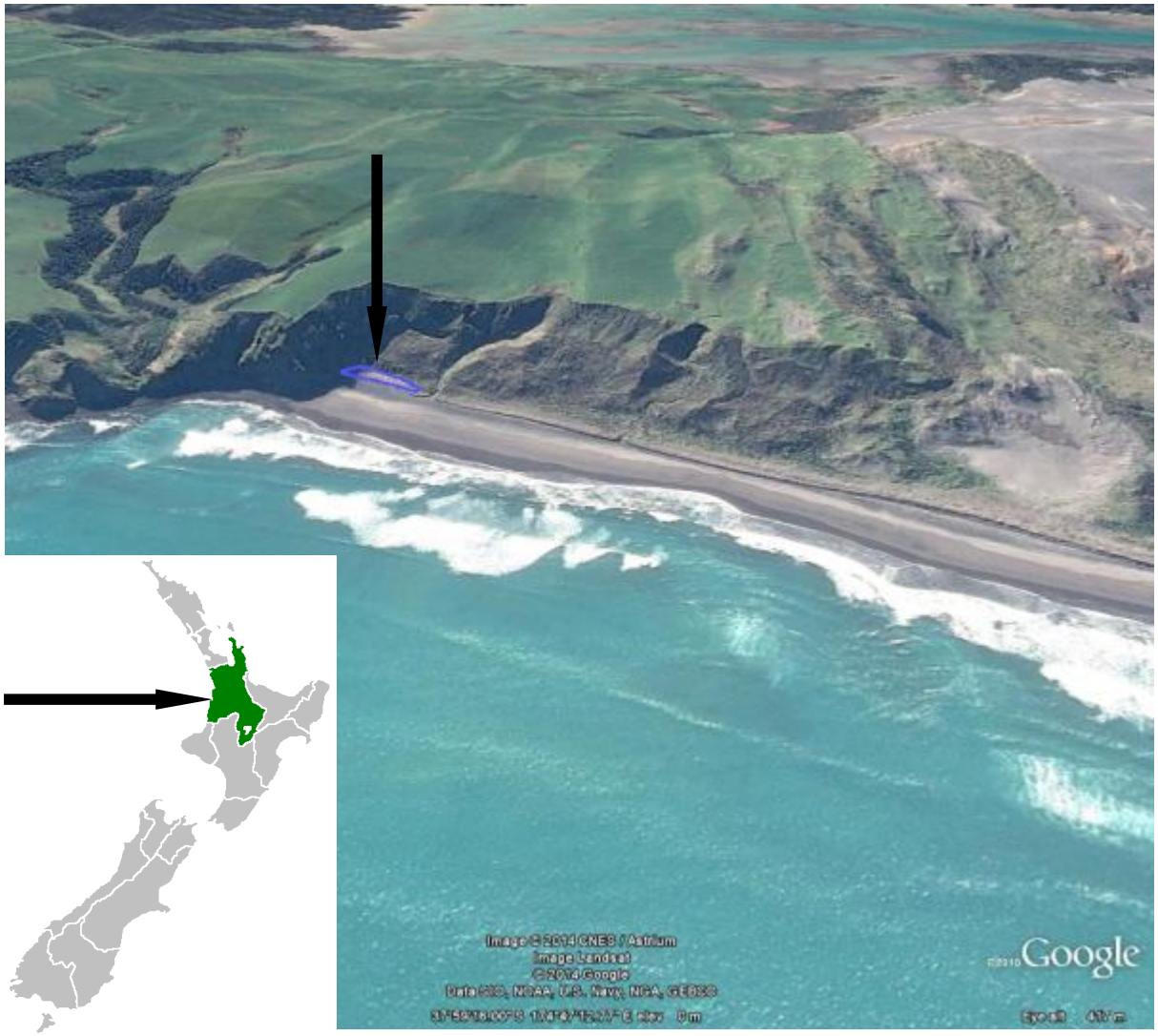

Photo 2. The location of the sea spurge infestation site near Aotea Harbour.

2 Timing of Visits for 2016/17

The infestation site was visited three times in the past year and a delimiting survey was carried out. Three small seedlings were found and hand pulled at the infestation site when the site was visited in September 2016.

Table 1. *Dates of Sea spurge infestation site visit and delimiting survey.*

1	Friday 16th September	Inspection of original infestation area and Aotea Beach surveillance
2	Wednesday 11 January 2017 Thursday 12th January 2017 Thursday 16th February 2017 Thursday 9th March 2017	Inspection of original infestation area and Aotea Beach delimiting survey Ruapuke Beach delimiting survey Aotea to Kawhia delimiting survey Schnackenberg Bay delimiting survey and Ruapuke Beach
3	Wednesday 3rd May 2017	Inspection of original infestation area

Photo 3. Original infestation site.

2.1 Site Visit September 2016

On the 16 September 2016 the original infestation site was visited and the site was grid searched. The debris at the site had changed a lot since it was originally visited and three small seedlings were found with the infestation area. The three seedlings were hand pulled and removed from the site. The first time in a three years that any sea spurge has been found at the site.

Swell surges breeching the dunes and disrupting sand and debris could have caused the germination of seeds. Pampas was also increasing at the site and will need to be controlled to help improve the chance of detecting sea spurge seedlings.

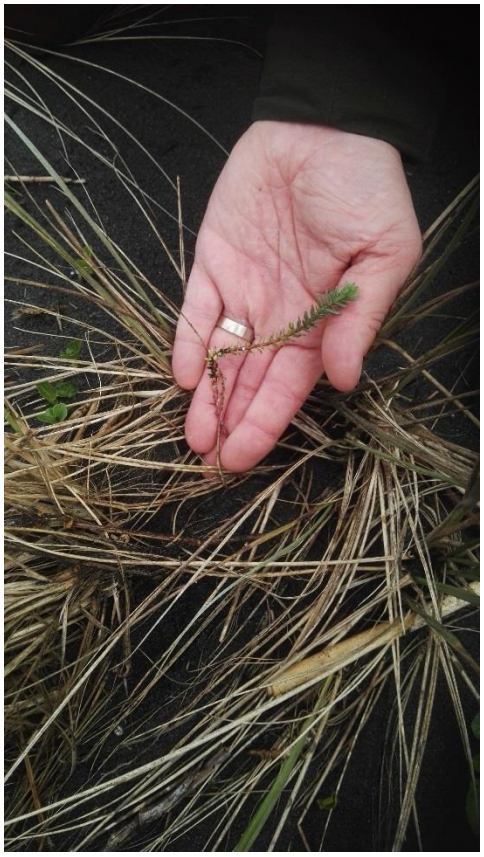

Photo 4. Sea spurge seedlings found at the infestation site during the September visit.

Photo 5. Ben Elliot and Frances Mckinnon remove sea spurge seedlings during the September site visit.

2.2 Site Visit/Delimiting Survey January 2017

On January 11th 2017 the second site survey was carried out. Like before the site was grid searched. No sea spurge was found.

Then the beach from the infestation site to Aotea harbour and around into the harbour was surveyed. No sea spurge found.

Photo 6. Ben Elliot preparing for a day walking along the beach at the original sea spurge infestation site before surveying the beach, 11th January 2017

Photo 7. Track log of delimiting survey between infestation site and Aotea harbour on 11th January 2017.

2.3 Ruapuke Beach delimiting Survey 12/01/17

The part of Ruapuke Beach off Peacocks Farm was surveyed. The beach was walked by two Waikato Regional Council Staff and no sea spurge was found.

Photo 8. Track log from delimiting surveying of part of Ruapuke beach 12th January 2017

2.4 Aotea to Kawhia delimiting

Aotea to Kawhia was surveyed on the 16th February 2017. Two Department of Conservation staff walked from Aotea to the front beach at Kawhia and two Waikato Regional Council staff walked from the harbour to meet them. No sea spurge was found.

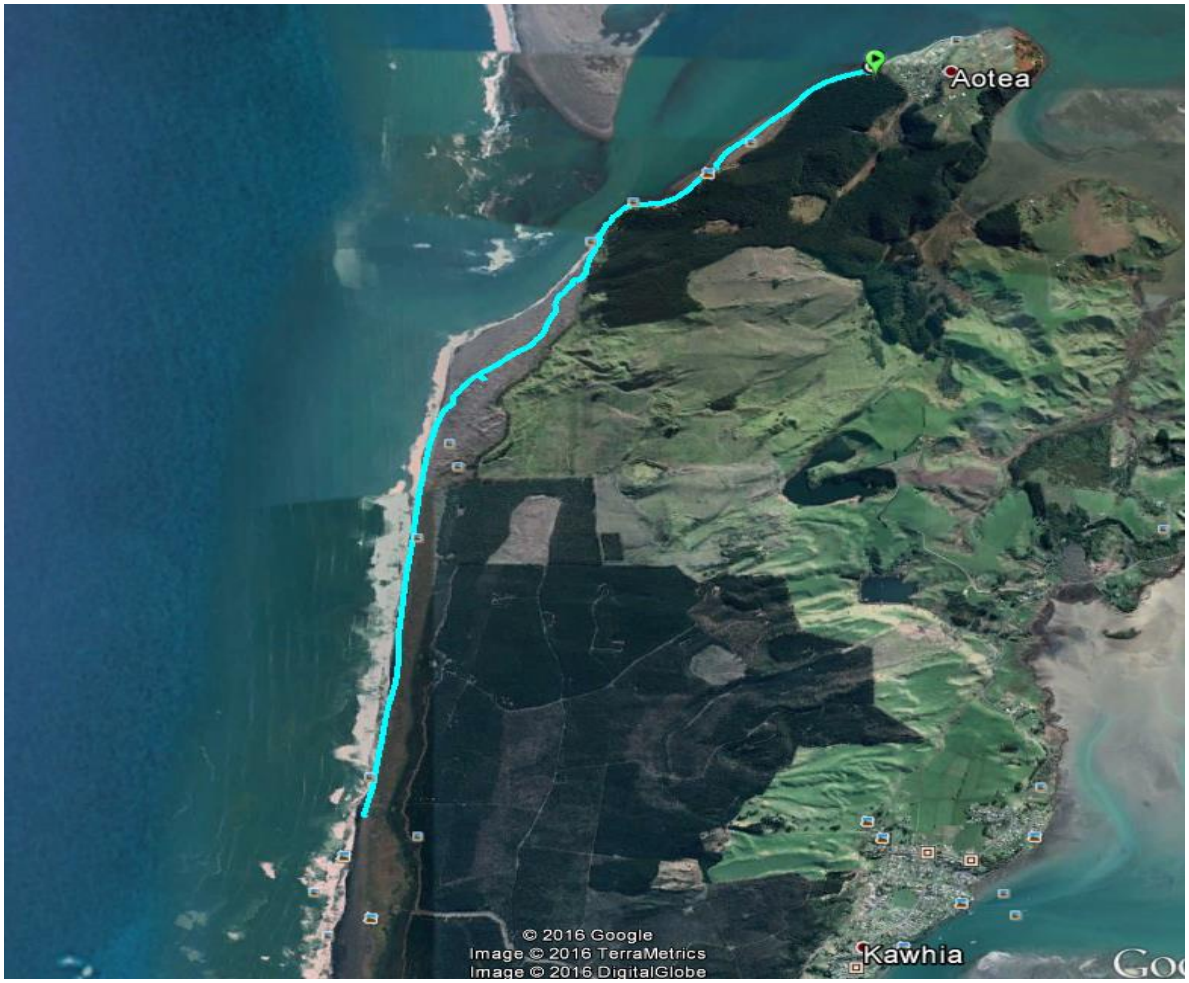

Photo 9. Track log for delimiting survey between Aotea and Kawhia on February 16th, 2017

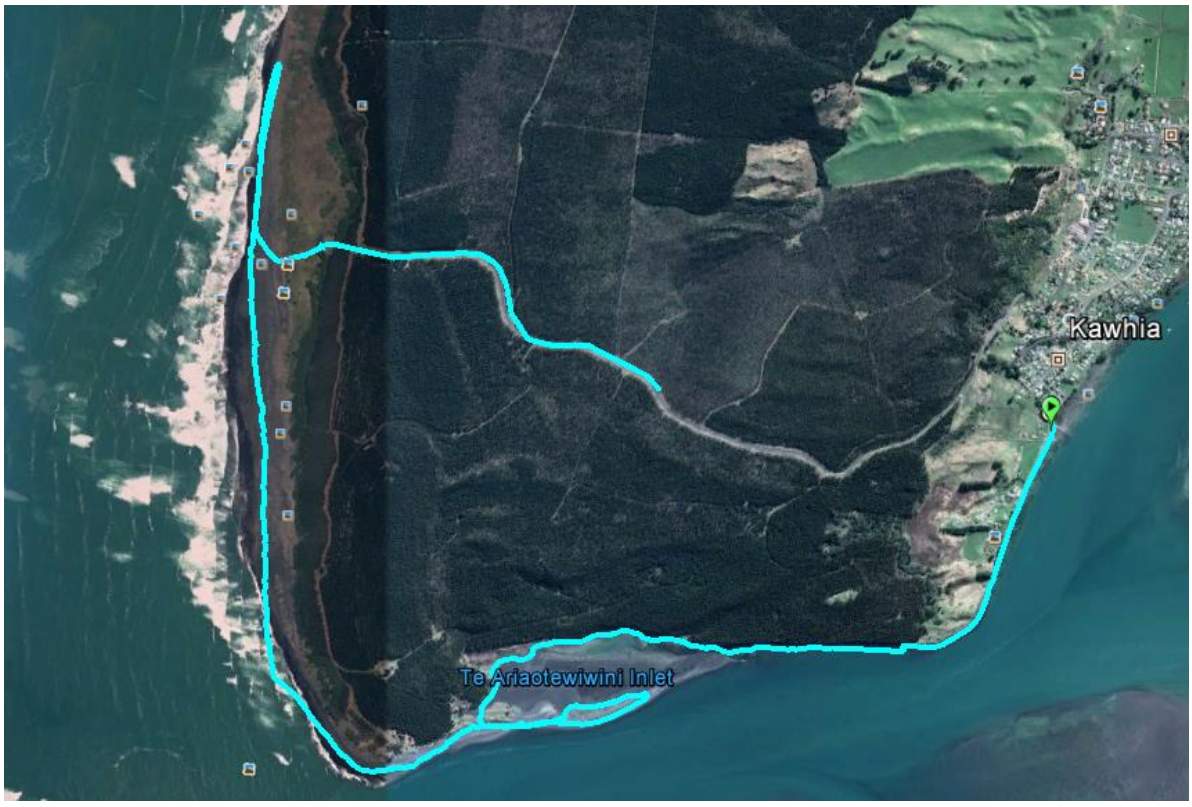

Photo 10. Track log for delimiting survey between Aotea and Kawhia on February 16th, 2017

2.5 Schnackenberg Bay and Ruapuke Beach Delimiting Survey

Schnackenberg Bay and Ruapuke Beach were surveyed as part of the delimiting survey on the 9th March 2017 by two WRC Staff. No sea spurge was found and unfortunately there is not a track log for Schnackenberg Bay due to the GPS running out of power.

Photo 11. Track log from the delimiting survey along Ruapuke on March 9th, 2017.

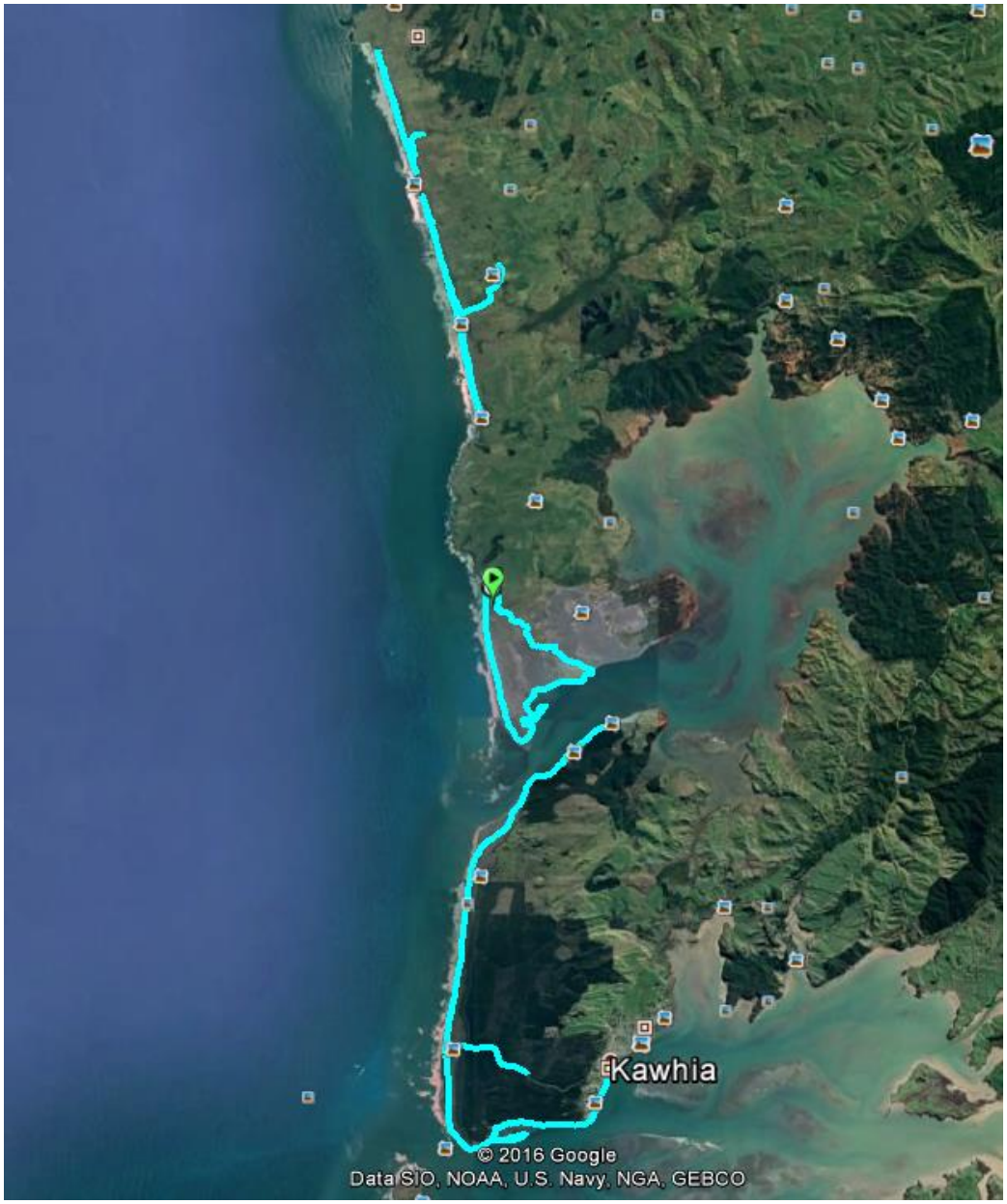

Photo 12. All the track logs from the delimiting survey in 2017

2.6 Site Visit May 2017

On Wednesday the May 3rd the original infestation site was visited for the final time in the 2016/2017 financial year. The site was grid searched again and no sea spurge was found. Also the pampas that has been increasing at the site was sprayed with glyphosate.

There had been a couple of significant weather events before the site visit and it appears the water has invaded the dune causing some erosion of the small bank leading up to the infestation site and movement of material at the site.

If there is sea spurge seed left the erosion of the bank and sea water breeching the site may help seed distribution highlighting importance of the delimiting survey in 2017/18.

Three signs were then erected at two entrances to Ruapuke Beach and at the Ruapuke camp ground.

Photo 13. Track log of Infestation site visit on May 3rd, 2017

Photo 14. The original infestation site on May 3rd, 2017.

Photo 15. Sea spurge sign at Ruapuke Beach May 3rd, 2017

3 Risks, issues and recommendations

3.1 Risk and Issues

- The west coast is a dynamic environment, there is a risk of seed spread from the infestation site due to swell surges breeching the dunes and moving debris and sand around. Which could increase the risk of sea spurge seed moving to new locations. It could also bury seeds deeper into the sand causing seeds to remain dormant stretching out the eradication program.

  Conversely swell surges could help expose seed, triggering germination and help exhaust the seed bank quicker.

- Plants can be difficult to detect among the debris and Pampus at the site. The site needs to be kept as clear as possible.

- The 2016/2017 summer has seen more rain and stormy weather than usual which has resulted is significant erosion of the site. This could increase the risk of seeds spreading.

3.2 Recommendations

- Continue delimiting survey and site visits to help with eradication at infestation site and reduce the risk of further spread.

- Continue to control Pampas at the site with glyphosate to help ensure sea spurge plants are found and help sea spurge seeds germinate.

- Put up more signs and continue to promote awareness in the surrounding regions. This should help insure that if there are any new incursions the likelihood of them being picked up early if high.

4.1 Acknowledgments

David Peacocks and sons for allowing access to their land is very important to the success of the eradication program and it is very much appreciated. Without this access carrying out control at the infestation site and delimiting survey would be extremely difficult.