

Monitoring of Marine INNS using Submerged Settlement Panels

Maryport Marina - May to October 2022

Solway Firth Partnership November 2022



Maryport Marina

Solway Firth

Partnership

Table of Contents

1. Introduction	3
2. Method	4
3. Results	6
4. Conclusion	7
5. References.....	8
Appendix 1: Maryport settlement panel results	9

1. Introduction

The GB non-native species secretariat (2015a) defines an invasive non-native species (INNS) as “any non-native animal or plant that has the ability to spread causing damage to the environment, the economy, our health and the way we live.” Globally, 84% of marine ecoregions have reported marine invasion (Molnar *et al.*, 2008). In the UK marine environment INNS have the potential to pose a significant threat to native marine biodiversity and commercial interests. DEFRA (Department for Environment, Food and Rural Affairs) is the overarching coordinator for INNS in England with the GB NNSS (GB Non-Native Species Secretariat) being the organisation for reporting INNS.

Known impacts of INNS on native biodiversity are the spread of disease, competition for habitat and food and direct predation (GB NNSS, 2015b). Direct impacts include where biological indices display lower scores where INNS are present. Indirect impacts include where INNS densities are so high that a reduction in abundance of other taxa is observed (SEPA, 2013). The major pathways by which marine INNS are introduced include shipping, recreational boating, aquaculture stock movements and natural dispersal (GB NNSS, 2015c). Once INNS have established in a marine ecoregion, they are very difficult or even impossible to eradicate as many filter-feeding marine invertebrate animals live attached to solid surfaces and, along with algae, may be spread along coastlines marina-to-marina as fouling growth on the hulls of leisure craft. For this reason, early detection and monitoring of marine INNS is crucial.

2. Method

Two settlement panels (Photo 1) were attached to pontoons within Maryport Marina on 11 May 2022 by SFP staff in locations highlighted in Figure 1. The panels were attached to the underside of the pontoons and submerged to around one metre depth using strong paracord and weighed down with 6 oz fishing weights (Photo 2).

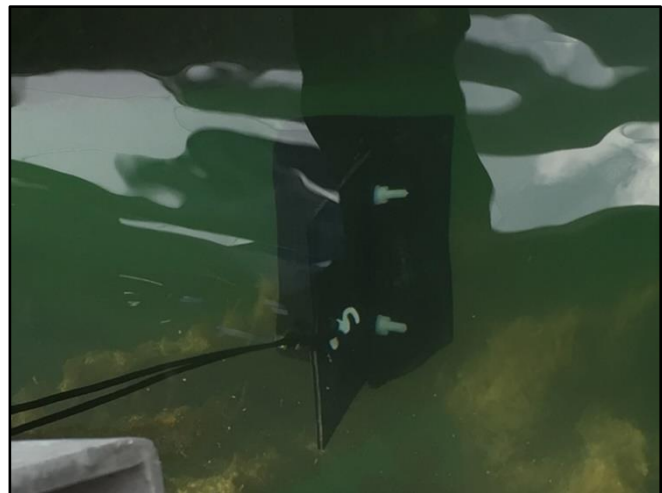


Photo 1 - Complex Correx panel structure Photo 2 - Submerged complex Correx panel

Maryport was chosen as a relatively large and active but protected marina.



Figure 1 - Maryport Marina. Location of panels 1 & 2

At the end of the summer (4 October 2022), the panels at Maryport were collected, photographed (Photos 4, 5), scored for percentage cover of surface species and then appropriately discarded. Mobile organisms, including barnacle cyprids and crabs were also noted and recorded.

Unfortunately only one panel was retrieved from Maryport Marina with the second being dropped in the water.



Photo 4 – Location of Panel



Photo 5 – Retrieved Panel

3. Results

The species diversity on the one panel retrieved appeared to be much reduced from that recorded in the 2021 survey. There were very low levels of coverage of sea squirt and it was impossible to identify the species as they appeared to be damaged (Photo 6). It may be that the weather had affected the species on the panel.

Only four species were noted from the panels. These included unidentified sea squirt (Photos 6 and 7), a species of barnacle, the red seaweed, *Ceramium virgatum* and an unidentified shrimp species.

More generally, the marina was more sheltered than Scottish marinas on the north side of the Solway and had a much higher volume of mud and silt on the panels and lower amounts of growth.



Photo 6 – Unidentified sea squirts



Photo 7 – Unidentified sea squirts



Photo 8 – Red Seaweed, *Ceramium virgatum*

4. Conclusion

The 2022 survey of Maryport Marina was very disappointing as one panel was lost and the second panel had very few species present. The results were not representative of the species that were found the previous year. Therefore, it is intended to continue deploying panels there in 2023 to maintain monitoring.

Continued awareness of INNS gained from the use of the panels and the rapid site assessments will allow for improved biosecurity control of invasives species. It is recommended the use of the current 3D scratched surface panel design is continued, as this seems to encourage a representative level of growth.

It is suggested that panels should also aim to be removed prior to any major storms, as even though this may result in a reduced soak time, it could prevent the loss of panels to the environment.

5. References

Finlay, J.A., Callow, M.E., Schultz, M.P., Swain, G.W. and Callow, J.A., (2002). Adhesion strength of settled spores of the green alga *Enteromorpha*.

Molnar JL, Gamboa RL, Revenga C & Spalding MD (2008). Assessing the global threat of invasive species to marine biodiversity. *Frontiers in Ecology and the Environment*, 6. 485-492.

GB NNSS (2015a). *Definition of Terms*. Online at <http://www.nonnativespecies.org/index.cfm?pageid=64> [accessed 01.10.18].

GB NNSS (2015b). *Check, Clean, Dry*. Online at <http://www.nonnativespecies.org/checkcleandry/index.cfm> [accessed 18/03/15].

GB NNSS (2015c). *Monitoring for NNS*. Online at <http://www.nonnativespecies.org/index.cfm?pageid=477> [accessed 01.10.18].

SEPA (2013). Natural Scotland Managing Invasive Non-Native Species in Scotland's Water Environment. A supplementary Plan to the River Basin Management Plans. SEPA on behalf of the Scottish Government. December 2013. Available at: https://www.sepa.org.uk/media/37362/managing-invasive-non-native-species_plan.pdf [accessed 01.10.18].

Solway Firth Partnership (2012). Marine Invasive Non-Native Species in the Solway. A report prepared by the Solway Firth Partnership. Available at: <http://www.solwayfirthpartnership.co.uk/uploads/Marine%20Invasive%20Non-native%20Species/Marine%20INNS%20in%20Solway%202013.pdf> [accessed 01.10.18].

Solway Firth Partnership (2015). Marine Invasive Non-Native Species in the Solway, Revised for 2015-18.

A report prepared by the Solway Firth Partnership. Available at: <http://www.solwayfirthpartnership.co.uk/uploads/Marine%20Invasive%20Non-native%20Species/Marine%20INNS%20in%20Solway%202013.pdf> [accessed 01.10.18].

Appendix 1: Maryport settlement panel results

MARYPORT MARINA									
Panel No	Grid Ref	Species - Common Name	Species - Latin Name	Abundance	Invasive sp	Abbrev	Scale	%	
1	NY0304736597	This panel was dropped and so lost					S	Super Abundant	80 - 100
						A	Abundant	20 - 80	
						C	Common	10 - 40	
						F	Frequent	20	
						O	Occasional	5 - 10	
						R	Rare	<5%	
	NY0298936515	Sea squirt	<i>Unsure of species</i>	O	N				
	NY0298936515	Barnacle sp	<i>Unsure of species</i>	R	N				
	NY0298936515	Red seaweed	<i>Ceramium virgatum</i>	F	N				
	NY0298936515	Shrimp sp	<i>Gammarus sp</i>	R	N				