Sea spurge *(Euphorbia paralias)*
incursion response at Aotea Heads New Zealand


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▲ **Figure 1-Mature sea spurge plant, Aotea Heads, Waikato, NZ**


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▲ **Figure 2-Detection site April 2012 showing sea spurge and other coastal vegetation**


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▲ **Figure 3-Waikato coastline showing detection site north of the entry to Aotea Harbour. Entry to Kawhia Harbour in the background**


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▲ **Figure 4-Detection site June 2012, showing erosion of seaward bank**


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▲ **Figure 5-Detection site June 2012 showing surface damage and debris**

Sea spurge–What is the problem?

- Serious environmental coastal weed capable of changing physical and ecological structure of sand dunes (Figure1).
- Toxic sap causes skin and eye irritations.
- Potential to establish along much of New Zealand's coastline (MPI 2012).
- Uncontrollable entry pathway is by seed floating on ocean currents.
- Seed survives many years on land and in sea water.
- Further incursions likely due to increasing propagule pressure from Australia.
- "Unwanted organism" under the Biosecurity Act 1993.

Detection site–Aotea Heads, Waikato

- First detected April 2012. Only known population in New Zealand (Figure 2).

What are the opportunities?

- Information to date indicates sea spurge is at an early stage of incursion.
- Young population 2-4 years old covers a small area of 80m^2 (Beadel 2012) (Figure 3).
- No other detections on 20-30km of coastline.
- Landowners and local communities support response activites.

What are the challenges?

- Seed reserve mobilised during storm surges. (Figure 4 & 5).
- Operational activities are challenged by the remote location, difficult access, high storm surges and heavy flotsam deposits.
- Unknown if this is the primary incursion site or if other populations exist.

What is happening at Aotea Heads?

- The Ministry for Primary Industries (MPI) established a working group in partnership with Waikato Regional Council and the Department of Conservation. The agencies work collaboratively to address the biosecurity risk posed by sea spurge at Aotea Heads, Waikato.
- The working group identified risks and opportunities for intervention and established an operations programme to maintain zero population density (Table 1).
- The group considered options to manually remove the seed from the site. However, intensive sand sampling after severe storm damage indicated that most seed had already been lost to sea.
- A suite of surveillance techniques are being used to maintain zero population density (Table 2; Figure 6).
- Local coastal communities are kept informed and help with surveillance.
- Plant characteristics and management practices in Australia help inform response decisions and actions.

What next?

- Develop a long-term management approach across multiple regions to maintain zero population density. Discussions are at a preliminary stage.
- Knowledge gained from Waikato and Australia will inform future responses to sea spurge in New Zealand.

References
Beadel, S. (2012) Sea spurge *(Euphorbia paralias)* – a serious new invasive weed found in New Zealand. *Trilepidea* 102, 3-5. New Zealand Plant Conservation Network.
MPI (2012) Risk Analysis: *Euphorbia paralias* - sea spurge (Ministry for Primary Industries, New Zealand.

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Table 1: Sea Spurge Response Objective: Maintain zero population density
Early detection and intervention provide the best opportunity to prevent establishment in New Zealand

Threat	Likelihood	Risk Mitigation	Probability of success	Action Taken
Seed production at detection site	High →	Monitor site and remove plants before further seed production	High →	Plants removed; site to be monitored for up to 10 years
Mobilisation of seed reserve into the sea	High →	Remove seed reserve before seed washed into sea	Low ☒	No action taken Seed loss has already occurred through erosion by ocean storm surges
Related populations exist	Unknown →	Conduct delimiting survey near detection site	High →	Intensive search of beaches near detection site
Non-related populations exist in the Waikato region	Unknown →	Survey Waikato coastline	Medium-High →	Search of high risk sites only Raise public awareness to promote early detection and reporting
New incursions in the Waikato region	Unknown →	Survey Waikato coastline	Medium-High →	Long term surveillance programme to be developed

Figure 6: Sea spurge surveillance Aotea Heads, Waikato

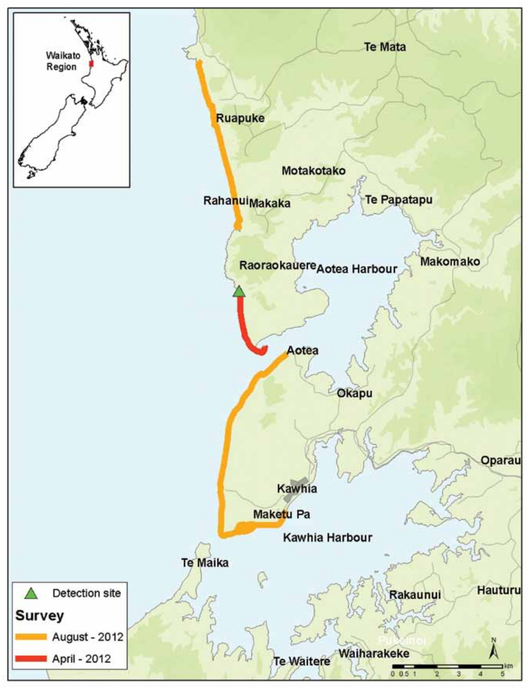

Table 2: Sea Spurge Surveillance Programme – Waikato region

Type	When	Methodology	Results
Active specific: Immediate area of detection site	April 2012	Thorough ground search of the base of the fore-dune along 3-4km beach at the detection site. Search undertaken at time of detection.	One mature plant found 50m from main site.
Active specific: Close to detection site	August 2012	Thorough ground search of base of fore-dunes along beaches 10 to 15km either side of detection site.	No sea spurge found
Integrated surveillance: Waikato harbours	June 2012–December 2012	Sea spurge incorporated into existing vegetation surveys along the shores of the three major Waikato harbours.	No sea spurge found to date
Passive specific: Waikato coastline	June 2012–	Passive surveillance to promote detection and early reporting: fact sheets, signs at key beach access points. Local community support encouraged.	No sea spurge reports to date
Targeted surveillance: only high risk sections of Waikato coastline	Summer 2012-13	Search 200km coastline: target high risk areas only where flotsam deposits.	–
Long term surveillance	2013–	Yet to be developed.	–

Ministry for Primary Industries
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