

NIFCA Seagrass Survey

2017

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Background

The Northumberland Inshore Fisheries and Conservation Authority (NIFCA) have received reports from recreational bait diggers/anglers that the Lindisfarne Voluntary Bait Digging Zone now contains vast quantities of seagrass. NIFCA Byelaw 8 prohibits damage to seagrass therefore NIFCA needs to determine the extent and distribution of seagrass within the site to inform future management. NIFCA conducted a survey in September 2017 to map the distribution of seagrass within the site.

Study Site

This study was conducted at Lindisfarne, Northumberland on the north east coast of England (Figure 1). The Voluntary Bait Digging Zone is located adjacent to the Lindisfarne Causeway (The road connecting Holy Island to the mainland), and extends approximately 100m north and between 750 and 850m south of the causeway (Figure 2).



Figure 1. Location of the survey site at Lindisfarne, Northumberland.

Figure 2. Approximate location of Lindisfarne Voluntary Bait Digging Zone and access point (Lindisfarne Causeway).

Methods¹

A scoping survey was conducted on 20th July 2017 to verify the reports of seagrass within the bait Digging Zone. Deputy Chief IFCO Green and Environmental IFCO Wallace visited the site and walked a random route through the site. Vast quantities of seagrass were noted and it was decided that a more detailed survey would be conducted. In order to approximate timings for the survey design IFCOs re-visited the site on 4th September 2017 and walked the perimeter of the dense patches of seagrass, recording the tracks on a handheld garmin GPS.

On 6th and 21st of September data relating to the extent and distribution of seagrass within the Lindisfarne Voluntary Bait Digging Zone was collected on foot by officers. A series of transects approximately 50 metres

¹ The surveys were conducted during the safe crossing times for the Lindisfarne Causeway, Northumberland (<http://orawww.northumberland.gov.uk/www2/holyisland/holyisland.asp>.)

apart (south of the causeway) and 40 metres apart (north of the causeway) (Figure 3) were created on the Garmin GPS software BaseCamp and imported on to four handheld GPS units. Six officers/volunteer, split into three teams of two conducted the surveys.

The method involved each team walking a transect perpendicular to the causeway recording the presence under each step by marking a waypoint on a GPS (if no waypoint was recorded at a given point along a transect this was regarded as seagrass absence).

A quadrat was placed down and a photograph taken for every third record of seagrass. The waypoint number for each photo was recorded and the surveyor then continued along the transect until the boundary of the site/end of the transect was reached.

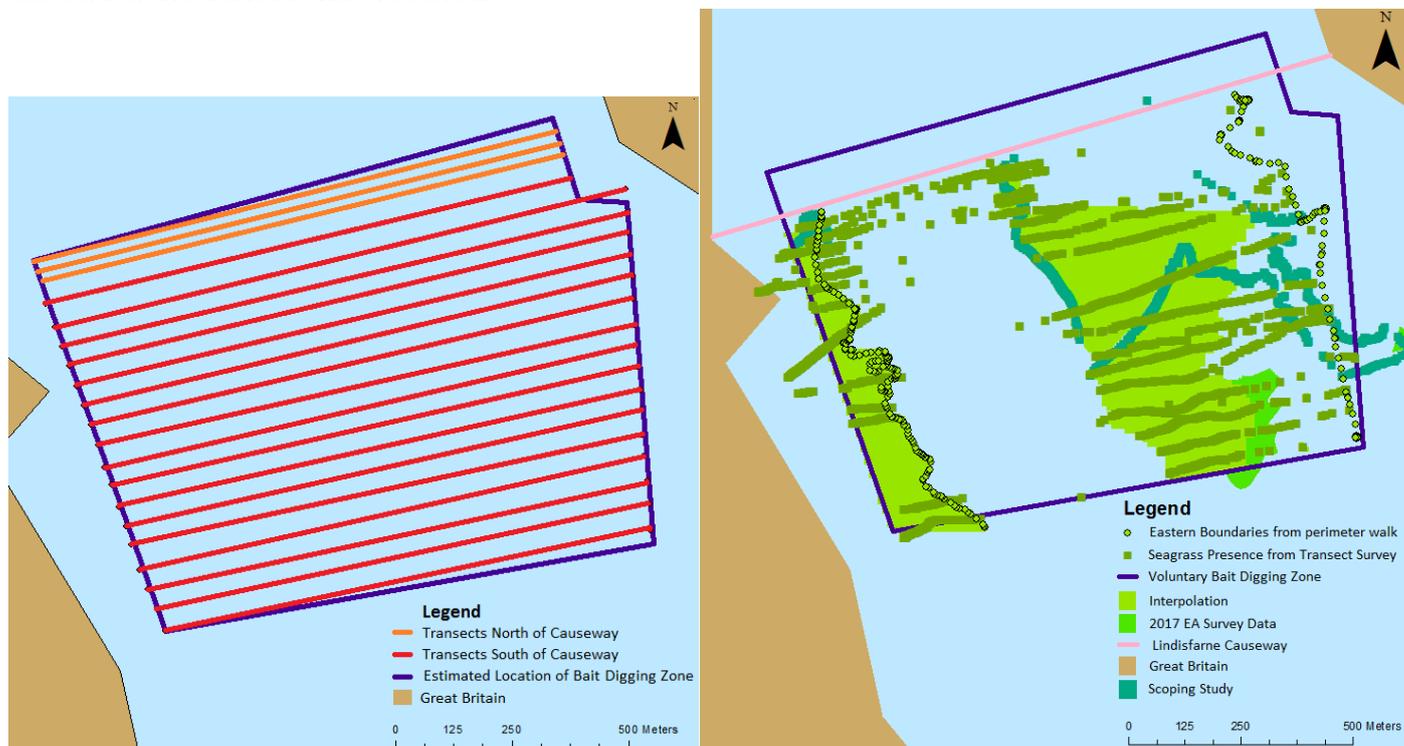


Figure 3. Location of Survey Transects within the Voluntary Bait Digging Zone.

Figure 4. All data layers used to determine the distribution of seagrass within the Lindisfarne Voluntary Bait Digging Zone.

Back at the office all waypoints were exported from the GPS units using Garmin Basecamp. The files were exported in .csv format and then imported into ArcGIS where shapefiles of the data were created. Shapefiles were also imported for the NIFCA scoping study, NIFCA perimeter walk and 2017 Environment Agency Survey. All GIS layers and field observations were used to interpolate (fill in gaps) the data and create a map of seagrass distribution at the site (Figure 4). The area of the Voluntary Bait Digging Zone and the estimated area of seagrass were calculated in ArcGIS and used to estimate the proportion of the site where seagrass is present.

Results

Figure 5 shows the estimated distribution of Seagrass within the Lindisfarne Voluntary Bait Digging Zone in 2017. Only 1 observation of seagrass was recorded on the northern side of the causeway, conversely there were substantial amounts of seagrass recorded on the southern side of the causeway. Two distinctive, dense patches of seagrass were observed during the surveys and this is reflected in the data, one on the landward edge of the site and one in the middle. There were also sparse patches of seagrass radiating from the dense patches. Approximately 36% of the Voluntary bait digging zone contained Seagrass in 2017. Both *Zostera noltii* and *Zostera angustifolia* were observed during this survey but species specific information was not recorded for each observation.



Figure 5. Estimated distribution of Seagrass within the Lindisfarne Voluntary Bait Digging Zone.

Further Study

As mentioned above NIFCA also collected quadrat photographs which can be used to more accurately estimate percentage cover at the site (as the current estimate is only based on presence and absence data). This data can be used as a baseline for future work to determine if there is a change in seagrass cover over time, in response to a disturbance or due to encroaching macroalgae.

Acknowledgements

Thank you to all NIFCA officers and volunteers who participated in the seagrass surveys and to the Environment Agency for provided GIS shapefiles of their results. Special thank you to Paula Lightfoot and the Dove Marine Laboratory for loaning equipment for the survey.